



MINUTES

ORDINARY MEETING OF COUNCIL

Tuesday, 15 July 2014

Held at Swan Hill Town Hall
Council Chambers
McCallum Street, Swan Hill
Commenced at 5:00 PM

Confirmed 19 August 2014

Chairperson

COUNCIL:

Cr LT McPhee – Mayor

Cr JN Katis

Cr GW Norton

Cr GI Cruickshank

Cr JA Kiley

Cr CM Adamson

Cr JB Crowe

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SECTION A – PROCEDURAL MATTERS

- **Open**

Mayor, Cr Les McPhee assumed the chair and declared the meeting open at 5pm.

- **Acknowledgement of Country**

Mayor, Cr Les McPhee read the Acknowledgement to Country.

- **Prayer**

Cr Norton read the prayer.

- **Apologies**

Note: Acting CEO, Brett Luxford advised Dean Miller (CEO) is currently away at this time.

Recommendations

That the apologies be accepted.

- **Confirmation of Minutes**

- 1) Ordinary Meeting held on 10 June 2014

1/14 Motion

MOVED Cr Norton

That the minutes be confirmed.

SECONDED Cr Crowe

The Motion was put and CARRIED

- **Declarations of Conflict of Interest**

Cr Adamson – Report B.14.39 Planning Scheme Amendment Request – C58 Land – Swan Hill South West Development Precinct

- **Receptions and Reading of Petitions, Memorials, Joint Letters and Deputations**
- **Public Question Time**

2/14 Recommendations

MOVED Cr Kiley

That standing orders be suspended.

SECONDED Cr Adamson

The Motion was put and CARRIED

Yvonne Jennings

Question – In reference to the upcoming VCAT hearing on the Yana Street Childcare Centre Application: What level of support and resourcing will Council provide at the hearing to uphold their granting of permission and when will the hearing be held and where?

Answer – No date for hearing as yet, Council is preparing a case and will devote the necessary resources.

Mayor Cr Les McPhee advised that the budget submissions would also be heard whilst standing orders have been suspended for public question time.

Budget Submissions – Submission No 1: Janet Field

Ms Field spoke briefly to Council regarding the library:

- The library is one of the few outposts of Council that actually engages with the public at large.
- More than 200 people on average go through the library each day and in particular, one day in July last year, saw 402 people use the library (a school holiday program was running at the time). On Saturday mornings, over 50 people an hour go through the door.
- The great thing about the library is that it is open to everyone, from the rich, to the poor, the lonely, the old, family researchers, users of the internet, the knitters, the chess players, the newspaper junkies and the learners of English. They can all access the services and the vast range of resources.

- Through the mobile library, the library reaches the remote parts of our rural city and binds isolated people together, and it's actually opened 24/7 through its online website.

So without doubt it is a Council service that is widely used and universally available.

3/14 Recommendations

MOVED Cr Cruickshank

That Standing Orders be resumed.

SECONDED Cr Adamson

The Motion was put and CARRIED

SECTION B – REPORTS

B.14.36 RECEIVE AND HEAR SUBMISSIONS TO THE DRAFT 2014/15 ANNUAL BUDGET

Responsible Officer: Director Corporate Services

File Number: 42-09-71

Attachments: Nil

Declarations of Interest: Officer

David Lenton - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

The purpose of this item is to enable Council to formally receive and hear submissions to the Draft 2014/15 Budget.

Discussion

Council advertised for submissions to its Draft 2014/15 Budget in the Swan Hill Guardian on Friday 13 June 2014 and the Robinvale Sentinel on Thursday 19 June 2014.

The Statutory period for making submissions has now passed. As required under the Local Government Act, Council is now in a position to formally receive any submissions and allow submitters to speak to any issues they have raised.

Consideration of any submissions will be dealt with at a Special Council Meeting to be held in 22 July 2014.

Consultation

The submission process is part of the consultation process for the Budget.

Financial Implications

Nil

Social Implications

Nil

Economic Implications

Nil

Environmental Implications

Nil

Risk Management Implications

Nil

Council Plan Strategy Addressed

Responsible management of resources - We will continually improve the management of our finances, assets, systems and technology to achieve and maintain Best Value in our operations.

Options

Nil

Recommendations

That Council:

- 1. Receive any submissions to the Draft 2014/15 Budget.**
- 2. Enable any submitters to speak to their submission.**

Cr Katis left the Council Chamber at 5:13pm due to a perceived Conflict of Interest in the current report being heard.

4/14 Motion

MOVED Cr Norton

That Council:

- 1. Note the contents of the submissions to the 2014/15 budget.**
- 2. In relation to bus shelters and seating, a discussion paper be prepared for a Council Assembly and then the possible progression to major projects.**
- 3. Fees and charges in relation to the pioneer settlement and the hire of Council buildings also be brought to a Council for discussion.**
- 4. Adopt the 2015/15 budget as presented and advertised.**

SECONDED Cr Crowe

The Motion was put and LOST

5/14 Motion

MOVED Cr Cruickshank

That Council:

- 1. Receive any submissions to the Draft 2014/15 Budget.**
- 2. Enable any submitters to speak to their submission.**
- 3. Receive the petitions that were attached.**

SECONDED Cr Kiley

The Motion was put and CARRIED

Cr Katis returned to the Council Chamber at 5:23pm and was informed of the decision.

B.14.37 SWAN HILL ECONOMIC DEVELOPMENT STRATEGY IMPLEMENTATION

Responsible Officer: Director Development and Planning
File Number: 26-33-00
Attachments: 1 Economic Development Strategy Implementation Report

Declarations of Interest: Officer
Brett Luxford - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

This report seeks to update Council and the community on the actions taken to implement the Swan Hill Rural City Council Economic Development Strategy 2011-2016. The report is accompanied by an attachment that demonstrates the large number of initiatives undertaken to develop a sustainable and diverse local economy.

Discussion

The Swan Hill Rural City Council Economic Development Strategy 2011-2016 was adopted by Council at its Ordinary Meeting in October 2011. The strategy is a key document that links to the Council Plan and helps guide Council's role in economic development and identifies economic development activities across the five year lifespan of the strategy.

Within the strategy there are also some actions that extend beyond the 5 year horizon. This is in recognition of the long term strategic nature of some of the activities and that many of the projects or initiatives are a long time in the planning.

Throughout the development of the strategy the focus was on understanding what Council was able to achieve or able to influence. This resulted in a series of actions across five strategic themes. The themes are:

1. Attracting New Business Investment
2. Supporting Existing Businesses to Grow
3. Marketing the Region
4. Addressing Infrastructure Needs
5. Educations and Skills Development

It should be noted that the Economic Development Strategy is implemented by many different departments across Council. Many of the actions that Council undertakes on a daily basis either supports or generates local economic development and local businesses.

The attached report breaks down each of the key themes into its actions and outlines some of the activities that Council has been undertaking since the adoption of the strategy. The report highlights that significant progress has been made in achieving many of the actions identified.

The report also highlights that Council alone cannot develop a sustainable economy. Council is supported by, and in turn supports, many private and government entities in the quest for economic growth. Funding support from both the Australian and Victorian Governments has allowed many of the actions to be achieved.

The strategy is a living document and is continually being reviewed. A new strategy will be developed during 2016. Until that time Council will continue to implement the actions identified in the 2011-2016 strategy and harness new opportunities as they arise.

Consultation

Significant consultation was undertaken in the development of the strategy and initiatives or projects undertaken in implementing the strategy are often undertaken in partnership with other organisations or require consultation themselves.

Financial Implications

Not applicable.

Social Implications

There are strong links between economic development outcomes and social outcomes. Measurable community benefits come from creating a sustainable economy including employment and improvements to community infrastructure.

Economic Implications

The development of a sustainable local economy through the five strategic themes identified in the economic development strategy has significant local economic implications. The strategy was developed to seek to leverage the strengths in the local economy and address the gaps that were identified.

Environmental Implications

The economic development strategy identified actions to improve environmental sustainability and at the same time generate local economic growth.

Risk Management Implications

Not applicable.

Council Plan Strategy Addressed

Attracting new business - We will encourage new business development and will provide support to attract new business investment and expansion in the community.

Options

Council can accept the recommendations as outlined in the report or not accept the recommendations.

Recommendation

That Council note the report.

6/14 Motion

MOVED Cr Cruickshank

That Council note the report.

SECONDED Cr Kiley

The Motion was put and CARRIED

Theme One: ATTRACTING NEW BUSINESS INVESTMENT

Initiative	Horizon Years 1-5 >5		
SHRCC will encourage new business developments and provide support to attract new business.			
Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
1. Continue to provide hard public infrastructure ensuring that the region is an attractive place to live, work and invest.	✓	Economic Development Unit, Planning Department, Murray River Group of Councils, Infrastructure Department, RDV.	<p>✓ Riverfront Masterplans Swan Hill (Oct 2013) and Robinvale Completed and endorsed by Council</p> <p>✓ Bromley Road Masterplan Completed and endorsed by Council (Dec 2013)</p> <p>✓ Natural Gas Feasibility Study Completed by Consultant Victorian Government have tendered for supply of natural gas to various areas including Swan Hill Rural City. Awaiting results of tender</p> <p>✓ Swan Hill CBD Redevelopment Completed (April 2014)</p> <p>✓ Swan Hill Aerodrome Business Case Completed and endorsed by Council (Dec 2014)</p> <p>✓ Gateway Signage Project Completed (Jan 2014)</p> <p>✓ George Lay Park Redevelopment Completed (Aug 2013)</p> <p>✓ Barry Steggal Park Development Completed (2013)</p> <p>✓ Municipal Road Infrastructure Upgrades <ul style="list-style-type: none"> - North South Road (2013) - Karinie Street (Swan Hill) - Perrin Street (2011) - Shaggyridge Road (2013) - Crete Road (2014) - Beveridge Street (Aug/Sep 2013) </p> <p>✓ Beveridge & McCallum Streets Drainage Upgrade Completed (2012)</p>
			<p>✓ Aerodrome Runway Upgrade Works likely to occur this calendar year (2014)</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
2. Attract new investment in identified key industries including tourism, agriculture and manufacturing through the development of targeted investment prospectuses.	✓	Economic Development Unit, DPI, Murray Regional Tourism Board, Community Groups.	<p>✓ Swan Hill Region Overview Marketing Materials Fact sheets (agriculture, tourism, manufacturing, retail and municipal overview) completed and printed Investment prospectus in final draft format</p> <p>In progress Investment Attraction Policy Review Final draft currently being completed</p> <p>In progress Robinvale Investment Prospectus Final draft currently being completed</p> <p>In progress Riverfront Masterplan – Lodges redevelopment Expression of Interest document currently under development</p>
3. Secure new business investment through targeted and proactive engagement with potential investors in the renewable energy sector.	✓	Economic Development Unit, Environment Department, Planning Department, Community Groups.	<p>✓ SHRCC Solar Prospectus Completed and endorsed by Council (2013) Distributed to solar developers (2013)</p> <p>In progress Wemen Substation investigation Ongoing site analysis and discussions with potential solar investors and land owners</p> <p>On going Large – Medium Scale Solar Development Liaising with potential solar investment companies</p> <p>In progress Blackwire Reserve Solar Development Rezoning Completed (Nov 2012) Preferred developer selected (Dec 2012) Due diligence of site completed (2012/2013) Land under contract (June 2014)</p>
4. Ensure well-located industrial, business and residential land are available for businesses and individuals to become established within the region.	✓	Economic Development Unit, Planning Department, Victorian State Government	<p>✓ Rezoning of North Park Reserve Completed</p> <p>✓ Karinie Street Industrial Land (Development Plan) Completed</p> <p>✓ Highway Business Strategy Completed</p> <p>In progress South West Development Precinct Under development</p> <p>In progress Tower Hill Land Release Various stages have been completed</p> <p>✓ Residential Development Strategy (Review) Completed and adopted by Council</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
5. Actively pursue a 10-year Aboriginal Tourism Plan through the States Government's Tourism Victoria and Aboriginal Victoria Project with the aim of establishing an Aboriginal Interpretive Centre within the Swan Hill region.	✓	Economic Development Unit, Tourism Victoria, Wakool Shire, DPCD, Parks Victoria, Aboriginal Elders, Murray Valley Aboriginal Cooperative (MVACOP)	<p>✓ Old Tech School rezoning Completed</p> <p>✓ On going Inclusion in Lake Boga Economic Development, Tourism and Marketing Strategy New Tourism Strategy currently under development (June 2014)</p> <p>✓ Swan Hill Riverfront Masterplan Seeking funding to undertake a feasibility study into the development of a Interpretive Centre</p>
6. Capitalise on opportunities presented by the rollout of a National Broadband Network, particularly in the health and education fields.	✓	Economic Development Unit, LLEN, SunTAFE, RTOs, SHDH, RDHS, Schools, Community Groups	<p>✓ On going NBN 4 Loddon Mallee NBN Champion identified committee formed (2012)</p>
7. Facilitate the sale and development of unoccupied green development zones (Crown Land) in the municipality on behalf of the State Government.	✓	Economic Development Unit, Planning Department, State Government, Private Developers	<p>✓ Old Tech School rezoning Completed (Land sold)</p> <p>✓ Rezoning of North Park Reserve Completed (Land sold)</p>
8. Improve the social infrastructure, in particular the welcoming of new residents, by developing programs with community groups, industry bodies and service providers.	✓	Economic Development Unit, Media & Events Unit, Community Facilitation Unit, Pacific Islander Guest Workers Scheme, Industry, Community Groups.	<p>✓ Update Guide for New Residents Completed and printed (2013/2014)</p> <p>✓ On going Regional Certifying Body Providing certification of skilled migrants for businesses</p> <p>✓ On going Swan Hill Region Introduction Weekend Held as a result of the Regional Victoria Living Expo (July 2013) Planned to be held again in 2014</p> <p>✓ Swan Hill Region App Completed and available for download</p>
9. Develop an Investment Attraction Program to streamline processes for	✓	Economic Development Unit, Planning Department.	<p>✓ On going Regular Updates of Official Visitor Guides for – Robinvale and the Swan Hill region Completed and distributed nationally</p> <p>✓ On going Regional Victoria Living Expo Annual event</p> <p>In progress Investment Attraction Policy Review Final draft currently being completed</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
large scale business investment.			<p>✓ On going</p> <p>Industry Forums Breakfast and Luncheons Business Breakfasts held quarterly Businesses from selected industries meet to discuss issues</p>
10. Develop and improve upon relationships with private developers by facilitating timely investment and offering pre-lodgement meetings.	✓	Economic Development Unit, Planning Department, Developers, Real Estate Agents, RDV.	<p>✓ On going</p> <p>Regular Pre-judgement Meetings Occurring</p>
11. Actively attract private investment for the establishment of tourism-related businesses that enhance access or awareness of the regions' natural attractions.	✓	Economic Development Unit, Environment Department, Murray Regional Tourism Board, Tourism Victoria, Community Groups.	<p>In progress</p> <p>✓</p> <p>Blackwire Reserve Solar Development (see above)</p> <p>✓</p> <p>Riverfront Masterplans Swan Hill (2013) and Robinvale Completed and endorsed by Council</p> <p>✓ On going</p> <p>Regional Victoria Living Expo Annual event</p> <p>In progress</p> <p>Pioneer Settlement Redevelopment including Heartbeat of the Murray</p> <p>✓</p> <p>Loddon Mallee Region 2014 Investment Prospectus Features SHRCC tourism investment opportunities</p> <p>✓</p> <p>Murray Regional Tourism Board Investment Prospectus Features SHRCC tourism investment opportunities</p>
12. SHRCC will support improvements in access to quality early childcare and education to encourage a quality workforce.	✓	Family, Youth and Children's Services, Economic Development Unit, Community Facilitation, Swan Hill District Health, Mallee Family Care.	<p>✓</p> <p>Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway</p>

Theme Two: SUPPORTING EXISTING BUSINESSES TO GROW

Initiative	Horizon Years 1-5 <5	Stakeholders
SHRCC will support existing businesses and encourage expansion through building business capacity and Council's own procurement policies.		

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
1. Create stronger links with business communities through more planning (info sharing) active engagement and revised communication frameworks.	✓	Economic Development Unit, Industry, Media & Events Unit, Community Groups.	✓ Business Expansion and Retention Business Visits 50 visits completed (May/June 2013) and report endorsed by Council (Oct 2013). To be conducted again in 2014.
	✓ On going		Economic Development Unit Newsletter Published and distributed monthly
2. Establish a business database to assist in disseminating information and engaging the business community e.g. advertising of Council tenders, training and funding opportunities.			✓ On Going Host Small Business Victoria Workshops and Seminars Events hosted between March and August as part of Victoria's Small Business Festival, and as available.
			✓ On Going Swan Hill Incorporated Events and Functions Attendance at events and functions
			✓ Murray River Tourism Excellence Program Completed 2012
			✓ On going Industry Forums Breakfast and Luncheons Business Breakfasts held quarterly Businesses from selected industries meet to discuss issues
	✓	Economic Development Unit, Media & Events Unit, Community Groups.	In progress Australian Business Register A major audit of businesses in SHRCC is being conducted utilising ABN data, rates information and existing databases
			✓ On Going Swan Hill Incorporated Events and Functions Attendance at events and functions

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
			<p>In progress</p> <p>Complete Municipal Business Database Currently being updated and revamped to include home based businesses (June 2014)</p> <p>Solar Industry database Updated as required</p>
<p>3. Council's Economic Development Unit will strengthen ties and increase accessibility through a number of tactics including regular site visits throughout the business community.</p>	<p>✓</p>	<p>Economic Development Unit, Industry, Community Groups.</p>	<p>Business Expansion and Retention Business Visits 50 visits completed (May/June 2013) and report endorsed by Council (Oct 2013). To be conducted again in 2014</p> <p>Host Small Business Victoria Workshops and Seminars Events hosted between March and August as part of Victoria's Small Business Festival, and as available.</p> <p>Swan Hill Incorporated Events and Functions Attendance at events and functions</p>
<p>4. Facilitate programs designed by government and industry bodies to provide business development, professional development training and assistance to meet challenges identified in SHRCC.</p>	<p>✓</p>	<p>Economic Development Unit, SBV, Industry bodies, DPI, RTOs, Employment agencies, LLEN, Community Groups.</p>	<p>On going</p> <p>Industry Forums Breakfast and Luncheons Business Breakfasts held quarterly Businesses from selected industries meet to discuss issues</p> <p>Economic Development Unit Newsletter Published and distributed monthly</p> <p>Industry Forums Breakfast and Luncheons Business Breakfasts held quarterly Businesses from selected industries meet to discuss issues</p> <p>Swan Hill Region Workforce Development Strategy 2013 – 2017 Complete and endorsed by Council (Oct 2013) Implementation now underway</p> <p>Advancing Country Town Project – Robinvale Led by Robinvale District Health Services, the ACT Employment Program is improving outcomes for job seekers and industry by delivering more efficient joined up employment services, training that addresses local and regional skills gaps, and improving employability of local people.</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
5. Drive a more integrated community response to events including better communication surrounding extended trading hours.	✓	Economic Development Unit, Media & Events Unit, Robinvale Resource Centre, Community Facilitation, Community Groups.	<p>✓ On going Host Small Business Victoria Workshops and Seminars Events hosted between March and August as part of Victoria's Small Business Festival, and as available.</p> <p>✓ Murray River Tourism Excellence Program Complete 2012</p> <p>In progress Strengthening Swan Hill Region's Retail Industry Strategy development and implementation of actions to increase retail business viability. Funding received and project underway.</p> <p>✓ On going Economic Development Unit Newsletter Published and distributed monthly</p> <p>✓ On going Partnering with Swan Hill Incorporated on communication</p> <p>✓ On going Events and Special Events Calender Special events calendars produced during Easter and Christmas and long weekends</p> <p>✓ On going Council Website Update 2013 Major upgrade has been completed. The EDU will continue to update content as required.</p> <p>✓ Swan Hill Region App Completed and available for download</p> <p>✓ On going Events Pack Compiled by EDU staff promoting attractions and important local information distributed by event organisers</p> <p>✓ On going Regional Victoria Living Expo Annual event</p> <p>✓ Sunraysia Agribusiness Summit 2014 Agricultural forum held in Robinvale in May 2014 partnered with the Robinvale District Health Service to deliver</p> <p>✓ Implementation of Strengthening Murray Darling Basin Communities funding program. Strategy development for reduced irrigation water and economic impact, economic development strategy for Robinvale (2012) and Bromley Road Masterplan (2013)</p>
6. Council will play a more active role in developing business market opportunities on a regional, national and international level. Particular emphasis will be on utilising existing links such as sister city relationships with Yamagata and Villas Bretenoux, France.	✓	Economic Development Unit, Industry, Export Development Bodies, RDV, Yamagata, Villers Bretenoux, France, AusTrade, Export Vic.	
7. Assist local businesses and industry to adapt to changes in water policies and opportunities for alternative sustainable land uses and management systems.	✓	Economic Development Unit, DPI, Industry, Environment Unit, Lower Murray Water.	

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
8. Undertake skills and training projects in partnership with local businesses with seasonal labour demands to establish year round employment outcomes for seasonal workers.	✓	Economic Development Unit, LLEN, Industry, RTOs.	<p>✓ Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway</p> <p>In progress Advancing Country Town Project – Robinvale Led by Robinvale District Health Services, the ACT Employment Program is improving outcomes for job seekers and industry by delivering more efficient joined up employment services, training that addresses local and regional skills gaps, and improving employability of local people.</p> <p>✓ On going Regional Certifying Body Providing certification of skilled migrants for businesses</p> <p>✓ On going Host Small Business Victoria Workshops and Seminars Events hosted between March and August as part of Victoria's Small Business festival, and as available.</p>
9. SHRCC will employ an Economic Development and Tourism Projects Officer for the Robinvale area to improve business outcomes specifically for Robinvale, subject to available funding.	✓	Economic Development Unit, RDV, Industry.	<p>✓ Economic Development Officer Robinvale This position was funded by Regional Development Victoria until March 2013. Ongoing support has been has been provided from existing resources.</p>
10. Council will support the improvement of the range and early childhood education and care, flexibility in order to retain the trained workforce.	✓	Family, Youth and Children's Services, Early Childhood Education Providers, Economic Development Unit.	<p>✓ Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway</p> <p>✓ Family, Youth and Children Services Information packs developed & distributed</p>
11. SHRCC through its Economic Development and Tourism Projects Officer will develop an Economic Development Strategy for Robinvale.	✓	EDU, Business Community, Federal Government, Community Groups.	<p>✓ Robinvale Economic Development Strategy 2012 -2017 Completed and endorsed by Council (2012)</p>

Theme Three: MARKETING THE REGION

Initiative	Horizon Years 1-5 >5	Stakeholders
SHRCC will work with the community to ensure the municipality is continually promoted as a family friendly place to invest, live, work, visit and shop.		

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
1. Increase the value of the tourism industry to the region through more targeted marketing programs in partnership with regional tourism bodies.	✓	Economic Development Unit, Murray Regional Tourism Board, Parks Victoria, Events & Media Department, Community groups, Murray Mallee Racing, Pioneer Settlement, Local tourism operators, Community Groups.	In progress Swan Hill Region Farmers Market Feasibility Study Funding secured from RDV to complete a feasibility study into the establishment of market in the municipality
			✓ On going Murray Regional Tourism Board SHRCC continues to be a key member of this regional marketing committee.
			✓ On going Swan Hill Incorporated Marketing The EDU works in close partnership with Swan Hill Inc to implement projects such as billboard advertising in Melbourne, and print and media campaigns.
2. Continue to support the partnership with Swan Hill Incorporated on the co-operative "Swan Hill - Heart of the Murray" marketing campaigns.	✓	Economic Development Unit, Community Groups.	✓ On going Pioneer Settlement Marketing Program Ongoing marketing of the Pioneer Settlement
			✓ On going Swan Hill Incorporated Marketing The EDU works in close partnership with Swan Hill Inc to implement projects such as billboard advertising in Melbourne, and print and media campaigns.
3. Review existing marketing efforts to ensure expected economic outcomes are being achieved and encourage a more targeted approach to identified markets including empty nesters and young families.	✓	Economic Development Unit, Swan Hill and Robinvale Information Centres (RDHS), Tourism operators, Murray Regional Tourism Board, Community Groups.	✓ On going Swan Hill Incorporated Marketing The EDU works in close partnership with Swan Hill Inc to implement projects such as billboard advertising in Melbourne, and print and media campaigns.
			In progress Tourism Investment Prospectuses Promoting tourism opportunities for the LGA, Lake Boga and Robinvale, currently under development
			In progress SHRCC Tourism Strategy 2010 – 2013 Currently being updated and previous strategy reported on
			✓ On going Swan Hill Incorporated Annual Marketing Plan The EDU works closely with Swan Hill Incorporated to ensure KPI's are achieved.
			✓ On going Regular Updates of Official Visitor Guides for – Robinvale and the Swan Hill region Completed and distributed nationally

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
			<p>Swan Hill Region Overview Marketing Materials Fact sheets (agriculture, tourism, manufacturing, retail and municipal overview) completed and printed. Investment prospectus in final draft format.</p> <p>Investment Attraction Policy review Final draft currently being completed</p> <p>Robinvale Investment Prospectus Final draft currently being completed</p> <p>Murray Regional Tourism Board Research Quarterly ABS visitation reports provided</p> <p>Swan Hill Region App Complete and available for download</p> <p>Update Guide for New Residents Completed and printed (2013/2014)</p> <p>Update and Redevelopment of Swan Hill Online The upgrade will be conducted in 2014 as part of a joint marketing project with the Murray Regional Tourism Board and Swan Hill Incorporated</p> <p>Regular Updates of Official Visitor Guides for – Robinvale and the Swan Hill region Completed and distributed nationally</p> <p>Council Website Update Major upgrade was completed in 2013. The EDU will continue to update content as required.</p> <p>Swan Hill Region App Completed and available for download</p> <p>Update DVD Tourism focussed DVD completed with Swan Hill Incorporated in 2013. Investment DVD in progress, industry specific grabs will be developed for online distribution</p> <p>Census Data Census data is utilised by the EDU to update marketing materials such as industry fact sheets, new resident's guides and websites.</p> <p>Profile ID and REMPLAN Profile ID is online profile of the LGA, using graphs and analysis to present statistic information on the region.</p>
			<p>✓</p> <p>In progress</p> <p>In progress</p> <p>✓ On going</p> <p>✓</p> <p>✓</p> <p>In progress</p> <p>✓ On going</p> <p>✓ On going</p> <p>✓</p> <p>In progress</p> <p>✓</p> <p>✓</p>
4. Continue to update, refine and make available marketing materials and the www.swanhillonline.com website, with special emphasis on investor packs, visitor guides, new residents' kits, and informational DVDs.	✓	Economic Development Unit, Community Facilitation Unit, Media & Events Unit, Community Groups.	
5. Maintain a detailed and up-to-date statistical profile and analysis of the Swan Hill Rural City and its various industries and economic attributes.	✓	Economic Development Unit, RDV, Industry bodies, Community Groups.	

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
<p>6. Seek to improve the overall tourism offering by attracting private investment into tourism-related businesses that leverage off our natural assets i.e.: Murray River.</p>	<p>✓</p>	<p>Economic Development Unit, Developers, Planning Department, Parks Victoria.</p>	<p>REMPAN is an online modelling program that can measure the economic impact of scenarios.</p> <p>Investment Attraction Policy Review Final draft currently being completed</p> <p>Riverfront Masterplans Swan Hill (2013) and Robinvale Completed and endorsed by Council</p> <p>Swan Hill Region Farmers Market Feasibility Study Funding secured from RDV to complete a feasibility study into the establishment of market in the municipality</p> <p>Swan Hill to Lake Boga Trail Feasibility Study Funding secured from RDV to investigate establishing a trail between Lake Boga and Swan Hill</p> <p>Major Events Support Scheme Support of the regions hallmark events along with new and emerging events</p> <p>Murray Regional Tourism Board Investment Prospectus Features SHRCC tourism investment opportunities</p> <p>Loddon Mallee Region 2014 Investment Prospectus Features SHRCC tourism investment opportunities</p> <p>Pioneer Settlement Redevelopment including Heartbeat of the Murray</p> <p>Lake Boga Economic Development and Tourism Marketing Strategy Completed and endorsed by Council (2012)</p> <p>RV Friendly Infrastructure The installation of RV friendly infrastructure throughout the municipality to attract RVs</p> <p>Riverfront Masterplan – Lodges redevelopment Expression of Interest document currently under development</p> <p>Regional Victoria Living Expo Annual event</p> <p>Murray Regional Tourism Board Membership Membership 2011 – 2014 New agreement endorsed December 2013 for the period 2014 – 2017</p>
<p>7. Continue to be involved in and support state and regional marketing programs through Regional Development Victoria and the Murray Regional Tourism Board.</p>	<p>✓</p>	<p>Economic Development Unit, Murray Regional Tourism Board, RDV, Community Groups.</p>	<p>On going</p> <p>On going</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
8. Continue to run a quality accredited Visitor Information Service and Booking Office in Swan Hill and support the Robinvale Euston Information Centre.	✓	Economic Development Unit, Town Hall, Robinvale District Health Service, Cultural Services, Pioneer Settlement, Community Groups.	<p>✓ On going</p> <p>In progress</p> <p>Swan Hill Region Information Centre Accreditation renewal annually. 2014 has been approved</p> <p>Review of Visitor Services in Robinvale A review is currently underway in regards to visitor servicing in Robinvale</p>
9. Continue to use and enhance the effectiveness of the Major Events Support Scheme. Increase the targeted marketing to identify groups that could hold events during quieter visitor periods.	✓	Economic Development Unit, Community Facilitation Unit, Events & Media Unit, Industry bodies, Community Groups, Tourism operators	<p>✓ On going</p> <p>Major Events Support Scheme Support of the regions hallmark events along with new and emerging events</p>
10. Develop a Economic Development, Marketing and Tourism Strategy for Lake Boga, complete with investment prospectuses that suit the areas competitive advantages.	✓	Economic Development Unit, RDV, Industry, Community Facilitation Unit, Community Groups.	<p>✓</p> <p>In progress</p> <p>Lake Boga Economic Development and Tourism Marketing Strategy Completed and endorsed by Council (2012)</p> <p>Investment Prospectuses for Lake Boga Currently under development as part of the overall municipal investment prospectus</p>
11. Promote services and activities for young people, to reflect the youth and family friendliness of SHRCC.	✓	Family, Youth and Children's Services, Youth Service Providers, Youth Connections, Youth Inc., SHDH, RDHS, Community groups, Community Facilitation Unit, Community Groups.	<p>✓</p> <p>On going</p> <p>✓</p> <p>Swan Hill Region Overview Marketing Materials Fact sheets (agriculture, tourism, manufacturing, retail and municipal overview) completed and printed Investment prospectus in final draft format</p> <p>Regional Victoria Living Expo Annual event</p> <p>Family, Youth and Children Services Information packs developed & distributed</p>
12. Undertake and develop specific marketing materials that promote the Swan Hill Region as a place to invest, work and live.	✓	Economic Development Unit, Community Groups.	<p>✓</p> <p>✓</p> <p>✓</p> <p>Swan Hill Region Overview Marketing Materials Fact sheets (agriculture, tourism, manufacturing, retail and municipal overview) completed and printed Investment prospectus in final draft format</p> <p>Swan Hill Region App Complete and available for download</p> <p>Update Guide for New Residents Completed and printed (2013/2014)</p> <p>SHRCC Solar Prospectus Completed and endorsed by Council (2013) Distributed to solar developers (2013)</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
			<p>Murray Regional Tourism Board Investment Prospectus Features SHRCC tourism investment opportunities</p> <p>Update and Redevelopment of Swan Hill Online The upgrade will be conducted in 2014 as part of a joint marketing project with Murray Regional Tourism Board and Swan Hill Incorporated</p>
<p>13. Identify and attend marketing events that promote the region as a place to invest, work, live, visit and shop.</p>	<p>✓</p>	<p>Economic Development Unit.</p>	<p>✓ In progress</p> <p>✓ On going</p> <p>✓ On going</p> <p>✓</p> <p>Regional Victoria Living Expo Annual event</p> <p>National Caravan and Camping Shows Annual events</p> <p>CMCA Rally – Robinvale 2014 Robinvale hosted the 2014 CMCA rally which attracted approximately 1500 for over 7 days</p>

Theme Four: ADDRESSING INFRASTRUCTURE NEEDS

Initiative	Horizon Years 1-5 >5	Stakeholders
SHRCC seeks to ensure that appropriate infrastructure is provided to continue our economic growth.		

Actions	Horizon Years		Stakeholders	Key Activities
	1-5	>5		
1. Facilitate the building of the new Murray River Bridge for Swan Hill, in partnership with the Wakool Shire Council (NSW) and the appropriate Victorian and New South Wales State Governments in a timely fashion.	✓	✓	Economic Development Unit, VicRoads, RTA, Wakool Shire Council, Community Facilitation Unit.	In progress Location Under Review Bridge location identified and adopted by the Victorian Government. SHRCC seeking a review of the decision and adoption of alternative location.
	✓		Economic Development Unit, Community Planning, SHRCC, Community Groups.	✓ Riverfront Masterplans Swan Hill (Oct 2013) and Robinvale Completed and endorsed by Council Gateway Signage Project Completed (Jan 2014) Community Plans Continue to implement community plans Discovery Drive CD Discover drive throughout the entire municipality RV Friendly Infrastructure The installation of RV friendly infrastructure throughout the municipality to attract RVs Swan Hill Region Farmers Market Feasibility Study Funding secured from RDV to complete a feasibility study into the establishment of market in the municipality Swan Hill to Lake Boga Trail Feasibility Study Funding secured from RDV to investigate establishing a trail between Lake Boga and Swan Hill Natural Gas Feasibility Study Completed by Consultant
3. Lobby State and Federal Governments for the delivery of major hard infrastructure into the region including	✓		Economic Development Unit, State Government, MRGC, Community Facilitation Unit, RDV, VicRoads, VLine.	✓

reticulated natural gas and soft infrastructure including increased transport connections throughout the municipality and Loddon Mallee region.					Central Murray Transport Strategy 2012 Regional approach to transport, implementation now underway	Central Murray Intermodal Transport Strategy 2014 Currently being finalised
					Regional Business Case Developed 2011 SHRCC in conjunction with the Murray River Group of Councils developed a business case for the region which led to the State Government pledging \$1m to undertake a Feasibility Study.	
4. Develop a business case for the extension of reticulated natural gas for the Loddon Mallee, specifically the Swan Hill region, in partnership with the Murray River Group of Councils (subject to funding from the State Government).	✓			Economic Development Unit, State Government, MRGC, Environment Industry bodies.	Central Murray Transport Strategy 2012 Regional approach to transport, implementation now underway	
5. Lobby for the establishment of an inland transport hub including intermodal connections between road and rail freight.	✓	✓		Economic Development Unit, Infrastructure, State Government, VicRoads, VLine, Planning Department, MRGC.	Central Murray Intermodal Transport Strategy 2014 Currently being finalised	
6. Support the redevelopment of the Chisholm Reserve Motorsport Complex so that it is capable of hosting major regional, national and international motorsport events in partnership with local motorsport clubs and national motorsport bodies.	✓			Economic Development Unit, Planning Department, Infrastructure, State Government, Motorsport Industry Bodies, Community Groups, Media & Events Unit.	Community Facilitation Regular meetings with user groups occurring State Government funding application lodged.	
7. Complete required upgrades to the Swan Hill Aerodrome site and develop a business study into future use.	✓			Economic Development Unit, Infrastructure, RDV, Industry bodies, Planning Department, State Government.	Swan Hill Aerodrome Business Case Completed and endorsed by Council (Dec 2014)	
8. Support the Mildura Rail Link Feasibility Study recommendations five and nine to capture additional services from Swan Hill to Bendigo or Melbourne and increased bus links with the Loddon Mallee region.	✓			Economic Development Unit, Mildura RCC, RDV, VLine, State Government.	Central Murray Transport Strategy 2012 Regional approach to transport, implementation now underway	
9. Develop the Robinvale and Swan Hill riverfronts in partnership with State and Federal Governments, key stakeholders and private investors with the aim of improving tourism within the municipality.	✓	✓		Economic Development Unit, Planning, Infrastructure Department, RDV, State & Federal Government, Community Groups, Community Facilitation Unit.	Riverfront Masterplans Swan Hill (Oct 2013) and Robinvale Completed and endorsed by Council	
10. Advocate for the relocation of Council information services in Robinvale and/or provide a physical upgrade to	✓			Economic Development Unit, Infrastructure, Centrelink, RDHS, Planning Department, RDV,	Review of current visitor services in Robinvale	

the existing site in partnership with other key stakeholders.			Community Groups, Community Facilitation Unit.	✓	Bromley Road Masterplan Completed and endorsed by Council (Dec 2013)
11. Upgrade the region's road network through partnerships with VicRoads and major transport users to support projected increases of heavy transport usage, especially in the west of the municipality.	✓		Economic Development Unit, Planning Department, Infrastructure, Transport Industry, VicRoads, Industry bodies.	In progress	Central Murray Transport Strategy 2012 Regional approach to transport, implementation now underway
12. Complete the installation of the Gateway Signage Program by 2013 including the installation of over 55 signs throughout the municipality.	✓		Economic Development Unit, Communities, Community Facilitation Unit, Engineering Department, Planning Department.	In progress	Central Murray Intermodal Transport Strategy 2014 Currently being finalised
13. Address cross border differences in planning, regulation, service provision and opportunities more efficiently through the establishment of a new collaborative forum involving Local, State and Federal Government regionally-based representatives from Victoria and New South Wales. The forum will identify and develop processes to resolve cross-border differences to be endorsed by the NSW & VGBAC.	✓	✓	Economic Development Unit, State Government, Federal Government, Wakool Shire Council, Balranald Shire Council, Gannawarra Shire Council, Service providers, SHRCC, MRG of Councils, Industry bodies.	✓	Gateway Signage Project Completed (Jan 2014)
14. Advocate for and support the implementation of the Swan Hill District Hospital Master Development Plan.	✓		SHDH, SHRCC, State Government	On going	Central Murray Transport Forum Victorian State Logistics Plan
				Ongoing	Involvement and Support provided from Council as required

Theme Five: EDUCATION AND SKILLS DEVELOPMENT

Initiative	Horizon Years 1-5 >5	Stakeholders
SHRCC will encourage and support local employment opportunities with the aim to improve employment outcomes for local residents.		
SHRCC will seek to advocate for increased local post-secondary education options and explore other opportunities to encourage an appropriate level of skills in the community.		

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
1. Design and implement Workforce Development Strategies with the private sector and public sector, including the region's Registered Training Organisations (RTOs), to address the region's skills shortages.	✓	Economic Development Unit, LLEN, Industry, State Government, RTOs, Business Communities, Pacific Islander Guest Workers Scheme, Community Groups.	<p>Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway</p>
2. Facilitate the development of a Municipal Learning Strategy, inclusive of all development stages from early childhood to adult learning opportunities.	✓	Economic Development Unit, LLEN, RTOs, SuniTAFE, Loddon Mallee Department of Education, Education Providers, Family Youth & Children's Services.	<p>Priority has been on the development of the Workforce Development Strategy</p>
3. Support local Registered Training Organisations in the expansion of education offerings that address regional skills shortages, particularly in the agricultural, manufacturing, construction industries and health and community services.	✓	Economic Development Unit, LLEN, RTOs, Industry, Health & Community Organisations, State Government, Education Providers.	<p>Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway</p> <p>Advancing Country Town Project – Robinvale Led by Robinvale District Health Services, the ACT Employment Program is improving outcomes for job seekers and industry by delivering more efficient joined up employment services, training that addresses local and regional skills gaps, and improving employability of local people.</p>
			<p>Yet to commence</p>
			<p>In progress</p>
			<p>Regional Victoria Living Expo Annual event</p>

Actions	Horizon Years 1-5 >5	Stakeholders	Key Activities
4. Support improved access to tertiary education via a regional university campus shop front and/or access to appropriate university links, through collaborative partnerships between SuniTAFE and Universities such as the "Deakin at your Doorstep" program.	✓	Economic Development Unit, LLEN, SuniTAFE, National Universities, Loddon Mallee Department of Education, Education Providers.	Working in partnership with SuniTAFE To promote courses and the region via the Workforce Development Strategy. Deakin at your Doorstep program occurring
5. Attract private investment for the development of affordable accommodation options for travelling students and foreign backpackers.	✓	Economic Development Unit, SuniTAFE, Private Developers, Planning Department, RTOs.	Investment Attraction Policy Review Final draft currently being completed Swan Hill Region Workforce Development Strategy 2013 – 2017 Completed and endorsed by Council (Oct 2013) Implementation now underway Advancing Country Town Project – Robinvale Led by Robinvale District Health Services, the ACT Employment Program is improving outcomes for job seekers and industry by delivering more efficient joined up employment services, training that addresses local and regional skills gaps, and improving employability of local people.
6. Offer and encourage work experience programs throughout the business community including the Victorian Government's Young Professionals Provincial Cadetship Program for tertiary students and structured workplace learning opportunities.	✓	Economic Development Unit, LLEN, Industry, Community Groups, Community Facilitation Unit, Education Industry, RDV, AES.	Working with Large Employers Meetings occurring with large employers in the region including the Swan Hill Abattoirs. Swan Hill Incorporated Accounting Work Experience Program Participating
7. Link to the Victorian Aboriginal Economic Development Agenda and Yareeta Yirramboi (the Victorian Aboriginal Public Sector Employment and Career Development Plan 2010-2015) to ensure a co-ordinated approach to regional Indigenous employment, with the aim of increasing public and private sector employment for Indigenous people.	✓	Economic Development Unit, Kinaway-Aboriginal Chamber of Commerce (Vic), MVACOP, DPCD, Aboriginal Elders, AES.	No progress No progress

Actions	Horizon Years		Stakeholders	Key Activities	
	1-5	>5			
8. Assist and support the Aboriginal Employment Strategy (AES) in the establishment of an AES Service Centre with the Swan Hill Rural City, in the aim of improving regional employment outcomes for local Indigenous communities.	✓		Economic Development Unit, Aboriginal Employment Strategy, Federal Government, LLEN, SHRCC, RTOs, MVACOP, Industry.	In progress	A number of events (2011) held with interested parties, however no outcome as yet.
9. Continue to deliver the Pacific Islander Guest Workers Program as part of the Department of Immigration and Citizenship's Diverse Australia Program.	✓		Economic Development Unit, Federal Government, DICDA, Local Employers, Community facilitation.	Ceased	Funding from Federal Government Ceased June 2013
10. Support flexible and effective early childhood education options, to allow adult enrolment in formal and informal education.	✓		Family, Youth and Children's Services, Education Providers, SHDH, Welfare providers, MMLLEN, RTOs.	In progress	Community and Cultural Services Program Supporting the development of an Early Years Centre in Robinvale – offering long day and occasional care as well as actively encouraging links between existing and potential occasional care providers in Swan Hill

B.14.38 ROOMING HOUSE AND PRESCRIBED ACCOMMODATION UPDATE

Responsible Officer: Director Development and Planning
File Number: 48-12-01
Attachments: Nil

Declarations of Interest: Officer
Brett Luxford - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

This report provides an update on the actions Council takes following reports of alleged rooming houses operating in various locations throughout the municipality. This report also highlights the challenges faced relating to the investigation, compliance and follow-up of alleged rooming houses and requests that Council advocate for a coordinated approach to rooming houses and temporary worker accommodation across the region.

Discussion

The issue relating to alleged unregistered rooming houses and the challenges faced during investigation and enforcement are widespread throughout Victoria. There has also been media attention in recent months regarding rooming houses and follow-up of alleged rooming houses.

Council actively follows up on any reports it receives in relation to rooming houses and has a coordinated internal approach involving four separate departments. Upon receipt of advice regarding an alleged rooming house operating within the municipality, Council employees implement the Cross Functional Rooming House Investigation Procedure which involves Public Health, Building, Planning and Local Laws.

An inspection of the alleged property is conducted by a cross functional team of Authorised Council Officers. Where breaches and non-compliance of respective legislation are identified (eg) Public Health, Building, Planning and Local Laws, the necessary enforcement processes are implemented in accordance with the relevant Acts and Regulatory provisions.

As a result of legislative changes in 2008 and 2009, Council has had a key role to play in enforcement and registration of rooming houses. Since this time Council employees have conducted a number of investigations of alleged rooming houses in Robinvale, Nyah West, Lake Boga and Woorinen.

The following example of an investigation highlights the challenges Council faces in enforcing legislation relating to rooming houses. In 2009 Council received information about 20 alleged rooming houses operating in the Robinvale area. A large investigation resulted in only one of the premises requiring registration with Council as a rooming house. Four other building owners were issued with Building Notices and Orders with respect to illegal building works, lack of smoke detectors, etc.

The above example highlights that while it may be easy for local residents to identify what appears to be an “alleged” rooming house, the ability to gather sufficient evidence to prove a premises is operating in that manner is difficult to obtain. The protracted investigation and subsequent legal processes and costs incurred are also a major frustration.

As an example, matters relating to an alleged rooming house investigated in 2009 were not heard in the Magistrates Court until 2011. Legal costs were in the order of \$5,000 and Council employee time involved in this matter was significant. The Magistrate only awarded \$1,500 in costs to Council.

As a result when Council receives complaints about an alleged rooming house, Council Officers will seek to work with the owner of the premises to either stop the activity or put into place the necessary requirements and register the premises. To assist, Council’s Public Health and Building departments have developed information kits and links are also available on Council’s website that is specific to rooming house requirements.

Council’s Planning, Building and Public Health departments have also worked together to develop an ‘On-Farm Workers Accommodation Guideline’ to assist farmers who are looking to develop workers’ accommodation on-farm.

The challenges faced by the Council are reflected across the region and across the state and while Council actively enforces the legislation more may be achieved through a coordinated approach by other tiers of Government and industry. A coordinated approach will help ensure that safe accommodation is available for a workforce that is vital to the region.

Consultation

Nil

Financial Implications

There are significant officer resources required to investigate rooming house complaints and the financial impacts to follow up non-compliance is also substantial.

Social Implications

The report will contribute to improving the health and wellbeing of communities.

Economic Implications

Nil

Environmental Implications

Nil

Risk Management Implications

Nil

Council Plan Strategy Addressed

Housing - We will support appropriate accommodation options for our growing economy.

Options

1. Adopt all of the recommendations as outlined below.
2. Adopt some of the recommendations.
3. Choose not to accept the report.

Recommendations

That Council:

1. **Note the report.**
2. **Advocate to other tiers of government and relevant agencies for a coordinated approach to rooming houses and temporary worker accommodation across the region.**

7/14 Motion

MOVED Cr Adamson

That Council:

- 1. Note the report.**
- 2. Advocate to other tiers of government and relevant agencies for a coordinated approach to rooming houses and temporary worker accommodation across the region.**

SECONDED Cr Cruickshank

The Motion was put and CARRIED

Cr Adamson left the Council Chamber at 5:49pm due to a conflict of interest in the next agenda item B.14.39 Planning Scheme Amendment Request – South West Development Precinct.

B.14.39 PLANNING SCHEME AMENDMENT REQUEST - C58 LAND - SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

Responsible Officer: Director Development and Planning
File Number: 73-02-125
Attachments:

- 1 Swan Hill C58 001znMaps36_39_40 Exhibition
- 2 Swan Hill C58 003dpoMaps36_39 Exhibition
- 3 Swan Hill C58 002dpoMaps39_40 Exhibition
- 4 Schedule 6 for DPO Draft
- 5 Version 4.5 SWDP
- 6 Infrastructure Cost Sharing Calculations
- 7 SWDP Planning Report 23 June 2014
- 8 SWDP Drainage Strategy 23 June 2014
- 9 SWDP Traffic Strategy 2 July 2014
- 10 TIA Final 20 June 2014
- 11 TIA Appendices Report

Declarations of Interest: Officer
Brett Luxford - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

The purpose of this report is to request Council resolve to seek authorisation from the Minister for Planning (**Minister**) to undertake amendment C58 to the Swan Hill Planning Scheme.

Council adopted the “*Review of the Swan Hill Residential Development Strategy 2006-2030*” at its meeting in March 2013. When adopting the Strategy, Council directed that officers review the previously prepared Outline Development Plan (ODP) for the Swan Hill South West Development Precinct and undertake necessary amendments to the Planning Scheme.

Accordingly, the previously prepared ODP and the associated documents have been reviewed. A revised draft Swan Hill South West Development Plan (**SWDP**) has been prepared, which together with the background documents, inform this amendment.

The majority of the land within the SWDP is zoned Farming and Low Density Residential. As such this amendment is required to rezone these parcels of land to General Residential Zone (**GRZ**) to facilitate the supply of residential zoned land as identified in the draft SWDP. The amendment also proposes to apply necessary planning controls to land within the SWDP to ensure fair, orderly and sustainable development outcomes within the SWDP.

Discussion

Land affected by the amendment

The SWDP includes 33 parcels of land; however the amendment applies to only 27 parcels of land within the Precinct.

The following map shows the land within the SWDP.

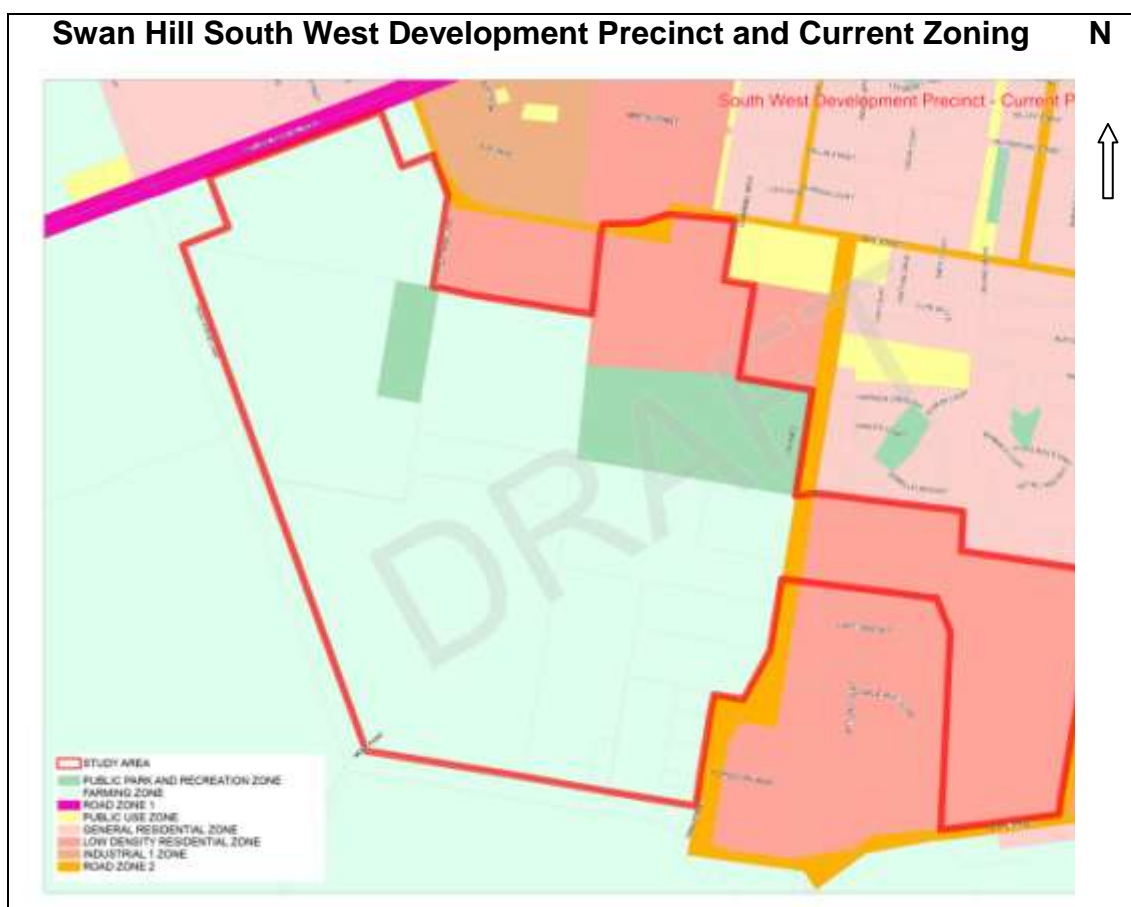


Table below lists the land within the SWDP that is to be rezoned by this amendment.

Land affected by amendment C58

Address	Lot No	TP/PS/LP	Approximate Size/ha
Dead Horse Lane, Swan Hill	Lot 2	PS 131446	28.3ha
Sea Lake-Swan Hill Road, Swan Hill (part of)	Lot 2	PS 405842S	19.8ha

SECTION B - REPORTS

15 July 2014

Address	Lot No	TP/PS/LP	Approximate Size/ha
Feldtmann Lane, Swan Hill	Lot 1	LP 131446	3.8ha
Dead Horse Lane, Swan Hill (part of)	Lot 1	TP 821121W	17.3ha
Dead Horse Lane, Swan Hill	Lot 1	TP 821120Y	51.8ha
183-187 Gray Street, Swan Hill (part of)	Lot 1	TP 519005	5.0ha
177 Gray Street, Swan Hill	Lot 1	TP 814807A	0.4ha
175 Gray Street, Swan Hill	Lot 1	TP 519770S	0.5ha
173 Gray Street, Swan Hill	Lot 1	PS 424914L	0.9ha
179 Gray Street, Swan Hill	Lot 1	TP 539204Q	7.1ha
70 Yana Street, Swan Hill	Lot 1	PS 76581	4.4ha
98 Yana Street, Swan Hill	Lot 1	TP 179253F	13.9ha
110 Yana Street, Swan Hill	Lot 1	PS 99806	4.8ha
116 Yana Street, Swan Hill	Lot 1	TP 205402A	4.8ha
235 Dead Horse Lane, Swan Hill	Lot 2	PS 124722	13ha
233 Dead Horse Lane, Swan Hill	Lot 1	PS 124722	0.8ha
249 Dead Horse Lane, Swan Hill	Lot 2	PS 637281M	4.8ha
134 Yana Street, Swan Hill	Lot 3	PS 99806	0.6ha
142 Yana Street, Swan Hill	Lot 1	PS 75694	0.9ha
148 Yana Street, Swan Hill	Lot 2	PS 75694	0.8ha
154 Yana Street, Swan Hill	Lot 1	PS 637281M	0.5ha
75 Yana Street, Swan Hill	Lot 1	LP 117284	3.3ha
75 Yana Street, Swan Hill	Lot 2	LP 117284	6.7ha
Coronation Avenue, Swan Hill	Lot 18	LP14827	6ha
112 Coronation Avenue, Swan Hill	Lot 19	LP14827	6.1ha
112 Coronation Avenue, Swan Hill	Lot 2	LP 205853S	11.4ha
152 Coronation Avenue, Swan Hill	Lot 1	LP205853S	0.8ha
TOTAL Approximately			218.5ha

Although located within the SWDP the following parcels of land listed below will not be rezoned as part of amendment C58 and will be retained in their current zone:

- Properties excluded from being rezoned due to required setback from industrial activities in Gray Street as per requirements of Clause 52.10 of the Swan Hill Planning Scheme, include:
 - Entire land at Nos. 69 and 71 Sea Lake – Swan Hill Road, Swan Hill;
 - No. 219 Gray Street, Swan Hill;
 - No. 183-187 Gray Street (Lot No. 1 TP 614559H);
 - Part of No. 183-187 Gray Street, Swan Hill (Lot No. 1 TP 519005); and
 - A 70 metre wide and 140 metre long strip of land along Gray Street of Lot No. 2 PS 405842 Sea Lake- Swan Hill Road.

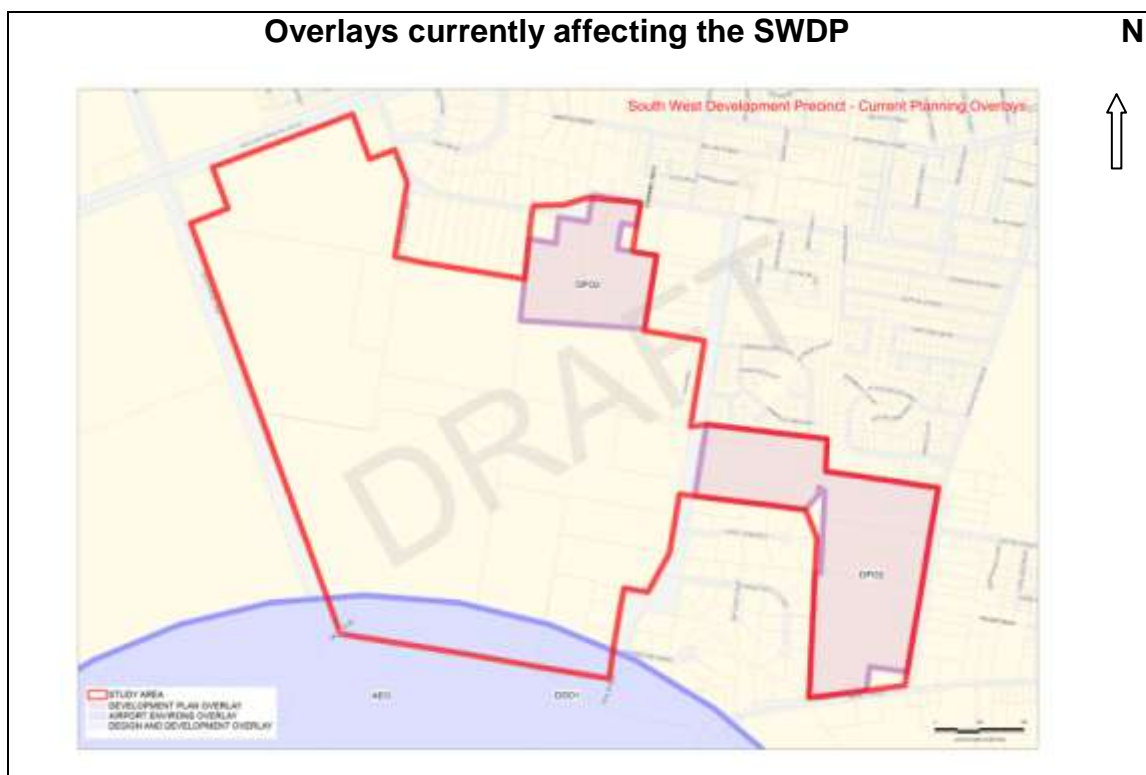
- Property at No. 7 Dead Horse Lane will be retained as Farming Zone pending Environmental Audit justifying the suitability of the land for residential uses.
- The Council owned and managed Ken Harrison Reserve will be retained as Public Park and Recreation Zone.

The SWDP also includes land currently used by the Goulburn Murray Water channel; this land will also be rezoned. The authority is in the process of decommissioning the channel infrastructure and aims to reinstate the land used for the channel. However, future developments on land that are reclaimed as a result of decommissioning of the channel requires further investigation to demonstrate the suitability of the land to use and develop for residential and other purposes.

Overlays affecting the SWDP

There are three overlays affecting the land within the SWDP:

- Development Plan Overlay – Schedule 2 (DPO2) affects the land zoned LDRZ. This DPO 2 will be removed and will be replaced with a new Scheduled DPO6 that will be applied to all land to be rezoned for residential purpose within SWDP.
- The southern boundary along Werril Street of the SWDP is affected by Airport Environs Overlay (AEO) and a Design and Development Overlay (DDO). These overlays will be retained.



What the amendment does

Amendment C58 proposes to rezone land within the Swan Hill South West Development Precinct to facilitate the supply of future residential zoned land. It also proposes Schedule 6 to the Development Plan Overlay to implement the final Swan Hill South West Development Plan and removes Schedule 2 to the Development Plan Overlay from land within the SWDP.

In particular the amendment proposes the following:

- Rezones Farming Zone land to General Residential Zone,
- Rezones Low Density Residential Zone land to General Residential Zone,
- Rezones Public Park and Recreation Zone land to General Residential Zone,
- Rezones Farming Zone land to Commercial 1 Zone (to provide a retail activity area),
- Rezones Farming Zone land to Public Park and Recreation Zone (to provide a small public open space),
- Introduces new Schedule to Development Plan Overlay (DPO6) to Clause 43.04 and amends maps 39 DPO and 40 DPO; and
- Removes Development Plan Overlay Schedule 2 (DPO2) in map 39 DPO and 40 DPO from land within the Swan Hill South West Development Precinct.

Compliance with planning and Council policies

Compliance with the State Planning Policy Framework (SPPF)

The proposed amendment directly supports an implementation of the State Planning Policy Framework through the following:

Clause 11 Settlement of SPPF

A rezoning of land within the SWDP is a proactive response by Council to the needs of existing and future communities. The proposal provides appropriately zoned and serviced land for housing; it will generate direct and indirect employment opportunities; and facilitate the provision of recreation and open spaces, commercial and community facilities and necessary infrastructure for future communities.

Clause 15 Built Environment and Heritage of SPPF

The proposed Schedule 6 to Clause 43.04 – Development Plan Overlay ensures orderly outcomes as per the requirements of the proposed General Residential Zone. The SWDP is not affected by heritage overlay.

Clause 16 Housing of SPPF

The proposed rezoning will facilitate the provision of diverse and affordable housing choices to local communities and will ensure the efficient provision and use of supporting infrastructure.

The proposed Schedule 6 to Clause 44.04 (Development Plan Overlay) ensures that new housing within the SWDP will have access to services, and will facilitate long term sustainability by facilitating walking to activity areas, open space and recreational facilities, and public transport service.

Clause 17 Economic Development of SPPF

The amendment will have a positive impact on the local economy. There will be direct and indirect job opportunities created during the construction of future developments. In addition, the proposed retail activity area, medical centre, aged care facility and child care centre will bring permanent employment opportunities to Swan Hill.

Clause 18 Transport of SPPF

The proposed draft Development Plan identifies the need and allocates land for the provision of six bus stops (on three key locations) along the main collector road that runs through the precinct. The proposed Schedule 6 to the Development Plan Overlay encourages increased densities along the collector roads and closer to the activity areas to maximise the use of public transport service when it becomes available. In addition, the draft Development Plan proposes shared paths that can encourage and support alternative and sustainable transports models like walking and cycling.

Clause 19 Infrastructure of SPPF

The draft Development Plan proposes and facilitates the provision of necessary infrastructure and the efficient use of existing infrastructure that is already servicing the surrounding areas of Swan Hill township. It encourages necessary social and physical infrastructure including medical and childcare centres, aged care facilities and retail activity area within the SWDP.

Local Planning Policy Framework (LPPF)

The proposed amendment supports and implements the Local Planning Policy Framework, including the Municipal Strategic Statement (**MSS**) as follows:

Clause 21.02 Key Influences and Issues of the MSS

The rezoning supports key issues for the municipality including facilitating residential and economic development and maximising the use of existing infrastructure.

Clause 21.04 Settlement and Housing of the MSS

The rezoning supports the municipality's objectives for settlement by helping to facilitate residential use and developments which are encouraged in the major regional centre of Swan Hill.

Clause 21.04-4 Orderly growth of towns and settlements of the MSS

Clause 21.04-4 highlights the need to prepare an Outline Development Plan for the Swan Hill South West Development Precinct to facilitate future residential development. This amendment fulfils this requirement.

Clause 21.08 Economic Development of the MSS

The rezoning supports Council's economic development objectives in allowing for appropriate non-residential activities within the SWDP.

Clause 21.10-1 Swan Hill of the MSS

The rezoning will support the enhancement of Swan Hill as a strong regional centre.

Infrastructure provision

The attached draft Swan Hill South West Development Plan identifies the necessary development and community infrastructure within the Precinct. Concept infrastructure requirements for traffic and drainage servicing the SWDP have been prepared by Council to assist developers and Council in the planning for this planning scheme amendment and determining the viability of this rezoning. These concept infrastructure requirements are listed in the following documentation:

- Swan Hill South West Development Precinct Drainage Strategy
- Swan Hill South West Development Precinct Traffic Impact Assessment
- Swan Hill South West Development Precinct Traffic Strategy
- Swan Hill South West Development Precinct Infrastructure Cost Sharing Calculations

Further detailed design and studies as listed within the proposed Schedule 6 to the Development Plan Overlay will be required before development can commence.

The Planning and Environment Act 1987 (**Act**) specifies that infrastructure provision can be funded by either or a combination of:

- Development Contributions Plans (**DCP**)
- Under Section 173 Agreements of the Act

In considering the length of time for the completion of the development (in excess of 40 years) within the SWDP and the associated difficulties in determining standards

and costs over that timeframe it was determined to enter into a series of s173 Agreements to facilitate development.

One advantage in the use of s173 agreements was that together with subdividing the SWDP into 6 sub-precincts, development could commence in each of these sub-precincts independently of other sub-precincts. All landowners participated during consultations agreed in principle to enter into s173 Agreements.

However, it is vital that these agreements are signed prior to seeking authorisation to prepare the amendment to the Minister. In particular, the *Ministerial Direction No. 15 – The Planning Scheme Amendment Process* sets clear timelines for completing each step of the amendment process.

Upon receipt of the authorisation, Council has to commence the amendment process and publically exhibit the documents within 40 business days. As such any delay in getting the s173 agreements signed could obstruct the amendment process.

Consultation

Consultation undertaken prior to the commencement of the amendment

During the preparation of the revised draft Development Plan, consultation has been undertaken with the landowners within the SWDP. Where possible and appropriate, landowners' requirements have been incorporated into the revised Development Plan.

Further, landowners were consulted as individual groups at sub-precinct level to discuss the cost sharing options. They were presented with information on all the infrastructure projects required in future developments, cost of these projects, and the following four options available for sharing the cost for the infrastructure projects.

1. Option 1 – Development Contribution Plan
2. Option 2 – Two or more Development Contribution Plans to match the rate of proposed development in Swan Hill.
3. Section 173 Agreements for sub-precincts.
4. A combination of DCP and section 173 Agreements

Landowners were requested to choose an option from the above four. Landowners who attended the consultation meetings chose the Section 173 option for the provision of infrastructure.

Accordingly required section 173 agreements were prepared by legal professionals and the draft were sent to the landowners for comments prior to them being finalised for signing.

Where needed, State agencies were consulted with and without landowners to promote and facilitate landowners' interests without compromising agency's requirements.

In addition to the formal meetings, Council Officers met with landowners and their representatives when needed and or at landowners' request.

Further, landowners were kept informed via written correspondence of the progress of the project.

In addition to the consultation with the landowners, series of consultations were undertaken with the following State agencies:

- Lower Murray Water Authority – No objection and supports the amendment in principle.
- Goulburn Murray Water Authority – No objection and supports the amendment in principle.
- Country Fire Authority – No objection and supports the amendment in principle.
- VicRoads – The authority does not have any objection to the proposed development Plan, except for providing direct access to Sea Lake – Swan Hill Road.

However the traffic impact assessment undertaken for the Development Plan specifies the upgrades requirements for the provision of safe and convenient direct access to Sea Lake – Swan Hill Road.

Recommended upgrades have been incorporated as part of the infrastructure provision and necessary arrangements have been put in place to ensure that the upgrades are completed at the right time to the quality and standards required.

During the exhibition period, VicRoads will be able to provide formal comments on the proposed direct access indicated on the draft Development Plan.

- Department of Environment and Primary Industries – No objection and supports the amendment in principle. The authority is also supportive of the environmental impact assessment and soil testing requirements to be included in the Schedule 6 to DPO. Especially, given the 40 years residential supply/development time of the Precinct, there could be changes in land use practices which will impact on the environment and flora and fauna. As such it is agreed that it will be appropriate to undertake such assessments at the time of development.
- Department of Transport – The Department recommends increased densities especially along the proposed public transport route. The proposed Schedule 6 encourages increased densities along the collector roads and around the activity areas.

- Aboriginal Affairs Victoria – The authority is supportive of the amendment and informed that there is no known cultural heritage significance within the SWDP. The authority provided notes to be included in planning permits in relation to cultural heritage significance. These notes are included in the proposed Schedule 6 to the Development Plan Overlay.
- Department of Transport, Planning and Local Infrastructure – Throughout the development of the revised Development Plan the Department had been consulted and kept informed of its progress. The Department also reviewed the amendment documents prior to send for authorisation. The Department is generally supportive of the amendment.

All of the relevant agencies will be formally notified during the exhibition process.

Relevant internal Council departments were consulted during the development of the draft Development Plan and background documents. In particular, inputs were sought from the Asset Management Department, Engineering Department, Environment Sustainability Unit, Council Valuer, Economic Development, and Community Facilitation Unit.

Proposed consultation during public exhibition

Upon receipt of the authorisation, public exhibition will be held for a period of four weeks. During the public exhibition period, the owners and occupiers of affected land and the adjoining properties will be notified. Further, a public notice will be published at the local news paper the *Guardian* every Wednesday during the public exhibition period. Two drop-in sessions will also be held for the public and agencies to drop in and discuss the amendment and clarify any issues with Council officers. A Notice of Amendment will also be published in the Government Gazette.

Further, amendment documents will be made available at Council's website, and Council Office.

In addition, notices will be sent to the prescribed Ministers, relevant State agencies and any other agencies required by the Minister for Planning during authorisation.

Financial Implications

Council will be paying the Planning Scheme Amendment fees. In addition, depending on the number of submissions received during the public exhibition there will be costs associated with Panel Hearing.

Social Implications

The amendment will facilitate the supply of residential land to meet the increasing housing needs of Swan Hill communities. Provision of appropriately zoned land is critical in addressing the affordable housing issues. In addition, future developments within the SWDP will offer a variety of residential lots that will meet the diverse housing needs of the future population.

The draft Development Plan encourages the provision of community facilities such as aged care facilities, medical centre, child care centre, retail activity areas and public places. Further, the proposed Schedule 6 to DPO encourages that future developments within the SWDP incorporate Sustainable Design and Healthy by Design principles. The development infrastructure within SWDP is to be constructed to the standards specified in the Local Government Infrastructure Design Association's Infrastructure Design Manual (adopted by Council in April 2013).

The above requirements are designed to ensure that future development within the SWDP meets community needs and enhances the liveability of the area and the wellbeing of Swan Hill communities.

Economic Implications

The proposed amendment will not have any negative impact on the economy. In contrast, facilitating the provision of appropriately zoned residential land will have positive impact on the local economy.

The proposed retail activity area, medical centre, aged care facility and child care centre will bring employment opportunities. In addition, during the construction of future developments there will be direct and indirect job opportunities created for locals, particularly in the areas of real-estate and building and construction.

Further, more housing means more people, and more demand for goods and services, which will boost local businesses and the local economy.

Environmental Implications

The SWDP land currently located in the Farming Zone and the Low Density Residential Zone are already cleared and have been used for dry land and irrigated agriculture activities, and for rural residential purposes. As such there are no significant flora and fauna to be affected by the proposed amendment.

As part of the pre-amendment consultations, the draft Development Plan was consulted with the Department of Environment and Primary Industries in April 2014. The Department did not have any objection to the draft Development Plan and agreed that removal of native vegetation to facilitate future developments within the SWDP will have to be assessed as per the requirements of Clause 52.17 of the Swan Hill Planning Scheme.

Further, the proposed Schedule 6 to the Development Plan Overlay requires additional studies/analysis to be undertaken prior to any development approval in order to minimise negative impacts on the environment from future developments. The detailed studies required include:

- Environmental Management Plan to address the following but not limited to:
 - Sub-precinct development plans to identify the location of any significant environmental, cultural, heritage and/or ecological (faunal and/or floral) features including fauna and remnant native vegetation,
 - An environmental assessment of the land, involving a flora and fauna survey, which among other things, identifies the health and habitat value of all native vegetation; and
 - A preliminary soil assessment demonstrating the extent of any contaminated soils that may exist on the subject land. If detected, a more detailed assessment outlining the location of the contaminated soil, the type of contaminants detected, and the strategies required to be undertaken to decontaminate the affected areas in accordance with the Ministerial Direction No. 1 - Potentially Contaminated Land.
- Drainage Management Plan for all sub-precincts including computations and stormwater modelling.
- Approval from all relevant service authorities for works on waterways (where necessary).
- A Landscaping Plan including landscaping and street trees proposed to further enhance visual amenity of the area.

These studies will assist in the assessment of future residential subdivisions and will ensure the efficient use of land within the SWDP and minimal negative impact on the environment.

In addition, the SWDP is not located within the Designated Bushfire Prone Area, nor affected by Bushfire Management Overlay / Wildfire Management Overlay. However, any bushfire risk would be addressed at the building permit stage with construction standards enforced through the Building Code of Australia.

Risk Management Implications

There are no known risks in undertaking this amendment.

Council Plan Strategy Addressed

Housing - We will support appropriate accommodation options for our growing economy.

The Council Plan 2013 – 2017 emphasises the need to support appropriate accommodation options for the growing economy, and aims to complete respective amendments to the Swan Hill Planning Scheme to support the supply of future housing.

Options

Nil

Recommendations

That Council:

- 1. Organise the necessary Section 173 Agreements as discussed in this report by end of November 2014.**
- 2. If such agreements are not signed for any sub-precincts by the 30 November 2014, prepare alternative cost-sharing arrangements (such as Development Contributions Plan with no cost to Council) for those sub-precincts that did not sign, or the entire South West Development Precinct if necessary, to enable this planning scheme amendment to proceed.**
- 3. Upon signing the required agreements and/or making alternative cost sharing arrangements, seek authorisation from the Minister for Planning to prepare amendment C58; and**
- 4. Following the receipt of authorisation, publically exhibit the amendment and the draft Swan Hill South West Development Plan for a minimum period of 30 days.**

8/14 Motion

MOVED Cr Katis

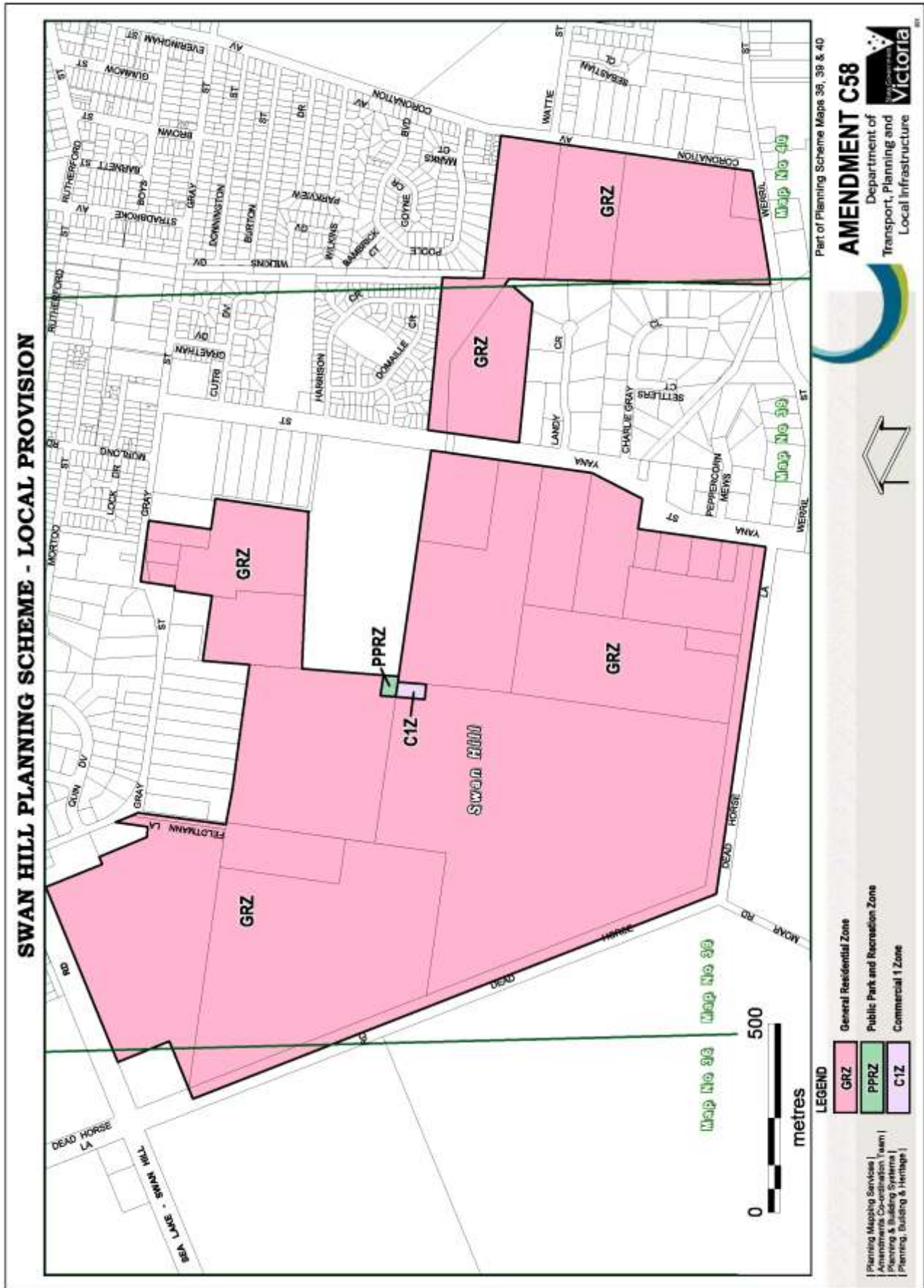
That Council:

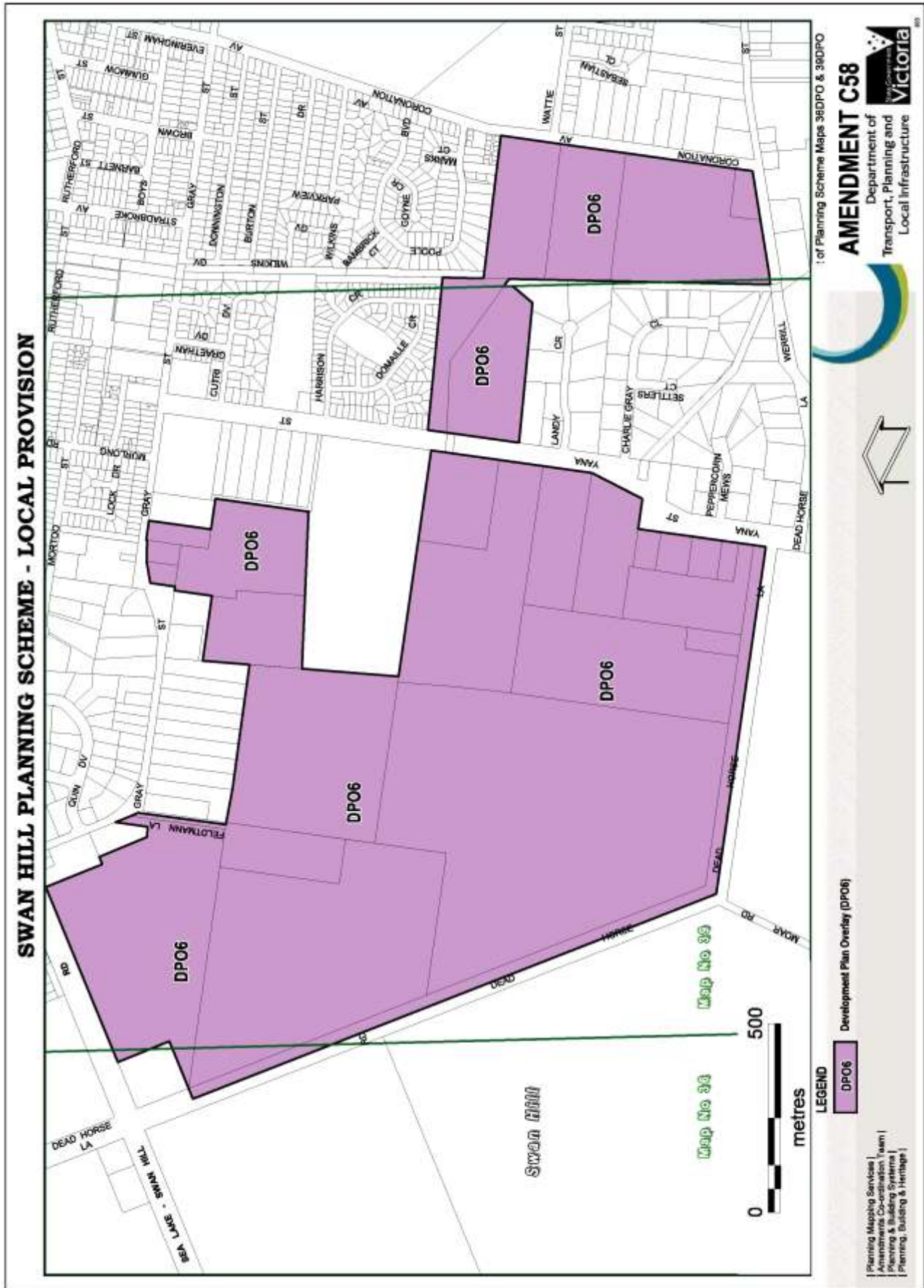
- 1. Organise the necessary signing of the Section 173 Agreement by 30 November 2014.**
- 2. If such agreement is not signed by the 30 November 2014, prepare alternative cost-sharing arrangements (such as Development Contributions Plan with no cost to Council) for those sub-precincts that did not sign, or the entire South West Development Precinct if necessary, to enable this planning scheme amendment to proceed.**
- 3. Upon signing the required agreement and/or making alternative cost sharing arrangements, seek authorisation from the Minister for Planning to prepare amendment C58; and**
- 4. Following the receipt of authorisation, publically exhibit the amendment and the draft Swan Hill South West Development Plan for a minimum period of 30 days.**

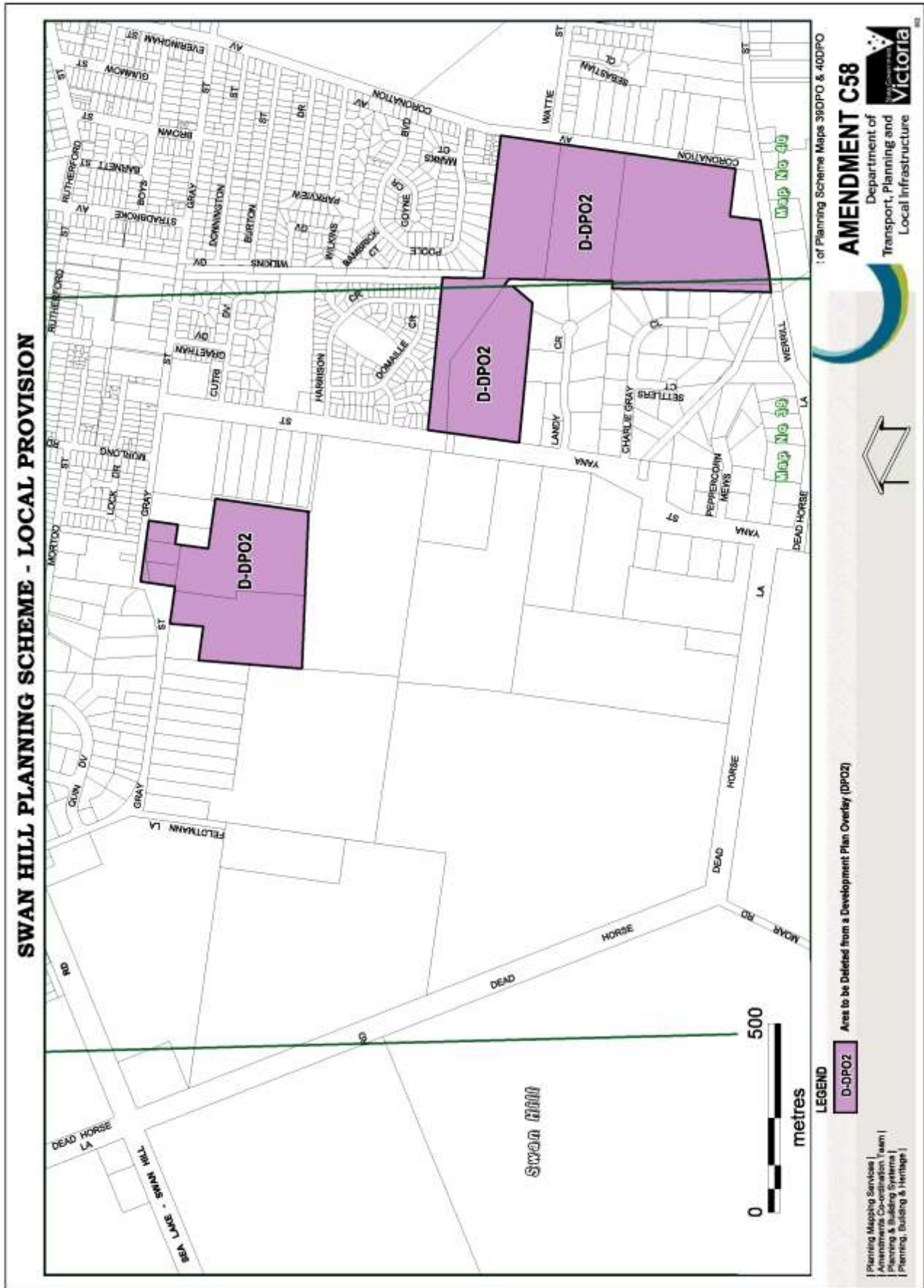
SECONDED Cr Norton

The Motion was put and CARRIED

Cr Adamson returned to the Council Chamber at 6:03pm and was informed of the decision.







SWAN HILL PLANNING SCHEME

SCHEDULE 6 TO THE DEVELOPMENT PLAN OVERLAY

11/1/2018
CSB

Shown on the planning scheme map as **DDO6**

SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

11/1/2018
CSB

1.0 Requirement before a permit is granted

A permit must not be granted to use or subdivide land, construct a building or construct or carry out works within a sub-precinct until the following is prepared to the satisfaction of the Responsible Authority:

1.1 Detailed Sub-precinct Plan

- A detailed sub-precinct level development plan must be prepared as per the requirements outlined in this schedule for the sub-precinct and approved by the Responsible Authority.

Note: The approved sub-precinct level development plan may be amended to the satisfaction of the Responsible Authority, and

1.2 Section 173 Agreement – Provision of infrastructure

- A signed and registered agreement pursuant to section 173 of the Planning and Environment Act 1987 between Swan Hill Rural City Council and the landowners within the sub-precinct for the provision of infrastructure to serve the land within the South West Development Precinct.

This agreement will specify the infrastructure that is to be provided by the landowners within the sub-precinct as their fair and equitable contribution to the provision of infrastructure serving the whole of the South West Development Precinct. As a result they will not be expected to make contributions to the provision of infrastructure in other sub-precincts other than the common infrastructure covered by any s173 Agreement listed in Clause 1.3 of this schedule

The provision of infrastructure is to be in accordance with the requirements of the report titled "South West Development Precinct Infrastructure Cost Sharing Calculations" dated xxx (or as reviewed thereafter), and

1.3 Section 173 Agreement for infrastructure jointly provided by more than one sub-precinct

- A signed and registered agreement pursuant to section 173 of the Planning and Environment Act 1987 between Swan Hill Rural City Council and the landowners within all the sub-precincts that are to jointly provide infrastructure,

SWAN HILL PLANNING SCHEME

This agreement will specify the infrastructure that is to be jointly provided by the landowners of more than one sub-precinct as their fair and equitable contribution to the provision of infrastructure serving the whole of the South West Development Precinct.

This clause relates to the provision of Project 18: Catchment 4 Retardation Basin, pump station, rising main and outfall drains to service all of sub-precinct 3 and parts of sub-precincts 1 and 6

The provision of infrastructure is to be in accordance with the requirements of the report titled "South West Development Precinct Infrastructure Cost Sharing Calculations" dated xxx (or as reviewed thereafter), and referenced in this schedule, and

1.4 Section 173 Agreement for cost sharing within sub-precincts

A signed and registered agreement pursuant to section 173 of the Planning and Environment Act 1987 between Swan Hill Rural City Council and the landowner/s of the sub-precinct and any landowner on whose land the infrastructure to be provided by the sub-precinct, is located upon.

This agreement is to specify:

- That the landowners party to this agreement will pay 100% of the cost of providing the infrastructure that has been allocated to be provided by the by the landowners within the sub-precinct.
- Details of the cost sharing of the infrastructure allocated to be provided by the landowners within the sub-precinct in the report titled "South West Development Precinct Infrastructure Cost Sharing Calculations" dated xxx (or as reviewed thereafter) to the satisfaction of the Responsible Authority.

The agreement must provide that the signatories to this agreement must meet all of the obligations of the Owner listed in the section 173 agreements listed in Clause 2.2 and 2.3 of this schedule.

All the above agreements must be prepared in consultation with, to the satisfaction of, and at no cost to Swan Hill Rural City Council.

Exemptions

Permits may be granted before the detailed sub-precinct level plan is approved for the following, subject to the Responsible Authority being satisfied that the issuing of a planning permit will not prejudice the preparation and / or the implementation of the Swan Hill South West Development Plan:

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- A single dwelling on an existing allotment
- For buildings or works and extensions and modifications associated with an existing use in accordance with the provisions of Clause 63 of this Planning Scheme.
- For the excision of an existing dwelling. The excision should be limited to the dwelling and any outbuildings and works associated with the dwelling to the satisfaction of the Responsible Authority.
- An outdoor advertising sign/structure.
- A minor utility installation and access to.
- Boundary realignment to the satisfaction of the Responsible Authority and will not prejudice the preparation and / or the implementation of the Swan Hill South West Development Plan.

2.0 Conditions and requirements for permits

Special conditions and notes that are to be included on subdivision permits other than those that are exempted in this schedule.

2.1 Infrastructure works

Conditions as appropriate must be included on any planning permit issued to subdivide or develop land with regard to infrastructure works being completed in accordance with any approved Infrastructure Plan approved under this Schedule.

2.1.1 Where development fronts to an existing collector street and arterial roads (such as Sea Lake - Swan Hill Road, Yana Street, Coronation Avenue, Gray Street and Werril Street) developer will be required to provide the following infrastructure:

- A 2.5 metre wide shared path
- Kerb and channel
- Pavement widening to the satisfaction of the Responsible Authority.

2.2 Cultural Heritage related requirementsNotes to be included in permits:

All Aboriginal Cultural Heritage, that is Aboriginal Places, Aboriginal Objects and Aboriginal Human remains are protected under the State Aboriginal Heritage Act 2006. It is an offence to do an act that will harm Aboriginal cultural heritage or is likely to harm Aboriginal cultural heritage.

- Works must cease immediately up the discovery of any Aboriginal cultural material, and Aboriginal Affairs Victoria must be notified immediately of any such discovery at GPO Box 2392, Melbourne 3001 or on telephone 1300551380 or (03) 9208 3277 or via email to vahr@dpc.vic.gov.au (Contact details must be checked at the time of contact).

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- If any suspected human remains are found, work in the area must cease and the Victorian Police and the State Coroner’s Office must be informed of the discovery immediately.
- If there are reasonable grounds to suspect that the remains are Aboriginal, the discovery should be reported to Aboriginal Affairs Victoria as specified above.

2.3 Construction Management Plan

A site construction management plan that accords with the sediment control principles outlined in Construction techniques for Sediment Pollution Control (Environment Protection Authority, 1991) to manage site run off, dust, erosion, litter and construction waste must be submitted to and approved by the Responsible Authority prior to the commencement works.

3.0 Requirements for Development Plan

The Swan Hill South West Development Plan was prepared and approved by the Swan Hill Rural City Council in July 2014.

This Development Plan requires detailed sub-precinct plans to be prepared for individual sub-precincts prior to any development (other than that are exempted) can be approved. The South West Development Precinct has been divided into six sub-precincts to enable development to proceed in an orderly manner.

Sub-precinct development plans must:

- Ensure future use and development within the South West Development Precinct is generally in accordance with the approved Swan Hill South West Development Plan prepared and approved by Swan Hill Rural City Council July 2014 (or as reviewed thereafter).
- Ensure the orderly development of the Swan Hill South West Development Precinct creates a liveable place for the current and future communities of Swan Hill.
- Ensure the development provides appropriate traffic, drainage, transport, recreational, community and necessary social infrastructure to service the community.

The location of six sub-precincts is shown below on map titled Swan Hill South West Development Sub-Precincts Plan.

SWAN HILL PLANNING SCHEME



3.1 Requirements for Sub-precinct Development Plans

3.1.1 Site analysis and subdivision layout

DEVELOPMENT PLAN OVERLAY – SCHEDULE 8

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SWAN HILL PLANNING SCHEME

The sub-precinct development plans must be drawn to scale and must be generally in accordance with the approved Swan Hill South West Development Plan and include the following but not limited to:

- A detailed site analysis plan showing existing conditions on the subject land and adjoining and opposite properties, contours at 0.1 meters and existing infrastructure, vegetation, buildings and any other structures.
- A subdivision layout that:
 - Creates a safe, convenient and legible street layout design that ensures development fronts streets and public open space.
 - The subdivision layout is sympathetic and appropriately responds to the proposed infrastructure as identified in the approved Swan Hill South West Development Plan, and developments that are already established within the adjoining sub-precincts.
 - Provides for a mix of lot sizes that can offer diverse residential development choices and affordable housing options.
 - Increased densities are encouraged along the proposed collector streets and near activity areas.
 - Is consistent with the requirements of sustainable design principles including solar efficiency where and as appropriate.
 - Has a minimum lot size of 2000m² abutting Dead Horse Lane and Werril Street as specified in the approved Swan Hill South West Development Plan. This requirement is valid until end of 2030.
 - Has a minimum lot size of 1000m² abutting to existing Low Density Residential Zone as specified in the approved Swan Hill South West Development Plan to minimize the negative impacts on the adjoining land.
 - Incorporates where appropriate *Healthy by Design* principles to encourage walking, cycling and active living by design.
 - Identify vegetation that are to be retained and/or to be removed
 - Identify existing and proposed infrastructure
 - Identify existing buildings, works and structures that are to be removed or to be relocated.

3.1.2 Drainage

A Drainage Management Plan for the sub-precinct addressing the management of the quantity of stormwater which is generally consistent with the drainage strategy titled "South West Development Precinct Drainage Strategy dated xxx (or as reviewed thereafter) and referenced in this schedule must be prepared to the satisfaction of the Responsible Authority. The Plan then has to be approved by the Responsible Authority.

The Drainage Management Plan must address the following but not limited to:

SWAN HILL PLANNING SCHEME

- Provision for stormwater arriving from upstream, passing through, and moving downstream from the site
- An assessment of the existing surface and subsurface drainage conditions on the site by a suitably qualified professional and the potential impacts on the proposed development, including any measures required to mitigate the impacts of groundwater coming to the ground surface on the development and the impact of the development on drainage.
- Detailed geotechnical and hydrological analysis and design of any retardation basins and their proximity to any groundwater table and in particular how groundwater infiltration will be addressed and how accessions to the water table will be addressed to the satisfaction of the Responsible Authority.
- Detailed computations and stormwater modelling showing that there are no adverse impacts to the operation of the Swan Hill Main Drain in a 100 year ARI rainfall event by any discharge from the drainage system serving the precinct to the Swan Hill Main Drain.
- Subdivision layout and road alignment must consider and give effect to the natural direction of overland flow paths for stormwater as shown in the "South West Development Precinct Drainage Strategy dated xxx (or as reviewed thereafter). Overland flows should be along roads reserves. Overland flows in drainage reserves should be avoided wherever possible.
- The provision, staging and timing of drainage infrastructure serving particular sub-precinct.
- An agreement from the landowners on whose land the drainage infrastructure is to be located upon (as detailed in Clause 2.4 of this schedule).
- A detailed landscape plans for the retardation basin within the sub-precinct showing the proposed landscape treatments, tree planting, footpaths around the basins and access to and around the basins for maintenance.
- A minimum of 40% of the perimeter of the retardation basin must have a frontage to a road/s to allow overland flows to enter the basin unless otherwise agreed in writing by the Swan Hill Rural City Council
- Must show the approved drainage connection points to Council's existing drainage infrastructure identified in the "South West Development Precinct Drainage Strategy" unless otherwise approved by the Swan Hill Rural City Council.
- Designation of fence design provisions in relation to the interface with retardation basin areas to maximise passive surveillance.
- Approval from all relevant service authorities whose assets or land may be affected by surface or pipe flow discharge. In particular it should be noted that a separate permit (Works on Waterway) from the relevant Catchment Management Authority may be required if:
 - There is a direct connection to a waterway.
 - There is a bridge or culvert over a waterway.
 - Construction of a retardation basin, and
 - When required by the relevant Catchment Authority.

3.1.3 Traffic

SWAN HILL PLANNING SCHEME

A sub-precinct level Traffic Management Plan that is generally in consistent with the report titled "Swan Hill South West Development Precinct Traffic Impact Assessment" dated xx) (or as reviewed thereafter), and the Swan Hill South West Development Precinct Traffic Strategy dated xxx) (or as reviewed thereafter) and referenced in this schedule must be prepared to the satisfaction of the Responsible Authority.

The Traffic Management Plan must address the following but not limited to:

- Appropriate access and circulation of vehicles on the existing and future road network.
- Appropriate integration with the existing or proposed subdivision of adjoining properties and sub-precincts including through alignment and configuration of the street network and landscape character.
- The identification of existing and proposed public transport routes, bus stops (as shown on the approved Swan Hill South West Development Plan) and associated infrastructure.
- The identification of existing and proposed pedestrian and cycling networks and shared paths
- Including provision for safe and convenient access to public transport infrastructure.
- The works necessary to accommodate traffic generated by the development and to mitigate the impact of that traffic on the development.
- Ensure that the road and intersection design must create efficient clearance of traffic, activity areas including around public facilities. The proposed road network should not overload or detrimentally affect existing or proposed residential streets and intersections.
- Adequate sight distance should be provided, especially where road alignment deflections occur at acute angles.
- Road layouts should provide natural traffic speed control, appropriate to the street category. The introduction of specific speed control devices should be considered only as a secondary option. Roundabouts may be implemented at intersections. However, care must be taken to provide adequate sized roundabouts and therefore road reservation boundaries must be designed to accommodate the radius required and sightlines.
- Road layouts should be designed for all road users appropriate to the street type, including service vehicles, emergency vehicles, waste collection vehicles and street-sweepers. Bus routes need to be considered when developing road networks and be based on the Department of Transport, Planning and Local Infrastructure publication titled 'Public Transport Guidelines for Land Use Development' (or a replacement document by the Department).
- Road reserve widths must be adequate for the intended road type, and should comply with requirements of the Infrastructure Design Manual.
- Should include a typical cross-section of differing road types, detailing the intended function of the road, e.g. bike lanes, drainage, landscaping.

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- Addresses all off-site traffic infrastructure requirements associated with the sub-precinct and is to be accompanied by a Road Safety Audit, prepared by an appropriately qualified person. The Plan must address any safety issues raised by the Audit.

3.1.4 Environmental Assessment

A sub-precinct level Environmental Management Plan to be prepared to the satisfaction of the Responsible Authority. The Plan then must be approved by the Responsible Authority.

The Environmental Management Plan must address the following but not limited to:

- The location of any significant environmental, cultural, heritage and/or ecological (faunal and/or floral) features including fauna and remnant native vegetation.
- An environmental assessment of the land, involving a flora and fauna survey, which among other things, identifies the health and habitat value of all native vegetation.
- A preliminary soil assessment demonstrating the extent of any contaminated soils that may exist on the subject land, and if detected, a more detailed assessment outlining the location of the contaminated soil, the type of contaminants detected, and the strategies required to be undertaken to decontaminate the affected areas in accordance with the *Ministerial Direction No. 1 - Potentially Contaminated Land*.
- Developments on land that are reclaimed as a result of decommissioning of the Goulburn Murray Water Channel infrastructure requires further investigation undertaken by suitably qualified persons to demonstrate the suitability of the land to use and develop for residential and other purposes to the satisfaction of the Responsible Authority.

3.1.5 Infrastructure Plan

A sub-precinct level infrastructure plan approved by the Responsible Authority which identifies the anticipated staging and timing of the provision of infrastructure (on and off the subject land or sub-precinct), in accordance with the "South West Development Precinct Infrastructure Cost Sharing Calculations". The Infrastructure plan should address the following as appropriate:

- The provision, staging and timing of stormwater drainage works both internal and external to the precinct.
- The provision, staging and timing of road works (including bus stops, associated works, and shared paths as identified in the approved Swan Hill South West Development Plan) both internal and external to the precinct in accordance with the approved sub-precinct level traffic management plan.
- The widening of Feldtmann Lane road reserve to 24 metres (Only for sub-precinct 1).
- The provision, staging and timing of project numbers 22 and 23 as listed in Table 3 titled 'List of Infrastructure Projects to be Provided' in the Swan Hill South West Infrastructure Provision.

SWAN HILL PLANNING SCHEME

- That all infrastructure must be constructed generally in accordance with the provisions of the Infrastructure Design Manual as referred in this Schedule.
- The standard of construction for Dead Horse Lane, Werril Street and Yana Street is kerb and channel only on one the side of the development, with a 2.5 metre shared path, and 6 metre seal width and 1.5 metre gravel shoulder.
- Properties wishing to open access to Dead Horse Lane and Werril Street must construct the relevant road to which to wish to access at no cost to Council or to any other landowners (unless otherwise voluntarily agreed) to the standards specified above up to the nearest sealed urban road.
- Any other infrastructure or related matter reasonably requested by the Responsible Authority associated with the development of the land.

3.2 Urban Design requirements

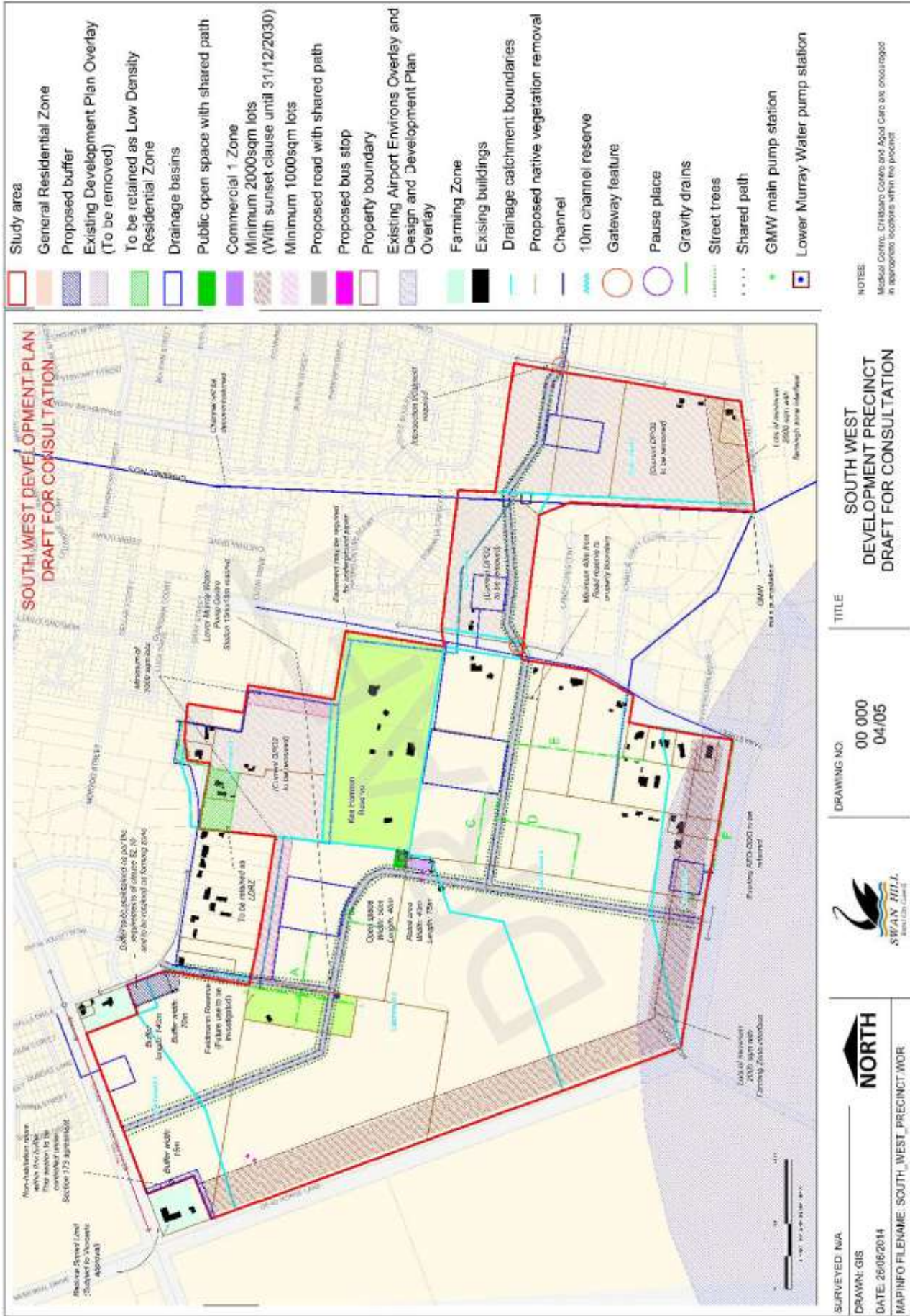
Future development fronting Sea Lake- Swan Hill Road and Dead Horse Lane should be designed to achieve attractive visual presentation to the roads in terms of built form, landscaping and streetscape to the satisfaction of the Responsible Authority.

3.3 Fencing

Fencing on or within 10 meters of the boundary along the SeaLake- Swan Hill Road and Dead Horse Lane should be at least 50% transparent to the satisfaction of the Responsible Authority unless otherwise agreed in writing by the Responsible Authority.

3.4 General Requirements

- The required buffer as per the requirements of Clause 52.10 of the Swan Hill Planning Scheme must be maintained between the industrial activities on Gray Street and sensitive use and developments within the Swan Hill South West Development Precinct.
- The following documents should be considered in the preparation of the reports, studies and documents required in this schedule.
 - Swan Hill South West Development Plan (approved and or revised thereafter)
 - Infrastructure Design Manual (as updated)
 - South West Development Precinct Infrastructure Cost Sharing Calculations " dated xxx (or as reviewed thereafter),
 - South West Development Precinct Drainage Strategy dated xxx (or as reviewed thereafter)
 - Swan Hill South West Development Precinct Traffic Impact Assessment dated xxx (or as reviewed thereafter), and the Swan Hill South West Development Precinct Traffic Strategy dated xxx (or as reviewed thereafter)
 - Swan Hill Review of the Residential Strategy dated March 2013 (or as reviewed thereafter).
- Proposed street names must conform to the Guidelines for Geographic Names Victoria.



NOTE:
Medical Centres, Childcare Centres and Aged Care are encouraged in appropriate locations within the precinct.

Placeholder for Attachment 6

PLANNING SCHEME AMENDMENT REQUEST - C58 LAND - SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

Infrastructure Cost Sharing Calculations

Pages



**Swan Hill South West Development Precinct
Planning Scheme Amendment C58
Planning Report**

Swan Hill Rural City Council

June 2014

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Swan Hill South West Development Precinct Planning Scheme Amendment C58

Introduction

The purpose of this report is to provide background information for Amendment C58 (**C58**) to Swan Hill Planning Scheme. Amendment C58 proposes rezoning of land within the Swan Hill South West Development Precinct (**SWDP**) to facilitate the supply of residential zoned land to meet the housing needs of future communities. C58 also proposes Schedule 6 to Development Plan Overlay that will implement the orderly development outcome of future residential developments within the SWDP.

Background

The Swan Hill Residential Development Strategy 2006 identified the SWDP as the suitable area for future residential development for the Township of Swan Hill. Accordingly Swan Hill Rural City Council (**SHRCC**) in consultation with landowners developed a draft Development Plan, Drainage Plan and associated background documents¹ towards an amendment process. However due to various reasons including estimated cost associated with stormwater management within the precinct the project has not been proceeded with.

In 2009, Council has commenced the Review of the Swan Hill Residential Development Strategy. This Strategy while reviewed the previous residential strategy, it also investigated further opportunities for residential land supply. The revised Strategy was adopted by Council at its meeting in March 2013. The Strategy provides directions for future residential development in the municipality and recommends that the previously prepared draft Outline Development Plan for the SWDP to be reviewed.

The current SWDP project includes the review of the previously prepared draft Outline Development Plan, review of the previously prepared drainage plan, stormwater management plan, and develops suitable cost sharing mechanism for the provision of future development infrastructure within the precinct via a series of section 173 agreements under the *Planning and Environment Act 1987*.

Land affected by the project

The table below shows the land within the SWDP. Total area of land within the Precinct is approximately 244.33ha, of which the Council owned and managed Ken Harrison Reserve and the Feldtmann Reserve both zoned Public Park and Recreation Zone (**PPRZ**) are approximately 17.3ha and 3.8ha respectively. Ken Harrison Reserved will be retained as PPRZ.

¹ Draft Development Plan was prepared by David Locks and Associates
Drainage Plan was prepared by Oricon
Development Contributions Plan was prepared by SGS Economics

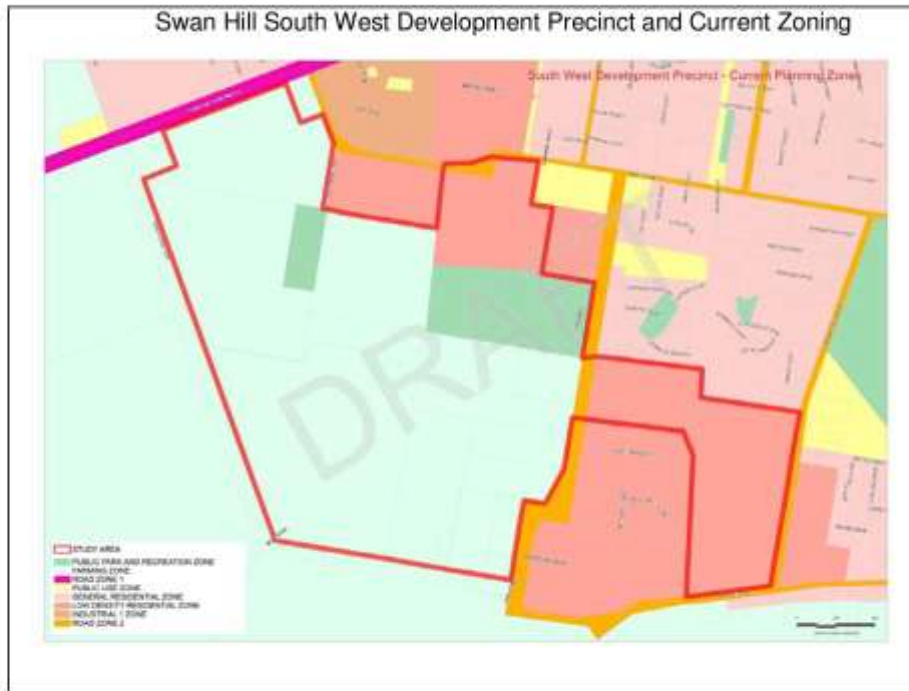
Address	Lot No	TP/PS/LP	Size ha	Comments
69 Sea Lake-Swan Hill Road, Swan Hill	Lot 1	PS 81008	0.1ha	
71 Sea Lake-Swan Hill Rd, Swan Hill	Lot 1	TP 99093V	0.1ha	Will be retained as Farming Zone due to proximity to IN1Z
219 Gray Street, Swan Hill	Lot 1	PS 405842S	1.3ha	
7 Dead Horse Lane, Swan Hill	Lot 1	TP 243546J	2ha	
183-187 Gray Street, Swan Hill	Lot 1	TP 614559H	0.8ha	Will be retained as LDRZ due to its proximity to IN1Z
66 Yana Street, Swan Hill	Lot 1	TP 187649H	17.3ha	Ken Harrison Reserve will be retained as PPRZ
Feldtmann Lane, Swan Hill	Lot 1	LP 131446	3.8ha	
Dead Horse Lane, Swan Hill	Lot 2	PS 131446	28.3ha	
Sea Lake-Swan Hill Rd Swan Hill	Lot 2	PS 405842S	20.8ha	Part of the land (about 9800sqm) will be retained FZ
Dead Horse Lane, Swan Hill	Lot 1	TP 821121W	18.3ha	Part of the land (about 1ha) is outside the SWDP in LDRZ.
Dead Horse Lane, Swan Hill	Lot 1	TP 821120Y	51.8ha	
183-187 Gray Street, Swan Hill	Lot 1	TP 519005	5.7ha	Part of the land (about 8000sqm) will be retained LDRZ
177 Gray Street, Swan Hill	Lot 1	TP 814807A	0.4ha	
175 Gray Street, Swan Hill	Lot 1	TP 519770S	0.5ha	
173 Gray Street, Swan Hill	Lot 1	PS 424914L	0.9ha	
179 Gray Street, Swan Hill	Lot 1	TP 539204Q	7.1ha	
70 Yana Street, Swan Hill	Lot 1	PS 76581	4.4ha	
98 Yana Street, Swan Hill	Lot 1	TP 179253F	13.9ha	
110 Yana Street, Swan Hill	Lot 1	PS 99806	4.8ha	
116 Yana Street, Swan Hill	Lot 1	TP 205402A	4.8ha	
235 Dead Horse Lane, Swan Hill	Lot 2	PS 124722	13ha	
233 Dead Horse Lane, Swan Hill	Lot 1	PS 124722	0.8ha	
249 Dead Horse Lane, Swan Hill	Lot 2	PS 637281M	4.8ha	
134 Yana Street, Swan Hill	Lot 3	PS 99806	0.6ha	
142 Yana Street, Swan Hill	Lot 1	PS 75694	0.9ha	
148 Yana Street, Swan Hill	Lot 2	PS 75694	0.8ha	
154 Yana Street, Swan Hill	Lot 1	PS 637281M	0.5ha	
75 Yana Street, Swan Hill	Lot 1	LP117284	3.3ha	
75 Yana Street, Swan Hill	Lot 2	LP 117284	6.7ha	
Coronation Avenue, Swan Hill	Lot 18	LP14827	6ha	
112 Coronation Avenue, Swan Hill	Lot 19	LP 14827	6.1ha	
112 Coronation Avenue, Swan Hill	Lot 2	LP 205853S	11.4ha	
152 Coronation Avenue, Swan Hill	Lot 1	LP 205853S	0.8ha	

The SWDP also includes land currently used by the Goulbourn Murray Water channel. The authority is in the process of decommissioning the channel infrastructure and reinstates the land. However, future developments on land that are reclaimed as a result of decommissioning of the Goulbourn Murray Water Channel infrastructure requires further investigation to demonstrate the suitability of the land for build on for habitable and other purposes.

Current zoning and land uses within SWDP

As shown in map below, majority of the land within SWDP is Farming Zone (FZ) with an exception to land along the south side of Gray Street, east of Yana Street and west of Coronation Avenue which are zoned Low Density Residential Zone (LDRZ).

Most of the land within the precinct are predominantly used for combination of dry land and irrigated farming. Small FZ parcels along west side of Yana Street are used for residential purpose. Smaller parcels of land zoned LDRZ along the southern side of Gray Street are too used for residential purposes while the larger parcels of along this section are used for farming activities.



Small parcels of FZ land that located on south west corner of Gray Street and Swan Hill – Sea Lake Road are too being used for residential purposes (69 Sea Lake-Swan Hill Road, 71 Sea Lake-Swan Hill Road and 219 Gray Street, Swan Hill). However, it is believed that these properties are located within the minimum setback requirements specified in Clause 52.10 of the Swan Hill Planning Scheme to the existing industrial activities on the east side of Gray Street. This 100 metre setback was measured from the polystyrene products operation at No. 2-4 McAllister Road, Swan Hill. As such these land cannot be rezoned for residential purposes and will be retained FZ. The landowners were advised of this matter and were invited to justify if they believe their land should be included in the residential zoning.

When applied the same setback requirements to Lot No. 2 PS 405842 Sea Lake- Swan Hill Road, it is found a 70metre setback was required inside the property to make up the 100metre setback from the above polystyrene products activity, this setback is 20 meters more than what the landowners proposed. This setback within Lot No. 2 PS 405842 Sea Lake- Swan Hill Road will also be retained Farming Zone as indicated in the draft Swan Hill South West Development Plan.

The land located at the south east corner of Dead Horse Lane and Swan Hill – Sea Lake Road (No. 7 Dead Horse Lane, Swan Hill) will also be retained FZ. Due to the history of its previous uses, an environmental audit of the site is required prior to the land can be considered for residential rezoning. Representatives of the owners of the land have been advised of this issue and were invited to submit an environmental audit to justify the suitability of the land for residential zoning. This land will also be retained as FZ until the above matter is addressed.

Further, a 15 metre buffer is proposed on the adjoining land to protect the future residential amenity from activities of this FZ land.

The LDRZ properties along the southern side of Gray Street that are within the SWDP were invited to justify their suitability and required minimum setbacks as per the requirements Clause 52.10 of the Swan Hill Planning Scheme. Information provided by landowners claims these properties are located outside the minimum setback. However, it is noted that as per the requirements of Clause 52.10 the concrete batching use at No. 9 Quin Drive, Swan Hill requires 300 metre setback from residential uses. As such the entire Lot No. 1 TP614559 and the northern section of Lot No.1 TP519005 both properties known as No. 183-187 Gray Street could not be rezoned from LDRZ to GRZ as they are located within the 300 metre setback. The remaining southern section of Lot No.1 TP519005 (outside the existing dwelling and associated outbuildings) will be rezoned to GRZ.

The Council owned Ken Harrison Reserve is zoned PPRZ and used for recreational activities and will be kept as PPRZ. The Development Plan for SWDP identifies this reserve as a public open space for future residential uses. The Reserve currently fronts to Yana Street. A small 50 X 40 metre public open space 'pose area' is proposed at the south west corner of the Reserve to provide pedestrian access to the Reserve from SWDP. In addition, the proposed collector roads and the shared paths are too designed to provide linear, efficient and safe access to Ken Harrison Reserve from the development.

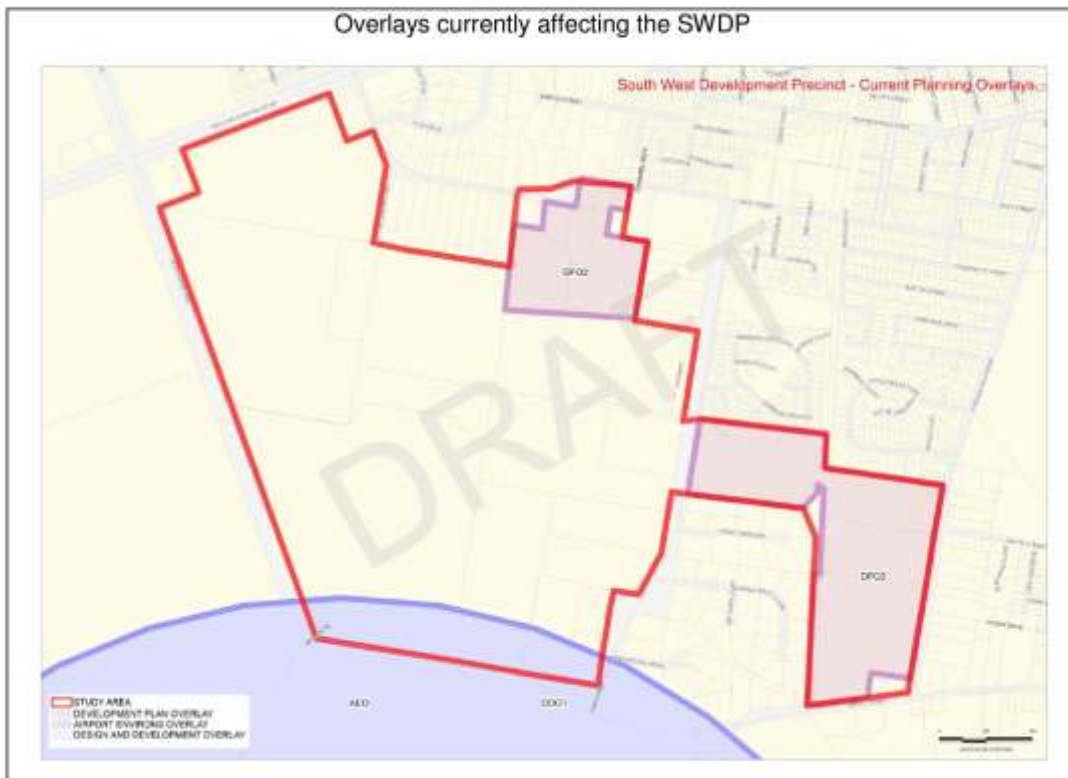
Project No 22 - Development of Ken Harrison Reserve and purchase and development of public open space identified in the 'South West Development Precinct Infrastructure Cost Sharing Calculations' will be used to purchase land for and develop the small public open space 'pose area' and to upgrade the facilities at Ken Harrison Reserve as identified in the approved Master Plan for the Reserve.

The Council owned and managed Feldtmann Reserve located within the SWDP is currently used by a Pony Club. This reserve will be rezoned for residential uses and the Pony Club will be relocated to the exiting Equestrian Facility at E.F. Butler Reserve in Tyntynder South or another suitable location.

Overlays affecting the SWDP

There are three overlays affecting the land within the SWDP. Development Plan Overlay – Schedule 2 (DPO2) affects the land zoned LDRZ. This DPO 2 will be removed and will be replaced with a new Scheduled DPO6 that will be applied to all land to be rezoned for residential purpose within SWDP.

The southern boundary along Werril Street of the SWDP is affected by Airport Environs Overlay (AEO) and a Design and Development Overlay (DDO). These overlays will be retained.



Surrounding land uses

Most of the surrounding uses along the north and western sides of the Precinct are residential, with an exception of the industrial uses on the north east corner of Gray Street, the Council owned reserve and the Swan Hill Primary School both located south of Gray Street. These lands are zoned Public Use Zone -PUZ 6 and PUZ2 respectively. Uses along the west of Dead Horse Lane and the south of Werril Street are predominantly farming with exception to residential activities towards the east end of Werril Street.

Sea Lake- Swan Hill Road borders a section of the northern boundary of the Precinct zoned Road Zone Category 1 (RD1Z). Majority of the eastern half of the northern boundary is bounded by Gray Street zoned both Industrial 1 Zone and LDRZ. Dead Horse Lane and Werril Street border the western and southern boundaries of the Precinct respectively, whereas Coronation Avenue, a section of Yana Street and various private properties border the eastern boundaries of the Precinct. A section of Yana Street also runs north-south through the Precinct and zoned Road Zone Category 2 (RD2Z).

Strategic policy background

State Planning Policy Framework (SPPF)

The proposed rezoning and future residential and associated developments within the SWDP are consistent with the SPPF. Clause 11 (Settlement) of the SPPF states that:

“Planning is to anticipate and respond to the needs of existing and future communities through provision of zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure. Planning is to recognise the need for, and as far as practicable contribute towards:

- Health and safety.
- Diversity of choice.
- Adaptation in response to changing technology.
- Economic viability.
- A high standard of urban design and amenity.
- Energy efficiency.
- Prevention of pollution to land, water and air.
- Protection of environmentally sensitive areas and natural resources.
- Accessibility, and
- Land use and transport integration.

Above directions from the SPPF are acknowledged, recognised and incorporated in the preparation of the DP and associated provisions for the SWDP.

Clause 11.02 (Urban Growth) within the SPPF requires *“to ensure a sufficient supply of land is available for residential, commercial, retail, industrial, recreational, institutional and other community uses”*. As identified by the Review of the Swan Hill Residential Strategy 2013, the main aim of the rezoning of land for residential uses within the SWDP is to ensure the supply of appropriately zoned residential land to meet the current and future communities of Swan Hill.

The clause also emphasises the importance of infrastructure to support sustainable urban development. The proposed DP for the SWDP ensures the provision of relevant development and community infrastructure are planned and provided in the Precinct. Infrastructure that is identified and planned for includes collector streets, internal streets, shared paths, bus stops, public open space, upgrades to existing intersections, retardation

basins, overland flow paths for managing stormwater, and a retail area for convenience stores.

Standards and quality of development infrastructure provided within the Precinct will be in accordance with the standards specified within the Local Government Infrastructure Design Manual (version as updated).

In addition, to the above, the DP recognises the need for and supports the provision of aged care facilities, child care centres and medical centres within the SWDP. Use and development of these facilities and any other relevant social, community and commercial uses can be supported within the Precinct as needed and as per the requirements of Swan Hill Planning Scheme.

Clause 16 (Housing) of the SPPF specifies that:

- Planning should provide for housing diversity, and ensure the efficient provision of supporting infrastructure.
- New housing should have access to services and be planned for long term sustainability, including walkability to activity centres, public transport, schools and open space.
- Planning for housing should include providing land for affordable housing.

The proposed DP for SWDP carefully considers the above directions including the provision of necessary development and social infrastructure, long-term sustainability, encourage walkability by the provision of shared path, provision of bus stops for future public transport, the and provision of and efficient access to open spaces within the Precinct. It also aims to, and supports the supply of affordable housing by encouraging small residential lots in suitable locations with appropriate orientations. These will not only ensure affordability during purchase, but will also be affordable live in these as houses as the right orientation will reduce the cost of heating and cooling in different seasons and allow natural light and ventilation into the houses.

Loddon Mallee North Regional Growth Plan (LMNRGP)

The LMNRGP was adopted by Council in November 2013 as it was by other four municipalities within the Loddon Mallee North Region. The Plan amongst other things recognises the need for appropriately zoned land to meet the increasing need of variates of residential uses in the region. It acknowledges the SWDP being identified for the provision of future residential land supply.

It also recognises continues increase in housing prices, affordable and sustainable housing needs, quality and standards of development infrastructure, the need to create places that encourage active and healthy living and integrated development that encourage use of public transport.

The proposed draft Development Plan for the SWDP and the Schedule 6 to DPO ensure the achievement of the above goals outlined in the LMNRGP and quality development outcome.

Council Plan 2013-2017 - Council's vision for housing

Council Plan 2013 – 2017 sets out Council's targets for service delivery and provides strategic directions to achieve them. It emphasises the need to support appropriate accommodation options for the growing economy, and aims to complete respective amendments to the Swan Hill Planning Scheme to support the supply of future housing.

The Council Plan also states that Council is seeking to grow the regional population to 40,000 by 2040 (also referred in Clause 21 of the Swan Hill Planning Scheme). The proposed residential rezoning will contribute to achieve this goal by facilitating the supply of residential land.

Local Planning Policy Framework (LPPF)

The LPPF of the Swan Hill Planning Scheme consists of two major clauses. Clause 21 being the Municipal Strategic Statement (MSS) and Clause 22 contains local (planning) policies.

Clause 21.02 (Settlement) recognises that:

- Moderate population growth is expected in Swan Hill and Robinvale.
- The size of households has declined over time and is consistent with general national trends.
- The population is ageing and will require a diversified housing stock.

The proposed rezoning of land within the SWDP will increase the supply of residential zoned land to meet the housing needs of the growing population. Decline in household size with increase in population means more demand for variety of housing types including one to two bedroom units and townhouses as generally small households prefer this type of accommodations. Equally the aging population also means increasing needs for low-maintenance small houses for downsizing, and increasing demand for variety of retirement villages and age care facilities, including lifestyle living, independent living units, semi-care facilities, high-care facilities and palliative care units. Residential rezoning within SWDP and the associated DP recognise the need for and facilitate future aged care facilities within the Precinct.

Clause 21.02-2 (Settlement and housing) recognises *"the provision of an alternative to Tower Hill in Swan Hill as a new residential development front"*. The proposed development within the SWDP provides alternative residential fronts for the Township of Swan Hill.

Relevant adopted strategies

- The Review of Swan Hill Residential Development Strategy 2006-2013 identifies SWDP for future residential development. Although the Strategy suggests mixture of GRZ and LDRZ for the SWDP, Council chooses to use only GRZ for the following reasons.
 - Lower Murray Water the authority responsible for sewer and water is supportive of the amendment and confirmed that SWDP could be serviced with reticulated sewer and water.
 - To provide fair and equal opportunity to all landowners (big and small) within the precinct opportunity to develop. There are total of 23 private landowners within the precinct who have experienced many delays in attempts to rezone this land. The previous attempts were based on a mixture of LDRZ and Residential 1 Zone (former zone) which in Council's opinion will make it a difficult task to stage the development. As such, Council has decided to allow for all land that can be serviced to be rezoned GRZ and introduced a sub-precinct approach with Section 173 agreements where landowners within each sub-precinct can share the infrastructure cost and develop their land as they prefer.
 - However, as in any development the market will guide and determine the supply and release of the land.
- Public Health and Wellbeing Plan – recognises the need to incorporate Healthy by Design principles in future residential developments.
- Swan Hill Economic Development Strategy 2011-2016 (2011) highlights the importance of attracting new residents, and encouraging economic activities that can generate employment opportunities.
- Swan Hill Reserves Master Plan – lists the upgrades required for Ken Harrison Reserve.

Consultation

Consultation prior to the commencement of the amendment.

During the preparation of the revised Development Plan series of consultation have been undertaken with the landowners within the SWDP. Where possible and appropriate landowners' requirements have been incorporated into the revised Development Plan.

Further, landowners were consulted as individual groups at sub-precinct level to discuss the cost sharing options. They were presented with information on all the infrastructure projects required in future developments, cost of these projects, and the following four options available for sharing the cost for the infrastructure projects.

1. Option 1 – Development Contribution Plan
2. Option 2 – 2 or more Development Contribution Plans to match the rate of proposed development in Swan Hill.
3. Section 173 Agreements for sub-precincts.
4. A combination of DCP and section 173 Agreements

Landowners were requested to choose an option from the above four. Landowners attended the consultation meetings choose Section 173 option for the provision of infrastructure.

Accordingly the required section 173 agreements were prepared by legal professionals and the drafts were sent to the landowners for comments prior to them being finalised for signing.

Where needed State agencies were too consulted with and without landowners to promote and facilitate landowners' interest without compromising agencies requirements.

In addition to the formal meetings, Council Officers met with landowners and their representatives when needed and or at landowners' request.

Further, landowners were kept informed via written correspondence of the progress of the project.

In addition to the consultation with the landowners, series of consultation were undertaken with the following State agencies.

- Lower Murray Water Authority – No objection and supports the amendment in principle
- Goulbourn Murray Water Authority – No objections and supports the amendment in principle
- Country Fire Authority – No objections and supports the amendment in principle
- VicRoads – The authority does not have any objections to the proposed development Plan, except for providing direct access to Sea Lake – Swan Hill Road.

The traffic impact assessment undertaken for the Development Plan specifies the upgrades requirements for the provision of safe and convenient direct access to Sea Lake – Swan Hill Road.

Recommended upgrades have been incorporated as part of the infrastructure provision and necessary arrangements have been put in place to ensure the upgrades are completed at the right time to the quality and standards required.

During the exhibition period, VicRoads will be able to provide formal comments on the proposed direct access indicated on the draft Development Plan.

- Department of Environment and Primary Industries – No objections and supports the amendment in principle. The authority also supportive for environmental impact assessment and soil testing requirements to be included in the Schedule 6 to the DPO. Especially, given the 40 years residential supply/development time of the Precinct, there could be changes in land use practices which will impact on the environment and flora and fauna. As such it is agreed that it will be appropriate to undertake such assessments at the time of development.
- Department of Transport – The Department recommends increased densities especially along the proposed public transport route. The proposed Schedule 6 to the DPO encourages increased densities along the collector roads and around the activity areas.

- Aboriginal Affairs Victoria – The authority is supportive of the amendment and informed there is no known cultural heritage significance within the SWDP. The authority provided notes to be included in planning permits in relation to cultural heritage significance. These notes are included in the proposed Schedule 6 to the Development Plan Overlay.
- Department of Transport, Planning and Local Infrastructure – Throughout the development of the revised Development Plan the Department had been consulted and kept informed of the progress of the Plan. The Department also reviewed the amendment documents prior to submitting for authorisation. The Department is generally supportive of the amendment.

All the relevant agencies will be formally notified during exhibition process.

Relevant internal departments were consulted during the development of the draft Development Plan and background documents. In particular, inputs were sought from Asset Management Department, Engineering Department, Environment Sustainability Unit, Council Valuer, Economic Development, and Community Facilitation Unit.

Proposed consultation during public exhibition

Upon receipt of the authorisation, public exhibition will be held for a period of four weeks. During the public exhibition period, the owners and occupiers of affected land and the adjoining properties will be notified. And a public notice will be published at the local news paper the *Guardian* each Friday. Two drop-in sessions will also be held for public and agencies to drop in and discuss the amendment and clarify any issues with Council Officers. A Notice of Amendment will also be published at the Government Gazette.

Further, amendment documents will be made available at Council website, and Council Office.

In addition, notices will be sent to the Prescribed Ministers, relevant State agencies and any other agencies as required by the Minister for Planning during authorisation.

Planning Scheme Amendment

The amendment proposes the following:

Rezoning:

- Rezones Farming Zone to General Residential Zone in map No. 39
- Rezones Low Density Residential Zone into General Residential Zone in maps Nos. 39 and 40
- Rezones Public Park and Recreation Zone into General Residential Zone (Feldtmann Reserve) in map No. 39

- Rezones Farming Zone to Commercial 1 Zone (proposed retail activity area within the SWDP) in map No. 39
- Rezones Farming Zone to Public Park and Recreation Zone (proposed small Public Open Space within the SWDP) in map No. 39.

Overlays:

- Amends maps Nos. 39 DPO and 40 DPO to introduce the new DPO6 and to delete DPO2 from land within the SWDP, and
- Introduces new Schedule (DPO6) to Clause 43.04.

INFRASTRUCTURE PROVISION

Existing infrastructure and buildings

The following street and other infrastructure are currently available within the SWDP.

- Goulburn Murray Water Channel No 9 and other small channels
- Ken Harrison Reserve - Swan Hill Rural City Council
- Equestrian Reserve – Swan Hill Rural City Council
- Dead Horse Lane – Rural road
- Werril Street – Road Zone Category 2
- Yana Street – Road Zone Category 2
- Coronation Avenue – Urban road
- Gray Street – Urban road
- Sea Lake – Swan Hill Road – VicRoads Road Zone Category 1
- Feldtmann Lane – unmade local street, and
- Existing dwellings and associated outbuildings – private

Proposed Infrastructure

The following infrastructure is proposed to service the SWDP as identified in the Swan Hill South West Development Precinct Traffic Impact Assessment Report and as indicated in the Swan Hill South West Development Plan (only for infrastructure within the SWDP).

- Collector streets
- Intersections and upgrades (Yana Street and new collector street intersection, Coronation Avenue and new collector street intersection, Gray St , Feldtmann Lane widening and intersection with Gray Street, Dead Horse Lane Sea Lake Road intersection.
- Collector road exit to Sea Lake - Swan Hill Road (Option 1) and via Dead Horse Lane (Option 2) are shown on the draft Development Plan. However, only one option is required to serve the development. Council's preferred option 1 has been discussed with VicRoads; however the authority is not supportive of the option as it will impact on the functionality of the arterial road. The traffic impact assessment undertaken for

the development discuss the minimal impact on the arterial road of Option 1, and the necessary upgrades required at this intersection to support direct exit to Sea Lake – Swan Hill Road. As such Council prefers to proceed with this option.

- Shared paths on both sides of collector streets
- Internal streets
- Drainage infrastructure including pipes, pits, retardation basins (including landscaping), rising mains and associated infrastructure
- Street trees and footpaths in local streets
- Street furniture – by Council in the future
- Upgrades to the existing Ken Harrison Reserve. Public Open Space contribution collected from SWDP will be used to upgrade the Ken Harrison Recreation Reserve in accordance with an approved Master Plan for the reserve and to purchase and develop a small parcel of land for POS.
- A small 50metrex40metre Public Open Space (PPRZ)
- 75metre X 40metre Commercial 1 Zone land to provide retail activities
- Intersection upgrades
- Entry features
- Street lights

Triggers for the Provision of Proposed Infrastructure

The triggers for provision of common infrastructure are listed in Clause 6 of the Swan Hill South West Development Precinct Infrastructure Cost Sharing Calculations.

In summary this document states all intersections to be provided and upgraded must be carried out at the time of the construction of streets leading into that intersection.

There is a specific trigger for the provision of the collector street between east of Yana Street and Coronation Avenue and construction of a roundabout at the intersection of Coronation Avenue and the collector street.

This requires the construction of this collector street upon

- The completion of the collector street identified as Link Road 2, or
- The completion of 50% of the residential land in sub-precinct 5 whichever occurs first.

Infrastructure Standards

Each developer will be required to build infrastructure to service the development in accordance with the standards set by the relevant service authorities. In the case of infrastructure to be gifted to the Rural City of Swan Hill the infrastructure standards are specified in the Local Government Infrastructure Design Association's Infrastructure Design Manual (IDM, version as updated) and the specifications of Council.

The developer will be responsible for the maintenance of infrastructure and landscaping, after the handover of assets to Council, for the periods specified in the IDM, unless otherwise agreed in writing by Council.

Infrastructure Requirements

Concept infrastructure requirements for traffic and drainage servicing the SWDP have been prepared by Council to assist developers and Council in the planning for this planning scheme amendment and determining the viability of this rezoning. These concept infrastructure requirements are listed in the following documentation:

- Swan Hill South West Development Precinct Drainage Strategy
- Swan Hill South West Development Precinct Traffic Impact Assessment
- Swan Hill South West Development Precinct Traffic Strategy
- Swan Hill South West Development Precinct Infrastructure Cost Sharing Calculations

Further detailed design and studies as listed within the proposed Schedule 6 to the Development Plan Overlay will be required before development can commence.

Provision of Infrastructure - Funding

The Planning and Environment Act 1987 specifies that infrastructure provision can be funded by either or a combination of:

- Development Contributions Plans (DCP)
- S173 Agreements

In considering the length of time to complete the development (in excess of 40 years) within the SWDP and the associated difficulties in determining standards and costs over that timeframe it was determined to enter into a series of s173 Agreements to facilitate development.

One advantage in the use of s173 agreements was that together with subdividing the SWDP into 6 sub-precincts development could commence in each of these sub-precincts independently of other sub-precincts.

The methodology used to achieve this aim is as follows:

1. Determine the cost sharing to all landowners as if a DCP was to be implemented.
2. Allocate the costs to Analysis Areas (sub-precincts) as per in a DCP.
3. Allocate each sub-precinct to carry out "works in kind" to the approximate value of their contribution determined under step 2.
4. Get the landowners to agree to allocation of "works in kind" to each sub-precinct before the planning scheme amendment is approved. (Level 1 s173 Agreement.)
5. Identify any infrastructure that is servicing more than one sub-precinct and determine the costs sharing and other arrangements for the provision of this infrastructure and obtain agreement from all the landowners with the benefitting sub-precincts before the planning scheme amendment is approved (Level 2 s173 Agreement)

6. Determine the cost sharing between landowners within a sub-precinct for the works in kind allocated to that sub-precinct. This agreement is required before development can commence within a sub-precinct. (Level 3 s173 Agreement). This agreement will not require all landowners within the sub-precinct to sign it but those that do sign it must be prepared to fund 100% of the works in kind allocated to that sub-precinct.

The analysis of applying the above principles to the provision of infrastructure is detailed in Swan Hill South West Development Precinct Infrastructure Cost Sharing Calculations.

Community infrastructure

South West Development encourages the provision of community services such as medical centre, childcare centre and aged care facilities within the precinct. It identifies the need for and designates a small 40 X 75 metre area for the retail activities that can provide neighbourhood activity type of activities for future residents. A small 50x40metre 'pose area' has been identified adjacent to the exiting Ken Harrison Reserve. This area will be rezoned to Public Park and Recreation Zone and will be developed as a focal point and a pose area for public to sit and relax. These public areas are located in the centre of the prescient and will be linked by internal roads and shared paths.

In addition to the above, appropriate non-residential and community uses can be considered in the future as per the requirements of the proposed General Residential Zone.

Department of Education will be consulted during public exhibition. The Department will be able to incorporate future development of this area in their strategic planning for the Township of Swan Hill.

Service Provision

The local water and sewer authority Lower Murray Water indicated its support for the rezoning. Upon satisfying the authority's requirements, future developments can be connected to reticulated water and sewer services through the subdivision process.

There several properties connected to rural water supply through irrigation channels from Goulburn Murray Water Authority. Provision of rural water is not within the control of SHRCC. As such, future residential properties wish to receive rural water will have approach GMW for such arrangements.

Electricity, telecommunication, internet broadband including the provision for NBN will be addressed through the subdivision process of individual properties. Swan Hill does not have reticulated natural gas, however, if natural gas becomes available in the future, properties within the South West Development area will be able to tap into the service like any other developed urban areas of Swan Hill Township.

The SWDP designate areas for future bus stops. These bus stops will be provided by Council or other statutory authority and will not be the responsibility of the developer.

Implementation

The approved Swan Hill South West Development Plan will be implemented through the amendment C58 to the Swan Hill Planning Scheme Amendment.

The amendment amongst other things introduces Schedule 6 to the Development Plan Overlay (DPO6). DPO 6 outlines the prerequisites, standards and cost sharing arrangements required to ensure the orderly development of Swan Hill South West Development Precinct.

There are number of agreements under section 173 of the Planning and Environment Act 1987 that have been proposed to ensure current and future landowners provide the agreed infrastructure.

Where necessary, the approved plan, and agreements may be modified by Council to accommodate future circumstances of landowners, Council and agencies.

REFERENCE DOCUMENTS

The following supporting documents are prepared by the Council to inform the South West Development Plan and the associated planning scheme amendment.

- Swan Hill South West Development Plan (approved and or revised thereafter)
- Infrastructure Design Manual (version as updated)
- South West Development Precinct Infrastructure Cost Sharing Calculations dated xxx (or as reviewed thereafter),
- South West Development Precinct Drainage Strategy dated xxx (or as reviewed thereafter)
- Swan Hill South West Development Precinct Traffic Impact Assessment dated xxx (or as reviewed thereafter). Swan Hill South West Development Precinct Traffic Strategy dated (or as reviewed thereafter)
- Review of the Swan Hill Residential Development Strategy 2006-2030 March 2013 (or as reviewed thereafter).
- Background report and environmental impact assessment (Flora fauna assessment from previous reports, if not use the discussions in this report)



Swan Hill South West Development Precinct Drainage Strategy

Version 4.1

Swan Hill Rural City

21 June 2014.

South West Development Precinct
Drainage Strategy

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South West Development Precinct
Drainage Strategy

1. Introduction

This strategy has been prepared to assist Council to implement the rezoning of land within the bounds of the South West Development Precinct.

This has been a long term desire of Council to provide for the future residential growth for Swan Hill. Over time the requirements for the type and density of development to be permitted within this precinct and as a result there is a need to update a previous drainage study which was prepared for this precinct.

This strategy is based upon the study completed by M Dang of Aurecon entitled Swan Hill South West Development Precinct – Stormwater Drainage Schematic Design Study (Version 3, 5/12/2011, Doc Id 225232 001/350).

Since that report was completed following changes that have occurred:

- The rezoning proposed for the precinct has changed from partly Res 1 and partly LDRZ to the majority of precinct being rezoned to General Residential Zone. There are some other minor zoning changes but these do not affect the outcomes of this strategy and therefore they have been ignored
- Council wishes to reduce future operational and maintenance costs of the drainage system by reducing the number of retarding basins, pump stations and rising mains proposed in the Aurecon Report
- Council adoption of the Infrastructure Design Manual (IDM) as the design standard for new developments has an impact on the design of the drainage infrastructure.

This updated drainage strategy will provide Council and developers with the necessary drainage information to enable the provision of drainage infrastructure to serve the land within the precinct so that development can proceed in a logical and orderly manner so that the objectives of this drainage strategy are met.

2. Objectives

The objectives of this drainage strategy are as follows:

1. To ensure that the drainage infrastructure provided to serve the South West Development Precinct is planned, effective and avoids the unnecessary provision of infrastructure that will increase Council's future maintenance and renewal costs.
2. To provide drainage infrastructure which will allow for a number of development fronts to open up within the precinct without compromising the other objectives of this strategy.
3. To ensure that the drainage being discharged from this precinct does not adversely impact the existing Council drainage infrastructure or the environment.

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4. To identify the additional detailed drainage design requirements that are required for any area within the precinct to commence development.
5. To allow the review, assessment and approval of future detailed drainage designs required by Council before development can proceed against the requirements of this strategy.
6. To ensure that overland flow paths are identified and provided to the satisfaction of Council.

3. Methodology and Assumptions

Calculations have been done using the major and minor storm approach and the Rational Method as described in Australian Rainfall and Runoff. Some of the work previously done by Aurecon has been adopted for this report.

Rainfall Intensity Frequency Duration data for Swan Hill has been adopted from Table 3.1 of the Aurecon study as shown below.

Duration (minutes)	Rainfall Intensity mm/hr	
	Average Storm Recurrence Interval 5 years	Average Storm Recurrence Interval 100 years
10	66.01	126.25
20	47.21	89.43
30	37.7	71.03
40	31.72	59.57
50	27.56	51.63
60	24.46	45.76
90	18.56	34.64
120	15.15	28.24
150	12.91	24.03
180	11.3	21.04
210	10.1	18.79
240	9.16	17.03
270	8.4	15.62
300	7.77	14.45

Runoff coefficients have been adopted from Table 6.2 of the Aurecon study as shown below.

Land Use Zone	Fraction Impervious f	Runoff Coefficient C5	Runoff Coefficient C100
Farming Zone	0.1	0.21	0.266
Residential 1 Zone	0.45	0.461	0.582
Low Density Residential	0.2	0.282	0.356
Public Park & Recreation	0.1	0.21	0.266

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The following design assumptions have been adopted for this strategy:

- The existing main drain and Yana Street drains have limited capacity to accept additional stormwater runoff without major upgrades, therefore only Catchment 3 has been allowed to discharge directly into the drain. Other catchments may be discharged to the main drain via retarding basins provided that discharge is delayed by 12 hours. This will allow the main drain to empty before receiving discharges from the catchments covered by this strategy.
- Discharge to the existing southern drain may only occur after a 6 hour delay.
- A stormwater treatment wetland exists at the main drain outfall and no further treatment is required within the South West Development Precinct.
- It has been assumed that no overland flow will cross Deadhorse Lane from the farming zones to the west and south. Discussion with Council and council staff have revealed that stormwater runoff to the west of Deadhorse Lane does soak into the sand layers until it reaches the clay layer whereupon it flows along the clay layer and discharges out of the soil some days later on land east of Feldtmann Lane and south of Gray Street. Due to the time lag for this discharge to reach the proposed drainage system it will have no impact upon the sizing of the retardation basin or underground pipes. The issue of the impacts of these discharges will need to be determined (by developers to the satisfaction of Council) prior to development commencing.
- Discharge to the existing open drain in Sea Lake Swan Hill Road to be restricted to gravity discharge from a single 300mm pipe.
- Depth of retarding basins no longer restricted to 1.5m to allow for fewer basins placed further apart from each other.

Ground Water Table Assumptions and Preliminary Testing

Information on the local ground water table levels has been obtained from the DEPI website <http://data.water.vic.gov.au/monitoring.htm>. Ground water table levels have been recorded at bore number 26808 located near the intersection of Butterworth Street and Woorinen Rd, Swan Hill for the period 1986 to 2012. These records show that 95% of recorded levels are at or below AHD 66.04m.

Natural surface levels at the retarding basin sites vary from 66.75m to 68.0m.

Due to the possibility that groundwater levels would impact the design of the basins and the need to provide geotextiles and clay liners test excavations were dug at each site of a proposed retardation basin to determine the presence of groundwater. Monitoring bores were not installed at this time and will be a requirement placed a developers before development proceeds.

The results of the test excavations as shown in the

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Catchment No	Proposed depth of basin	Depth of Test Excavation	Results
1	1.5m	2.4m	Naturally high ground of sandy soil. Medium moisture in top layer of 0.5-0.8m then hard LS layer of 0.8m-1m then again sandy soil with very little moisture
2	3.0m	3.3m	Moist soil all the way down up to depth of 3.3m. No saturated soil or water found in the trench.
4	2.0m	2.9m	Moist soil all the way down up to depth of 2.9m. No saturated soil or water found in the trench.
5	2.4m	3.0m	Medium moist soil all the way down up to depth of 3.0m. No saturated soil or water sign visible the trench
6	1.35m	2.8m	Moist soil all the way down up to depth of 2.8m. No saturated soil or water found in the trench
7	1.85m	3.4m	Moist soil all the way down up to depth of 3.4m. No saturated soil or water found in the trench

Based on the testing carried out it has been assumed that the level of groundwater at each site that there is no impact on the design or construction of the retardation basins.

At least 6 months prior to development commencing in any of the above catchment areas developers will need to install a monitoring bore and monitor the level of any ground water table so that Council can be satisfied that the detailed design of retardation basins has adequately addressed the impacts of any groundwater table that may be present in the area of the proposed retardation basin.

4. Site Context

4.1 General

The Swan Hill South West Development Precinct is bounded by Sea Lake – Swan Hill Road, Dead Horse Lane, Coronation Avenue and Gray Street as shown in Map 1

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Map 1 Swan Hill South West Development Precinct



The majority of the development precinct is currently Farming Zone (FZ) used for agricultural purposes. The precinct is bounded by residential development to the north and east as Residential 1 Zone (R1Z) and Low Density Residential Zone (LDRZ). Towards the south and west of the precinct the land use is currently FZ.

Minor open irrigation channels are located within the precinct serviced from the main irrigation channel (Channel No. 9) located between Yana Street and Coronation Avenue as shown in Map 2 on the next page.

Discussions with Goulburn Murray Water have indicated that the main irrigation channel is proposed to be piped underground and that the minor open irrigation channels within the precinct will be removed.

This drainage study assumes that existing open irrigation channels within the precinct are abandoned and removed.

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Map 2 Key Existing Features



4.2 Existing Council Infrastructure

There are a number of existing drainage issues and constraints surrounding the development precinct. These are summarised below:

- An existing concrete lined open channel is located north of the precinct near Gray Street. Council’s main drain is currently servicing Swan Hill and outfalls towards the Murray River at the north end of Swan Hill.
- The existing piped drainage system is unable to accommodate the whole of the development within the precinct. The existing concrete lined main drain is capable of accepting development flows subject to some discharge and timing constraints.
- The main drain is relatively flat with a grade of approximately 1 in 5000, however the cross sectional area does have the capacity for the development once the flows from existing drainage system have passed. The outfall for the main drain is approximately 4.5km north east of the development and is treated and ultimately pumped into the Murray River.
- The main drain acts as a retarding basin as the flows to the river are highly restricted due to the existing pump rates.

5. Catchments

5.1 Location and sizing

Catchment boundaries have been determined firstly by following ridge lines and secondly by following property boundaries. This resulted in 7 catchments as shown Map 3 Catchment Boundaries

Map 3 Catchment Areas

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The areas and outfalls of the catchments are shown in the following table:

Catchment	Area (m ²)	Area (ha)	Location	Outfall
1	119,700	11.97	Sea Lake Rd	Gravity to Tower Hill
2	799,200	79.92	West	Pump to main drain
3	127,500	12.75	North	Gravity to main drain
4	672,300	67.23	Central	Pump to Yana St
5	117,600	11.76	South	Pump to Yana st
6	100,200	10.02	Yana Street	Pump to Yana St
7	241,900	24.19	Rosaia property	Pump to Cleeland Drive

5.2 Catchment Characteristics

The catchment boundaries have been determined using a 0.5m contour plan prepared by Price Merrett Consulting for the Council in 2007.

Catchment 1 – bound to the north by Sea Lake Swan Hill Rd, to the west by Dead Horse Lane, to the east by Gray Street and to the south by a ridge line. This catchment can discharge by gravity to the open channel constructed for the Tower Hill Estate along the north side of Sea Lake Swan Hill Rd. The capacity of this open channel will have to be determined by discussions with the Tower Hill Estate engineers Paroissian Grant Associates. For the purposes of this report it has been assumed that the channel can only accept the discharge from a single 300mm pipe operating under gravity. For this reason a retarding basin will be required in this catchment. This is an additional retarding basin not included in the Aurecon study

Catchment 2 – bound to the west by Deadhorse Lane, to the north and south by ridge lines and to the east by property boundaries. This catchment combines catchments B2 and B3 from the Aurecon study and requires a retarding basin, pump station and rising main discharging to the main drain in Gray St.

Catchment 3 – bound to the north by Gray St, to the south by Ken Harrison Reserve and to the east and west by property boundaries. This catchment has the same extents as Aurecon's Gray Street catchment and is assumed to discharge by gravity to the main drain in Gray Street. Since the main drain itself acts as a retardation basin and all other catchments discharging to the main drain at Gray Street have retarding basins it has been assumed that no further retardation will be required for catchment 3. This assumption should be verified by computation at detailed design stage.

Catchment 4 – bound by ridge lines to the north and south, Deadhorse Lane to the west, Yana St to the east and Ken Harrison Reserve to the north. This catchment includes Aurecon's catchment B4 and part of B1 and requires a retarding basin, pump station and rising main discharging to the gravity drain in Yana Street. The exact location of the discharge point in Yana Street is to be determined at detailed design stage.

Catchment 5 – bound to the south by Deadhorse Lane, to the north by a ridge line and to the east by Yana St. In the Aurecon study this catchment (Ext2) was entirely low density development and drainage was assumed to be retained on site, however with the new proposed zoning of General Residential, this will no longer be acceptable and a retarding basin, pump station and rising main discharging to the gravity drain in Yana Street will be required.

Catchment 6 – bound to the west by Yana Street, the east by the No. 9 channel and to the north and south by existing developments. This low lying catchment will require a retarding basin, pump station and rising main discharging to the gravity drain in Yana St.

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Catchment 7 – bound by Coronation Avenue to the east, the No. 9 channel to the west, Werril Street to the south and existing development to the north. This catchment will require a retarding basin, pump station and rising main discharging to the gravity drain in Cleeland Drive.

6. Retarding Basin and Outfall Pipe Sizes

6.1 Retardation Basin and Outfall Pipe Sizes

Calculation of retarding basin, pump station and outfall pipe sizes is detailed in a spreadsheet titled SWDP Drainage Review April 2014 located at M:\Projects\SWDP. The locations of the basins shown in the map are indicative only and subject to detailed design and subdivision layout.

A summary of the basin capacity and outfall details are shown in the following table:

Catchment Number	Outfall type	Basin storage capacity (m ³)	Outfall flow rate and pump capacity (lit/sec)	Outfall diameter (mm)	Length of outfall pipe (m)
1	Gravity	3,918	63	300	260
2	Pump	42,481	214	300	710
3	Gravity	Nil	Nil	Nil	Nil
4	Pump	35,591	214	375	560
5	Pump	6,232	34	150	1210
6	Pump	5,304	34	150	504
7	Pump	10,669	131	250	580

With co-operation between the developers the above three rising mains in Yana Street i.e. rising mains serving Catchments 4,5 and 6 could be combined into a single larger diameter rising main for a reduced cost. This combined rising main would be required to discharge into the Yana Street underground drainage system at the pit with the asset ID 11356 opposite Cutri Drive Swan Hill.

The rising main to serve catchment 4 has been increased in size from 300mm diameter to 375mm diameter and this will reduce the velocity slightly but will allow for the flows from catchments 5 and 6 to enter into it.

In the event that the rising main from Catchment 4 is not constructed at the time either development within catchment 5 or 6 is ready to develop they could choose to construct their own 150mm dia rising main to discharge into the existing Yana Street drainage system at Asset ID xxx which is locate approximately 454m from where the rising main from where Catchment 6 enters Yana Street.

6.2 Earthwork Volumes

Earthworks volume and minimum land area required have been calculated assuming that the retarding basin and land are square in shape, batters are sloped at 1 in 8, there is 300mm freeboard above top water level during a 1 in 100 year event, basin floor level matches the invert of incoming

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pipes and a 5m wide access/landscaping area on all sides of the basin. The resulting earthworks volumes and land areas are shown in the following table:

Catchment Number	Basin storage capacity (m ³)	Excavation Depth (m)	Floor width (m)	Excavation Volume (m ³)	Land width (m)	Land area (m ²)
1	3,918	1.5	49	5,365	83	6,889
2	42,481	3	106	48,972	164	26,896
3	Nil					
4	35,591	2	132	43,296	174	30,276
5	6,232	2.4	41	7,813	89	7,992
6	5,304	1.4	64	7,396	95	9,139
7	10,669	1.9	72	13,533	111	12,454

Due to the amount of earthworks being excavated from the retardation basins the developers will be required to provide an earthworks master plan to the satisfaction of Council prior to development commencing.

6.3 Gravity Drains

Where stormwater flows from one property across a different property to reach its retarding basin the size and depth of pipe required has been calculated to allow for apportionment of costs between property owners. The calculations are detailed in a spreadsheet titled SWDP Drainage Review April 2014 located at M:\Projects\SWDP.

The Rational Method was used to calculate flows resulting from a 1 in 5 year storm and pipes were sized and graded to ensure that a minimum velocity of 1m/sec was achieved. A maximum length between pits of 80m was assumed and a minimum cover of 600mm over the pipes. The resultant pipe diameters, depths and lengths are summarised in the table below and shown in Map1 above.

Line	Catchment	Length (m)	Diameter (mm)	Average Depth to invert (m)
A	2	100	750	1.4
A	2	167	750	1.5
A	2	160	600	1.3
A	2	190	1200	2.1
B	2	235	900	1.5
C	4	212	375	1.2
D	4	130	900	1.5
D	4	180	1050	1.7
D	4	130	1050	1.7
E	4	70	300	1.0
E	4	143	375	1.2
E	4	130	525	2.0
E	4	67	600	2.1

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Line	Catchment	Length (m)	Diameter (mm)	Average Depth to invert (m)
F	5	108	450	1.3
F	5	413	525	1.6
H	5	21	375	1.6
G	3	220	750	1.7

The routes of the various pipes are approximate only and cannot be accurately determined until the layout of the subdivisions is known. Developers will be required to provide detailed drainage designs to the satisfaction of Council generally complying with this strategy prior to development proceeding.

As the pipes are designed for minor 1 in 5 year storms only, overland flow paths along approximately the same routes will also be required for major 1 in 100 year storms. These must be allowed for in the detailed drainage design.

7. Overland Flow Paths

Gravity drainage pipes are designed for minor 1 in 5 year storms only and therefore overland flow paths will also be required to convey the stormwater for storms exceeding the pipe capacity for major 1 in 100 year storms.

These overland flow paths are required to be designed for all catchments throughout the development area in accordance with the requirements of the Infrastructure Design Manual (IDM).

Overland flow paths must be located on public land either in road reserves or landscaped drainage reserves to the satisfaction of Council.

Where overland flow paths cross property boundaries there is potential for cost sharing between developers. These instances coincide with the gravity drains described in the previous section and follow the same alignments as the gravity drains shown in green Map 1 and labelled A to G.

It is essential that overland flow paths crossing property boundaries are provided for by each developer and taken through to the appropriate retardation basin to the satisfaction of Council.

The siting of retardation basins along the frontage of collector streets is important to ensure that overlands flows are able to enter into the retardation basins. To achieve this, the retardation basins must have a frontage of at least 40% of the perimeter of the basin to a street/s frontage to the satisfaction of Council unless otherwise agreed in writing.

8. Temporary Drainage Infrastructure

To assist in the orderly and timely development of the precinct Council **MAY** allow the installation of temporary drainage infrastructure to service the land to be developed where the Council is satisfied that:

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- The proposed works will not result in any adverse effects on adjoining landowners
- The temporary works are designed to the satisfaction of Council
- The temporary works are constructed, maintained and owned by the developer. Council will have no responsibility or liability in relation to the operation, maintenance or renewal of such a temporary drainage system. This will remain the case until the drainage system is connected to Council's drainage infrastructure as per the details of this strategy or otherwise as approved by Council.
- Until a S173 Agreement is entered into with Council specifying that the landowner is responsible for all aspects of the temporary drainage works.
- The discharge from temporary drainage system must be contained on land belonging to the developer/landowner unless otherwise agreed in writing by the Council.

9. Standards of Construction

The infrastructure to be constructed for the SWDP must be constructed to the standards specified in the Local Government Infrastructure Design Association Infrastructure Design Manual (IDM) to the satisfaction of Council unless otherwise agreed in writing by Council.

10. Landscaping of the Drainage Reserves Containing Retardation Basins

All drainage reserves to be constructed within the bounds of the SWDP must be landscaped to the satisfaction of Council.

11. Estimated Costs

Costs of all of the above works have been estimated are detailed in the Swan Hill South West Development Precinct Infrastructure Cost Sharing Calculations.

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Appendix - Drainage Computations

Sizing of Basins for 100 Yr ARI

Gravity outfall

Catchment No	1	Diameter	300	mm
Size m ²	119,700	Grade	0.3	%
C*A m ²	69,665	Flow Rate	0.063	m ³ /sec
		Velocity	0.89	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	1,759	45	1,714	
0.3	89.43	1,869	68	1,801	
0.5	71.03	2,474	113	2,361	
0.7	59.57	2,905	159	2,746	
0.8	51.63	2,877	181	2,696	
1	45.76	3,188	227	2,961	
1.2	41.23	3,447	272	3,175	
1.3	37.6	3,405	295	3,110	
1.5	34.64	3,620	340	3,280	
1.7	32.16	3,809	386	3,423	
2	28.24	3,935	454	3,481	
2.5	24.03	4,185	567	3,618	
3	21.04	4,397	680	3,717	
4	17.03	4,746	907	3,839	
5	14.45	5,033	1134	3,899	
6	12.63	5,279	1361	3,918	3,918
7	11.28	5,501	1588	3,913	
8	10.22	5,696	1814	3,882	
9	9.37	5,875	2041	3,834	
10	8.67	6,040	2268	3,772	
11	8.08	6,192	2495	3,697	
12	7.58	6,337	2722	3,615	
13	7.14	6,466	2948	3,518	
14	6.76	6,593	3175	3,418	
15	6.42	6,709	3402	3,307	
16	6.12	6,822	3629	3,193	
17	5.85	6,928	3856	3,072	
18	5.61	7,035	4082	2,953	
19	5.39	7,134	4309	2,825	

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20	5.18	7,217	4536	2,681	
21	5	7,315	4763	2,552	
22	4.82	7,387	4990	2,397	
23	4.66	7,467	5216	2,251	
24	4.52	7,557	5443	2,114	
25	4.38	7,628	5670	1,958	
26	4.25	7,698	5897	1,801	
27	4.13	7,768	6124	1,644	
28	4.01	7,822	6350	1,472	
29	3.9	7,879	6577	1,302	
30	3.8	7,942	6804	1,138	
31	3.71	8,012	7031	981	
32	3.62	8,070	7258	812	
33	3.53	8,115	7484	631	
34	3.45	8,172	7711	461	
35	3.37	8,217	7938	279	
36	3.29	8,251	8165	86	

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Pumped outfall

Catchment No	2	Diameter	300	mm
Size m ²	799,200	Grade	3.5	%
C*A m ²	465,134	Flow Rate	0.214	m ³ /sec
		Velocity	3.03	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	11,745		11,745	
0.3	89.43	12,479		12,479	
0.5	71.03	16,519		16,519	
0.7	59.57	19,396		19,396	
0.8	51.63	19,212		19,212	
1	45.76	21,285		21,285	
1.2	41.23	23,013		23,013	
1.3	37.6	22,736		22,736	
1.5	34.64	24,168		24,168	
1.7	32.16	25,430		25,430	
2	28.24	26,271		26,271	
2.5	24.03	27,943		27,943	
3	21.04	29,359		29,359	
4	17.03	31,685		31,685	
5	14.45	33,606		33,606	
6	12.63	35,248		35,248	
7	11.28	36,727		36,727	
8	10.22	38,029		38,029	
9	9.37	39,225		39,225	
10	8.67	40,327		40,327	
11	8.08	41,341		41,341	
12	7.58	42,309	0	42,309	
13	7.14	43,174	770	42,404	
14	6.76	44,020	1541	42,479	
15	6.42	44,792	2311	42,481	42,481
16	6.12	45,546	3082	42,464	
17	5.85	46,258	3852	42,406	
18	5.61	46,969	4622	42,347	
19	5.39	47,634	5393	42,241	
20	5.18	48,188	6163	42,025	
21	5	48,839	6934	41,905	
22	4.82	49,323	7704	41,619	
23	4.66	49,853	8474	41,379	

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24	4.52	50,458	9245	41,213	
25	4.38	50,932	10015	40,917	
26	4.25	51,397	10786	40,611	
27	4.13	51,867	11556	40,311	
28	4.01	52,225	12326	39,899	
29	3.9	52,607	13097	39,510	
30	3.8	53,025	13867	39,158	
31	3.71	53,495	14638	38,857	
32	3.62	53,881	15408	38,473	
33	3.53	54,184	16178	38,006	
34	3.45	54,560	16949	37,611	
35	3.37	54,863	17719	37,144	
36	3.29	55,091	18490	36,601	
37	3.22	55,416	19260	36,156	
38	3.15	55,677	20030	35,647	
39	3.09	56,053	20801	35,252	
40	3.03	56,374	21571	34,803	
41	2.96	56,449	22342	34,107	
42	2.91	56,849	23112	33,737	
43	2.85	57,002	23882	33,120	
44	2.8	57,305	24653	32,652	
45	2.75	57,560	25423	32,137	
46	2.7	57,770	26194	31,576	
47	2.65	57,932	26964	30,968	
48	2.6	58,049	27734	30,315	

South West Development Precinct
Drainage Strategy

Pumped outfall

Catchment No	4	Diameter	300	mm
Size m ²	672,300	Grade	3.5	%
C*A m ²	391,279	Flow Rate	0.214	m ³ /sec
		Velocity	3.03	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	9,880		9,880	
0.3	89.43	10,498		10,498	
0.5	71.03	13,896		13,896	
0.7	59.57	16,316		16,316	
0.8	51.63	16,161		16,161	
1	45.76	17,905		17,905	
1.2	41.23	19,359		19,359	
1.3	37.6	19,126		19,126	
1.5	34.64	20,331		20,331	
1.7	32.16	21,392		21,392	
2	28.24	22,099		22,099	
2.5	24.03	23,506		23,506	
3	21.04	24,698		24,698	
4	17.03	26,654		26,654	
5	14.45	28,270		28,270	
6	12.63	29,651		29,651	
7	11.28	30,895		30,895	
8	10.22	31,991		31,991	
9	9.37	32,997		32,997	
10	8.67	33,924		33,924	
11	8.08	34,777		34,777	
12	7.58	35,591	0	35,591	35,591
13	7.14	36,318	770	35,548	
14	6.76	37,031	1541	35,490	
15	6.42	37,680	2311	35,369	
16	6.12	38,314	3082	35,232	
17	5.85	38,913	3852	35,061	
18	5.61	39,511	4622	34,889	
19	5.39	40,071	5393	34,678	
20	5.18	40,536	6163	34,373	
21	5	41,084	6934	34,150	
22	4.82	41,491	7704	33,787	
23	4.66	41,937	8474	33,463	

South West Development Precinct
Drainage Strategy

24	4.52	42,446	9245	33,201	
25	4.38	42,845	10015	32,830	
26	4.25	43,236	10786	32,450	
27	4.13	43,631	11556	32,075	
28	4.01	43,933	12326	31,607	
29	3.9	44,254	13097	31,157	
30	3.8	44,606	13867	30,739	
31	3.71	45,001	14638	30,363	
32	3.62	45,326	15408	29,918	
33	3.53	45,580	16178	29,402	
34	3.45	45,897	16949	28,948	
35	3.37	46,151	17719	28,432	
36	3.29	46,343	18490	27,853	
37	3.22	46,617	19260	27,357	
38	3.15	46,836	20030	26,806	
39	3.09	47,153	20801	26,352	
40	3.03	47,423	21571	25,852	
41	2.96	47,486	22342	25,144	
42	2.91	47,822	23112	24,710	
43	2.85	47,951	23882	24,069	
44	2.8	48,206	24653	23,553	
45	2.75	48,421	25423	22,998	
46	2.7	48,597	26194	22,403	
47	2.65	48,734	26964	21,770	
48	2.6	48,832	27734	21,098	

South West Development Precinct
Drainage Strategy

Pumped outfall

Catchment No	5	Diameter	150	mm
Size m ²	117,600	Grade	3.5	%
C*A m ²	68,443	Flow Rate	0.034	m ³ /sec
		Velocity	1.92	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	1,728		1,728	
0.3	89.43	1,836		1,836	
0.5	71.03	2,431		2,431	
0.7	59.57	2,854		2,854	
0.8	51.63	2,827		2,827	
1	45.76	3,132		3,132	
1.2	41.23	3,386		3,386	
1.3	37.6	3,346		3,346	
1.5	34.64	3,556		3,556	
1.7	32.16	3,742		3,742	
2	28.24	3,866		3,866	
2.5	24.03	4,112		4,112	
3	21.04	4,320		4,320	
4	17.03	4,662		4,662	
5	14.45	4,945		4,945	
6	12.63	5,187		5,187	
7	11.28	5,404		5,404	
8	10.22	5,596		5,596	
9	9.37	5,772		5,772	
10	8.67	5,934		5,934	
11	8.08	6,083		6,083	
12	7.58	6,226	0	6,226	
13	7.14	6,353	122	6,231	6,231
14	6.76	6,477	245	6,232	
15	6.42	6,591	367	6,224	
16	6.12	6,702	490	6,212	
17	5.85	6,807	612	6,195	
18	5.61	6,911	734	6,177	
19	5.39	7,009	857	6,152	
20	5.18	7,091	979	6,112	
21	5	7,187	1102	6,085	
22	4.82	7,258	1224	6,034	
23	4.66	7,336	1346	5,990	

South West Development Precinct
Drainage Strategy

24	4.52	7,425	1469	5,956
25	4.38	7,495	1591	5,904
26	4.25	7,563	1714	5,849
27	4.13	7,632	1836	5,796
28	4.01	7,685	1958	5,727
29	3.9	7,741	2081	5,660
30	3.8	7,803	2203	5,600
31	3.71	7,872	2326	5,546
32	3.62	7,928	2448	5,480
33	3.53	7,973	2570	5,403
34	3.45	8,028	2693	5,335
35	3.37	8,073	2815	5,258
36	3.29	8,106	2938	5,168
37	3.22	8,154	3060	5,094
38	3.15	8,193	3182	5,011
39	3.09	8,248	3305	4,943
40	3.03	8,295	3427	4,868
41	2.96	8,306	3550	4,756
42	2.91	8,365	3672	4,693
43	2.85	8,388	3794	4,594
44	2.8	8,432	3917	4,515
45	2.75	8,470	4039	4,431
46	2.7	8,501	4162	4,339
47	2.65	8,525	4284	4,241
48	2.6	8,542	4406	4,136

South West Development Precinct
Drainage Strategy

Pumped outfall

Catchment No	6	Diameter	150	mm
Size m ²	100,200	Grade	3.5	%
C*A m ²	58,316	Flow Rate	0.034	m ³ /sec
		Velocity	1.92	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	1,472		1,472	
0.3	89.43	1,565		1,565	
0.5	71.03	2,071		2,071	
0.7	59.57	2,432		2,432	
0.8	51.63	2,409		2,409	
1	45.76	2,669		2,669	
1.2	41.23	2,885		2,885	
1.3	37.6	2,851		2,851	
1.5	34.64	3,030		3,030	
1.7	32.16	3,188		3,188	
2	28.24	3,294		3,294	
2.5	24.03	3,503		3,503	
3	21.04	3,681		3,681	
4	17.03	3,973		3,973	
5	14.45	4,213		4,213	
6	12.63	4,419		4,419	
7	11.28	4,605		4,605	
8	10.22	4,768		4,768	
9	9.37	4,918		4,918	
10	8.67	5,056		5,056	
11	8.08	5,183		5,183	
12	7.58	5,304	0	5,304	5,304
13	7.14	5,413	122	5,291	
14	6.76	5,519	245	5,274	
15	6.42	5,616	367	5,249	
16	6.12	5,710	490	5,220	
17	5.85	5,800	612	5,188	
18	5.61	5,889	734	5,155	
19	5.39	5,972	857	5,115	
20	5.18	6,042	979	5,063	
21	5	6,123	1102	5,021	
22	4.82	6,184	1224	4,960	
23	4.66	6,250	1346	4,904	

South West Development Precinct
Drainage Strategy

24	4.52	6,326	1469	4,857	
25	4.38	6,386	1591	4,795	
26	4.25	6,444	1714	4,730	
27	4.13	6,503	1836	4,667	
28	4.01	6,548	1958	4,590	
29	3.9	6,596	2081	4,515	
30	3.8	6,648	2203	4,445	
31	3.71	6,707	2326	4,381	
32	3.62	6,755	2448	4,307	
33	3.53	6,793	2570	4,223	
34	3.45	6,841	2693	4,148	
35	3.37	6,878	2815	4,063	
36	3.29	6,907	2938	3,969	
37	3.22	6,948	3060	3,888	
38	3.15	6,980	3182	3,798	
39	3.09	7,028	3305	3,723	
40	3.03	7,068	3427	3,641	
41	2.96	7,077	3550	3,527	
42	2.91	7,127	3672	3,455	
43	2.85	7,147	3794	3,353	
44	2.8	7,185	3917	3,268	
45	2.75	7,217	4039	3,178	
46	2.7	7,243	4162	3,081	
47	2.65	7,263	4284	2,979	
48	2.6	7,278	4406	2,872	

South West Development Precinct
Drainage Strategy

Pumped outfall

Catchment No	7	Diameter	250	mm
Size m ²	241,900	Grade	3.5	%
C*A m ²	140,786	Flow Rate	0.131	m ³ /sec
		Velocity	2.67	m/sec

Duration hrs	Intensity mm/hr	Volume in m ³	Volume out m ³	Storage m ³	Maximum Storage m ³
0.2	126.25	3,555		3,555	
0.3	89.43	3,777		3,777	
0.5	71.03	5,000		5,000	
0.7	59.57	5,871		5,871	
0.8	51.63	5,815		5,815	
1	45.76	6,442		6,442	
1.2	41.23	6,966		6,966	
1.3	37.6	6,882		6,882	
1.5	34.64	7,315		7,315	
1.7	32.16	7,697		7,697	
2	28.24	7,952		7,952	
2.5	24.03	8,458		8,458	
3	21.04	8,886		8,886	
4	17.03	9,590		9,590	
5	14.45	10,172		10,172	
6	12.63	10,669	0	10,669	10,669
7	11.28	11,116	472	10,644	
8	10.22	11,511	943	10,568	
9	9.37	11,872	1415	10,457	
10	8.67	12,206	1886	10,320	
11	8.08	12,513	2358	10,155	
12	7.58	12,806	2830	9,976	
13	7.14	13,068	3301	9,767	
14	6.76	13,324	3773	9,551	
15	6.42	13,558	4244	9,314	
16	6.12	13,786	4716	9,070	
17	5.85	14,001	5188	8,813	
18	5.61	14,217	5659	8,558	
19	5.39	14,418	6131	8,287	
20	5.18	14,585	6602	7,983	
21	5	14,783	7074	7,709	
22	4.82	14,929	7546	7,383	
23	4.66	15,089	8017	7,072	

South West Development Precinct
Drainage Strategy

24	4.52	15,272	8489	6,783	
25	4.38	15,416	8960	6,456	
26	4.25	15,557	9432	6,125	
27	4.13	15,699	9904	5,795	
28	4.01	15,807	10375	5,432	
29	3.9	15,923	10847	5,076	
30	3.8	16,050	11318	4,732	
31	3.71	16,192	11790	4,402	
32	3.62	16,309	12262	4,047	
33	3.53	16,400	12733	3,667	
34	3.45	16,514	13205	3,309	
35	3.37	16,606	13676	2,930	
36	3.29	16,675	14148	2,527	
37	3.22	16,773	14620	2,153	
38	3.15	16,852	15091	1,761	
39	3.09	16,966	15563	1,403	
40	3.03	17,063	16034	1,029	
41	2.96	17,086	16506	580	
42	2.91	17,207	16978	229	
43	2.85	17,253	17449	-	
44	2.8	17,345	17921	-	
45	2.75	17,422	18392	-	
46	2.7	17,486	18864	-	
47	2.65	17,535	19336	-	
48	2.6	17,570	19807	-	



Swan Hill South West Development Precinct Traffic Strategy

Draft for Public Exhibition

Version 2.1

Swan Hill Rural City

3 July 2014.

South West Development Precinct
Traffic Strategy

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Draft for Public Exhibition

South West Development Precinct
Traffic Strategy

1. Introduction

This strategy has been prepared to assist Council to implement the rezoning of land within the bounds of the South West Development Precinct (SWDP).

This has been a long term desire of Council to provide for the future residential growth for Swan Hill.

This strategy has been prepared to consider the traffic management requirements of the proposed development of the South West Development Precinct.

Council engaged the Traffix Group to undertake a traffic impact assessment (TIA) of the proposed development. A copy of the assessment titled Swan Hill South West Development Precinct Traffic Impact Assessment prepared by in June 2014 is attached as Appendix 1 to this strategy.

2. Objectives

The objectives of this traffic strategy are as follows:

1. To integrate the transport requirements of the SWDP with the existing transport infrastructure serving Swan Hill.
2. To consider the two options for the collector street connection to the Swan Hill Sea Lake Road as identified in the SWDP.
3. To identify additional traffic studies/assessments to be undertaken prior to the development within the sub-precincts of the SWDP.
4. To identify and incorporate any existing Council strategy, policy or program into this Traffic Strategy.

3. South West Development Precinct Site Context

3.1 General

The Swan Hill South West Development Precinct is bounded by Sea Lake – Swan Hill Road, Dead Horse Lane, Coronation Avenue and Gray Street as shown in Map 1.

South West Development Precinct
Traffic Strategy

Map 1 Locality Plan of the Swan Hill South West Development Precinct



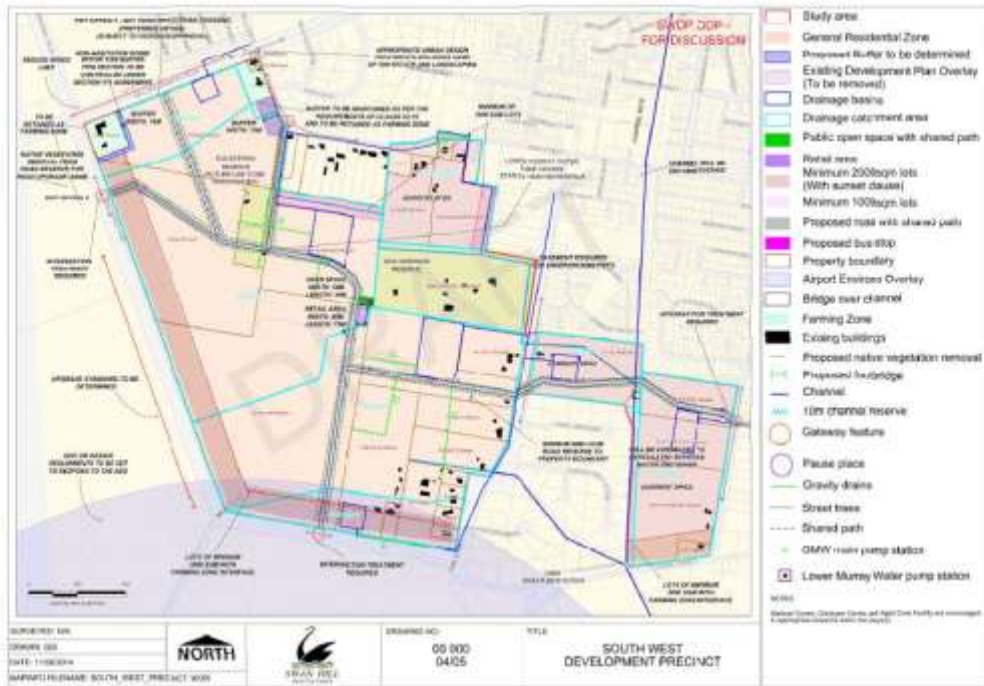
The majority of the development precinct is currently Farming Zone (FZ) used for agricultural purposes. The precinct is bounded by residential development to the north and east as Residential 1 Zone (R1Z) and Low Density Residential Zone (LDRZ). Towards the south and west of the precinct the land use is currently FZ.

Minor open irrigation channels are located within the precinct serviced from the main irrigation channel (Channel No. 9) located between Yana Street and Coronation Avenue as shown in Map 2 on the next page.

South West Development Precinct
Traffic Strategy

The existing and proposed land uses contained within and adjacent to the boundaries of the SWDP are shown in Map 2.

Map 2 Existing and Proposed Land Uses



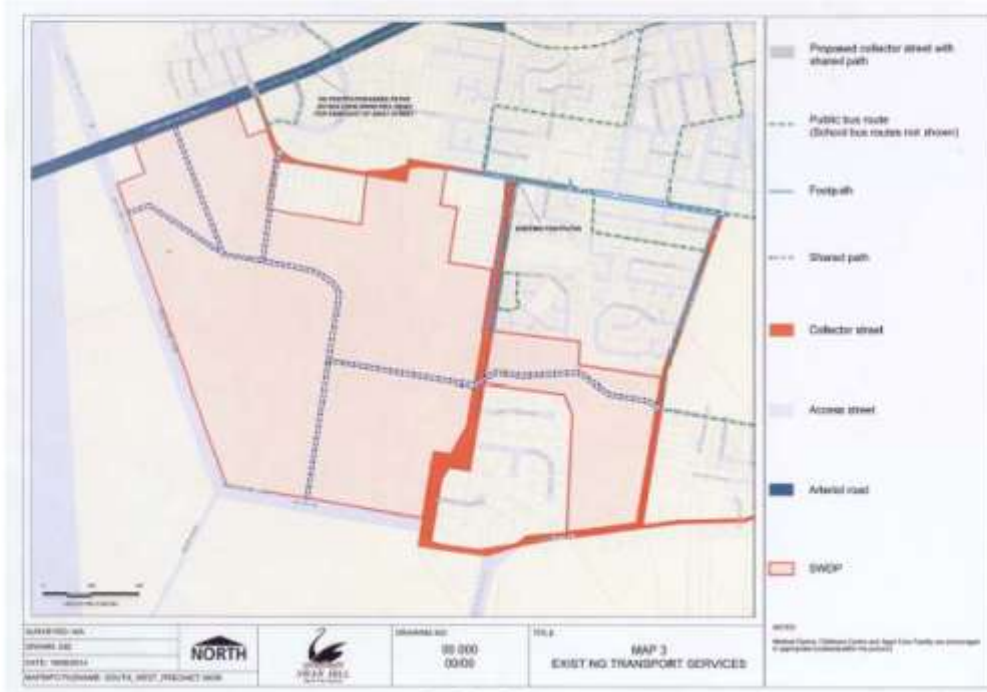
3.2 Existing Transport Network

3.2.1 Existing Transport Services

Map 3 Existing Transport Services details the location of existing transport services within the locality of the SWDP.

South West Development Precinct
Traffic Strategy

Map 3 Existing Transport Services



3.2.2 Road Network Connections

The SWDP primary connection points to the existing road network are listed in Table 1 Details of Existing Road Network Interfaces with the SWDP.

Table 1 Details of Existing Road Network Interfaces with the SWDP

Road Name	Status	Existing Construction Standard	Proposed Construction Standard	Comments
Sea Lake Swan Hill Road	VicRoads Arterial Road	7.9m seal width	No change	Intersection upgrades will be required as detailed in the Traffic Impact Assessment
Gray Street	Council Collector	9.4m seal at Feldtmann Lane and 6.9m where new	Where new development fronts Gray Street a 2.5m	Intersection upgrades will be required as detailed in the

South West Development Precinct
Traffic Strategy

Road Name	Status	Existing Construction Standard	Proposed Construction Standard	Comments
		access road from east of Feldtmann Lane intersects with Gray Street	shared path and kerb and channel will be required. Overall seal width must be at least 10.4m	Traffic Impact Assessment
Yana Street	Council Collector Street	6.9m seal	Where new development fronts Yana Street a 2.5m shared path and kerb and channel will be required. Overall seal width must be at least 10.4m	Intersection upgrades will be required as detailed in the Traffic Impact Assessment
Coronation Avenue	Council Collector Street	7.4m seal	Where new development fronts Coronation Avenue a 2.5m shared path and kerb and channel will be required. Overall seal width must be at least 10.4m	Intersection upgrades will be required as detailed in the Traffic Impact Assessment
Werril Street	Council Collector Street	6.9m seal	Where new development fronts Werril Street a 2.5m shared path and kerb and	

South West Development Precinct
Traffic Strategy

Road Name	Status	Existing Construction Standard	Proposed Construction Standard	Comments
			channel will be required. Overall seal width must be at least 10.4m	
Dead Horse Lane	Council Access	7.5m Gravel Road	6.2m seal, 1.5m shoulder, K&C and 2.5m shared path	
Feldtmann Lane	Council Access	6.0m Gravel Road	10.4m seal, K&C and 2.5m shared path on both sides	Intersection upgrade will be required as detailed in the Traffic Impact Assessment

The impact of the SWDP on the existing road network has been considered as part of the Traffic Impact Assessment (TIA) undertaken by the Traffic Group for Council.

A summary of their recommendations is shown in Table 2 Summary of TIA Intersection Treatment Recommendations for Option 1.

Table 2 Summary of TIA Intersection Treatment Recommendations.

Intersection Number	Description of Intersection	Recommended Treatment
1	Dead Horse Lane/Link 4	Simple T-intersection
2	Yana Street/Werril Street/Dead Horse Lane	The existing simple T-intersection continues to be provided.
3	Coronation Avenue/Wattie Street/Link 1	A single lane roundabout be provided
4	Yana Street/Link 2/Link 3	A single lane roundabout be provided

South West Development Precinct
Traffic Strategy

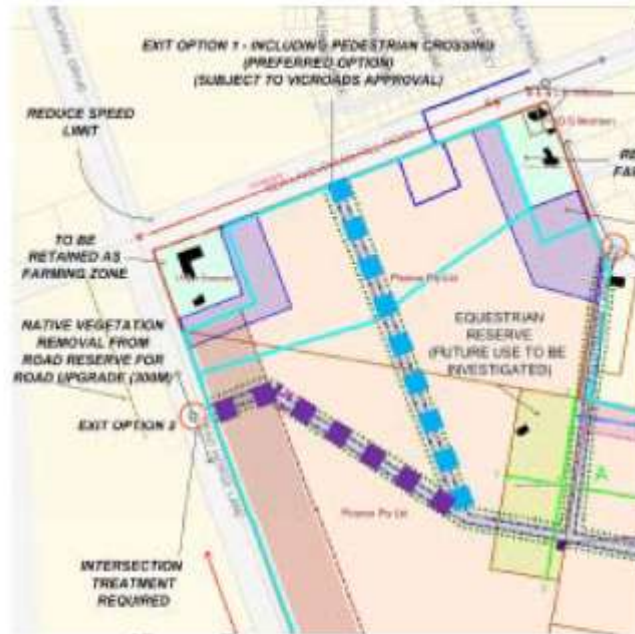
Intersection Number	Description of Intersection	Recommended Treatment
5	Gray Street/Yana Street	The existing configuration of the Gray Street/Yana Street intersection continues to be provided.
6	Gray Street/Internal Road	A simple T-intersection be provided at the Gray Street/Internal Road intersection provided with priority to Gray Street and separate left and right turn lanes in the internal road. A left turn lane should be provided in Gray Street, due to the relatively large volume of left turning traffic.
7	Gray Street/Feldtmann Lane	A simple T-intersection continues to be provided at the Gray Street/Feldtmann Lane intersection. A separate right turn facility should be provided in Gray Street and separate left and right turn lanes in Feldtmann Lane. A left turn lane in Gray Street is not warranted on the basis of the predicted left turn volumes.
8	Sea Lake-Swan Hill Road/Gray Street/Boobiulla Drive	The intersection remains under roundabout control. No upgrades are required from a capacity perspective.
9	Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive	That the intersection remains in its current form.
10	Sea Lake-Swan Hill Road/Link 7(1)	That a BAR (basic right turn) and AUL (auxiliary left turn) treatments be provided on the west and east approaches respectively. Given the relatively high volume of right turning traffic compared to left turning traffic in Link 7, separate left and right turn lanes should be provided in Link 7 at this intersection.
12	Link 5/Link 3/Link 4	A single lane roundabout be provided
13	Link 7/Link 6/Link 5	A single lane roundabout be provided

South West Development Precinct
Traffic Strategy

Connection to the Sea Lake Swan Hill Road.

The SWDP considered two options for the connection of the collector roads servicing the SWDP to the Sea Lake Swan Hill Road. These options are shown in Map 4 Connection Options to Sea Lake Swan Hill Road.

Map 4 Connection Options to Sea Lake Swan Hill Road.



The Sea Lake Swan Hill is an arterial road under the control and management of VicRoads and it is noted that under Clause 56.06 4 and Standard C17 that Council is required to comply with the Roads Corporation’s arterial road access management policies.

A search of the VicRoads website has not revealed any arterial road access management policies. (However, it is believed that the draft arterial road access management policy was prepared in 2006 but was never formally adopted. It has been assumed that the draft was used to prepare VicRoads internal arterial road access management guidelines.)

Option 1 is the preferred option for Council for the following reasons:

1. The urban design outcomes are superior for Option 1 because the interface of the development with the Sea Lake Swan Hill Road provides a more attractive visual presentation to the roads in terms of built form, landscaping and streetscape.
2. Will provide passive surveillance and promote a sense of safety for people as emphasised by the State Government’s Safer Design Guidelines 2006. It is also noted that Clause 15.01-4 of

South West Development Precinct
Traffic Strategy

the Planning Scheme requires planning to consider the recommendations of the Safer Design Guidelines 2006.

3. Provides a better distribution of traffic from the SWDP into Feldtmann Lane and Gray Street. The Traffic Impact Assessment undertaken for the SWDP states *"provides a superior road network compared to Option 2 and will not detrimentally affect the operation or capacity of the Sea Lake Swan Hill Road."*
4. This will also provide an opportunity to create a gateway entrance at the western entrance to Swan Hill.
5. Is consistent with the option indicated in the previous Outline Development Plan for the SWDP which was supported by VicRoads.

However, VicRoads' letter dated 8 October 2013 stating *"In August 2007 VicRoads agreed to create a new access point on Sea Lake –Swan Hill Road (arterial road) between Gray Street and Dead Horse Lane. VicRoads has now reconsidered this in order to uphold the functionality of the arterial road and to follow the Guidelines in Access Management which has been developed in recent years."*

VicRoads could not provide a copy of the document as it was only an internal draft policy and had not been through any public consultation.

While Council acknowledging the need to protect the existing and future functionality of arterial roads; Council believes that Option 1 does not detrimentally affect the functionality or operation or capacity of the Sea Lake - Swan Hill Road for the following reasons:

- The intersection spacing proposed Option 1 is not inconsistent with the spacing of existing intersections along the Sea Lake Swan Hill Road.
- There **are no known traffic management issues** with the existing spacing of intersections and therefore the addition of one more intersection will not detrimentally affect the functionality, operation and capacity of the Sea Lake Swan Hill Road.

Council is concerned that VicRoad's decision to reject Option 1 is based upon the following:

- An internal VicRoads Guideline which has not been subject public consultation and input and
- That the Guideline **does not distinguish** between urban arterials having different traffic volumes such that the access requirements for the Sea Lake Swan Hill Road with a current traffic count of 1095 vpd is the same as for an urban arterial having a traffic count of 6,000 to 10,000 vpd. There is a significant difference between the impacts of an additional intersection in both these situations and therefore Council believes that VicRoads should take this into account when assessing the preferred option of Council.

3.2.3 Pedestrian and Bicycle Network Connections

Map 3 showing the existing transport services shows that on the Sea Lake Swan Hill Road that the nearest shared path is some 430m east of the intersection of Gray Street and the Sea Lake Swan Hill Road. Developers will not be required to link the existing shared path network.

There is no master plan for pedestrian connections and it is recommended that Council should address this shortfall so that linkages to the Tower Hill residential development and the SWDP development can be identified as priorities and their provision planned future capital works programs.

Map 3 also there is a need to connect to the existing footpath networks in Yana Street, Coronation Avenue and Gray Street. This will be a requirement for individual developers as development takes place.

The new collector streets to be constructed are required to be constructed with a shared 2.5m path on both sides of the street.

This will meet the needs of parents and children riding to school but will not be used by cyclists cycling to and from work and other activities.

Some Council's recognising the differing requirements of parents and children riding to school and other serious cyclists have opted to replace one shared path with on road cycle lanes. The other 2.5m shared path is reclassified as a 2.5m wide footpath so that the shared path signage is not required.

It is recommended that Council gives serious consideration to this option.

3.2.4 Public Transport Connections

Map 3 shows the existing public bus routes going along some of the boundary streets to the SWDP.

The collector streets have been sized that are able to be used by buses and therefore as the SWDP develops both school bus routes and the public bus routes could be changed to service this development, subject to there being sufficient patronage to warrant such changes.

South West Development Precinct
Traffic Strategy

4. Information to be Provided Before Development Commences

To facilitate development within the SWDP the precinct has been subdivide into 6 sub-precincts. Map 5 Swan Hill South West Development Sub-precinct Plan shows the boundaries of the sub-precincts.

Map 5 Swan Hill South West Development Sub-precinct Plan



The following requirements must be met before development can take place within a sub-precinct.

South West Development Precinct
Traffic Strategy

A sub-precinct level Traffic Management Plan that is generally in consistent with the report titled "Swan Hill South West Development Precinct Traffic Impact Assessment" dated 20 June 2014) and this strategy

The Traffic Management Plan must address the following but not limited to:

- Appropriate access and circulation of vehicles on the existing and future road network.
- Appropriate integration with the existing or proposed subdivision of adjoining properties and sub-precincts including through alignment and configuration of the street network and landscape character.
- The identification of existing and proposed public transport routes, bus stops (as shown on the approved Swan Hill South West Development Plan) and associated infrastructure.
- The identification of existing and proposed pedestrian and cycling networks and shared paths
- Including provision for safe and convenient access to public transport infrastructure.
- The works necessary to accommodate traffic generated by the development and to mitigate the impact of that traffic on the development.
- Ensure that the road and intersection design must create efficient clearance of traffic, activity areas including around public facilities. The proposed road network should not overload or detrimentally affect existing or proposed residential streets and intersections.
- Adequate sight distance should be provided, especially where road alignment deflections occur at acute angles.
- Road layouts should provide natural traffic speed control, appropriate to the street category. The introduction of specific speed control devices should be considered only as a secondary option. Roundabouts may be implemented at intersections. However, care must be taken to provide adequate sized roundabouts and therefore road reservation boundaries must be designed to accommodate the radius required and sightlines.
- Road layouts should be designed for all road users appropriate to the street type, including service vehicles, emergency vehicles, waste collection vehicles and street-sweepers. Bus routes need to be considered when developing road networks and be based on the Department of Transport, Planning and Local Infrastructure publication titled 'Public Transport Guidelines for Land Use Development' (or a replacement document by the Department).
- Road reserve widths must be adequate for the intended road type, and should comply with requirements of the Local Government Infrastructure Design Association's Infrastructure Design Manual.
- Should include a typical cross-section of differing road types, detailing the intended function of the road, e.g. bike lanes, drainage, landscaping.

South West Development Precinct
Traffic Strategy

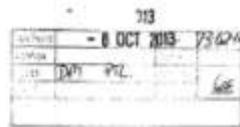
- Addresses all off-site traffic infrastructure requirements associated with the sub-precinct and is to be accompanied by a Road Safety Audit, prepared by an appropriately qualified person. The Plan must address any safety issues raised by the Audit.

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South West Development Precinct
Traffic Strategy

Appendix 1 VicRoads Response to Option 1 Sea Lake Swan Hill Road Intersection.

Doc ID 444505 Printed from Infovision EDMS at : 08:40AM on Wed 09 Oct 2013



Ms. Vige Sukumranjoh
Planning Team Leader
Swan Hill Rural City Council
PO Box 488
SWAN HILL, VIC 3588

3 October 2013
Customer Services
Telephone: 1434 0000
Our Ref: 00-2204796
Your Ref: 44716279-03-111
File No: 37430-000481

Dear Vige,

SWAN HILL DRAFT DEVELOPMENT PLAN – SOUTH WEST SWAN HILL

I refer to your meeting with VicRoads' officers and Department of Transport officers in Bendigo on 26 September 2013 in relation to the draft development plan for South West Swan Hill.

In August 2007 VicRoads agreed to create a new access point on Sea Lake-Swan Hill Road (arterial road) between Gray Street and Dead Horse Lane. VicRoads has now reconsidered this in order to uphold the functionality of the arterial road and to follow the Guidelines on Access Management which was developed in recent years.

VicRoads' position supports in principle what is shown in your draft plan (No:00 000 02/02 dated 09/09/2013) not to have an additional intersection point on Sea Lake-Swan Hill Road between Gray Street and Dead Horse Lane to minimise congestion and compromised future traffic lane configurations.

VicRoads also supports council's intention of channelling traffic to the west via a single access point on Dead Horse Lane. This access should be relocated well away from Sea Lake-Swan Hill Road/Dead Horse Lane intersection, preferably in the order of more than 300 metres to support future operational efficiency of both Dead Horse Lane and its intersection with the Swan Hill-Sea Lake Road.

VicRoads has no objection to the draft plan submitted by the council provided the above is considered and a detailed Transport Impact Assessment Report (TIAR) is prepared to VicRoads satisfaction taking into consideration the following:

- Predicted traffic generation by this development together with current and proposed future developments in the vicinity of Sea Lake-Swan Hill Road/Dead Horse Lane intersection to represent the traffic volume projected to 10 years after the development is fully completed.
- Mitigating works identified along Sea Lake-Swan Hill Road (eg: intersection treatments, any capacity improvements along the arterial road etc.) and must demonstrate how these



VicRoads 486/171 701 600

06/2



South West Development Precinct
Traffic Strategy

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-2-

Improvements assist the operation of the arterial road traffic flow and pedestrian movements along and across this section.

- Provision of pedestrian, bicycle and public bus facilities must be considered
- Staging of the development must identify trigger points for all identified improvement measures on and along the arterial road network, and identify a mechanism for the delivery of the mitigating works.

If you have any queries please contact Ravi Mylvaganam on 3434 5058.

Yours sincerely



DAVA GOVENDER
MANAGER PLANNING.

Draft for Public Exhibition



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SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

TRAFFIC IMPACT ASSESSMENT

PREPARED FOR

SWAN HILL RURAL CITY COUNCIL

20 JUNE, 2014

GRP16371R9263B

Swan Hill South West Development Precinct
Traffic Impact Assessment



TRAFFIC IMPACT ASSESSMENT

SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

Our Reference: GRP16371R9263B

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EXECUTIVE SUMMARY

Traffix Group was engaged by Swan Hill Rural City Council to undertake a traffic impact assessment of the proposed Swan Hill South West Development Precinct. Initially, the scope of the study comprised an assessment of the external traffic impacts, the forms of intersection treatments required and, on Sea Lake-Swan Hill Road, the trigger point for their provision. The scope of the study was extended to include an assessment of the relative traffic volumes from each land holding that travels through nominated intersections and along nominated roads. Initially, a yield of approximately 10.5 lots per hectare was investigated. The study was extended to "test" the impacts of a yield of approximately 14 lots per hectare.

Two layout options were considered: Option 1 - Sea Lake-Swan Hill Road Link, and Option 2 - Dead Horse Lane Link.

The outcomes of the study are summarised as follows:

1. Traffic Model

A traffic generation and distribution model was prepared for the Swan Hill South West Development Precinct, with the following key assumptions adopted:

- A residential density of approximately 10.5 lots per ha was adopted, resulting in 2,241 lots within the precinct.
- Daily traffic generation: 10 vte/household/day
- Peak hour traffic generation: 1 vte/household/hr
- Direction of travel:

AM peak hour:	"In":	20%	"Out":	80%
PM peak hour:	"In":	60%	"Out":	40%
- 5% of trips generated remain internal to the precinct.
- A design year of 2033 and a traffic growth of 1% per annum along Sea Lake-Swan Hill Road, as required by VicRoads.

2. Option 1 - Sea Lake-Swan Hill Road Link

2.1 Intersection Requirements

Dead Horse Lane/Link 4 (Intersection #1)

- It is recommended that a simple T-intersection be provided at the Yana Street/Werril Street/Dead Horse Lane intersection.

Yana Street/Werril Street/Dead Horse Lane (Intersection #2)

- It is recommended that the existing simple T-intersection continue to be provided at the Yana Street/Werril Street/Dead Horse Lane intersection.

Coronation Avenue/Wattie Street/Link 1 (Intersection #3)

- It is recommended that a single lane roundabout be provided at the Coronation/Wattie Street/Link 1 intersection.

Yana Street/Link 2/Link 3 (Intersection #4)

- It is recommended that a single lane roundabout be provided at the Yana Street/Link 2/Link 3 intersection.
- This should be provided when an intersection is first created (either as a T-intersection or as a cross road).

Gray Street/Yana Street (Intersection #5)

- It is recommended that the existing configuration of the Gray Street/Yana Street intersection continue to be provided.

Gray Street/Internal Road (Intersection #6)

- It is recommended that a simple T-intersection be provided at the Gray Street/Internal Road intersection provided with priority to Gray Street and separate left and right turn lanes in the internal road. A left turn lane should be provided in Gray Street, due to the relatively large volume of left turning traffic.



Gray Street/Feldtmann Lane (Intersection #7)

- It is recommended that a simple T-intersection continue to be provided at the Gray Street/Feldtmann Lane intersection. A separate right turn facility should be provided in Gray Street and separate left and right turn lanes in Feldtmann Lane. A left turn lane in Gray Street is not warranted on the basis of the predicted left turn volumes.

Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)

- It is recommended that the intersection remain under roundabout control. No upgrades are required from a capacity perspective.
- As no upgrades are required from a capacity perspective, there is no "trigger point".

Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive (Intersection #9)

- It is recommended that the intersection remain in its current form.
- As no upgrades are required from a capacity perspective, there is no "trigger point".

Sea Lake-Swan Hill Road/Link 7(1) (Intersection #10)

- It is recommended that BAR (basic right turn) and AUL (auxiliary left turn) treatments be provided on the west and east approaches respectively. Given the relatively high volume of right turning traffic compared to left turning traffic in Link 7, separate left and right turn lanes should be provided in Link 7 at this intersection.
- The need for the AUL treatment in Sea Lake-Swan Hill Road is linked to the volume of left turning traffic. Initially, a BAL (basic left turn) treatment may only be necessary, with an upgrade to an AUL treatment when traffic volumes warrant it. In terms of a "trigger point" for its provision, guidance is provided by Austroads Figure 4.9(b). A PM peak hour volume of 60 vph turning left would be appropriate, equivalent to approximately 130 residential lots each using this intersection in that period.
- It may be that it is more convenient to initially construct this intersection with the AUL treatment.

Link 5/Link 3/Link 4 (Intersection #12)

- It is recommended that a single lane roundabout be provided at the Link 5/Link3/Link 4 intersection.

Link 7/Link 6/Link 5 (Intersection #13)

- It is recommended that a single lane roundabout be provided at the Link 5/Link6/Link 5 intersection.

2.2 Apportionment of Traffic Generation to Land Holders

Intersections

Table A: *Apportionment of Traffic - Intersections (Option 1 - Sea Lake-Swan Hill Road Link)*

Landowner Number	Proportion of Traffic Through Intersection Attributable to Landowner						
	Int #3	Int #4	Int #6	Int #7	Int #10	Int #12	Int #13
1	0.41%	0.33%	2.11%	4.47%	65.60%	0.00%	0.44%
2	0.00%	0.00%	9.65%	10.22%	27.32%	0.00%	14.73%
3	0.06%	0.05%	2.73%	5.41%	1.19%	0.00%	0.69%
4	4.40%	4.35%	7.34%	21.63%	0.56%	5.10%	12.84%
5	17.13%	27.61%	0.00%	50.36%	1.89%	86.19%	61.04%
6	0.00%	0.00%	4.24%	0.02%	0.04%	0.00%	0.00%
7	0.00%	0.00%	29.69%	0.12%	0.26%	0.00%	0.00%
8	0.00%	0.00%	2.12%	0.01%	0.02%	0.00%	0.00%

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9	0.00%	0.00%	2.54%	0.01%	0.02%	0.00%	0.00%
10	0.00%	0.00%	34.78%	0.15%	0.30%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	10.45%	22.10%	0.00%	0.00%	0.56%	0.22%	0.31%
13	1.87%	1.56%	0.12%	0.05%	0.20%	0.05%	0.05%
14	4.81%	13.97%	0.00%	7.23%	0.52%	7.59%	8.64%
15	0.04%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%
16	2.08%	8.67%	0.00%	0.00%	0.22%	0.11%	0.12%
17	0.21%	0.60%	0.00%	0.31%	0.02%	0.33%	0.37%
18	1.29%	7.30%	0.00%	0.00%	0.00%	0.00%	0.00%
19	1.94%	9.37%	0.00%	0.00%	0.21%	0.00%	0.12%
20	0.23%	1.02%	0.00%	0.00%	0.03%	0.00%	0.01%
21	0.37%	1.60%	0.00%	0.00%	0.04%	0.02%	0.02%
22	0.13%	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%
23	7.36%	0.06%	0.00%	0.00%	0.15%	0.07%	0.08%
24	3.31%	0.15%	0.00%	0.00%	0.21%	0.10%	0.05%
25	10.95%	0.09%	0.00%	0.00%	0.26%	0.00%	0.09%
26	10.16%	0.09%	0.00%	0.00%	0.21%	0.00%	0.12%
27	21.95%	0.19%	0.00%	0.00%	0.12%	0.22%	0.25%
28	0.83%	0.01%	0.00%	0.00%	0.01%	0.01%	0.01%
29	0.00%	0.00%	2.54%	0.01%	0.02%	0.00%	0.00%
30	0.00%	0.00%	2.12%	0.01%	0.02%	0.00%	0.00%

Links

Table B: Apportionment of Traffic - Road Links (Option 1 - Sea Lake-Swan Hill Road Link)

Landowner Number	Proportion of Traffic Along Link Attributable to Landowner							
	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7(1)	Link 8
1	0.61%	0.88%	0.33%	0.00%	0.27%	0.14%	49.98%	0.00%
2	0.00%	0.00%	0.00%	0.00%	0.00%	6.50%	40.72%	0.00%
3	0.09%	0.12%	0.05%	0.00%	0.04%	3.34%	1.76%	0.00%
4	6.53%	9.38%	8.49%	0.00%	11.51%	19.51%	0.59%	0.00%

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5	25.26%	35.83%	53.87%	91.60%	75.74%	61.33%	2.84%	0.00%
6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	15.51%	22.26%	21.74%	0.00%	0.35%	0.03%	0.85%	0.00%
13	2.78%	3.99%	0.08%	0.00%	0.07%	0.01%	0.15%	0.00%
14	7.14%	10.25%	13.71%	8.05%	10.66%	8.68%	0.78%	0.00%
15	0.05%	0.08%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%
16	3.09%	4.44%	0.18%	0.00%	0.15%	0.01%	0.33%	0.00%
17	0.31%	0.44%	0.59%	0.34%	0.46%	0.37%	0.03%	0.00%
18	1.92%	2.75%	0.00%	0.00%	0.00%	0.00%	0.00%	90.63%
19	2.88%	6.61%	0.09%	0.00%	0.07%	0.01%	0.32%	0.00%
20	0.35%	0.50%	0.01%	0.00%	0.01%	0.00%	0.04%	0.00%
21	0.55%	0.78%	0.03%	0.00%	0.03%	0.00%	0.06%	0.00%
22	0.20%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	9.38%
23	10.92%	0.17%	0.12%	0.00%	0.10%	0.01%	0.23%	0.00%
24	4.90%	0.25%	0.17%	0.00%	0.10%	0.01%	0.23%	0.00%
25	16.25%	0.25%	0.09%	0.00%	0.06%	0.01%	0.32%	0.00%
26	0.16%	0.23%	0.08%	0.00%	0.07%	0.01%	0.31%	0.00%
27	0.34%	0.49%	0.37%	0.00%	0.31%	0.03%	0.43%	0.00%
28	0.18%	0.02%	0.01%	0.00%	0.01%	0.00%	0.02%	0.00%
29	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
30	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



3. Option 2 - Dead Horse Lane Link

There is very little difference in the predicted traffic volumes for the majority of intersections and link roads as a result of replacing a connection to Sea Lake-Swan Hill Road (Option 1) by a connection to Dead Horse Lane (Option 2). Intersections 7, 8, 9 and 11 and links 6 and 7 are most affected by this change and therefore these intersections have been assessed. The remainder of the intersections have the treatments recommended for Option 1.

3.1 Intersection Requirements

Gray Street/Feldtmann Lane (Intersection #7)

- It is recommended that a simple T-intersection continue to be provided at the Gray Street/Feldtmann Lane intersection be provided with priority to Gray Street, a right turn facility in Gray Street (due to the large volume of right turning traffic) and separate left and right turn lanes in Feldtmann Lane.

Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)

- It is recommended that the intersection remain under roundabout control. No upgrades are required from a capacity perspective.
- As no upgrades are required from a capacity perspective, there is no "trigger point".

Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive (Intersection #9)

- It is recommended that BAR (basic right turn) and BAL (basic left turn) treatments be provided on the west and east approaches respectively. No particular treatment is required for the left and right turn lanes in Dead Horse Lane at this intersection.
- The existing volumes warrant the provision of BAR and BAL turn treatments, as do the post development volumes. There is therefore no "trigger point" for an upgrade of the right turn treatment as a result of the Swan Hill South West Development Precinct.

Dead Horse Lane/Link 7(2) (Intersection #11)

- It is recommended that a simple T-intersection be provided at the Dead Horse Lane/Link 7(2) intersection, with priority to Dead Horse Lane.

3.2 Apportionment of Traffic Generation to Land Holders

Intersections

Table C: Apportionment of Traffic - Intersections (Option 2 - Dead Horse Lane Link)

Landowner Number	Proportion of Traffic Through Intersection Attributable to Landowner						
	Int #3	Int #4	Int #6	Int #7	Int #11	Int #12	Int #13
1	0.37%	0.30%	12.09%	19.77%	4.03%	0.35%	0.28%
2	0.52%	0.42%	16.85%	27.26%	31.67%	0.49%	39.15%
3	0.08%	0.06%	2.51%	4.07%	1.07%	0.02%	1.42%
4	4.38%	4.33%	5.89%	13.24%	4.50%	5.06%	9.02%
5	17.05%	27.49%	0.00%	30.82%	21.94%	85.45%	42.89%
6	0.00%	0.00%	3.40%	0.01%	0.00%	0.00%	0.00%
7	0.00%	0.00%	23.80%	0.08%	0.00%	0.00%	0.00%
8	0.00%	0.00%	1.70%	0.01%	0.00%	0.00%	0.00%
9	0.00%	0.00%	2.04%	0.01%	0.00%	0.00%	0.00%

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10	0.00%	0.00%	27.88%	0.09%	0.00%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	10.40%	22.01%	0.00%	0.01%	6.25%	0.22%	0.22%
13	1.86%	1.55%	0.09%	0.03%	1.14%	0.05%	0.04%
14	4.79%	13.91%	0.00%	4.42%	6.00%	7.53%	6.07%
15	0.04%	0.15%	0.00%	0.00%	0.04%	0.00%	0.00%
16	2.07%	8.63%	0.00%	0.00%	2.53%	0.11%	0.09%
17	0.21%	0.60%	0.00%	0.19%	0.26%	0.32%	0.26%
18	1.29%	7.27%	0.00%	0.00%	2.49%	0.00%	0.00%
19	1.93%	9.34%	0.00%	0.00%	2.49%	0.00%	0.08%
20	0.23%	1.01%	0.00%	0.00%	0.30%	0.00%	0.01%
21	0.37%	1.59%	0.00%	0.00%	0.47%	0.02%	0.02%
22	0.13%	0.75%	0.00%	0.00%	0.26%	0.00%	0.00%
23	7.33%	0.06%	0.00%	0.00%	1.76%	0.07%	0.06%
24	3.29%	0.15%	0.00%	0.00%	2.44%	0.10%	0.04%
25	10.90%	0.09%	0.00%	0.00%	2.61%	0.00%	0.09%
26	10.11%	0.09%	0.00%	0.00%	2.40%	0.00%	0.08%
27	21.84%	0.19%	0.00%	0.00%	5.19%	0.22%	0.17%
28	0.83%	0.01%	0.00%	0.00%	0.17%	0.01%	0.01%
29	0.00%	0.00%	2.04%	0.01%	0.00%	0.00%	0.00%
30	0.00%	0.00%	1.70%	0.01%	0.00%	0.00%	0.00%

Links

Table D: Apportionment of Traffic - Road Links (Option 2 - Dead Horse Lane Link)

Landowner Number	Proportion of Traffic Along Link Attributable to Landowner							
	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7(2)	Link 8
1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	0.11%	0.16%	0.07%	0.00%	0.06%	2.82%	3.25%	1.09%
4	6.48%	9.28%	8.39%	0.00%	11.39%	12.98%	0.36%	4.57%
5	25.07%	35.45%	53.27%	91.60%	75.01%	40.81%	1.71%	22.28%

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6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	15.39%	22.03%	21.50%	0.00%	0.34%	0.02%	0.52%	5.94%
13	2.76%	3.95%	0.08%	0.00%	0.07%	0.00%	0.09%	1.15%
14	7.09%	10.15%	13.56%	8.05%	10.55%	5.78%	0.48%	6.09%
15	0.05%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%
16	3.07%	4.39%	0.18%	0.00%	0.15%	0.01%	0.20%	2.57%
17	0.30%	0.43%	0.58%	0.34%	0.45%	0.25%	0.02%	0.26%
18	1.90%	2.72%	0.00%	0.00%	0.00%	0.00%	0.00%	1.51%
19	2.85%	6.54%	0.09%	0.00%	0.07%	0.01%	0.20%	2.52%
20	0.34%	0.49%	0.01%	0.00%	0.01%	0.00%	0.02%	0.30%
21	0.54%	0.77%	0.03%	0.00%	0.03%	0.00%	0.04%	0.48%
22	0.20%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.16%
23	10.84%	0.17%	0.12%	0.00%	0.10%	0.01%	0.14%	1.78%
24	4.87%	0.24%	0.16%	0.00%	0.10%	0.01%	0.09%	2.48%
25	16.13%	0.25%	0.09%	0.00%	0.08%	0.01%	0.21%	2.65%
26	0.16%	0.23%	0.08%	0.00%	0.07%	0.01%	0.19%	2.44%
27	0.34%	0.49%	0.36%	0.00%	0.30%	0.02%	0.41%	5.26%
28	0.18%	0.02%	0.01%	0.00%	0.01%	0.00%	0.01%	0.17%
29	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
30	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

4. Option 1 v Option 2

Option 1 (a connection to Sea Lake-Swan Hill Road) provides a superior road network compared to Option 2 (a connection to Dead Horse Lane) and will not detrimentally affect the operation or capacity of Sea Lake-Swan Hill Road. Option 1 is the preferred solution.



5. *Increased Residential Density*

The single lane roundabouts recommended at intersections 3 (Coronation Avenue/Wattie Street/Link 1), 4 Yana Street/Link 2/Link 3), 12 (Link 3/Link 4/Link 5) and 13 ((Link 5/Link 6/Link 7) will have the capacity to accommodate the extra traffic generated by a higher residential density.

The higher density will increase traffic at intersections 5 (Grey Street/Yana Street), 7 (Gray Street/Feldtmann Lane (Link 6)) and 8 Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive). Additional capacity analysis was undertaken to determine the impact the higher density will have on the operation and form of these intersections.

These analyses showed that the recommended treatments remain appropriate, albeit that the intersections will operate at lower levels of service. It is noted that the east approach in Gray Street is sufficiently wide to enable through vehicles to pass left turning vehicles, and on the west approach there is scope to ban kerbside parking to allow through traffic to pass stationary right turning traffic. This action should be considered by Council separate to this study.

6. *Comments on Specific Items*

Distance from Sea Lake-Swan Hill Road of First Intersection on Dead Horse Lane

VicRoads' requirement to offset a local road intersection on Dead Horse Lane more than 800m from Sea Lake Swan Hill Road is excessive. There will be low volumes of traffic through this intersection in the design year (2033) and queues on the Dead Horse Lane approach will be one vehicle long. The first intersection to the south will carry low volumes of traffic, and a simple T-intersection is all that is required.

The property on the southeast corner of this intersection has a frontage to Dead Horse Lane of some 135m and is to be retained. The first intersection to the south of Sea Lake-Swan Hill Road will therefore be greater than this distance from the main road, which is more than sufficient to ensure that both intersections can operate efficiently in the future.

Access to Sea Lake-Swan Hill Road

The intersections of Gray Street and Dead Horse Lane with Sea Lake-Swan Hill Road are separated by approximately 750m. There is therefore more than sufficient road length in which to create an intersection if so desired. A connection to Sea Lake-Swan Hill Road provides a superior road network whilst not detrimentally affecting the operation or capacity of Sea Lake-Swan Hill Road.

Recommended Speed Zones

The setting of speed zones on the declared road network is the responsibility of VicRoads and takes into account many factors. The assessment of the intersection requirements at Dead Horse Lane has been undertaken on the basis that, as the urban edge of Swan Hill would have moved to this location, a speed limit of 80 km/h is appropriate.



1. INTRODUCTION

Traffix Group was engaged by Swan Hill Rural City Council to undertake a traffic impact assessment of the proposed Swan Hill South West Development Precinct. Initially, the scope of the study comprised an assessment of the external traffic impacts, the forms of intersection treatments required and, on Sea Lake-Swan Hill Road, the trigger point for their provision. The scope of the study was extended to include an assessment of the relative traffic volumes from each land holding that travels through nominated intersections and along nominated roads. Initially, a yield of approximately 10.5 lots per hectare was investigated. The study was extended to "test" the impacts of a yield of approximately 14 lots per hectare.

2. SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

2.1. LOCATION

The development area is bounded by Sea Lake-Swan Hill Road, Gray Street, Yana Street and Dead Horse Lane. It is located at the southwest edge of the urban development of the Swan Hill township. The development area covers approximately 241 hectares. A locality plan is shown in Figure 1.

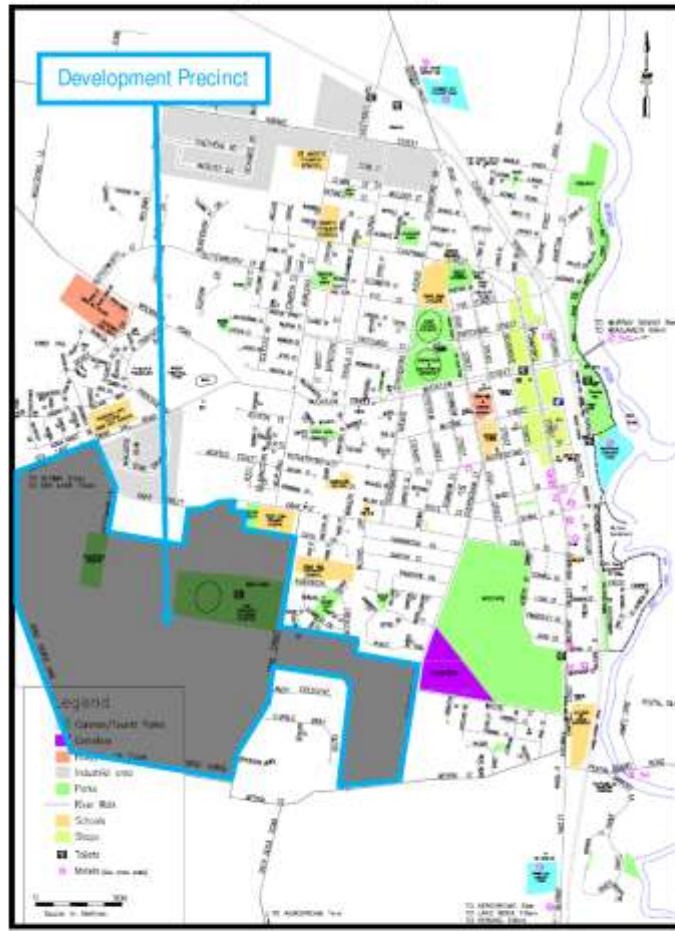


Figure 1: Swan Hill South West Development Precinct Locality Plan



2.2. ZONING

The development area comprises a number of zones, principally Farming Zone, but including Low Density Residential Zone and Public Park & Recreation Zone, as shown in the zoning map at Figure 2.



Figure 2: Zoning Map



2.3. DEVELOPMENT PLAN

The Swan Hill South West Development Precinct plan is shown in Figure 3.

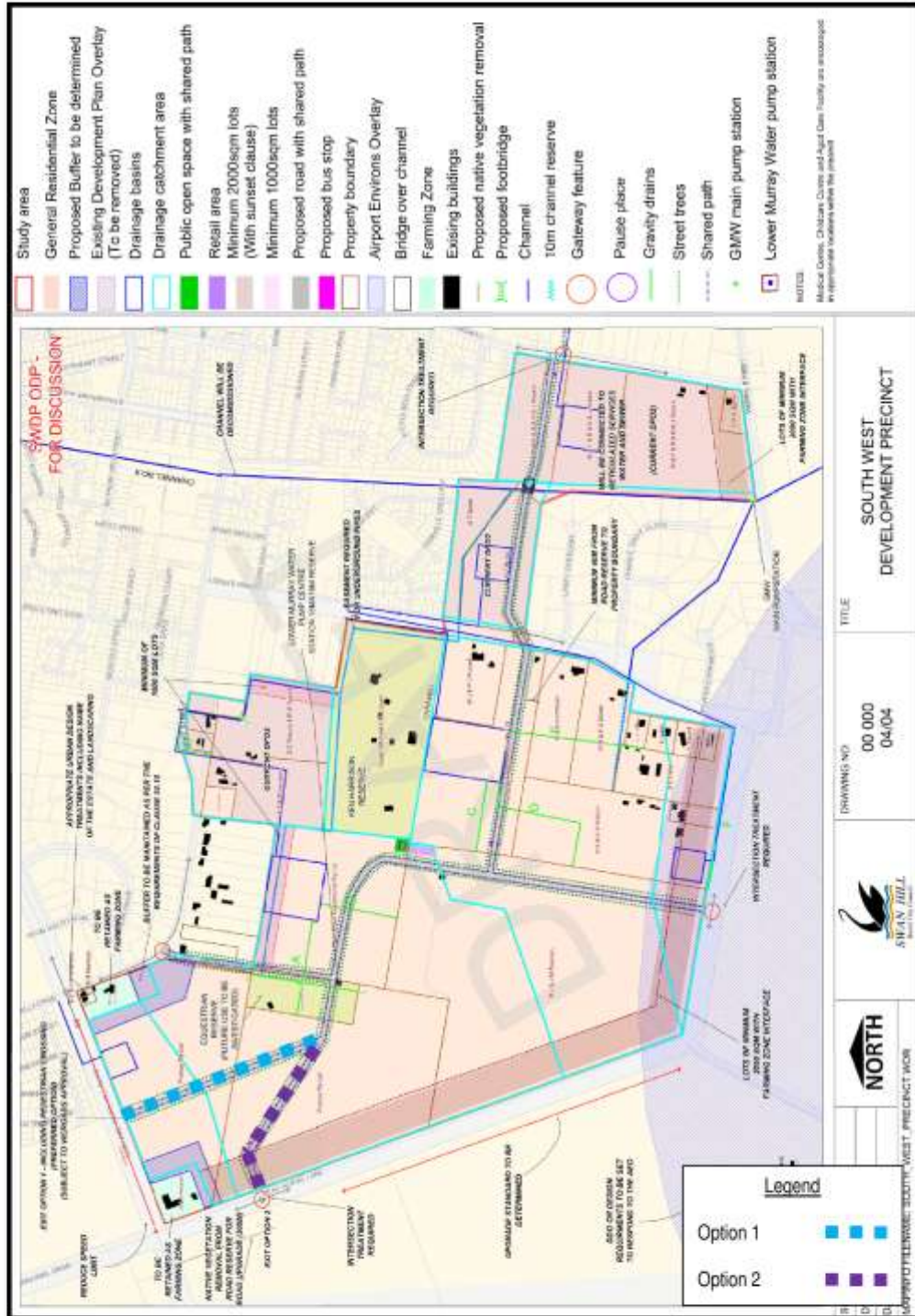


Figure 3: Swan Hill South West Development Precinct Plan



The Swan Hill South West Development Precinct Plan shows two access options in the northwest corner of the precinct:

- Option 1: Connection to Sea Lake-Swan Hill Road; and
- Option 2: Connection to Dead Horse Lane.

The remainder of the Development Precinct Plan is the same for both options.

2.4. EXISTING TRAFFIC VOLUMES

Swan Hill Rural City Council undertook a number of traffic surveys within the precinct area in November, 2013. These comprised turning movement counts and automatic tube counts. The results are shown in Figures 4 to 7 and Table 1.

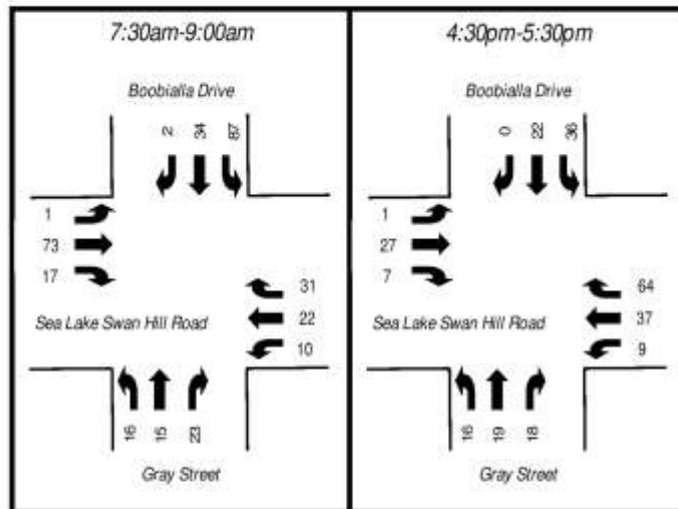


Figure 4: Existing Traffic Volumes - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive

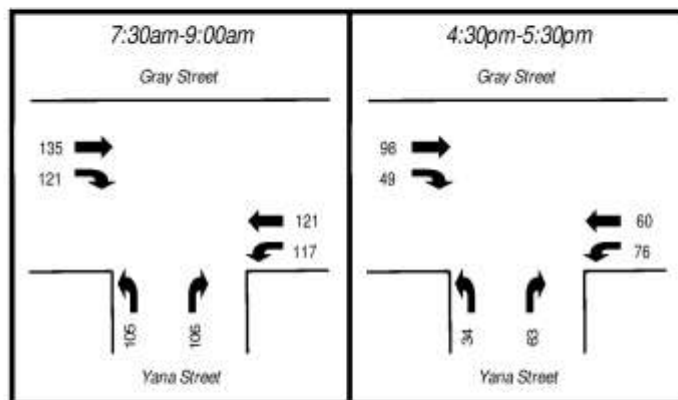


Figure 5: Existing Traffic Volumes - Gray Street/Yana Street

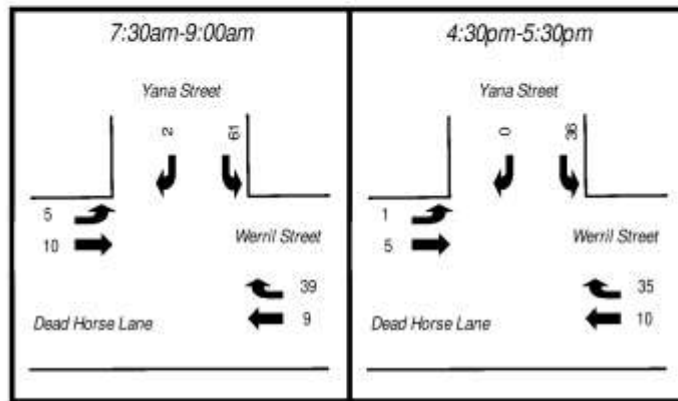


Figure 6: Existing Traffic Volumes - Yana Street/Werril Street/Dead Horse Lane

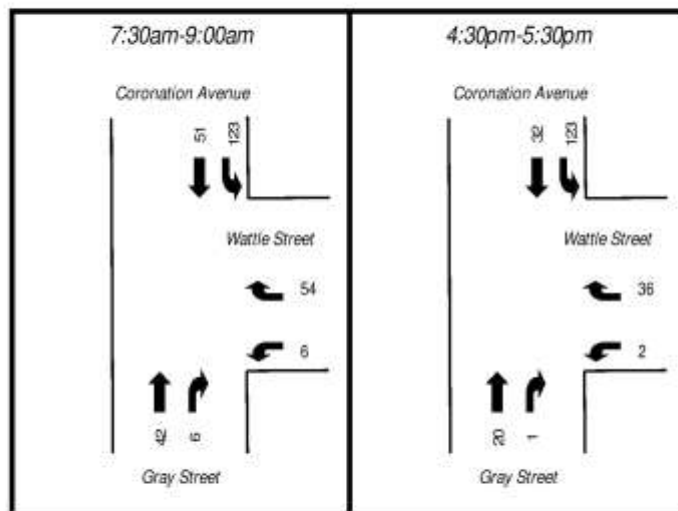


Figure 7: Existing Traffic Volumes - Coronation Avenue/Wattie Street



Table 1: Existing Traffic Volumes

Period	Tues 29/10/13	Wed 30/10/13	Thurs 31/10/13	Fri 1/11/13	Mon 4/11/13	Average
<i>Dead Horse Lane, South of Sea Lake Road</i>						
8:00am-9:00am	4	2	5	3	2	3
5:00pm-6:00pm	3	5	3	2	3	3
Daily	33	43	46	34	35	38
<i>Dead Horse Lane, West of Yana Street</i>						
8:00am-9:00am	14	7	15	10	3	10
5:00pm-6:00pm	15	21	9	12	8	13
Daily	139	149	150	124	111	141
<i>Gray Street, Between Murlong Street and Sea Lake Road</i>						
8:00am-9:00am	77	101	81	76	66	80
5:00pm-6:00pm	68	100	77	70	62	75
Daily	800	900	648	931	754	807
<i>Sea Lake Road, Between Gray Street and Dead Horse Lane</i>						
8:00am-9:00am	92	105	92	78	69	87
5:00pm-6:00pm	72	79	73	68	65	71
Daily	932	1,039	1,021	1,087	971	1,010
<i>Werril Street, Between Yana Street and Back Boga Road</i>						
8:00am-9:00am	83	91	99	85	79	87
5:00pm-6:00pm	92	81	93	97	77	88
Daily	842	916	918	917	768	872
Period	Thurs 7/11/13	Fri 8/11/13	Mon 11/11/13	Tues 12/11/13	Wed 13/11/13	Average
<i>Coronation Avenue, North of Wattie Street</i>						
8:00am-9:00am	176	149	159	157	166	161
5:00pm-6:00pm	174	170	181	175	185	177
Daily	1,557	1,702	1,649	1,665	1,700	1,655

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<i>Period</i>	<i>Thurs 7/11/13</i>	<i>Fri 8/11/13</i>	<i>Mon 11/11/13</i>	<i>Tues 12/11/13</i>	<i>Wed 13/11/13</i>	<i>Average</i>
<i>Coronation Avenue, South of Wattie Street</i>						
8:00am-9:00am	176	149	159	157	166	161
5:00pm-6:00pm	174	170	181	175	185	177
Daily	1,557	1,702	1,649	1,665	1,700	1,655
<i>Coronation Avenue, North of Wattie Street</i>						
8:00am-9:00am	104	85	91	91	88	92
5:00pm-6:00pm	93	91	81	78	75	84
Daily	773	830	791	825	805	805
<i>Yana Street, South of Ken Harrison Reserve Entrance</i>						
8:00am-9:00am	116	117	121	119	125	120
5:00pm-6:00pm	117	113	125	114	154	125
Daily	1,125	1,284	1,135	1,225	1,269	1,208
<i>Yana Street, North of Werril Street/Dead Horse Lane</i>						
8:00am-9:00am	22	15	9	13	10	14
5:00pm-6:00pm	10	8	15	6	14	11
Daily	140	148	119	119	130	131
<i>Werril Street, East of Back Boga Road</i>						
8:00am-9:00am	99	91	96	95	87	94
5:00pm-6:00pm	90	79	85	86	84	85
Daily	762	886	761	844	837	818
<i>Period</i>	<i>Fri 15/11/13</i>	<i>Mon 18/11/13</i>	<i>Tues 19/11/13</i>	<i>Wed 20/11/13</i>	<i>Thurs 21/11/13</i>	<i>Average</i>
<i>Sea Lake Road, West of Dead Horse Lane</i>						
8:00am-9:00am	81	94	91	76	-	86
5:00pm-6:00pm	65	58	74	73	-	68
Daily	1,065	842	935	898	-	935



3. SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT TRAFFIC GENERATION MODEL

A spreadsheet traffic generation and distribution model was prepared for the Swan Hill South West Development Precinct, whereby the precinct was divided into a number of discrete areas and the traffic generated by each area was assigned to the road network.

The following assumptions were adopted:

- Residential density:
 - "Standard" lot sizes: Approximately 10.5 households per ha
 - Low density lot sizes: 1,000m² and 2,000m²
- Residential traffic generation
 - Daily: 10 vte/household/day
 - Peak hour: 1 vte/household/hr
 - AM peak hour: "In": 20% "Out": 80%
 - PM peak hour: "In": 60% "Out": 40%
- Trip purpose:
 - Internal: 5%
 - External:
 - Work: 25.6%
 - School: 11.4%
 - Shopping: 34.2%
 - Other: 23.8%
- General trip distribution:

Purpose	To/From North	To/From South	To/From East	To/From West
Internal	0%	0%	0%	0%
Work	50%	0%	50%	0%
School	100%	0%	0%	0%
Shopping	50%	0%	50%	0%
Other	45%	5%	45%	5%

The model assumed that the traffic generated by the childcare centre, retail area and "village green" located within the middle of the precinct was all internal traffic.

- Applying this general trip distribution to the individual trip purpose produced the following adopted average external trip distributions:
 - To/from north: 58%
 - To/from south: 1%
 - To/from east: 35%
 - To/from west: 1%
 - Internal: 5%

VicRoads required traffic along Sea Lake-Swan Hill Road to be grown at a rate of 1% per annum to a design year of 2033 (being 10 years until full development of the precinct plus a further 10 years). Whilst full development of the precinct may take longer than 10 years, this design year is considered to be appropriate in light of the adopted growth rate for Sea Lake-Swan Hill Road traffic, which is likely to be high given the lack of future traffic generators to the west of the precinct.



4. OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK

4.1. DESIGN TRAFFIC VOLUMES (OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK)

Figure 8 identifies the intersection and road numbers used in this report for Option 1.

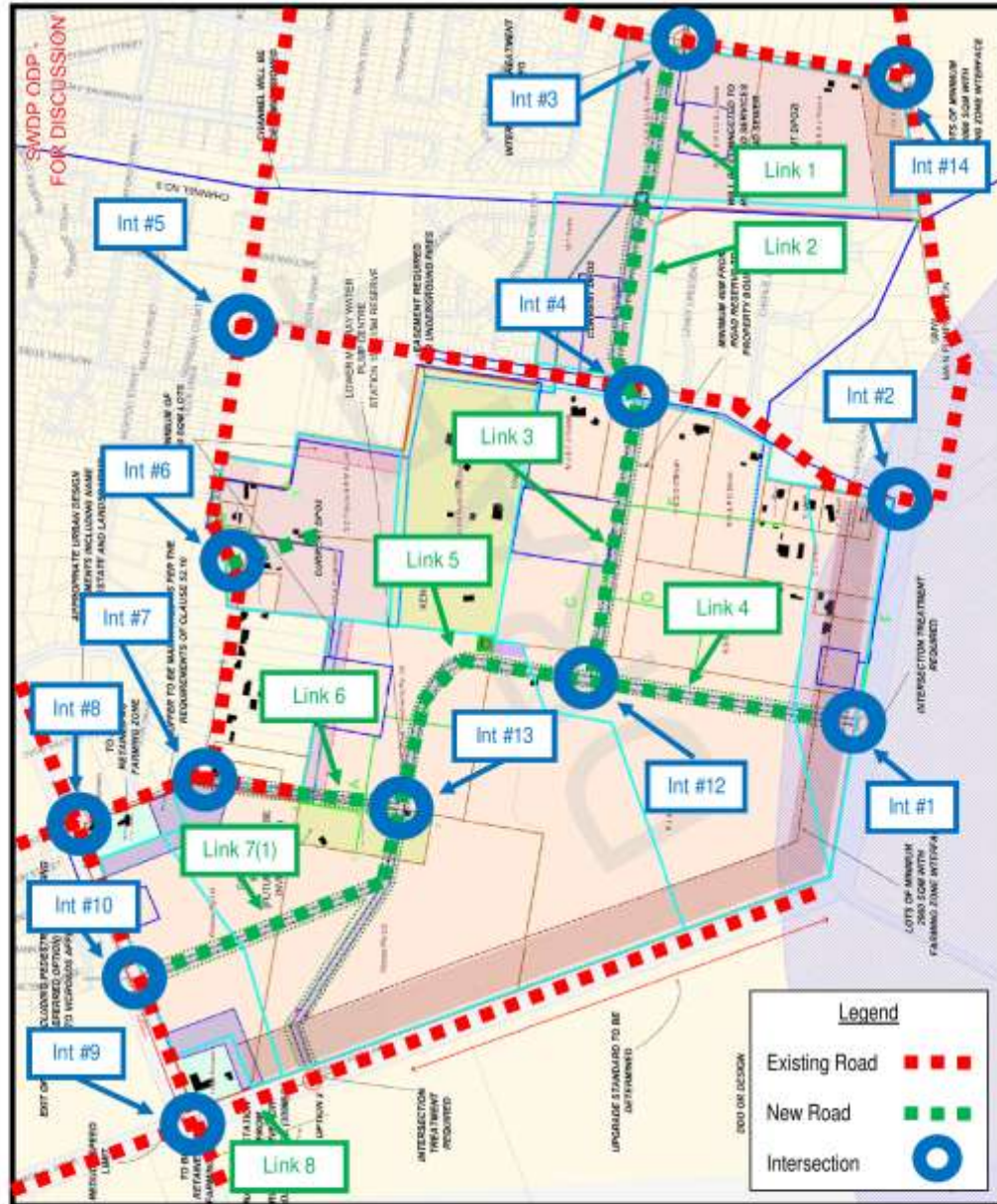


Figure 8: Intersection and Road Identification
(Option 1 - Sea Lake-Swan Hill Road Link)

The predicted precinct daily traffic volumes arising from the traffic model for Option 1 - Sea Lake-Swan Hill Road Link are shown in Figure 9.

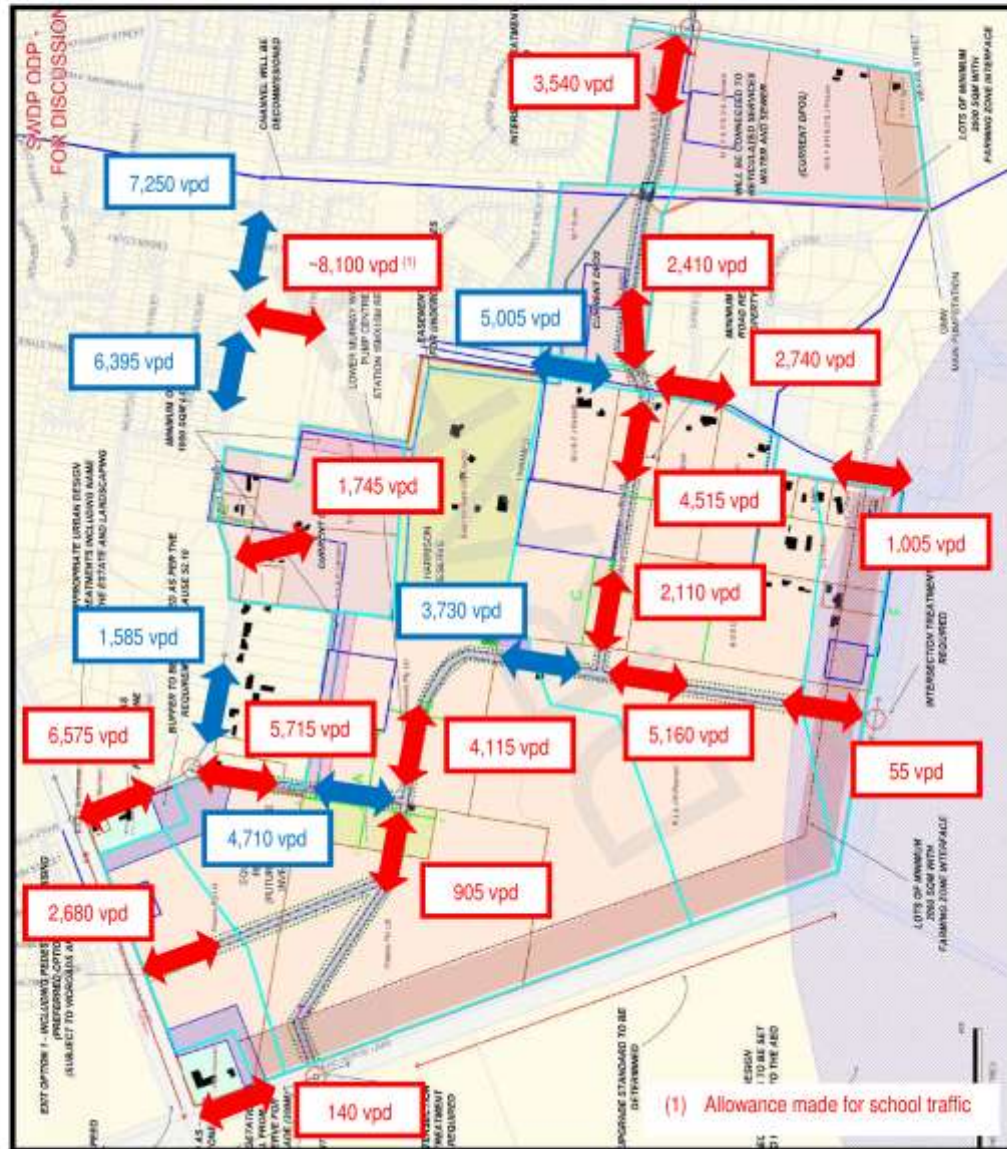
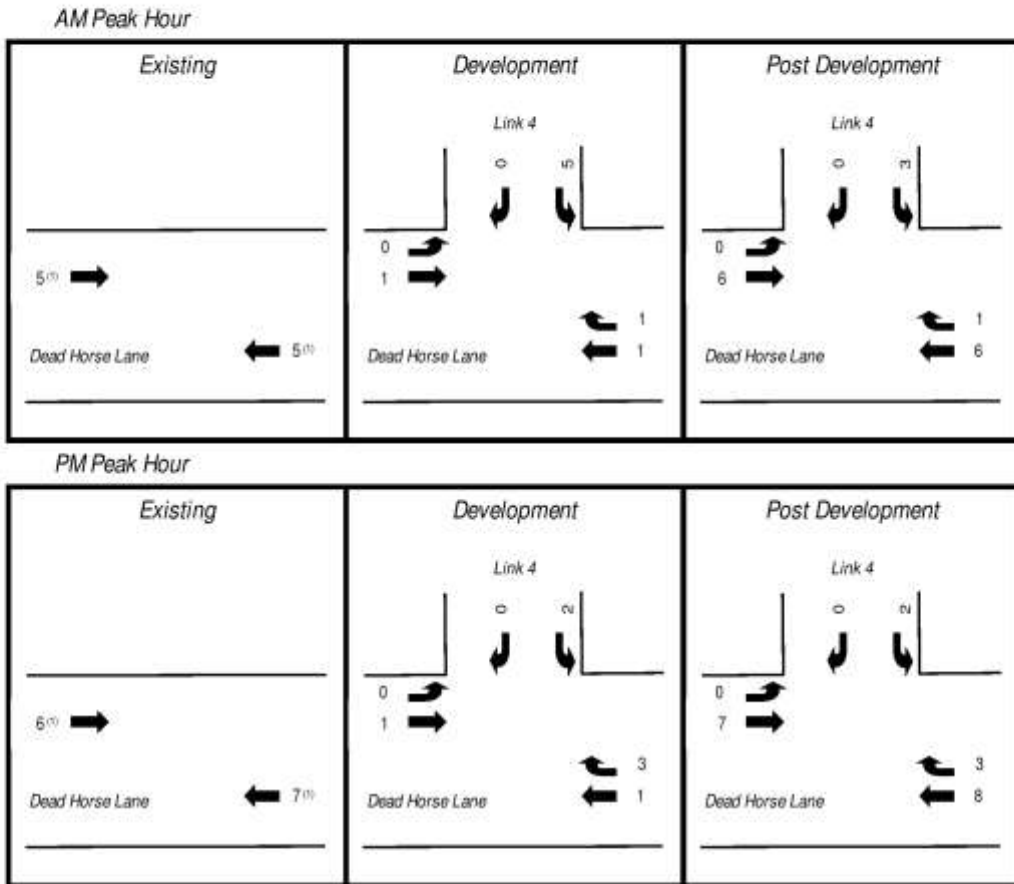


Figure 9: Predicted Precinct Daily Traffic Volumes (Option 1 - Sea Lake-Swan Hill Road Link)

The traffic model also allowed the peak hour turning volumes to be determined at critical locations. These are shown in Figures 10 to 21, which also show existing volumes and the total post-development volumes (including growth of traffic along Sea Lake-Swan Hill Road, as required by VicRoads).



(1) Assumed equally split northbound/southbound (based on directional split at Yana Street).

Figure 10: Traffic Volumes - Dead Horse Lane/Link 4 (Intersection #1)
(Option 1 - Sea Lake-Swan Hill Road Link)

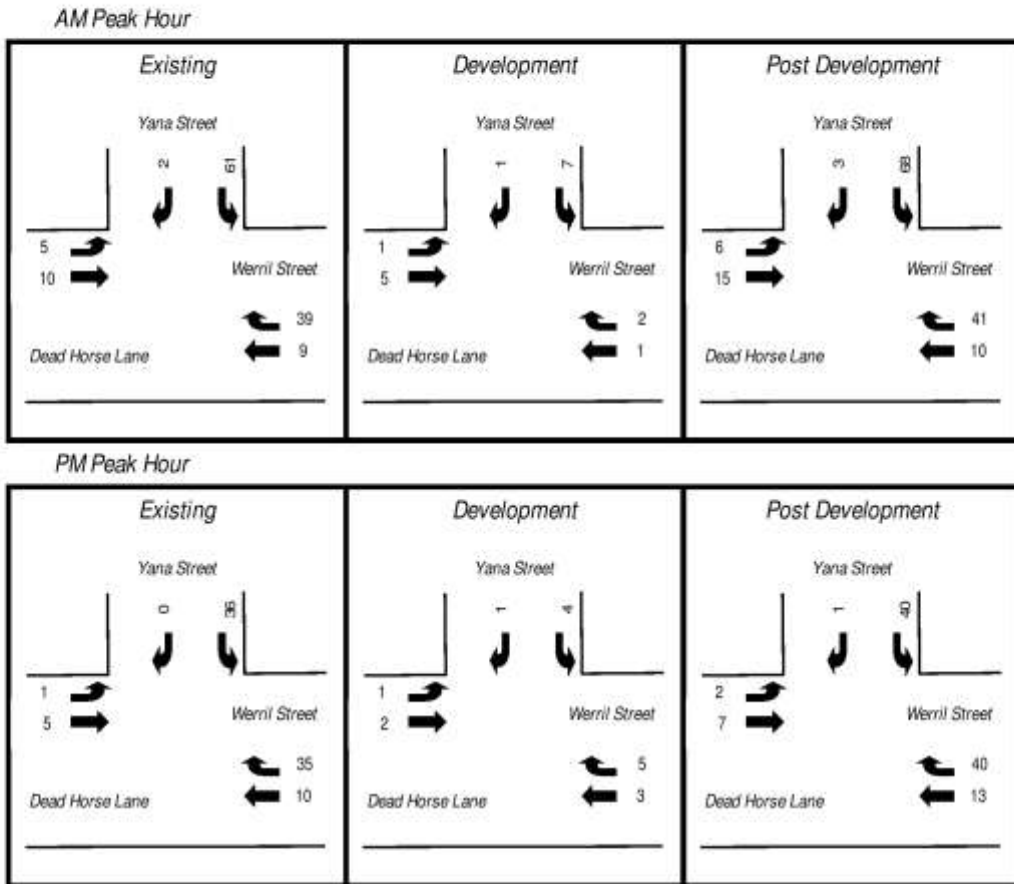
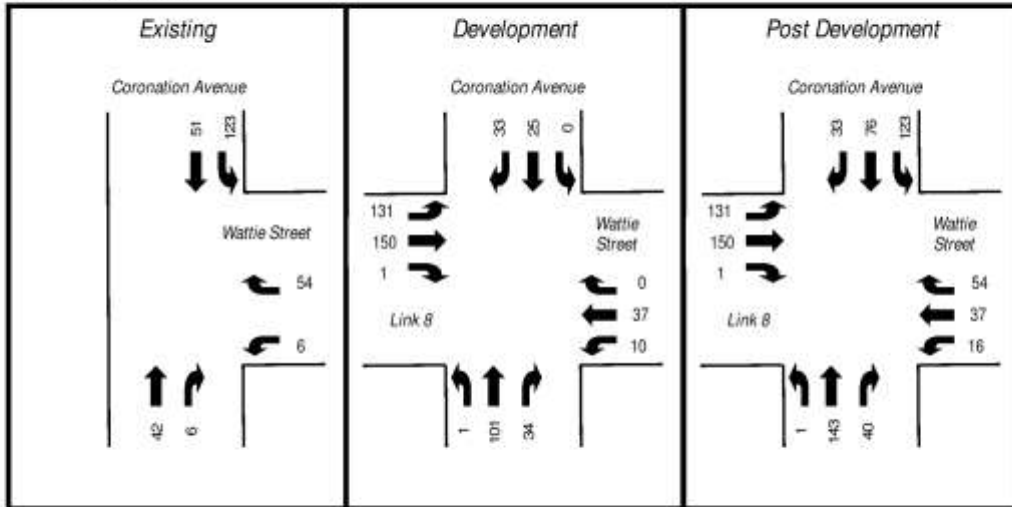


Figure 11: Traffic Volumes - Yana Street/ Werril Street/Dead Horse Lane (Intersection #2)
(Option 1 - Sea Lake-Swan Hill Road Link)



AM Peak Hour



PM Peak Hour

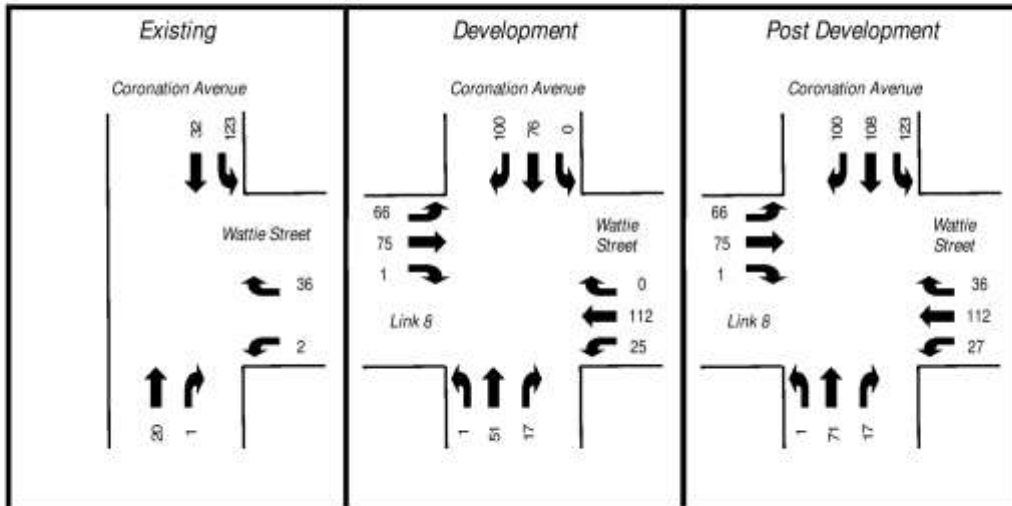
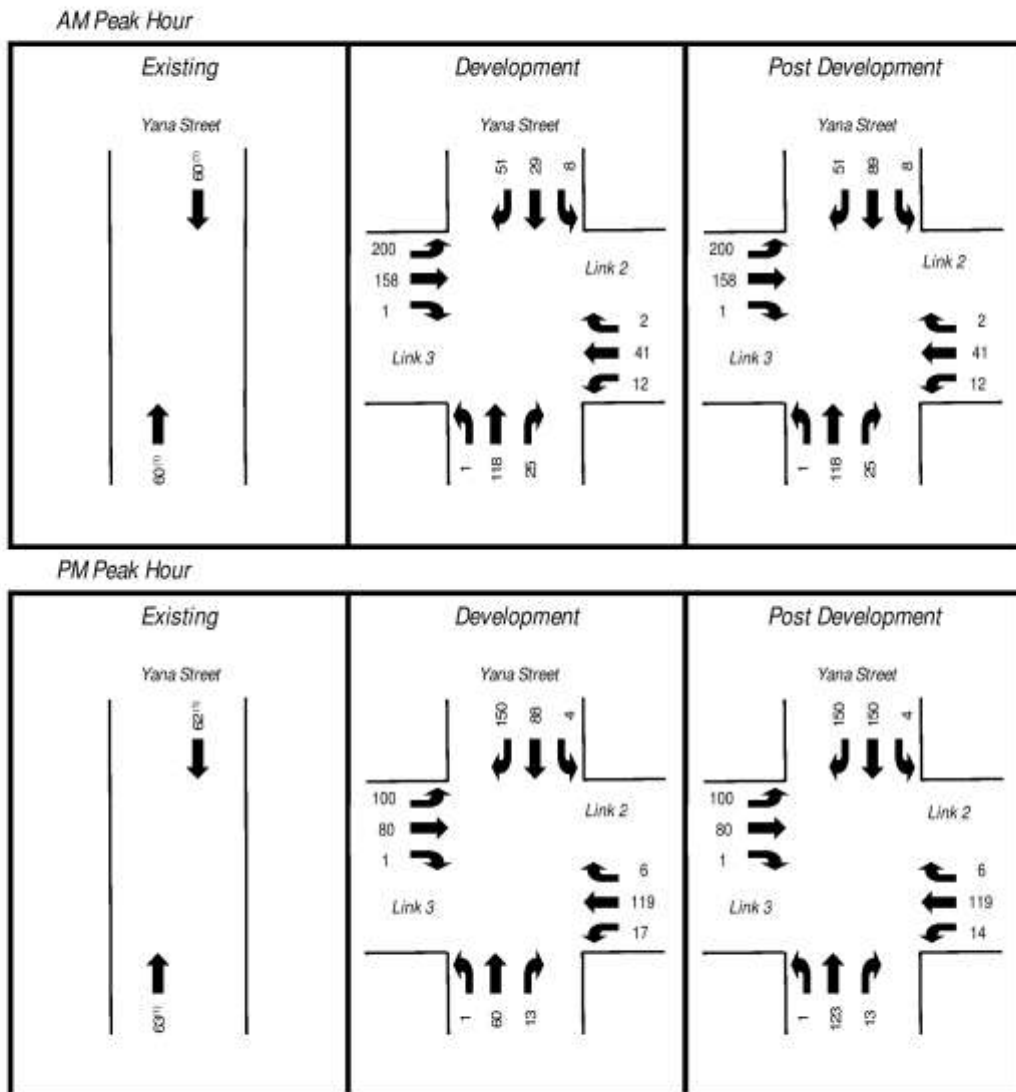


Figure 12: Traffic Volumes - Coronation Avenue/Wattle Street/Link 1 (Intersection #3)
(Option 1 - Sea Lake-Swan Hill Road Link)



(1) Assumed equally split northbound/southbound (based on directional split at Gray Street).

Figure 13: Traffic Volumes - Yana Street/Link 2/Link 3 (Intersection #4)
(Option 1 - Sea Lake-Swan Hill Road Link)

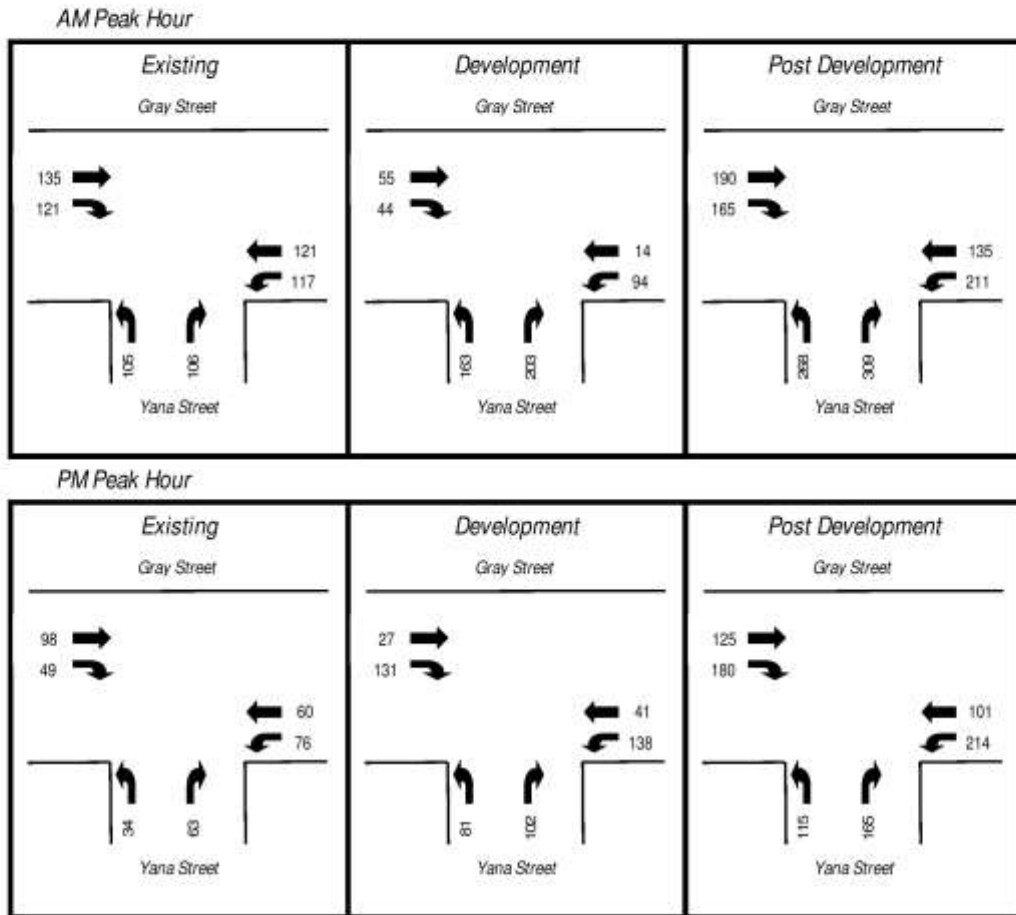
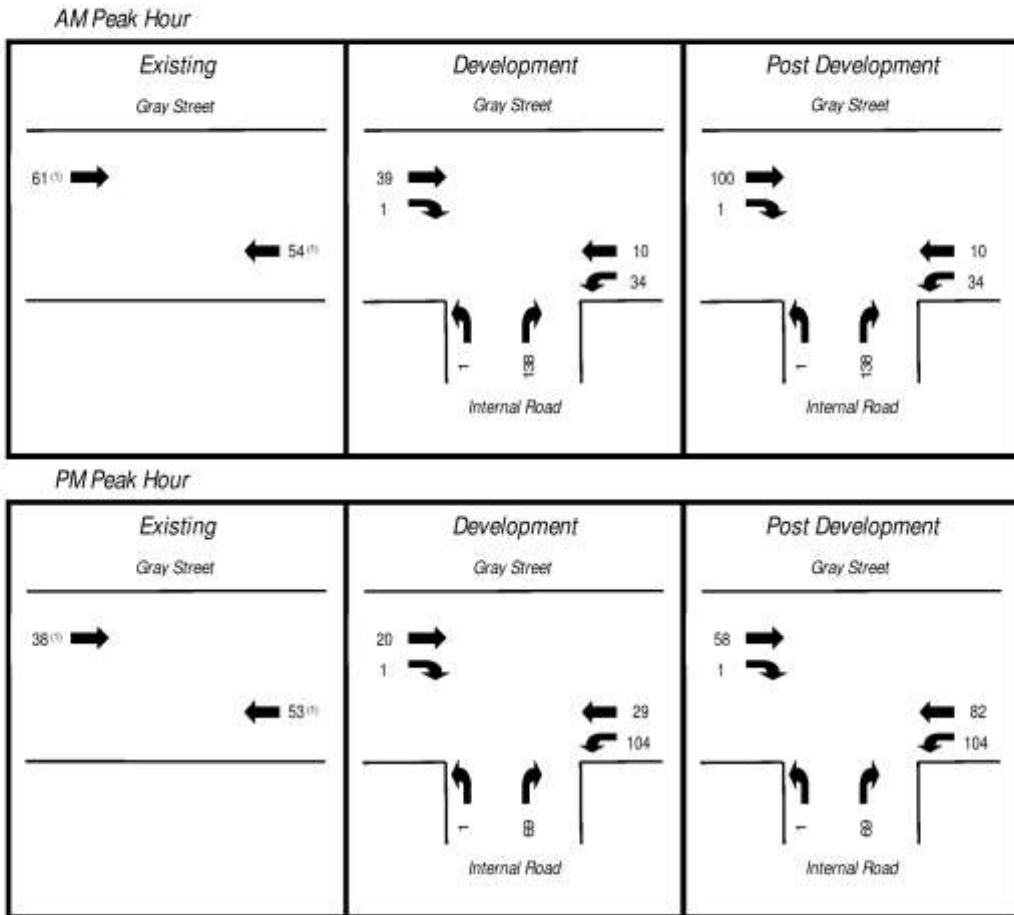


Figure 14: Traffic Volumes - Grey Street/Yana Street (Intersection #5)
(Option 1 - Sea Lake-Swan Hill Road Link)

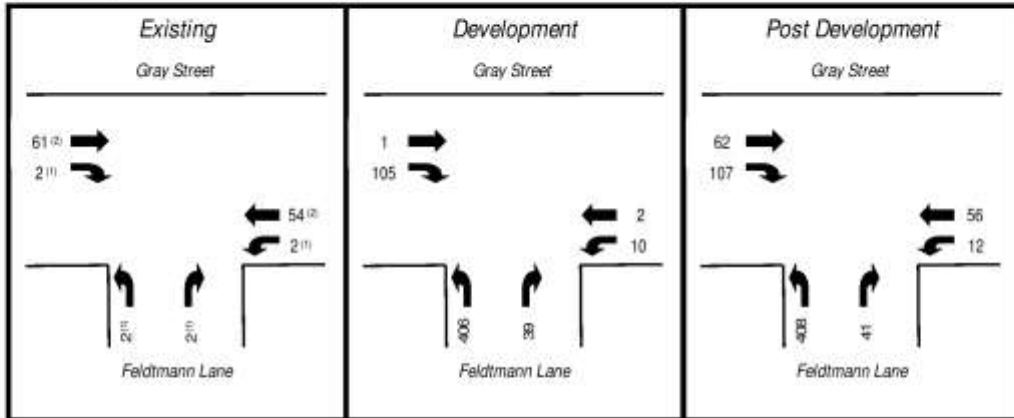


(1) Derived from adjacent intersection.

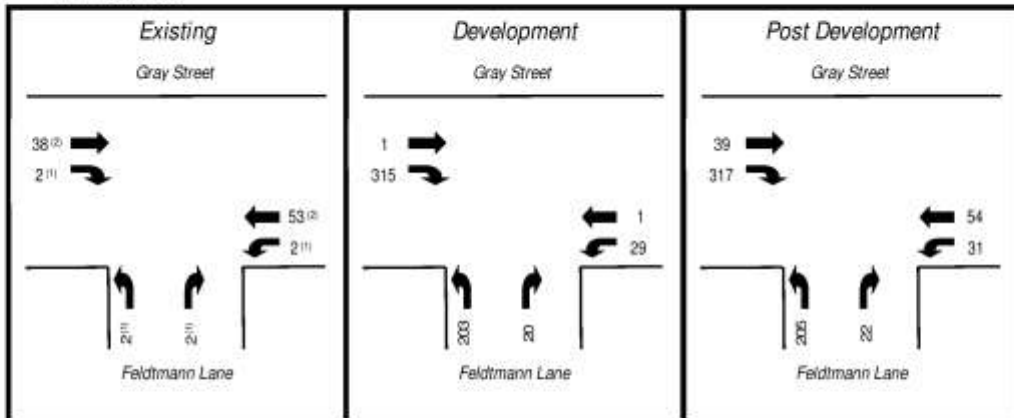
Figure 15: Traffic Volumes - Gray Street/Internal Road (Intersection #6)
(Option 1 - Sea Lake-Swan Hill Road Link)



AM Peak Hour



PM Peak Hour

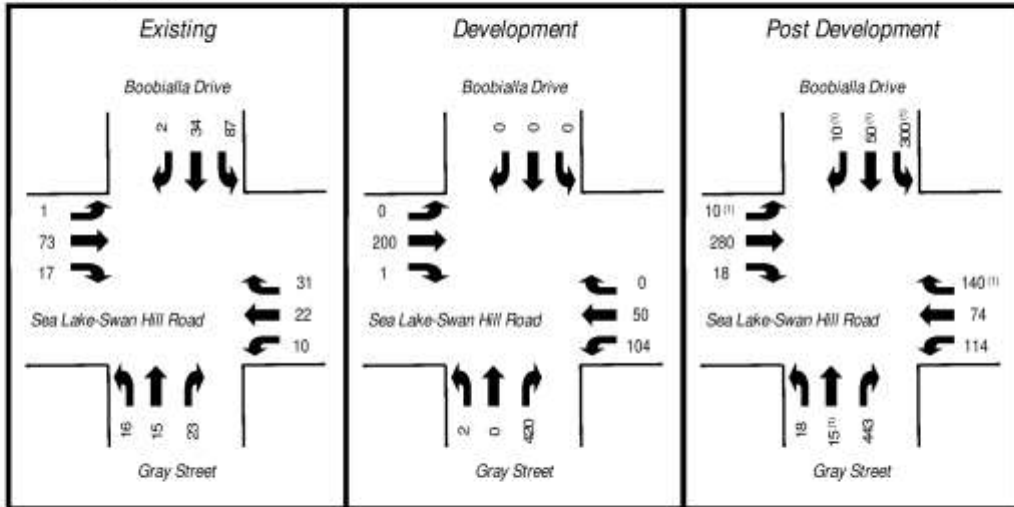


- (1) Assumed.
- (2) Derived from adjacent intersection.

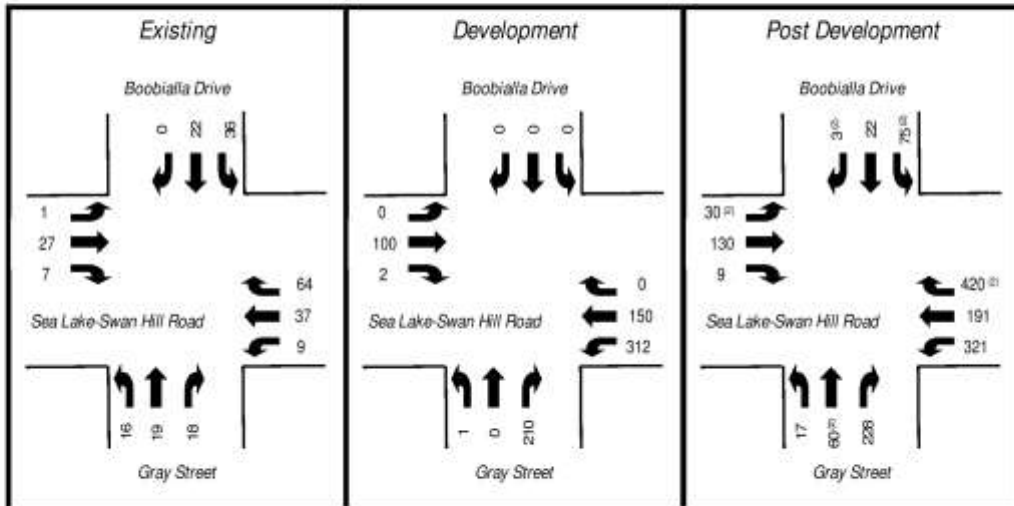
Figure 16: Traffic Volumes - Gray Street/Feldtmann Lane (Link 6) (Intersection #7)
(Option 1 - Sea Lake-Swan Hill Road Link)



AM Peak Hour

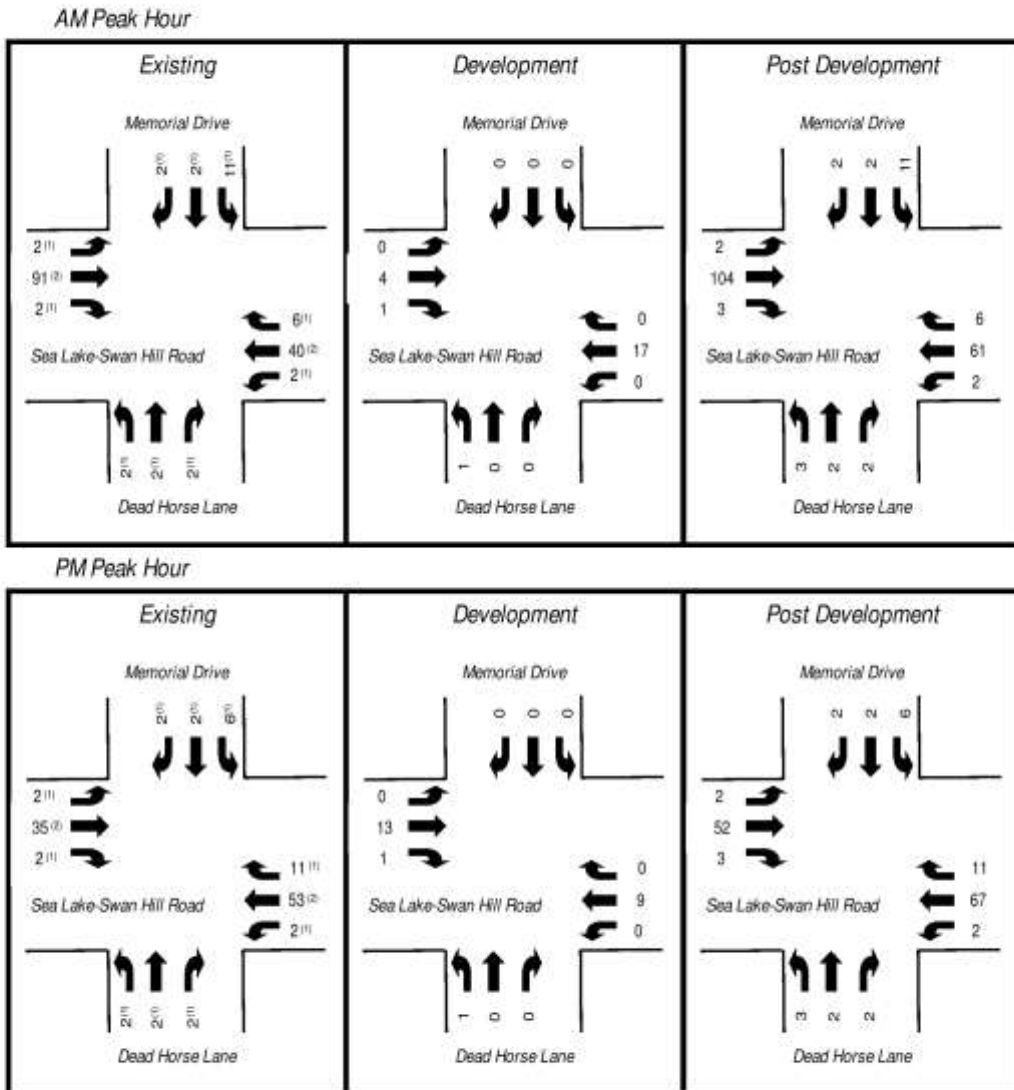


PM Peak Hour



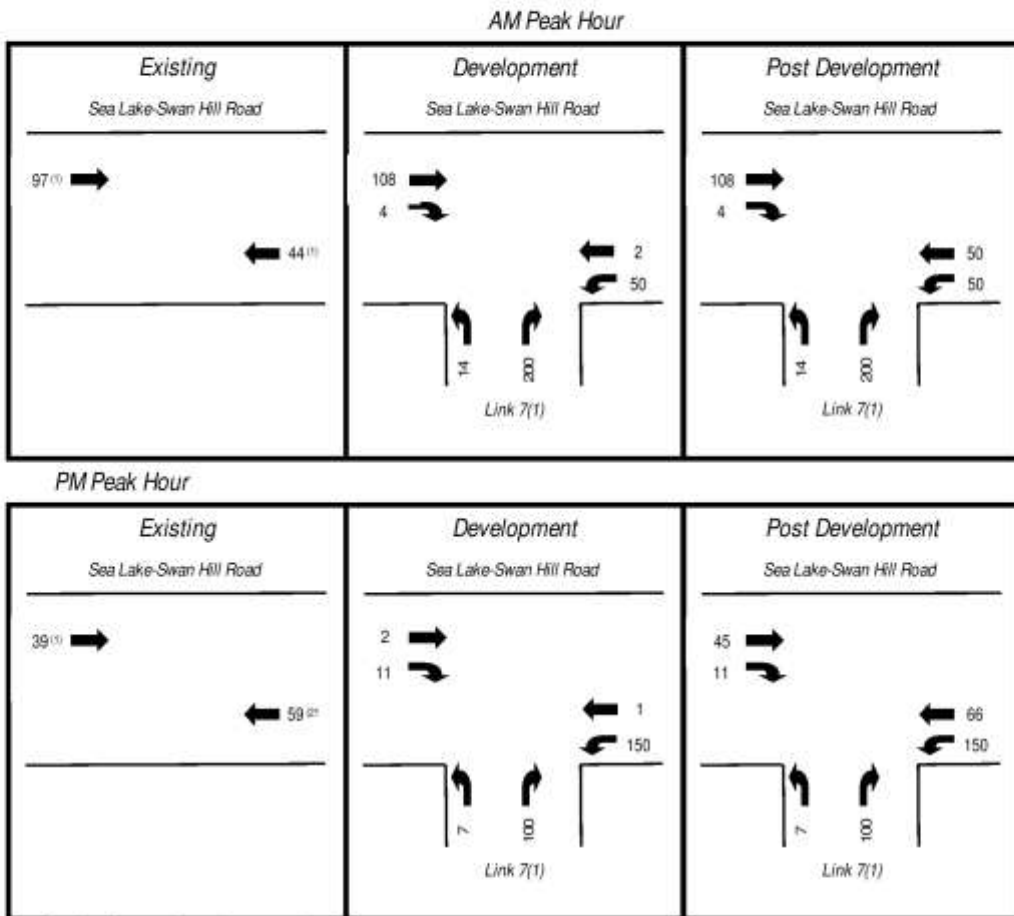
- (1) From TTM Consulting (Vic) traffic report for Tower Hill Development.
- (2) Derived from TTM Consulting (Vic) traffic report for Tower Hill Development.

Figure 17: Traffic Volumes - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8) (Option 1 - Sea Lake-Swan Hill Road Link)



- (1) Assumed/derived from TTM Consulting (Vic) traffic report for Tower Hill Development.
- (2) Derived from adjacent intersection.

*Figure 18: Traffic Volumes - Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive
(Intersection #9)
(Option 1 - Sea Lake-Swan Hill Road Link)*



(1) Derived from adjacent intersections.

Figure 19: Traffic Volumes - Sea Lake-Swan Hill Road/Link 7(1) (Intersection #10)
(Option 1 - Sea Lake-Swan Hill Road Link)

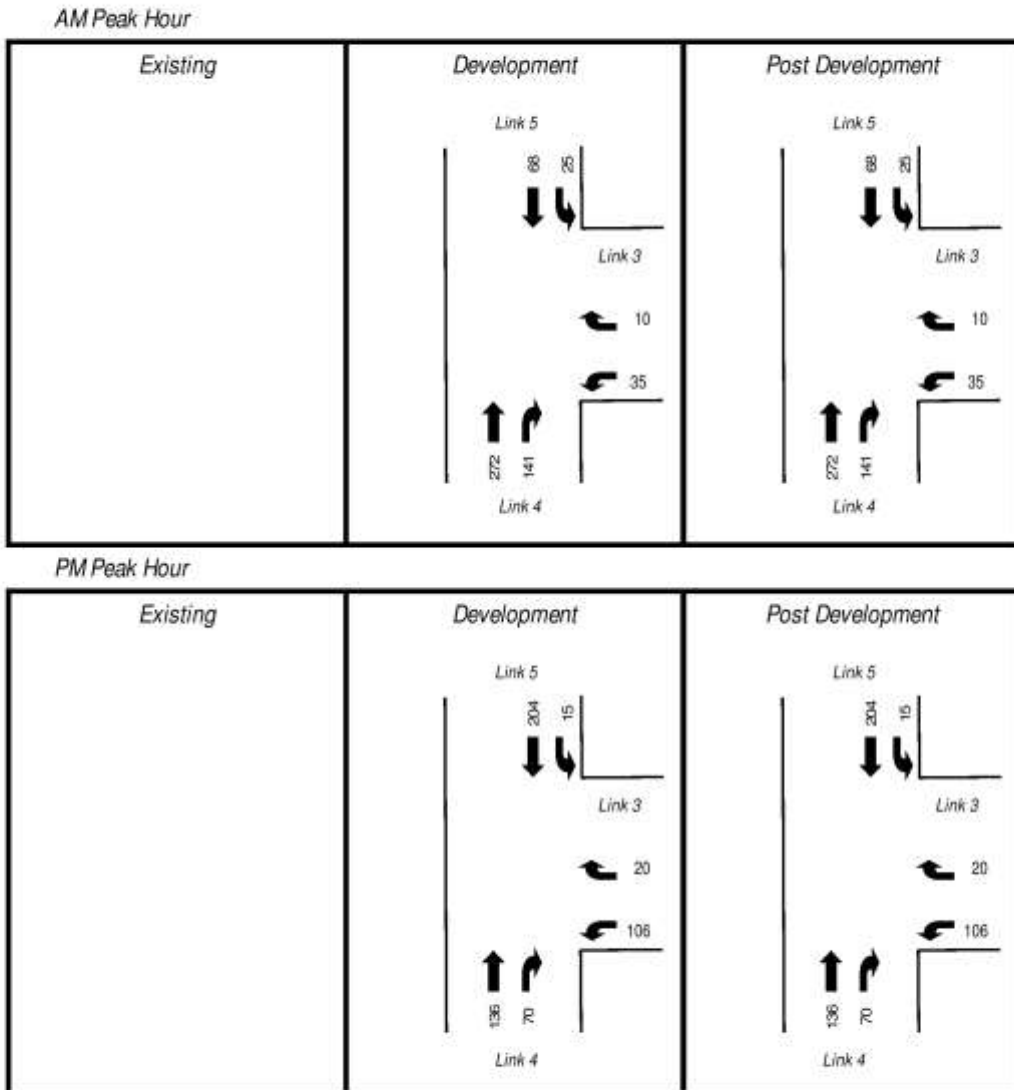


Figure 20: Traffic Volumes - Link 5/Link 3/Link 4 (Intersection #12)
(Option 1 - Sea Lake-Swan Hill Road Link)



Figure 21: Traffic Volumes - Link 7/Link 6/Link 5 (Intersection #13)
(Option 1 - Sea Lake-Swan Hill Road Link)

**4.2. INTERSECTION REQUIREMENTS
(OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK)**

To determine the appropriate requirements for the critical intersections, two assessments were completed - SIDRA capacity analysis and, on Sea Lake-Swan Hill Road, an assessment against the relevant requirements of "Guide to Road Design Part 4A: Unsignalised and Signalised Intersections" (Austroads, 2009). The outputs from the capacity analyses are contained in the separate Appendices report.

In undertaking these analyses, the following parameters were adopted:

- T-intersection:
 - Right turn from major road: $t_a = 4$ sec $t_l = 2$ sec
 - Right turn from minor road: $t_a = 5$ sec $t_l = 3$ sec
 - Left turn from minor road: $t_a = 5$ sec $t_l = 3$ sec
- Roundabout:
 - As calculated by SIDRA



4.2.1. Dead Horse Lane/Link 4 (Intersection #1)

Capacity Analysis

The existing simple T-intersection is an appropriate treatment for this intersection. Due to the low volumes of traffic through the intersection, no capacity analysis has been undertaken.

Recommended Intersection Treatment

It is recommended that a simple T-intersection be provided at the Yana Street/Werril Street/Dead Horse Lane intersection.

4.2.2. Yana Street/Werril Street/Dead Horse Lane (Intersection #2)

Capacity Analysis

The existing simple T-intersection is an appropriate treatment for this intersection. Due to the low volumes of traffic through the intersection, no capacity analysis has been undertaken.

Recommended Intersection Treatment

It is recommended that the existing simple T-intersection continue to be provided at the Yana Street/Werril Street/Dead Horse Lane intersection.

4.2.3. Coronation Avenue/Wattie Street/Link 1 (Intersection #3)

Capacity Analysis

This intersection will become a cross road, so a roundabout has been nominated as the most appropriate treatment. The results of the analysis for this configuration are summarised in Table 2.

Table 2: Capacity Analysis - Coronation Avenue/Wattie Street/Link 1 (Intersection #3)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.14	6.4	5.3
	East	N/A	N/A	N/A	0.08	8.4	3.1
	North	N/A	N/A	N/A	0.19	6.7	7.7
	West	N/A	N/A	N/A	0.24	6.0	9.8
	All Veh	N/A	N/A	N/A	0.24	6.6	9.8
	LoS	N/A			A		
PM	South	N/A	N/A	N/A	0.08	6.8	2.8
	East	N/A	N/A	N/A	0.15	6.9	5.6
	North	N/A	N/A	N/A	0.24	7.2	10.0
	West	N/A	N/A	N/A	0.11	5.4	4.1
	All Veh	N/A	N/A	N/A	0.24	6.7	10.0
	LoS	N/A			A		



The analysis shows that under post-development traffic volumes, the intersection operates at a Level of Service A, with a low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Recommended Intersection Treatment

It is recommended that a single lane roundabout be provided at the Coronation/Wattie Street/Link 1 intersection.

4.2.4. Yana Street/Link 2/Link 3 (Intersection #4)

Capacity Analysis

This intersection will become a cross road, so a roundabout has been nominated as the most appropriate treatment.

The results of the analysis for this configuration are summarised in Table 3.

Table 3: *Capacity Analysis - Yana Street/Link 2/Link 3 (Intersection #4)
(Option 1 - Sea Lake-Swan Hill Road Link)*

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.15	5.6	5.7
	East	N/A	N/A	N/A	0.04	5.4	1.6
	North	N/A	N/A	N/A	0.12	7.6	4.7
	West	N/A	N/A	N/A	0.29	6.0	12.7
	All Veh	N/A	N/A	N/A	0.29	6.1	12.7
	LoS	N/A			A		
PM	South	N/A	N/A	N/A	0.12	6.2	4.5
	East	N/A	N/A	N/A	0.13	6.1	4.9
	North	N/A	N/A	N/A	0.22	8.2	9.2
	West	N/A	N/A	N/A	0.14	5.5	5.7
	All Veh	N/A	N/A	N/A	0.22	6.8	9.2
	LoS	N/A			A		

The analysis shows that under post-development traffic volumes, the intersection operates at a Level of Service A, with a low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Recommended Intersection Treatment

It is recommended that a single lane roundabout be provided at the Yana Street/Link 2/Link 3 intersection. This should be provided when an intersection is first created (either as a T-intersection or as a cross road).



4.2.5. Gray Street/Yana Street (Intersection #5)

Capacity Analysis

The existing configuration of this intersection comprises a simple T-intersection with priority to Gray Street and separate left and right turn lanes in Yana Street.

The results of the analysis for this configuration are summarised in Table 4.

Table 4: Capacity Analysis - Gray Street/Yana Street - Existing Configuration (Intersection #5)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.57	13.2	25.1
	East	0.13	4.0	0.0	0.19	5.0	0.0
	West	0.16	4.9	6.5	0.24	5.5	10.7
	All Veh	0.16	6.2	6.5	0.57	8.9	25.1
PM	South	0.07	9.3	1.8	0.27	11.0	7.7
	East	0.08	4.6	0.0	0.17	5.6	0.0
	West	0.09	3.2	3.2	0.21	6.3	8.6
	All Veh	0.09	5.3	3.2	0.27	7.5	8.6

The analysis shows that under post-development traffic volumes, Gray Street operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on both approaches. Yana Street will experience a reduction in Level of Service in both peak periods.

It is noted that the model produced for this study does not allow for any redistribution of traffic that might occur due to congestion and/or delays at a particular intersection. Both these factors mean that the predicted traffic volumes turning from Yana Street (and into Yana Street) may be overestimated which, in turn, means that the traffic impact may be overstated.

To assess upgrade options, three upgrades have been assessed - left and right turn lanes in Gray Street, a roundabout and traffic signals. The results of the analyses for these configurations are shown in Tables 5, 6 and 7.



Table 5: Capacity Analysis - Gray Street/Yana Street (Intersection #5)
Turn Lanes in Gray Street
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.54	12.7	24.0
	East	0.13	4.0	0.0	0.12	5.0	0.0
	West	0.16	4.9	6.5	0.14	4.5	4.4
	All Veh	0.16	6.2	6.5	0.54	8.3	24.0
PM	South	0.07	9.3	1.8	0.26	10.8	7.5
	East	0.08	4.6	0.0	0.12	5.6	0.0
	West	0.09	3.2	3.2	0.14	5.6	4.7
	All Veh	0.09	5.3	3.2	0.26	7.2	7.5

Table 6: Capacity Analysis - Gray Street/Yana Street (Intersection #5)
Roundabout
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.20	9.0	10.0
	East	0.13	4.0	0.0	0.28	5.9	14.7
	West	0.16	4.9	6.5	0.33	9.6	16.8
	All Veh	0.16	6.2	6.5	0.33	8.3	16.8
PM	South	0.07	9.3	1.8	0.11	9.1	4.8
	East	0.08	4.6	0.0	0.26	6.1	12.7
	West	0.09	3.2	3.2	0.25	9.4	11.6
	All Veh	0.09	5.3	3.2	0.26	8.1	12.7



Table 7: Capacity Analysis - Gray Street/Yana Street (Intersection #5)
Traffic Signals
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.44	17.4	41.5
	East	0.13	4.0	0.0	0.20	8.7	17.1
	West	0.16	4.9	6.5	0.43	16.4	24.9
	All Veh	0.16	6.2	6.5	0.44	14.8	41.5
PM	South	0.07	9.3	1.8	0.31	20.4	23.7
	East	0.08	4.6	0.0	0.16	7.1	10.5
	West	0.09	3.2	3.2	0.36	12.9	22.5
	All Veh	0.09	5.3	3.2	0.36	13.2	23.7

It is noted that the SIDRA analysis did not take into account the "peaking effect" of the adjacent school during the AM period. In practice, more of the existing traffic will occur closer to 9:00am than be evenly spread over the hour. Similarly, more of the development traffic may occur away from the school peak to avoid the delays that it creates. Thus, the proposed development will have less of an impact at this intersection during the AM peak.

These analyses show that, compared to the existing configuration of the intersection, for post-development traffic volumes:

- Turn lanes in Gray Street have limited impact on delays and queues to traffic leaving Yana Street, and on the operation of Gray Street;
- A roundabout reduces delays and queues in Yana Street at the expense of increased queues in both directions along Gray Street; and
- Traffic signals, whilst operating at Level of Service B in both the AM and PM peaks, increase delays and queues for all movements.

Traffic Engineering Manual Volume 1 Traffic Management (VicRoads) provides guidelines for new traffic signals installations. A key consideration is traffic volumes. The manual states "Traffic signals may be considered subject to detailed analysis; when the major road carries at least 600 vehicles per hour (two way) and the minor road concurrently carries at least 200 vehicles per hour (one way) on one approach over any 4 hours of an average day." The predicted traffic volumes do not reach these values.

Pedestrian movements across the intersection would be enhanced by its signalisation. The manual states the following for pedestrian operated signals "Where the crossing is primarily intended for the use of school children, the device may be appropriate where for at least one hour of an average school day:

- The number of children (P) crossing the road within 20m of the proposed site exceeds 50 per hour; and
- The number of vehicles which children have to cross during that hour exceeds 500; and
- The product P x V exceeds:
 - 25,000 for primary school children, or
 - 34,000 for secondary school children."



It is unlikely that the existing pedestrian activity in the area would justify pedestrian operated signals (or signalisation of the intersection). The Swan Hill South West Development Precinct is unlikely to increase the number of pedestrian movements at this location.

Intersection signals are a costly measure (depending on services and the like, the cost could be in the order of \$1m to \$1.5m). Should they be considered for implementation as part of the Swan Hill South West Development Precinct, funding could include a contribution from Council to account for the traffic that currently uses the intersection.

It is noted that the east approach in Gray Street is sufficiently wide to enable through vehicles to pass left turning vehicles, and on the west approach there is scope to ban kerbside parking to allow through traffic to pass stationary right turning traffic.

Recommended Intersection Treatment

It is recommended that the existing configuration of the Gray Street/Yana Street intersection continue to be provided.

4.2.6. Gray Street/Internal Road (Intersection #6)

Capacity Analysis

The intersection was analysed as a simple T-intersection with priority to Gray Street and separate left and right turn lanes in the internal road.

The results of the analysis are summarised in Table 8.

*Table 8: Capacity Analysis - Gray Street/Internal Road (Intersection #6)
(Option 1 - Sea Lake-Swan Hill Road Link)*

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.15	9.5	4.0
	East	N/A	N/A	N/A	0.05	2.8	0.0
	West	N/A	N/A	N/A	0.06	0.4	2.1
	All Veh	N/A	N/A	N/A	0.15	4.8	4.0
PM	South	N/A	N/A	N/A	0.08	9.5	1.9
	East	N/A	N/A	N/A	0.10	4.6	0.0
	West	N/A	N/A	N/A	0.03	0.7	1.3
	All Veh	N/A	N/A	N/A	0.10	4.9	1.9

The analysis shows that under post-development traffic volumes, Gray Street operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on both approaches. The south approach (internal road) will operate at a Level of Service A, in both the AM and PM peaks.

Recommended Intersection Treatment

It is recommended that a simple T-intersection be provided at the Gray Street/Internal Road intersection with priority to Gray Street and separate left and right turn lanes in the internal road. A left turn lane should be provided in Gray Street, due to the relatively large volume of left turning traffic.



4.2.7. Gray Street/Feldtmann Lane (Intersection #7)

Capacity Analysis

The predicted volume of right turning traffic from Gray Street is high. This intersection has therefore been modelled with a separate right turn lane in Grey Street and separate left and right turn lanes in Feldtmann Lane.

The results of the analysis are summarised in Table 9.

Table 9: Capacity Analysis - Gray Street/Feldtmann Lane (Intersection #7)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.00	8.7	0.0	0.38	8.7	13.7
	East	0.03	0.3	0.0	0.04	1.4	0.0
	West	0.03	0.3	0.0	0.07	5.4	2.2
	All Veh	0.03	0.6	0.0	0.38	5.2	13.7
PM	South	0.00	8.6	0.1	0.19	8.7	5.5
	East	0.03	0.3	0.0	0.05	3.0	0.0
	West	0.02	0.4	0.0	0.20	7.7	7.3
	All Veh	0.03	0.7	0.0	0.20	7.4	7.3

The analysis shows that under post-development traffic volumes, the intersection operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Recommended Intersection Treatment

It is recommended that a simple T-intersection continue to be provided at the Gray Street/Feldtmann Lane intersection. A separate right turn facility should be provided in Gray Street and separate left and right turn lanes in Feldtmann Lane. A left turn lane in Gray Street is not warranted on the basis of the predicted left turn volumes.

4.2.8. Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)

Capacity Analysis

This existing cross road intersection is currently controlled by a single lane roundabout.

The results of the analysis for this configuration are summarised in Table 10.



Table 10: Capacity Analysis - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.04	7.8	1.3	0.39	12.1	18.6
	East	0.05	8.1	1.6	0.24	8.0	10.7
	North	0.10	5.6	3.3	0.17	9.9	7.9
	West	0.07	5.9	2.3	0.35	8.5	17.2
	All Veh	0.10	6.5	3.3	0.39	9.9	18.6
	LoS	A			A		
PM	South	0.04	7.4	1.3	0.30	14.1	13.8
	East	0.08	8.5	2.6	0.59	8.0	43.3
	North	0.04	5.3	1.4	0.31	7.3	14.3
	West	0.03	6.1	0.9	0.20	8.8	9.0
	All Veh	0.08	7.2	2.6	0.59	8.9	43.3
	LoS	A			A		

The analysis shows that under existing and post-development traffic volumes, the intersection operates at a Level of Service A, with low degrees of saturation in both the AM and PM peak periods and minimal delays and minimal queues on all approaches.

Recommended Intersection Treatment

It is recommended that the intersection remain under roundabout control. No upgrades are required from a capacity perspective.

"Trigger Point" for Upgrade

As no upgrades are required from a capacity perspective, there is no "trigger point".

4.2.9. Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive (Intersection #9)

Capacity Analysis

This cross road intersection carries relatively low volumes on the side roads, including very low volumes of crossing traffic. The intersection has therefore been analysed under yield conditions for the side road traffic, with no left or right turn lanes in Sea Lake-Swan Hill Road.

The results of the analysis are summarised in Table 11.



Table 11: Capacity Analysis - Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive (Intersection #9) (Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.01	8.4	0.1	0.07	8.5	0.2
	East	0.03	1.7	1.0	0.04	1.3	1.4
	North	0.02	8.5	0.4	0.02	8.6	0.4
	West	0.05	0.5	1.9	0.06	0.6	2.2
	All Veh	0.05	1.8	1.9	0.06	1.7	2.2
PM	South	0.01	8.2	0.1	0.01	8.4	0.2
	East	0.04	1.8	1.3	0.04	1.5	1.6
	North	0.01	8.3	0.2	0.01	8.4	0.2
	West	0.02	1.0	0.8	0.03	0.9	1.1
	All Veh	0.04	2.4	1.3	0.04	2.1	1.6

The analysis shows that under existing and post-development traffic volumes, the intersection operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches. The impact of the additional traffic on the operation of the intersection is negligible.

Austrroads

"Guide to Road Design Part 4A: Unsignalised and Signalised Intersections" (Austrroads, 2009) provides guidance on the form of intersection treatment for various situations. Of relevance here is Figure 4.9(b), which provides numerical warrants for turn treatments on the major road with a design speed of less than 100km/h (for the purposes of this assessment, it is assumed that the speed limit on Sea Lake-Swan Hill Road is 80 km/h).

The predicted volumes of left and right turning traffic into Dead Horse Lane from Sea Lake-Swan Hill Road are 2 or 3 vph. These volumes are within the range whereby basic right turn (BAR) and basic left turn (BAL) treatments are required, ie the warrants for a higher standard of treatment (CHR(S) or AUL(S)) are not met.

Recommended Intersection Treatment

It is recommended that the intersection remain in its current form.

"Trigger Point" for Upgrade

As no upgrades are required from a capacity perspective, there is no "trigger point".

4.2.10. Sea Lake-Swan Hill Road/Link 7(1) (Intersection #10)

Capacity Analysis

On the basis of predicted traffic volumes, this new intersection was analysed as a T-intersection with a left turn lane in Sea Lake-Swan Hill Road and separate left and right turn lanes in Link 7 (the new intersecting road).

The results of the analysis are summarised in Table 12.



Table 12: Capacity Analysis - Sea Lake-Swan Hill Road/Link 7(1) (Intersection #10)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.22	9.5	6.8
	East	N/A	N/A	N/A	0.03	4.1	0.0
	West	N/A	N/A	N/A	0.06	0.6	2.3
	All Veh	N/A	N/A	N/A	0.22	5.9	6.8
PM	South	N/A	N/A	N/A	0.11	9.4	3.1
	East	N/A	N/A	N/A	0.09	5.7	0.0
	West	N/A	N/A	N/A	0.03	2.3	1.2
	All Veh	N/A	N/A	N/A	0.11	6.2	3.1

The analysis shows that under post-development traffic volumes, the intersection operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Austrroads

"Guide to Road Design Part 4A: Unsignalised and Signalised Intersections" (Austrroads, 2009) provides guidance on the form of intersection treatment for various situations. Of relevance here is Figure 4.9(b), which provides numerical warrants for turn treatments on the major road with a design speed of less than 100km/h (for the purposes of this assessment, it is assumed that the speed limit on Sea Lake-Swan Hill Road is 80 km/h).

Figure 22 shows the post development assessments for the AM peak and the PM peak.

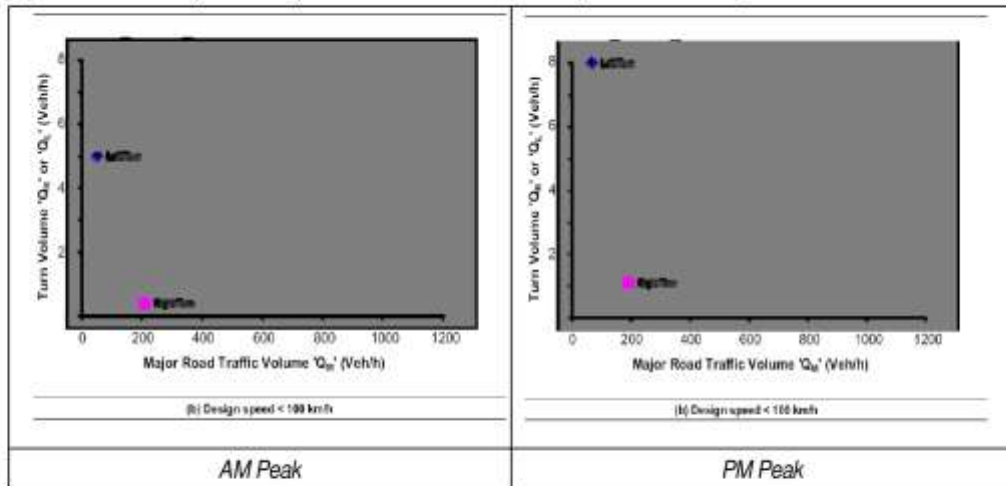


Figure 22: Turn Lane Warrant Assessment - Sea Lake-Swan Hill Road/
Link 7(1) (Intersection #10)
(Option 1 - Sea Lake-Swan Hill Road Link)



It is noted that the modelled left turn volume in the PM peak for the post development scenario is greater than 80 vph, the maximum value on the chart. The model developed for this study assumes that parcels of land ("zones") within the Development Precinct have one access point to the road network, ie there is no movement through zones to travel to and from the precinct. A consequence of this is that the volume of traffic moving between the east and south legs of this intersection may be overestimated.

The high volume of left turning traffic from Sea Lake-Swan Hill Road supports the provision of an AUL (auxiliary left turn) treatment on the east approach.

Recommended Intersection Treatment

On this basis, it is recommended that BAR (basic right turn) and AUL (auxiliary left turn) treatments be provided on the west and east approaches respectively. Given the relatively high volume of right turning traffic compared to left turning traffic in Link 7, separate left and right turn lanes should be provided in Link 7 at this intersection.

"Trigger Point" for Upgrade

The need for the AUL treatment in Sea Lake-Swan Hill Road is linked to the volume of left turning traffic. Initially, a BAL (basic left turn) treatment may only be necessary, with an upgrade to an AUL treatment when traffic volumes warrant it. In terms of a "trigger point" for its provision, guidance is provided by Austroads Figure 4.9(b). A PM peak hour volume of 60 vph turning left would be appropriate, equivalent to approximately 130 residential lots each using this intersection in that period.

It may be that it is more convenient to initially construct this intersection with the AUL treatment.

4.2.11. Link 5/Link 3/Link 4 (Intersection #12)

Capacity Analysis

This internal intersection has been analysed for two layouts - a simple T-intersection and a roundabout.

The results of the analysis for a T-intersection are summarised in Table 13.

Table 13: Capacity Analysis - Link 5/Link 3/Link 4 - T-Intersection (Intersection #12)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.26	3.3	11.7
	East	N/A	N/A	N/A	0.02	8.9	0.7
	North	N/A	N/A	N/A	0.05	2.2	0.0
	All Veh	N/A	N/A	N/A	0.26	3.6	11.7
PM	South	N/A	N/A	N/A	0.14	3.9	5.7
	East	N/A	N/A	N/A	0.08	9.1	2.3
	North	N/A	N/A	N/A	0.12	0.6	0.0
	All Veh	N/A	N/A	N/A	0.14	3.8	5.7

The results of the analysis for a roundabout are summarised in Table 14.



Table 14: Capacity Analysis - Link 5/Link 3/Link 4 - Roundabout (Intersection #12)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	N/A	N/A	N/A	0.25	6.7	12.4
	East	N/A	N/A	N/A	0.03	6.9	1.4
	North	N/A	N/A	N/A	0.07	5.3	2.9
	All Veh	N/A	N/A	N/A	0.25	3.6	12.4
PM	South	N/A	N/A	N/A	0.13	6.8	6.2
	East	N/A	N/A	N/A	0.11	7.3	4.4
	North	N/A	N/A	N/A	0.16	4.8	6.7
	All Veh	N/A	N/A	N/A	0.16	6.1	6.7

The analysis shows that for both layout options, the intersection operates with low degrees of saturation and minimal delays and queues. Link4-Link5 is a relatively long length of road. A roundabout is therefore preferred at this location from a speed management perspective.

Recommended Intersection Treatment

It is recommended that a single lane roundabout be provided at the Link 5/Link3/Link 4 intersection.

4.2.12. Link 5/Link 6/Link 7 (Intersection #13)

Capacity Analysis

This internal intersection has been analysed as a simple T-intersection with separate left and right turn lanes on the north (Link 6) approach). The results are summarised in Table 15.



Table 15: Capacity Analysis - Link 5/Link 6/Link 7 (Intersection #13)
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	East	N/A	N/A	N/A	0.20	8.3	7.5
	North	N/A	N/A	N/A	0.05	8.5	1.5
	West	N/A	N/A	N/A	0.04	7.7	0.0
	All Veh	N/A	N/A	N/A	0.20	8.2	7.5
PM	East	N/A	N/A	N/A	0.10	8.1	3.4
	North	N/A	N/A	N/A	0.15	8.4	4.9
	West	N/A	N/A	N/A	0.02	6.3	0.0
	All Veh	N/A	N/A	N/A	0.15	8.1	4.9

The analysis shows that that the intersection will operate at a low degree of saturation, with minimal queues and delays.

Whilst not analysed, a roundabout would also operate at a low degree of saturation, with minimal queues and delays. A roundabout provides better speed control than a T-intersection and is therefore recommended for this location.

Recommended Intersection Treatment

It is recommended that a single lane roundabout be provided at the Link 5/Link 6/Link 7 intersection.

**4.3. RELATIVE TRAFFIC VOLUMES CONTRIBUTIONS BY INDIVIDUAL LAND HOLDINGS
(OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK)**

Traffix Group was requested by Council to identify the relative traffic volumes from each land holding that travels through nominated intersections and along nominated roads.

The various land holdings (as provided by Council) are shown in Figure 23.

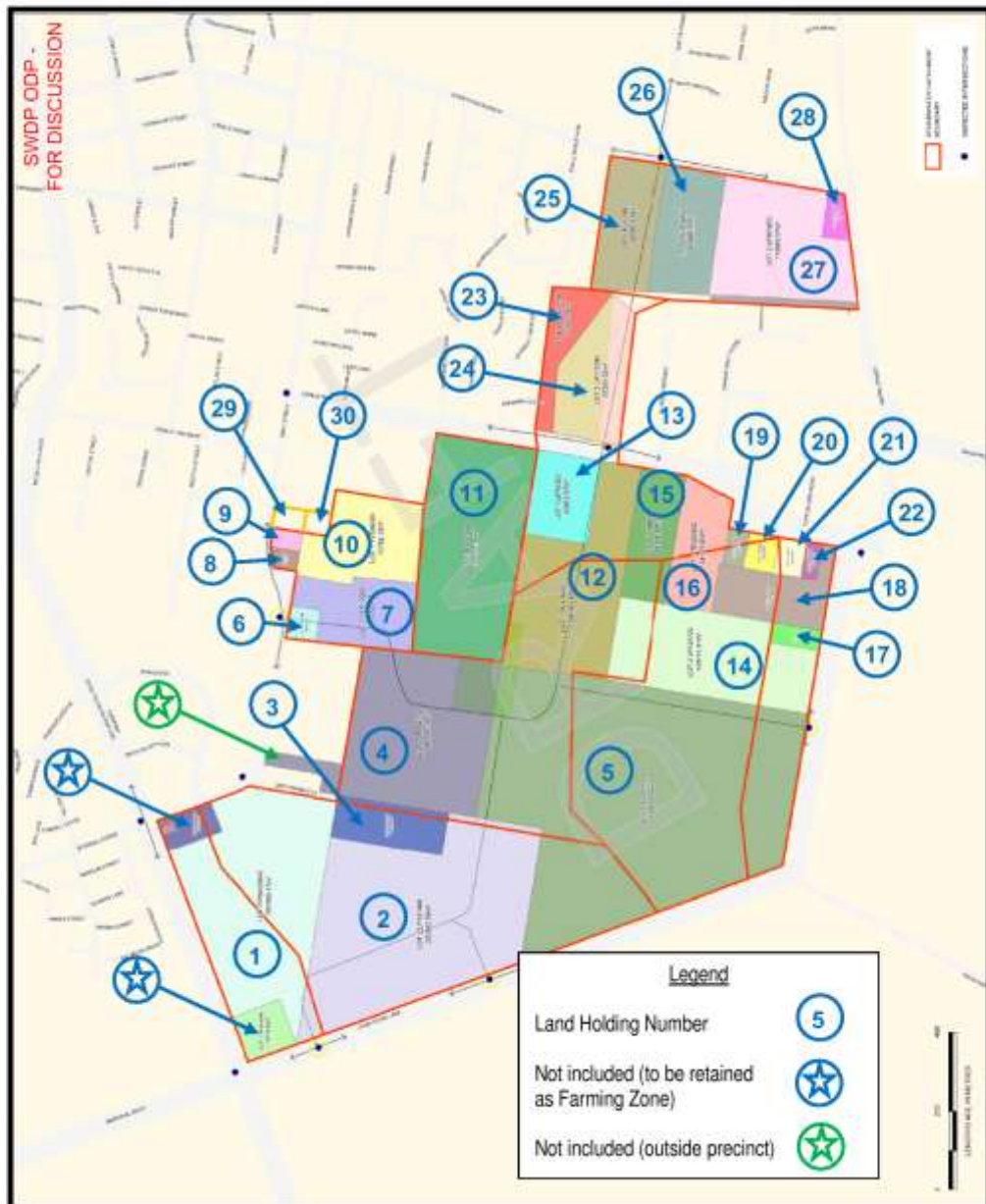


Figure 23: Precinct Land Holdings

4.3.1. Nominated Intersections (Option 1 - Sea Lake-Swan Hill Road Link)

The apportionment of traffic, calculated by determining the proportion of traffic generated by each zone in the traffic model that was attributable to each land holding, is shown in Table 16 for the nominated intersections.

Table 16: Apportionment of Traffic - Intersections (Option 1 - Sea Lake-Swan Hill Road Link)

Landowner Number	Proportion of Traffic Through Intersection Attributable to Landowner						
	Int #3	Int #4	Int #6	Int #7	Int #10	Int #12	Int #13
1	0.41%	0.33%	2.11%	4.47%	65.60%	0.00%	0.44%
2	0.00%	0.00%	9.65%	10.22%	27.32%	0.00%	14.73%
3	0.06%	0.05%	2.73%	5.41%	1.19%	0.00%	0.69%
4	4.40%	4.35%	7.34%	21.63%	0.56%	5.10%	12.84%
5	17.13%	27.61%	0.00%	50.36%	1.89%	86.19%	61.04%
6	0.00%	0.00%	4.24%	0.02%	0.04%	0.00%	0.00%
7	0.00%	0.00%	29.69%	0.12%	0.26%	0.00%	0.00%
8	0.00%	0.00%	2.12%	0.01%	0.02%	0.00%	0.00%
9	0.00%	0.00%	2.54%	0.01%	0.02%	0.00%	0.00%
10	0.00%	0.00%	34.78%	0.15%	0.30%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	10.45%	22.10%	0.00%	0.00%	0.56%	0.22%	0.31%
13	1.87%	1.56%	0.12%	0.05%	0.20%	0.05%	0.05%
14	4.81%	13.97%	0.00%	7.23%	0.52%	7.59%	8.64%
15	0.04%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%
16	2.08%	8.67%	0.00%	0.00%	0.22%	0.11%	0.12%
17	0.21%	0.60%	0.00%	0.31%	0.02%	0.33%	0.37%
18	1.29%	7.30%	0.00%	0.00%	0.00%	0.00%	0.00%
19	1.94%	9.37%	0.00%	0.00%	0.21%	0.00%	0.12%
20	0.23%	1.02%	0.00%	0.00%	0.03%	0.00%	0.01%
21	0.37%	1.60%	0.00%	0.00%	0.04%	0.02%	0.02%
22	0.13%	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%
23	7.36%	0.06%	0.00%	0.00%	0.15%	0.07%	0.08%
24	3.31%	0.15%	0.00%	0.00%	0.21%	0.10%	0.05%
25	10.95%	0.09%	0.00%	0.00%	0.26%	0.00%	0.09%
26	10.16%	0.09%	0.00%	0.00%	0.21%	0.00%	0.12%
27	21.95%	0.19%	0.00%	0.00%	0.12%	0.22%	0.25%



28	0.83%	0.01%	0.00%	0.00%	0.01%	0.01%	0.01%
29	0.00%	0.00%	2.54%	0.01%	0.02%	0.00%	0.00%
30	0.00%	0.00%	2.12%	0.01%	0.02%	0.00%	0.00%

4.3.2. Nominated Internal Roads (Option 1 - Sea Lake-Swan Hill Road Link)

The roads nominated by Council for assessment are shown in Figure 24.

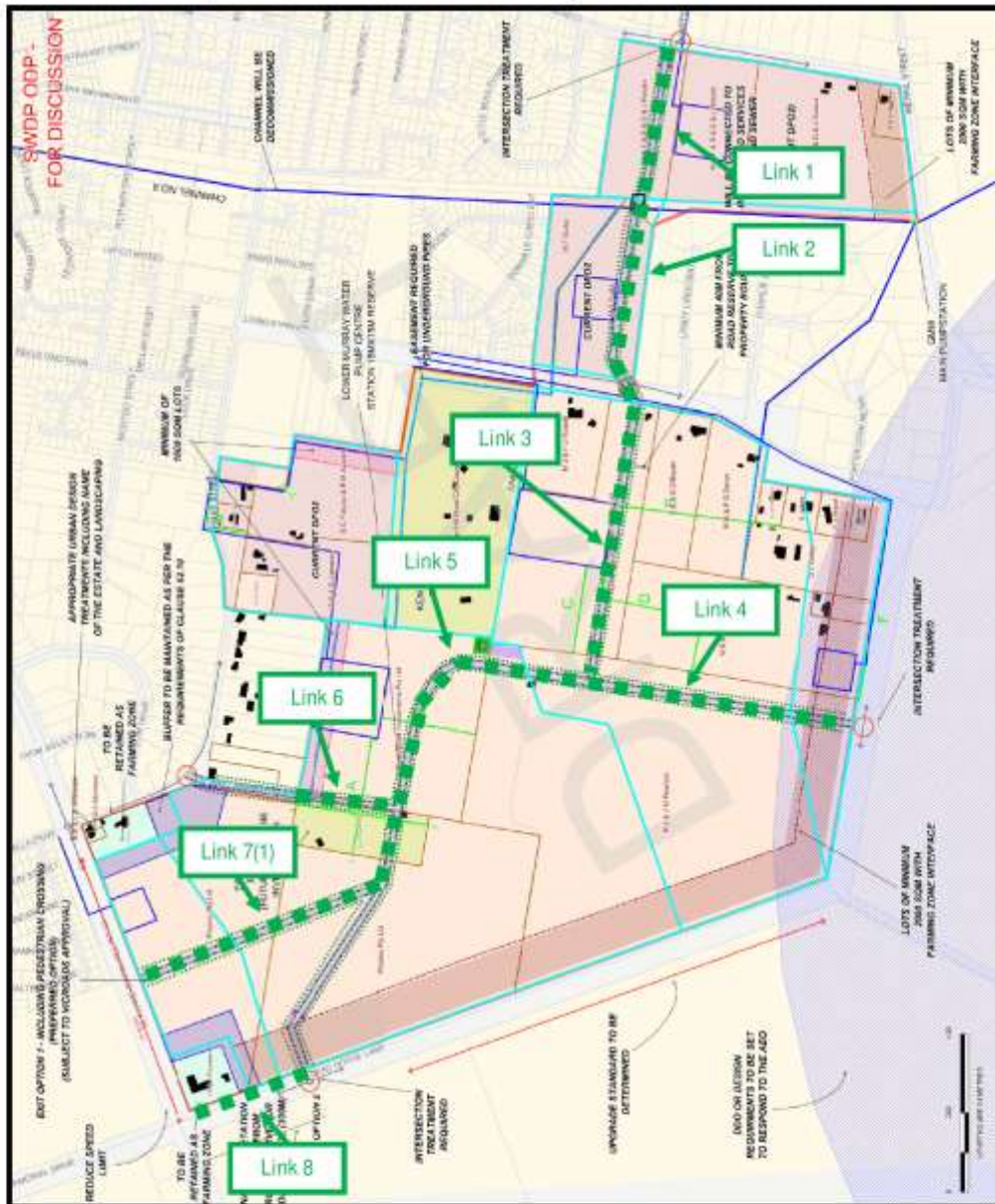


Figure 24: Nominated Internal Roads



The apportionment of traffic, calculated by determining the proportion of traffic generated by each zone in the traffic model that was attributable to each land holding, is shown in Table 17 for the nominated road links.

Table 17: Apportionment of Traffic - Road Links (Option 1 - Sea Lake-Swan Hill Road Link)

Landowner Number	Proportion of Traffic Along Link Attributable to Landowner							
	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7(1)	Link 8
1	0.61%	0.88%	0.33%	0.00%	0.27%	0.14%	49.98%	0.00%
2	0.00%	0.00%	0.00%	0.00%	0.00%	6.50%	40.72%	0.00%
3	0.09%	0.12%	0.05%	0.00%	0.04%	3.34%	1.76%	0.00%
4	6.53%	9.38%	8.49%	0.00%	11.51%	19.51%	0.59%	0.00%
5	25.26%	35.83%	53.87%	91.60%	75.74%	61.33%	2.84%	0.00%
6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	15.51%	22.26%	21.74%	0.00%	0.35%	0.03%	0.85%	0.00%
13	2.78%	3.99%	0.08%	0.00%	0.07%	0.01%	0.15%	0.00%
14	7.14%	10.25%	13.71%	8.05%	10.66%	8.68%	0.78%	0.00%
15	0.05%	0.08%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%
16	3.09%	4.44%	0.18%	0.00%	0.15%	0.01%	0.33%	0.00%
17	0.31%	0.44%	0.59%	0.34%	0.46%	0.37%	0.03%	0.00%
18	1.92%	2.75%	0.00%	0.00%	0.00%	0.00%	0.00%	90.63%
19	2.88%	6.61%	0.09%	0.00%	0.07%	0.01%	0.32%	0.00%
20	0.35%	0.50%	0.01%	0.00%	0.01%	0.00%	0.04%	0.00%
21	0.55%	0.78%	0.03%	0.00%	0.03%	0.00%	0.06%	0.00%
22	0.20%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	9.38%
23	10.92%	0.17%	0.12%	0.00%	0.10%	0.01%	0.23%	0.00%
24	4.90%	0.25%	0.17%	0.00%	0.10%	0.01%	0.23%	0.00%
25	16.25%	0.25%	0.09%	0.00%	0.06%	0.01%	0.32%	0.00%

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26	0.16%	0.23%	0.08%	0.00%	0.07%	0.01%	0.31%	0.00%
27	0.34%	0.49%	0.37%	0.00%	0.31%	0.03%	0.43%	0.00%
28	0.18%	0.02%	0.01%	0.00%	0.01%	0.00%	0.02%	0.00%
29	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
30	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

5. OPTION 2 - DEAD HORSE LANE LINK

5.1. DESIGN TRAFFIC VOLUMES (OPTION 2 - DEAD HORSE LANE LINK)

Figure 25 identifies the intersection and road numbers used in this report for Option 2.

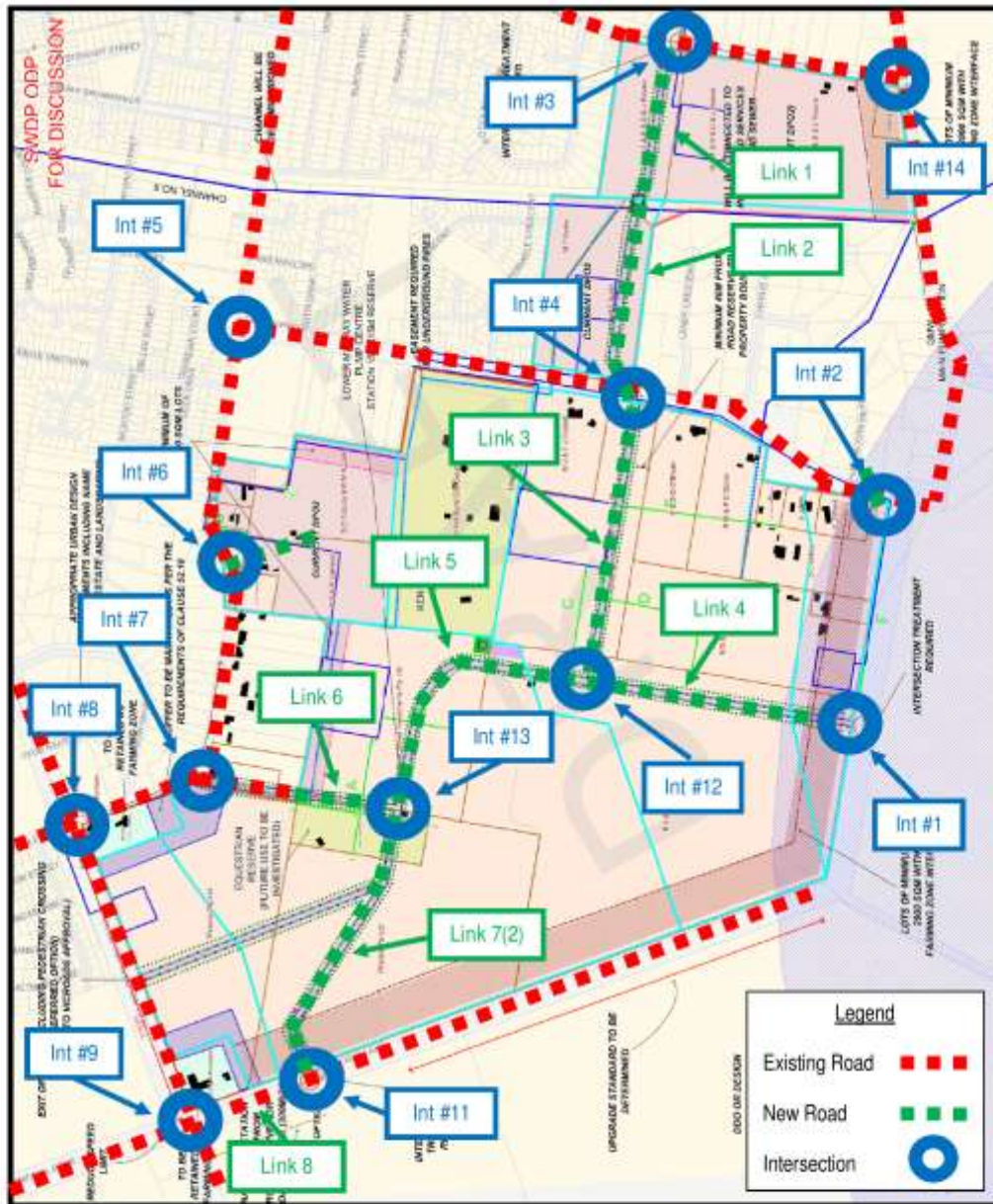


Figure 25: Intersection and Road Identification
(Option 2 - Dead Horse Lane Link)

The predicted precinct daily traffic volumes arising from the traffic model for Option 2 - Dead Horse Lane Link are shown in Figure 26.

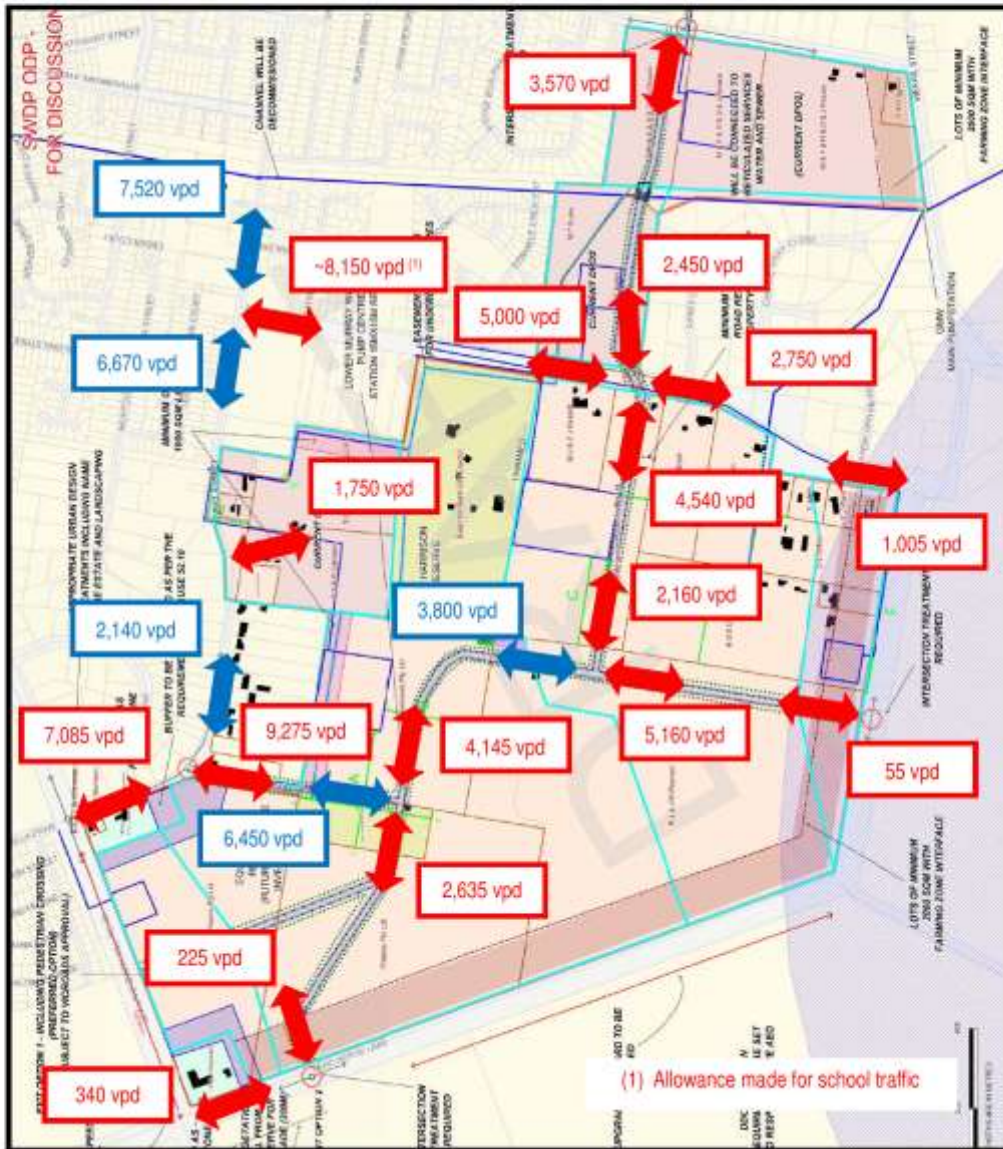
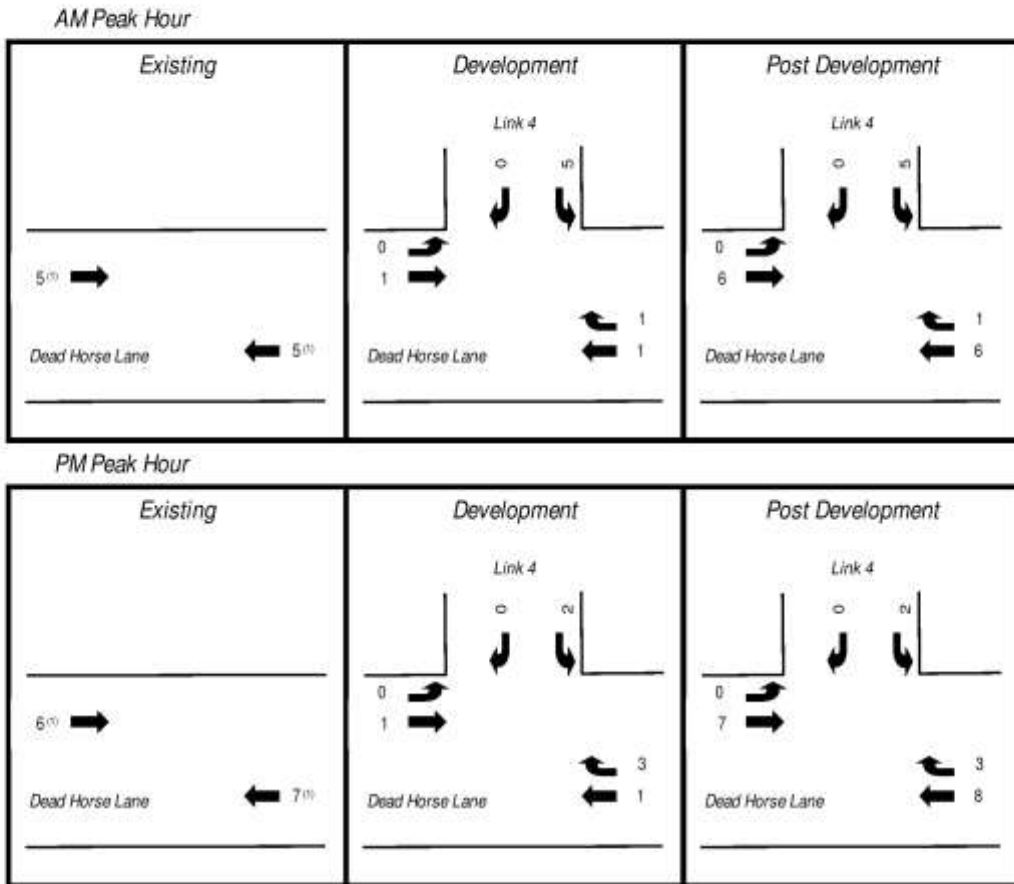


Figure 26: Predicted Precinct Daily Traffic Volumes (Option 2 - Dead Horse Lane Link)

Figures 27 to 38 show existing volumes and the total post-development volumes (including growth of traffic along Sea Lake-Swan Hill Road, as required by VicRoads) for Option 2 - Dead Horse Lane Link.



(2) Assumed equally split northbound/southbound (based on directional split at Yana Street).

Figure 27: Traffic Volumes - Dead Horse Lane/Link 4 (Intersection #1)
(Option 2 - Dead Horse Lane Link)

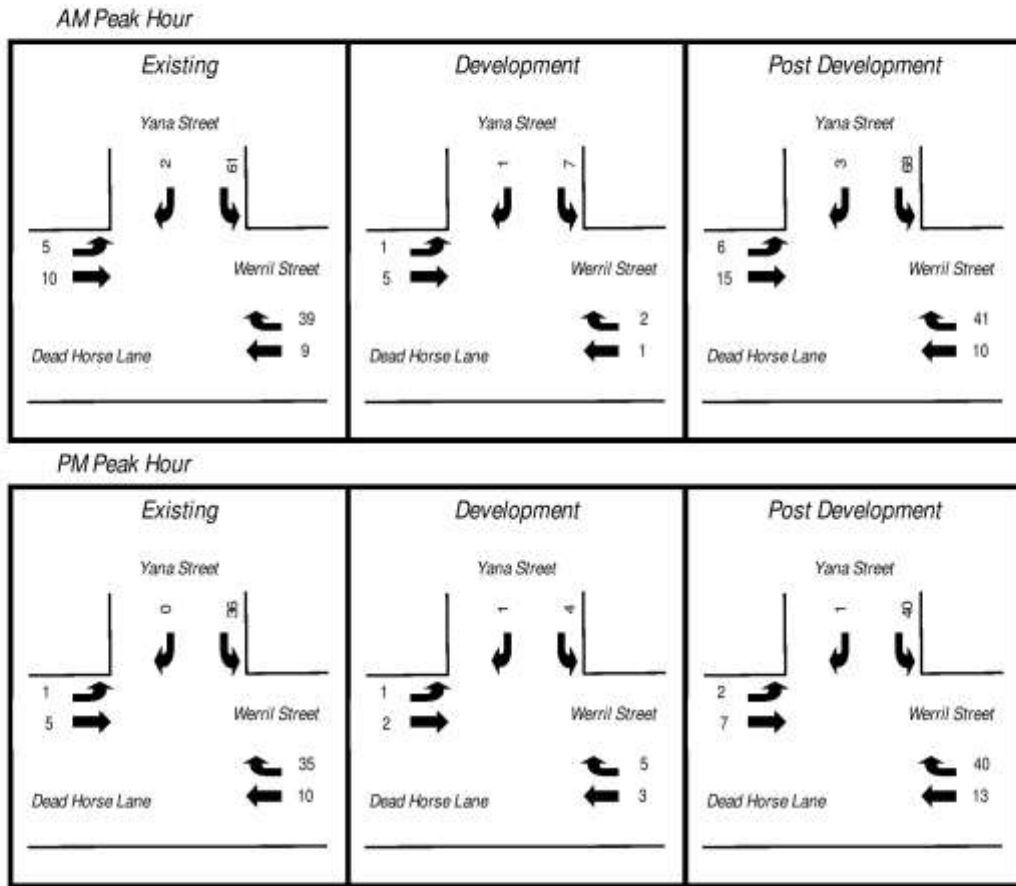
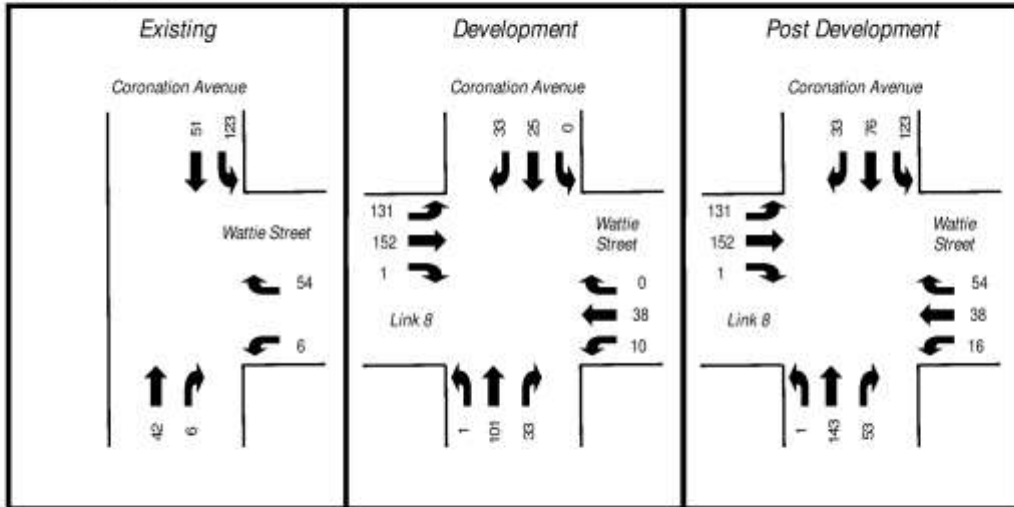


Figure 28: Traffic Volumes - Yana Street/ Werril Street/Dead Horse Lane (Intersection #2)
(Option 2 - Dead Horse Lane Link)



AM Peak Hour



PM Peak Hour

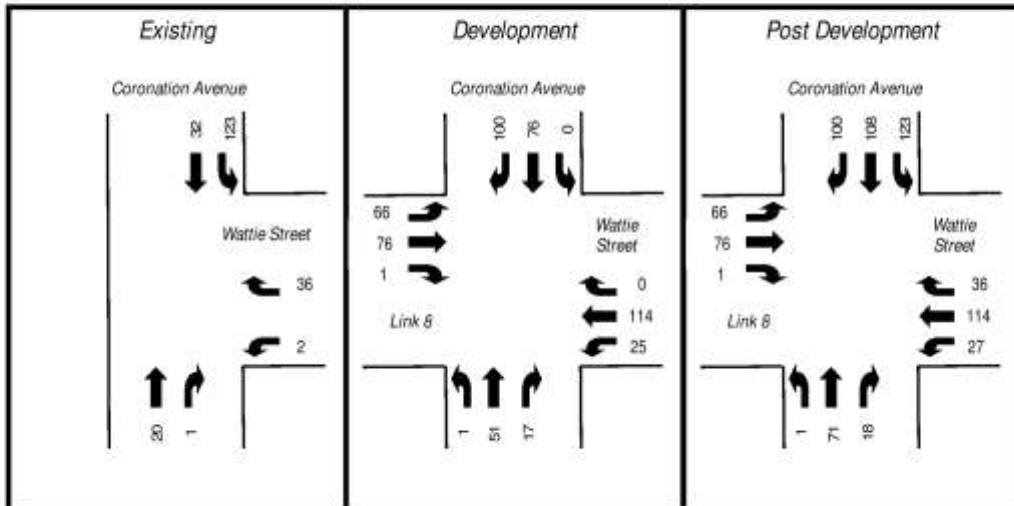
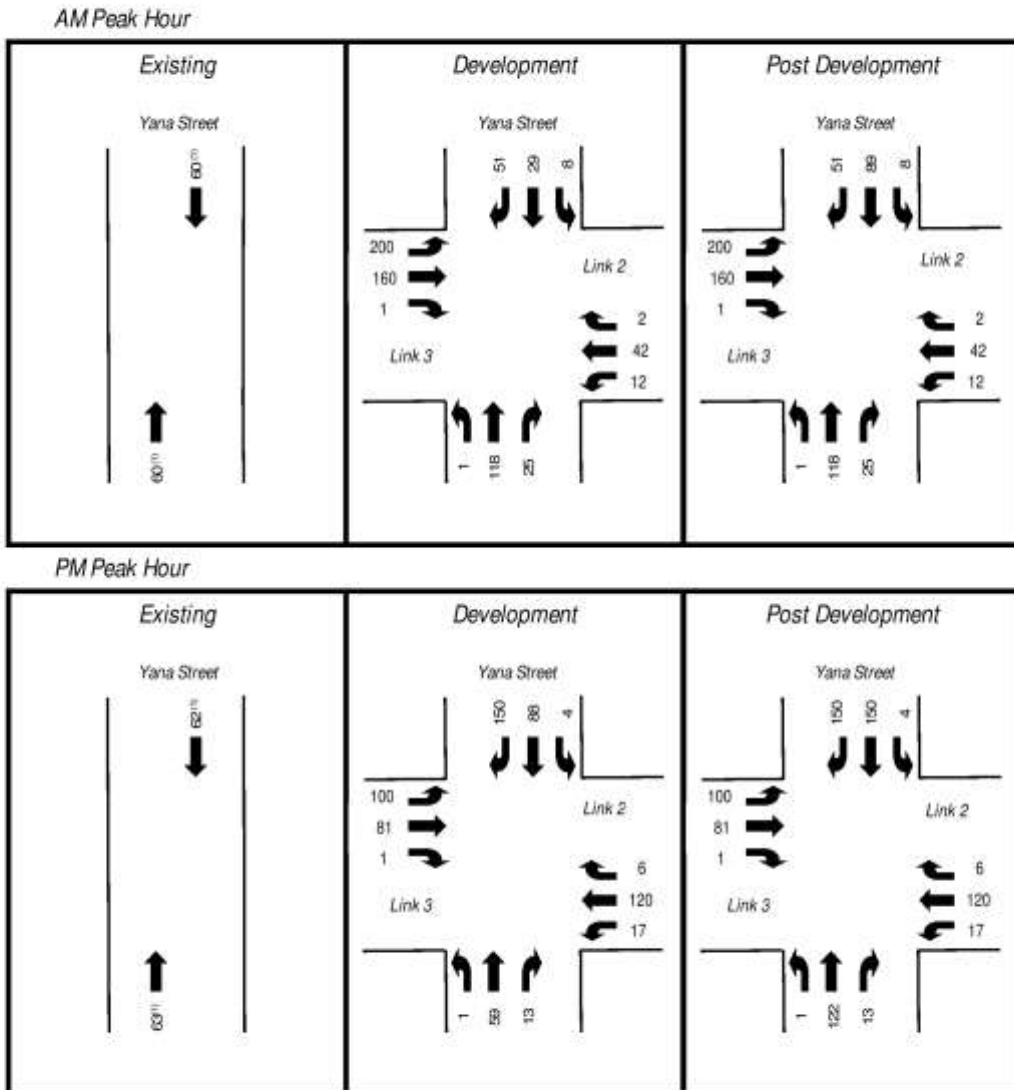


Figure 29: Traffic Volumes - Coronation Avenue/Wattie Street/Link 1 (Intersection #3)
(Option 2 - Dead Horse Lane Link)



(1) Assumed equally split northbound/southbound (based on directional split at Gray Street).

Figure 30: Traffic Volumes - Yana Street/Link 2/Link 3 (Intersection #4)
(Option 2 - Dead Horse Lane Link)

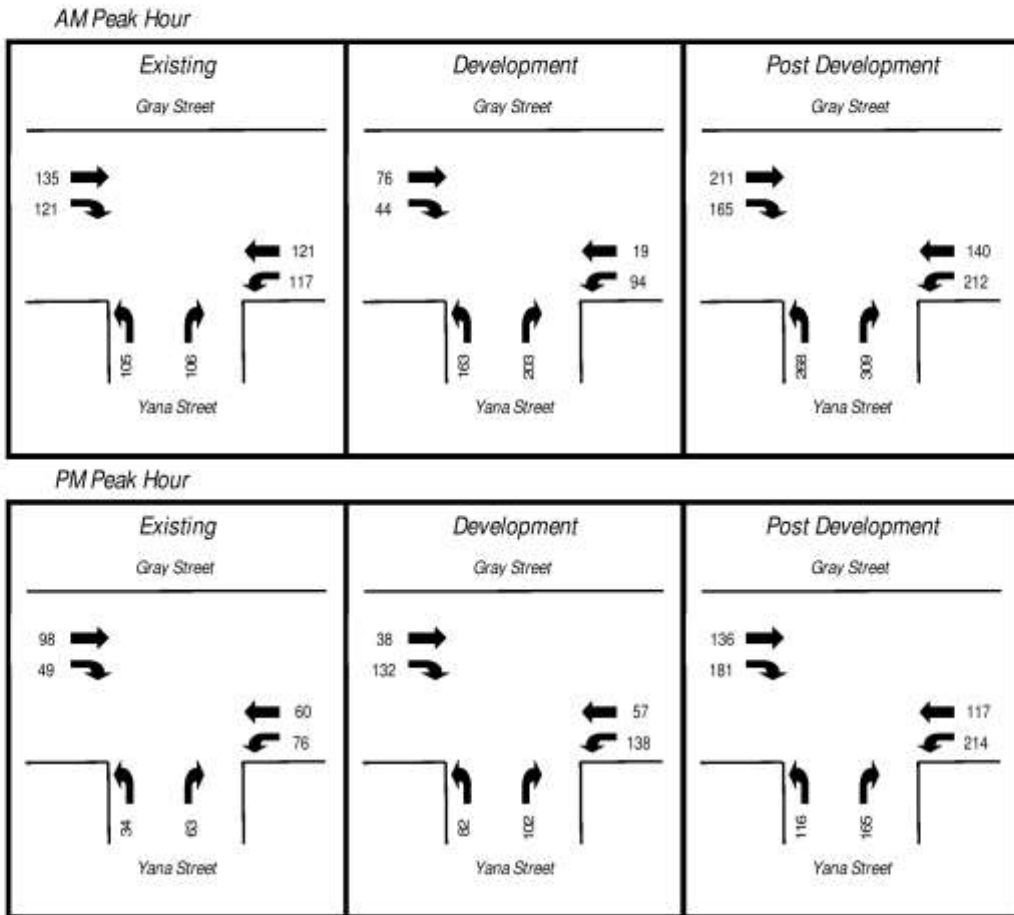


Figure 31: Traffic Volumes - Grey Street/Yana Street (Intersection #5)
(Option 2 - Dead Horse Lane Link)

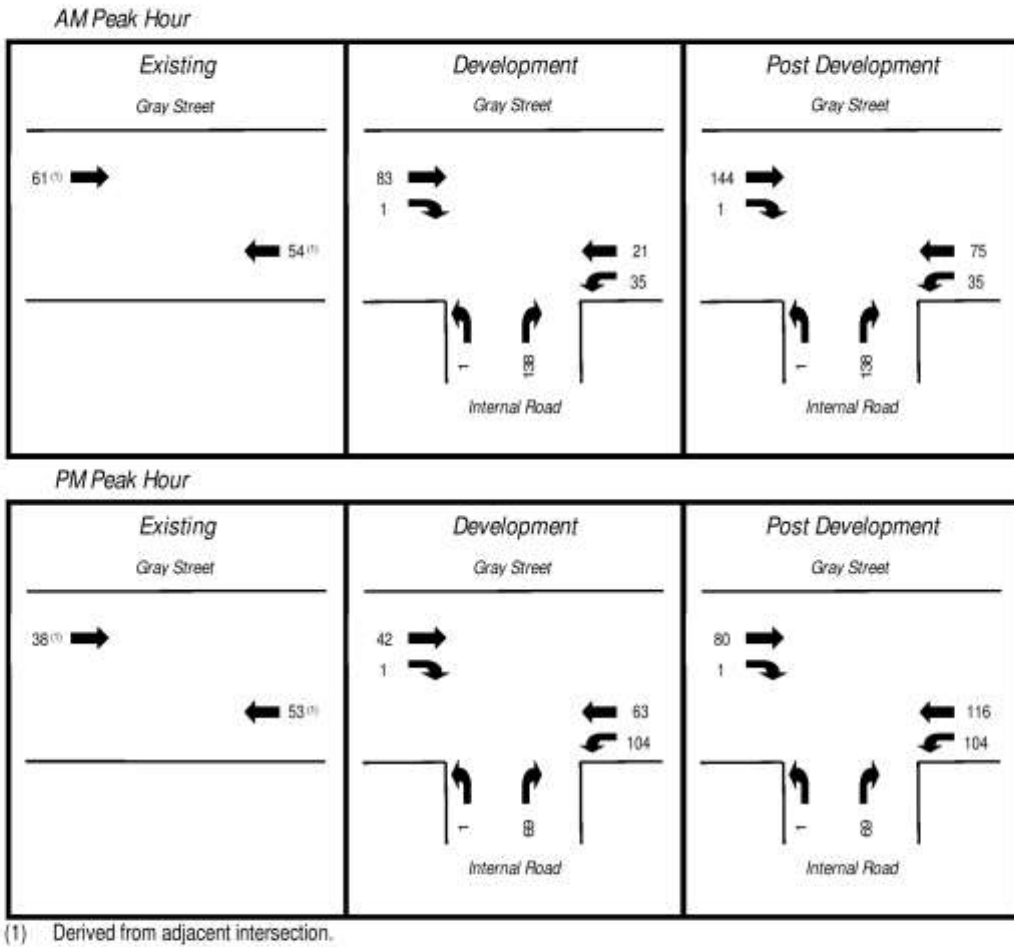
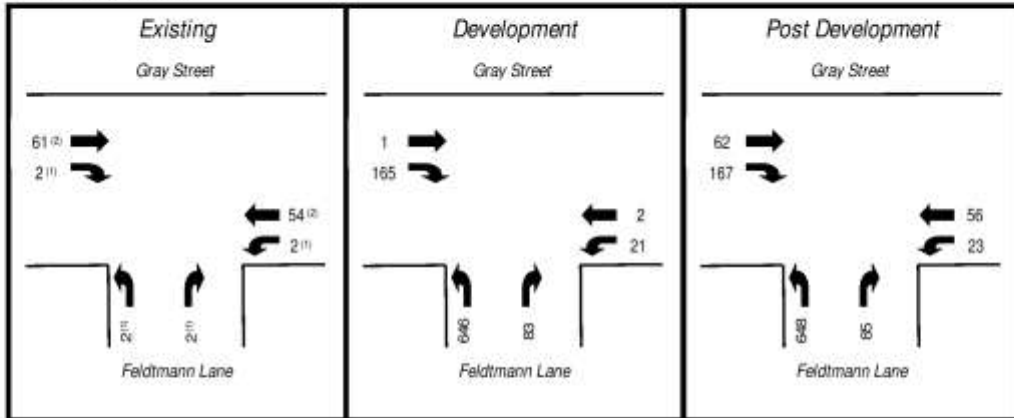


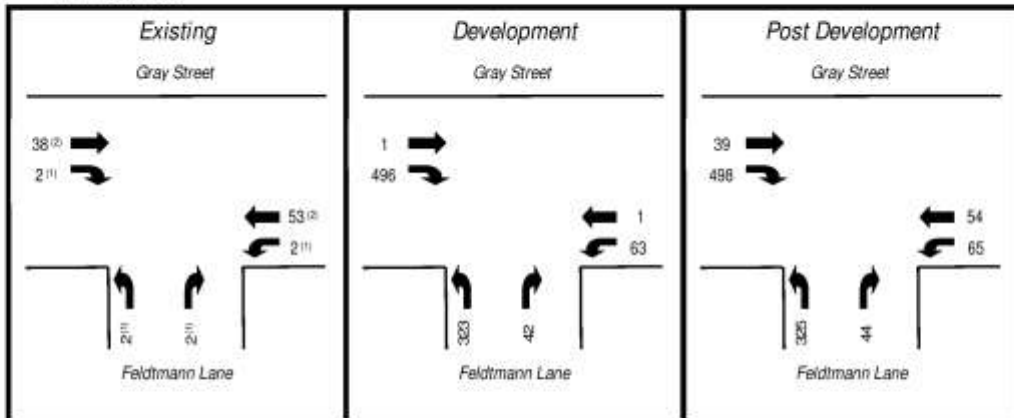
Figure 32: Traffic Volumes - Gray Street/Internal Road (Intersection #6)
(Option 2 - Dead Horse Lane Link)



AM Peak Hour

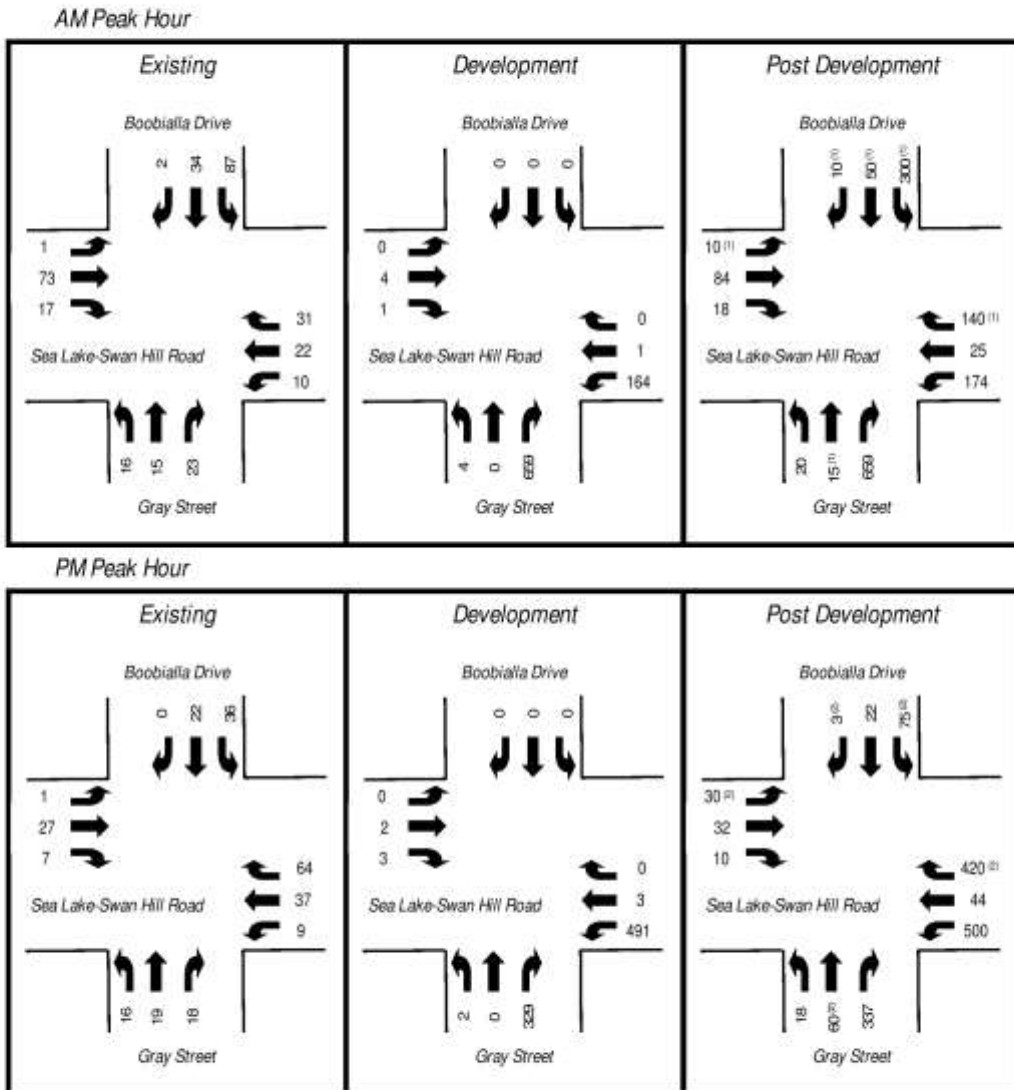


PM Peak Hour



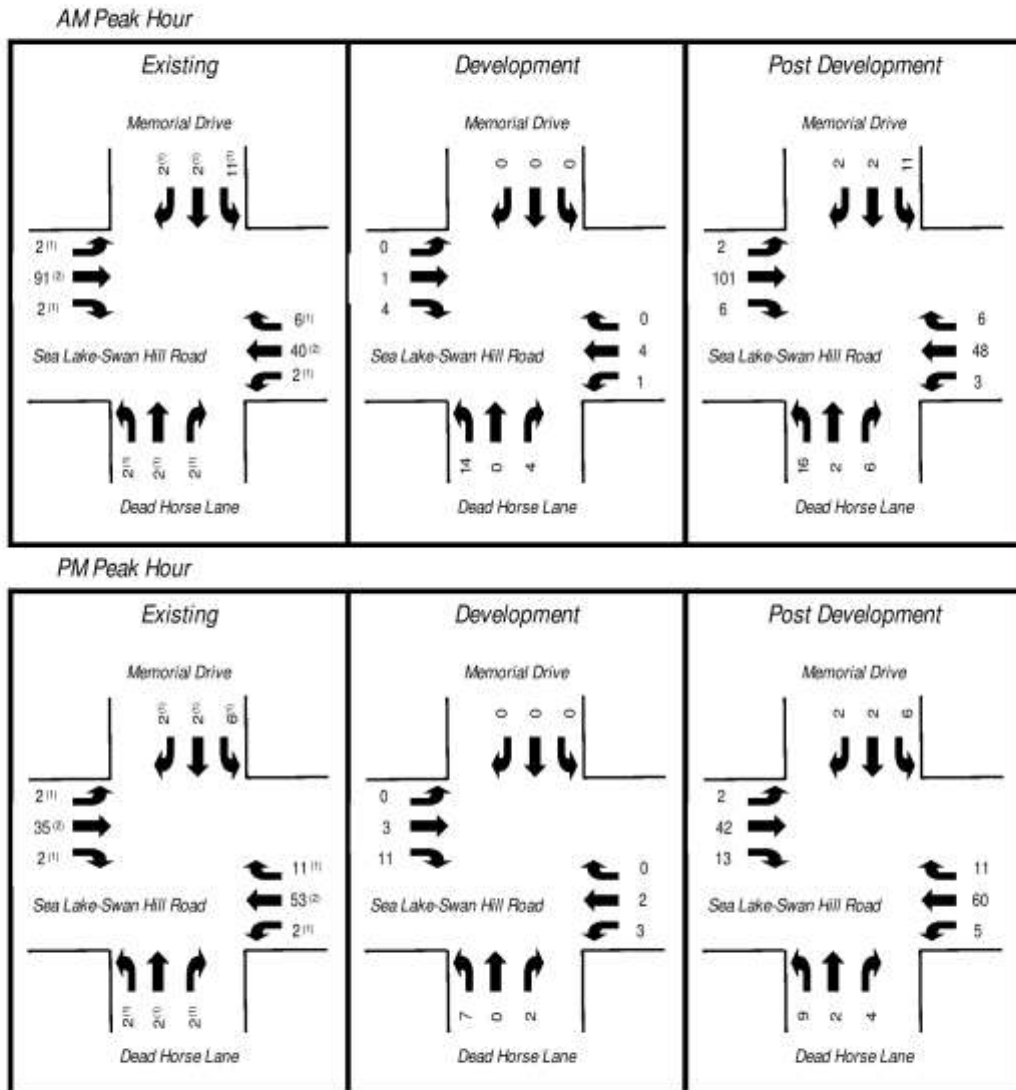
- (1) Assumed.
- (2) Derived from adjacent intersection.

Figure 33: Traffic Volumes - Gray Street/Feldtmann Lane (Link 6) (Intersection #7)
(Option 2 - Dead Horse Lane Link)



- (1) From TTM Consulting (Vic) traffic report for Tower Hill Development.
- (2) Derived from TTM Consulting (Vic) traffic report for Tower Hill Development.

Figure 34: Traffic Volumes - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8) (Option 2 - Dead Horse Lane Link)



- (1) Assumed/derived from TTM Consulting (Vic) traffic report for Tower Hill Development.
- (2) Derived from adjacent intersection.

*Figure 35: Traffic Volumes - Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive
(Intersection #9)
(Option 2 - Dead Horse Lane Link)*

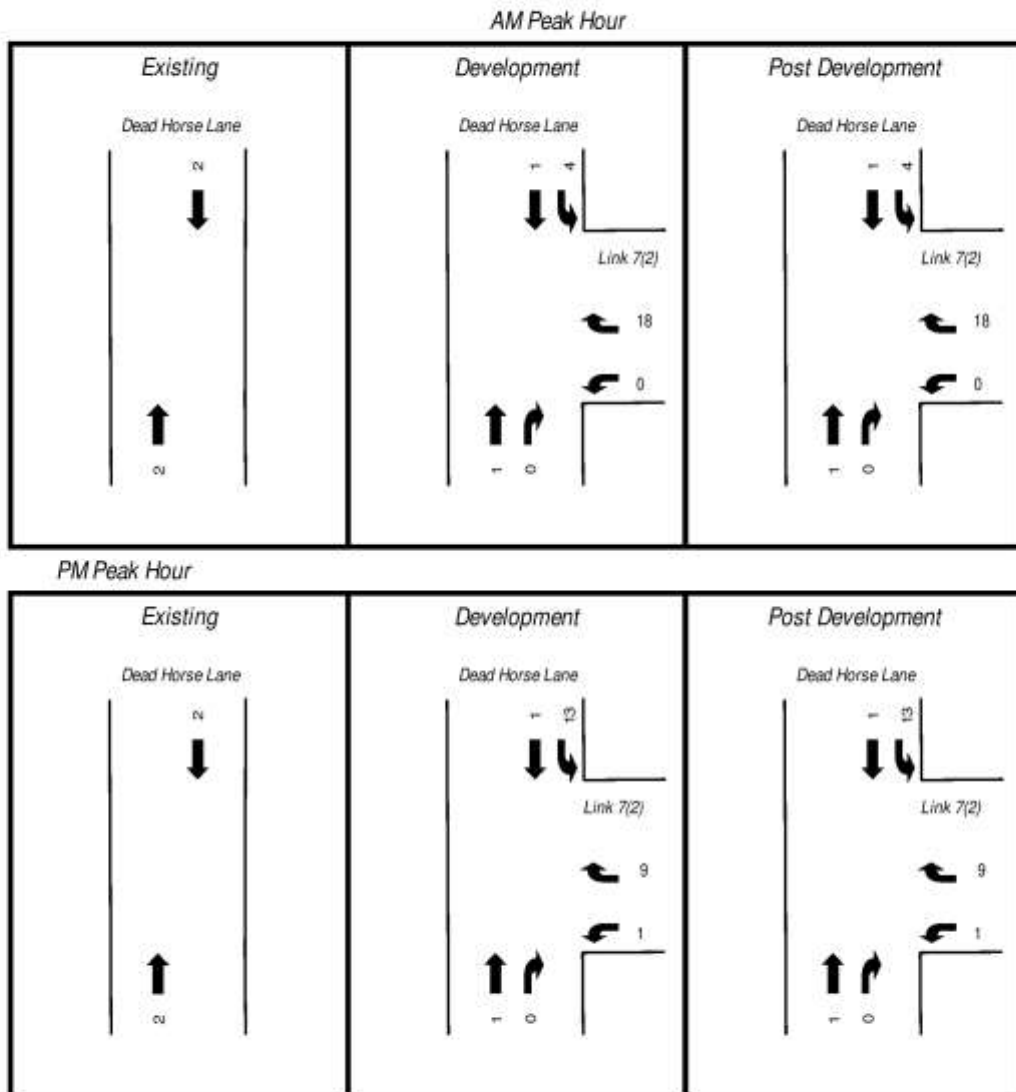


Figure 36: Traffic Volumes - Dead Horse Lane/Link 7(2) (Intersection #11)
(Option 2 - Dead Horse Lane Link)

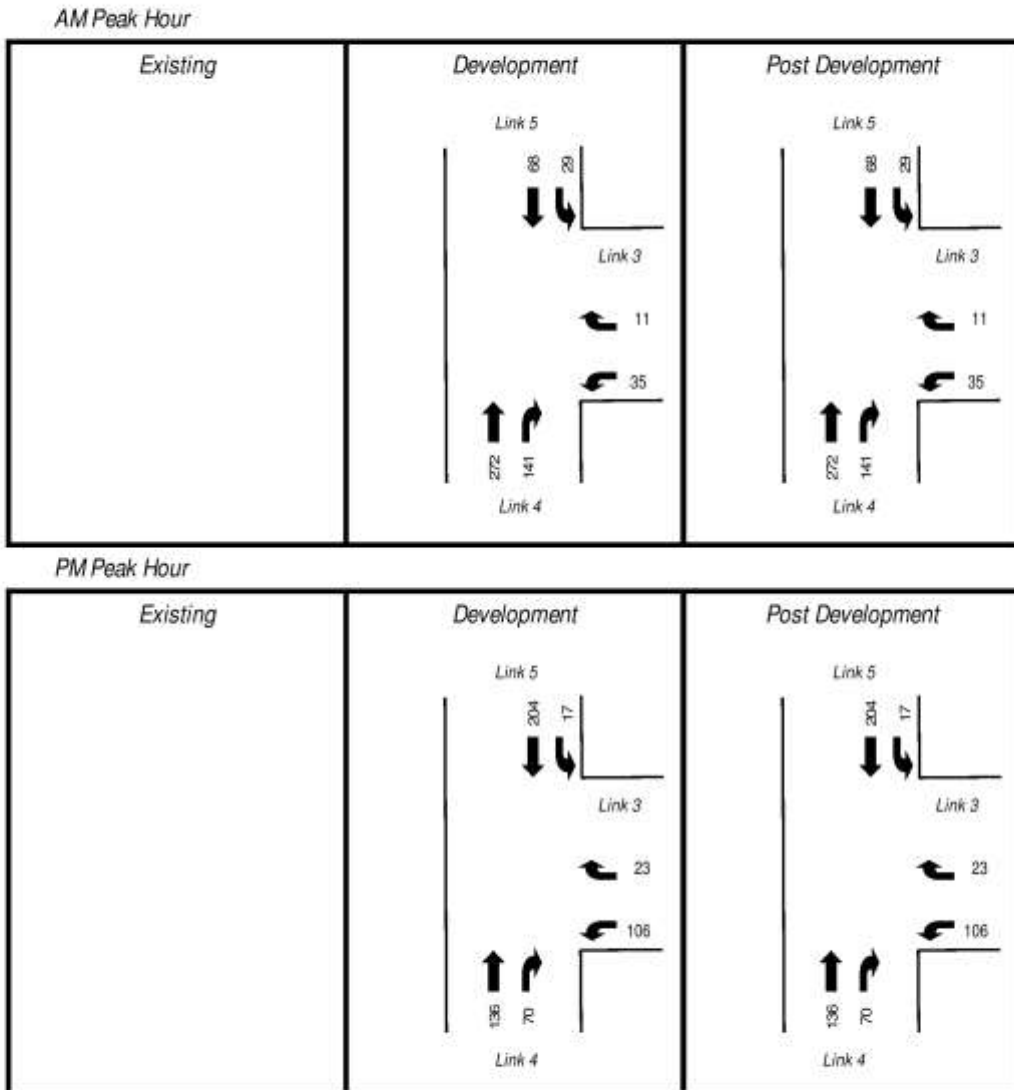


Figure 37: Traffic Volumes - Link 5/Link 3/Link 4 (Intersection #12)
(Option 2 - Dead Horse Lane Link)

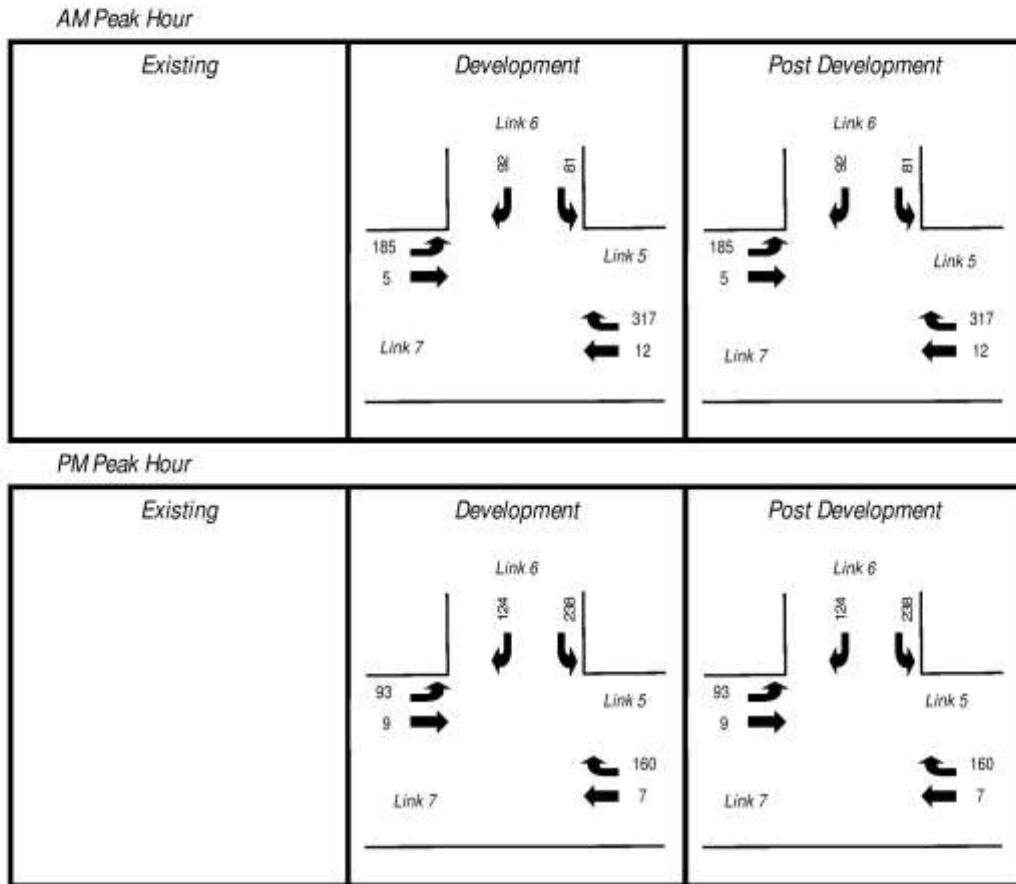


Figure 38: Traffic Volumes - Link 7/Link 6/Link 5 (Intersection #13)
(Option 2 - Dead Horse Lane Link)

**5.2. INTERSECTION REQUIREMENTS
(OPTION 2 - DEAD HORSE LANE LINK)**

A comparison of Figures 10 to 21 and Figures 26 to 37 shows that there is very little difference in the predicted traffic volumes for the majority of intersections and link roads. Intersections 7, 8, 9 and 11 and links 6 and 7 are affected by the replacement of a connection to Sea Lake-Swan Hill Road (Option 1) by a connection to Dead Horse Lane (Option 2). These intersections and links are therefore assessed as follows. The outputs of the capacity analyses are contained in the separate Appendices report.

5.2.1. Gray Street/Feldtmann Lane (Intersection #7)

Capacity Analysis

The volumes of traffic through this intersection are relatively low. The intersection was analysed as a simple T-intersection with priority to Gray Street and separate left and right turn lanes in Feldtmann Lane.

The results of the analysis are summarised in Table 18.



Table 18: Capacity Analysis - Grey Street/Feldtmann Lane (Intersection #7)
(Option 2 - Dead Horse Lane Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.00	8.7	0.0	0.60	9.0	31.3
	East	0.03	0.3	0.0	0.04	2.4	0.0
	West	0.03	0.4	0.0	0.11	6.2	3.5
	All Veh	0.03	0.6	0.0	0.60	7.9	31.3
PM	South	0.00	8.6	0.0	0.30	9.1	9.9
	East	0.03	0.3	0.0	0.07	4.5	0.0
	West	0.02	0.6	0.0	0.33	8.2	13.3
	All Veh	0.03	0.7	0.0	0.33	8.1	13.3

The analysis shows that under existing and post-development traffic volumes, the intersection generally operates with low degrees of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches. The exception to this is Feldtmann Lane, where the degree of saturation is 0.60 and the 95th percentile queue is 31.3m in the AM peak. These compare to Option 1 values of 0.38 and 13.7m.

Removing the new access to Sea Lake-Swan Hill Road significantly increases the number of movements between the south and west legs. Whilst the intersection operates at an acceptable level, it nonetheless performs at a lower level than in Option 1.

Recommended Intersection Treatment

It is recommended that a simple T-intersection continue to be provided at the Gray Street/Feldtmann Lane intersection be provided with priority to Gray Street, a right turn facility in Gray Street (due to the large volume of right turning traffic) and separate left and right turn lanes in Feldtmann Lane.

5.2.2. Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)

Capacity Analysis

This existing cross road intersection is currently controlled by a single lane roundabout.

The results of the analysis for this configuration are summarised in Table 19.



Table 19: Capacity Analysis - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)
(Option 2 - Dead Horse Lane Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.04	7.8	1.3	0.52	12.2	29.5
	East	0.05	8.1	1.6	0.24	8.0	11.6
	North	0.10	5.6	3.3	0.49	12.4	30.2
	West	0.07	5.9	2.3	0.16	10.8	7.7
	All Veh	0.10	6.5	3.3	0.52	11.2	30.2
	LoS	A			A		
PM	South	0.04	7.4	1.3	0.42	12.9	20.3
	East	0.08	8.5	2.6	0.61	8.1	45.7
	North	0.04	5.3	1.4	0.10	7.0	4.0
	West	0.03	6.1	0.9	0.10	10.8	4.6
	All Veh	0.08	7.2	2.6	0.61	9.4	45.7
	LoS	A			A		

As with Option 1, the analysis shows that under existing and post-development traffic volumes, the intersection operates at a Level of Service A, with a low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Removing the new access to Sea Lake-Swan Hill Road significantly increases the number of movements between the south and east legs. Whilst the intersection operates at an acceptable level, it nonetheless performs at a lower level than in Option 1.

Recommended Intersection Treatment

It is recommended that the intersection remain under roundabout control. No upgrades are required from a capacity perspective.

"Trigger Point" for Upgrade

As no upgrades are required from a capacity perspective, there is no "trigger point".

5.2.3. Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive (Intersection #9)

Capacity Analysis

This cross road intersection carries relatively low volumes on the side roads, including very low volumes of crossing traffic. The intersection has therefore been analysed under yield conditions for the side road traffic, with no left or right turn lanes in Sea Lake-Swan Hill Road.

The results of the analysis are summarised in Table 20.



Table 20: Capacity Analysis - Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive
(Intersection #9)
(Option 2 - Dead Horse Lane Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.01	8.4	0.1	0.02	8.6	0.6
	East	0.03	1.7	1.0	0.03	1.6	1.2
	North	0.02	8.5	0.4	0.02	8.6	0.4
	West	0.05	0.5	1.9	0.06	0.8	2.2
	All Veh	0.05	1.8	1.9	0.06	2.5	2.2
PM	South	0.01	8.2	0.1	0.01	8.5	0.4
	East	0.04	1.8	1.3	0.04	1.9	1.5
	North	0.01	8.3	0.2	0.01	8.3	0.2
	West	0.02	1.0	0.8	0.03	2.4	1.1
	All Veh	0.04	2.4	1.3	0.04	3.1	1.5

As with Option 1, the analysis shows that under existing and post-development traffic volumes, the intersection operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches. The impact of the additional traffic on the operation of the intersection is negligible.

Austrroads

"Guide to Road Design Part 4A: Unsignalised and Signalised Intersections" (Austrroads, 2009) provides guidance on the form of intersection treatment for various situations. Of relevance here is Figure 4.9(b), which provides numerical warrants for turn treatments on the major road with a design speed of less than 100km/h (for the purposes of this assessment, it is assumed that the speed limit on Sea Lake-Swan Hill Road has been reduced to 80 km/h).

Figure 39 compares the existing and post development assessment for the AM peak, and Figure 40 for the PM peak.

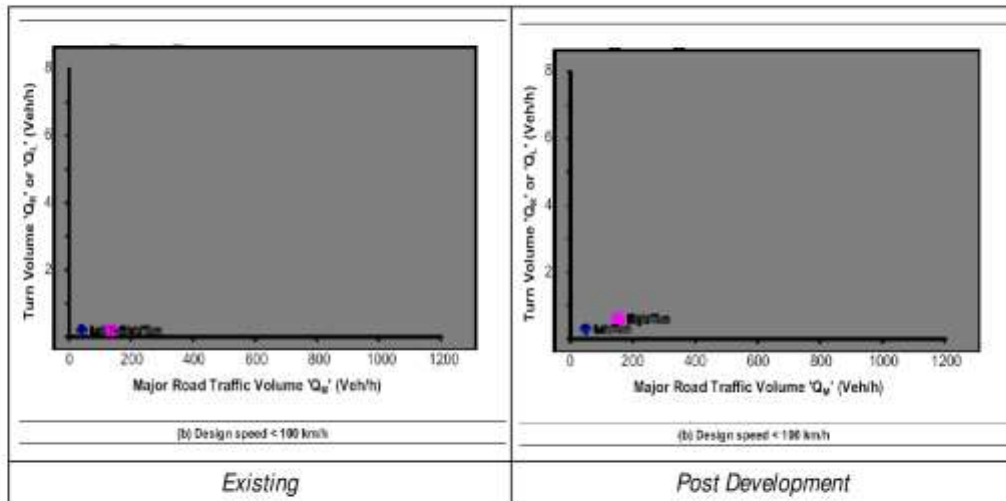


Figure 39: Turn Lane Warrant Assessment - Sea Lake-Swan Hill Road/
Dead Horse Lane/Memorial Drive (Intersection #9) - AM Peak
(Option 2 - Dead Horse Lane Link)

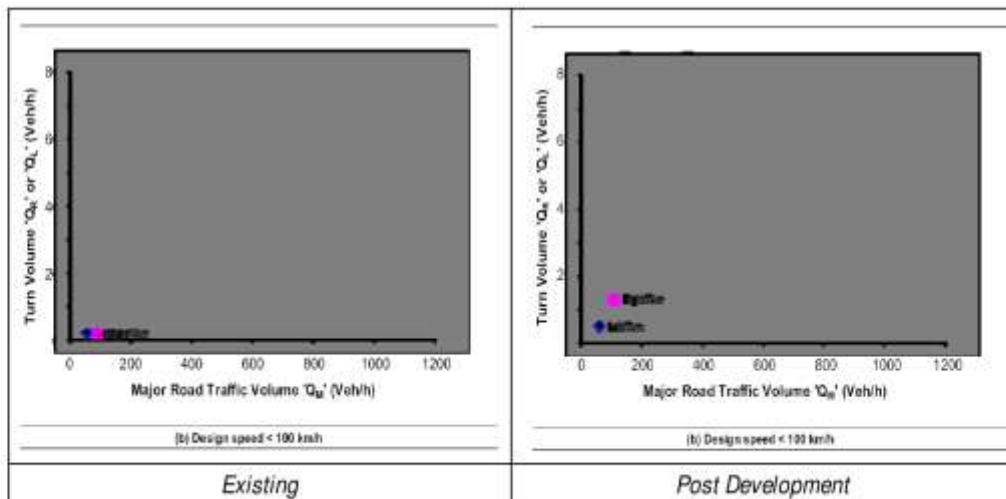


Figure 40: Turn Lane Warrant Assessment - Sea Lake-Swan Hill Road/
Dead Horse Lane/Memorial Drive (Intersection #9) - PM Peak
(Option 2 - Dead Horse Lane Link)

Recommended Intersection Treatment

On this basis, it is recommended that BAR (basic right turn) and BAL (basic left turn) treatments be provided on the west and east approaches respectively. No particular treatment is required for the left and right turn lanes in Dead Horse Lane at this intersection.

"Trigger Point" for Upgrade

The existing volumes warrant the provision of BAR and BAL turn treatments, as do the post development volumes. There is therefore no "trigger point" for an upgrade of the right turn treatment as a result of the Swan Hill South West Development Precinct.



5.2.4. Dead Horse Lane/Link 7(2) (Intersection #11)

Capacity Analysis

Due to the low volumes of traffic through the intersection, a simple T-intersection is an appropriate treatment. No capacity analysis has been undertaken.

Recommended Intersection Treatment

It is recommended that a simple T-intersection be provided at the Dead Horse Lane/Link 7(2) intersection, with priority to Dead Horse Lane.

5.3. RELATIVE TRAFFIC VOLUMES CONTRIBUTIONS BY INDIVIDUAL LAND HOLDINGS (OPTION 2 - DEAD HORSE LANE LINK)

5.3.1. Nominated Intersections (Option 2 - Dead Horse Lane Link)

The apportionment of traffic, calculated by determining the proportion of traffic generated by each zone in the traffic model that was attributable to each land holding, is shown in Table 21 for the nominated intersections.

Table 21: Apportionment of Traffic - Intersections (Option 2 - Dead Horse Lane Link)

Landowner Number	Proportion of Traffic Through Intersection Attributable to Landowner						
	Int #3	Int #4	Int #6	Int #7	Int #11	Int #12	Int #13
1	0.37%	0.30%	12.09%	19.77%	4.03%	0.35%	0.28%
2	0.52%	0.42%	16.85%	27.26%	31.67%	0.49%	39.15%
3	0.08%	0.06%	2.51%	4.07%	1.07%	0.02%	1.42%
4	4.38%	4.33%	5.89%	13.24%	4.50%	5.06%	9.02%
5	17.05%	27.49%	0.00%	30.82%	21.94%	85.45%	42.89%
6	0.00%	0.00%	3.40%	0.01%	0.00%	0.00%	0.00%
7	0.00%	0.00%	23.80%	0.08%	0.00%	0.00%	0.00%
8	0.00%	0.00%	1.70%	0.01%	0.00%	0.00%	0.00%
9	0.00%	0.00%	2.04%	0.01%	0.00%	0.00%	0.00%
10	0.00%	0.00%	27.88%	0.09%	0.00%	0.00%	0.00%
11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	10.40%	22.01%	0.00%	0.01%	6.25%	0.22%	0.22%
13	1.86%	1.55%	0.09%	0.03%	1.14%	0.05%	0.04%
14	4.79%	13.91%	0.00%	4.42%	6.00%	7.53%	6.07%
15	0.04%	0.15%	0.00%	0.00%	0.04%	0.00%	0.00%
16	2.07%	8.63%	0.00%	0.00%	2.53%	0.11%	0.09%



17	0.21%	0.60%	0.00%	0.19%	0.26%	0.32%	0.26%
18	1.29%	7.27%	0.00%	0.00%	2.49%	0.00%	0.00%
19	1.93%	9.34%	0.00%	0.00%	2.49%	0.00%	0.08%
20	0.23%	1.01%	0.00%	0.00%	0.30%	0.00%	0.01%
21	0.37%	1.59%	0.00%	0.00%	0.47%	0.02%	0.02%
22	0.13%	0.75%	0.00%	0.00%	0.26%	0.00%	0.00%
23	7.33%	0.06%	0.00%	0.00%	1.76%	0.07%	0.06%
24	3.29%	0.15%	0.00%	0.00%	2.44%	0.10%	0.04%
25	10.90%	0.09%	0.00%	0.00%	2.61%	0.00%	0.09%
26	10.11%	0.09%	0.00%	0.00%	2.40%	0.00%	0.08%
27	21.84%	0.19%	0.00%	0.00%	5.19%	0.22%	0.17%
28	0.83%	0.01%	0.00%	0.00%	0.17%	0.01%	0.01%
29	0.00%	0.00%	2.04%	0.01%	0.00%	0.00%	0.00%
30	0.00%	0.00%	1.70%	0.01%	0.00%	0.00%	0.00%

5.3.2. Nominated Internal Roads (Option 2 - Dead Horse Lane Link)

The apportionment of traffic, calculated by determining the proportion of traffic generated by each zone in the traffic model that was attributable to each land holding, is shown in Table 22 for the nominated road links.

Table 22: Apportionment of Traffic - Road Links (Option 2 - Dead Horse Lane Link)

Landowner Number	Proportion of Traffic Along Link Attributable to Landowner							
	Link 1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7(2)	Link 8
1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3	0.11%	0.16%	0.07%	0.00%	0.06%	2.82%	3.25%	1.09%
4	6.48%	9.28%	8.39%	0.00%	11.39%	12.98%	0.36%	4.57%
5	25.07%	35.45%	53.27%	91.60%	75.01%	40.81%	1.71%	22.28%
6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	15.39%	22.03%	21.50%	0.00%	0.34%	0.02%	0.52%	5.94%
13	2.76%	3.95%	0.08%	0.00%	0.07%	0.00%	0.09%	1.15%
14	7.09%	10.15%	13.56%	8.05%	10.55%	5.78%	0.48%	6.09%
15	0.05%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%
16	3.07%	4.39%	0.18%	0.00%	0.15%	0.01%	0.20%	2.57%
17	0.30%	0.43%	0.58%	0.34%	0.45%	0.25%	0.02%	0.26%
18	1.90%	2.72%	0.00%	0.00%	0.00%	0.00%	0.00%	1.51%
19	2.85%	6.54%	0.09%	0.00%	0.07%	0.01%	0.20%	2.52%
20	0.34%	0.49%	0.01%	0.00%	0.01%	0.00%	0.02%	0.30%
21	0.54%	0.77%	0.03%	0.00%	0.03%	0.00%	0.04%	0.48%
22	0.20%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.16%
23	10.84%	0.17%	0.12%	0.00%	0.10%	0.01%	0.14%	1.78%
24	4.87%	0.24%	0.16%	0.00%	0.10%	0.01%	0.09%	2.48%
25	16.13%	0.25%	0.09%	0.00%	0.08%	0.01%	0.21%	2.65%
26	0.16%	0.23%	0.08%	0.00%	0.07%	0.01%	0.19%	2.44%
27	0.34%	0.49%	0.36%	0.00%	0.30%	0.02%	0.41%	5.26%
28	0.18%	0.02%	0.01%	0.00%	0.01%	0.00%	0.01%	0.17%
29	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
30	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

5.4. OPTION 1 V OPTION 2

A key comparison task of the study was to compare the provision of a connection to Sea Lake-Swan Hill Road (Option 1) to the provision of a connection to Dead Horse Lane. A driver of this was VicRoads' preference to not provide a new intersection on Sea Lake-Swan Hill Road between the Gray Street/Boobiella Drive and Dead Horse Lane/Memorial Drive intersections to minimise congestion and to not compromise future traffic lane configurations.

To assist put this into perspective, the following are noted:

- The Gray Street/Boobiella Drive and Dead Horse Lane/Memorial Drive intersections are approximately 750m apart; and
- From Figure 4, the current daily two way traffic volume on Sea Lake-Swan Hill Road west of Gray Street/Boobiella Drive is 1,095 vpd. Based on the adopted growth rate of 1% pa for ten years, this will increase to around 1,215 vpd in 2023 (without Swan Hill South West Development Precinct traffic).



The intersections affected by the variation in connection to the external road network are intersections 7 (Gray Street/Feldtmann Lane), 8 Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive) and 9 (Sea Lake-Swan Hill Road/Dead Horse Lane/Memorial Drive). Removing the Sea Lake-Swan Hill Road connection (Option 1) significantly increases the number of movements between the south and west legs of the Gray Street/Feldtmann Lane intersection. It also significantly increases the number of movements between the south and east legs at the Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive roundabout. Whilst both these intersections will operate at an acceptable level under the increased traffic volumes resulting from the removal of the connection to Sea Lake-Swan Hill Road (ie Option 2), they will nonetheless perform at lower levels than in Option 1 (ie retaining the connection to Sea Lake-Swan Hill Road). This situation would be exacerbated should residential densities of 14 households per ha be adopted instead of 10.5 households per ha.

In simple terms, Option 2 results in more traffic using Gray Street and Feldtmann Lane than in Option 1. It also increases the volume of traffic through the internal intersection 13.

Physically, there are no reasons that prevent a new intersection to Sea Lake-Swan Hill Road in the location proposed. It is to be located approximately 400m west of the Gray Street/Boobialla Drive roundabout and approximately 350m east of the Dead Horse Lane/Memorial Drive intersection. The recommended treatment is a BAL (basic right turn) on the west approach and an AUL (auxiliary left turn) on the east approach. For an 80 km/h design speed, there is more than sufficient road length in which to generate the required lane lengths without affecting the adjacent intersections.

Option 1 will direct approximately 2,500 vpd onto Sea Lake-Swan Hill Road to/from the east. This will increase the total daily traffic volume on Sea Lake-Swan Hill Road west of Gray Street/Boobialla Drive to around 3,700 vpd in 2023 (the assumed completion date for development within the Swan Hill South West Development Precinct). This can be readily accommodated in a two lane-two way cross-section. Also, it is well within the environmental capacity of an arterial road (rural or urban) (10,000 vpd or more, depending on the road cross section).

Option 1 (a connection to Sea Lake-Swan Hill Road) provides a superior road network compared to Option 2 (a connection to Dead Horse Lane) and will not detrimentally affect the operation or capacity of Sea Lake-Swan Hill Road.

6. INCREASED DENSITY

Traffix Group was requested by Council to assess the impact of increasing the residential density from 10.5 lots per ha to 14 lots per ha.

6.1. DESIGN TRAFFIC VOLUMES

The predicted precinct daily traffic volumes arising from the traffic model for Option 1 - Sea Lake-Swan Hill Road Link are shown in Figure 41 and for Option 2 - Dead Horse Lane Link are shown in Figure 42.

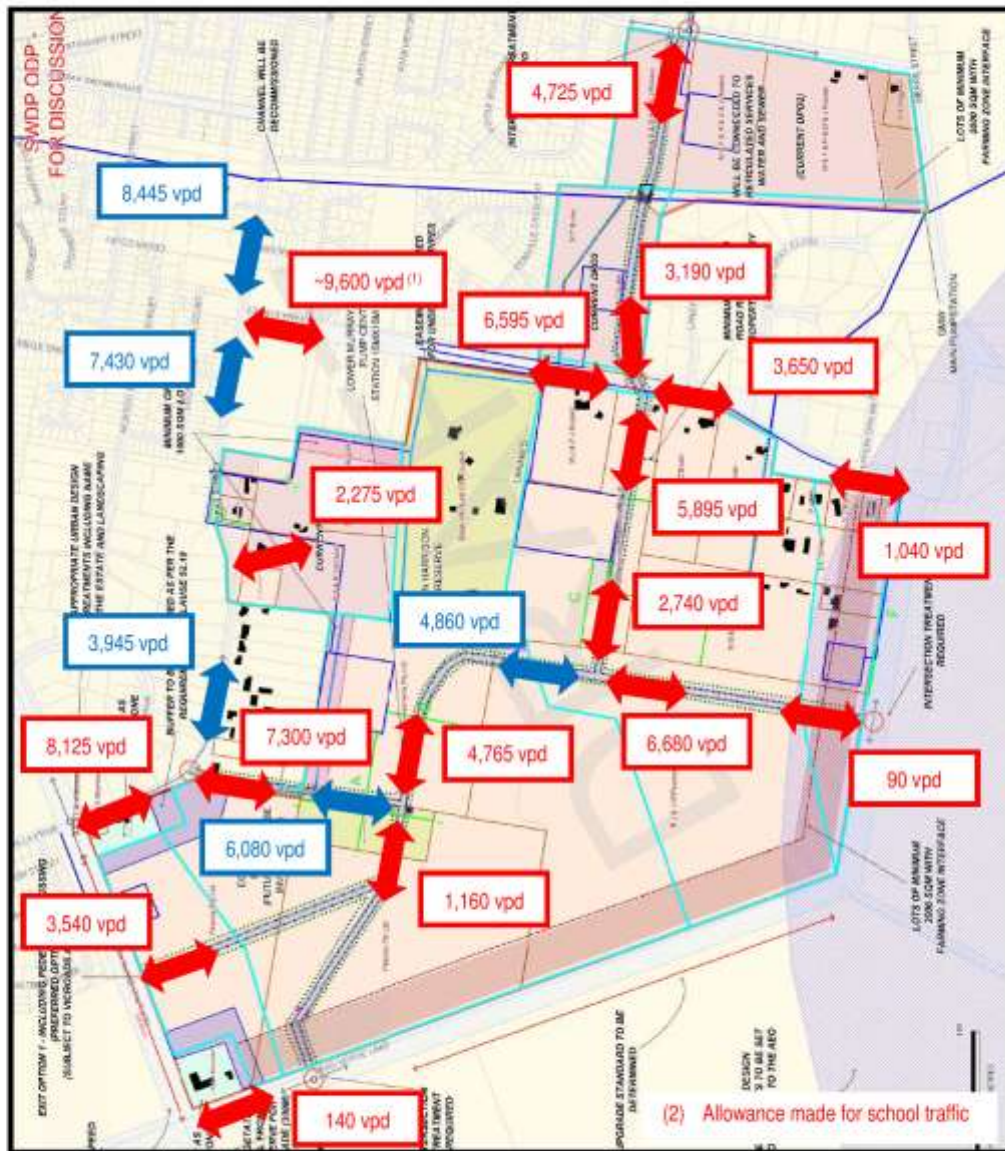


Figure 41: Predicted Precinct Daily Traffic Volumes - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)

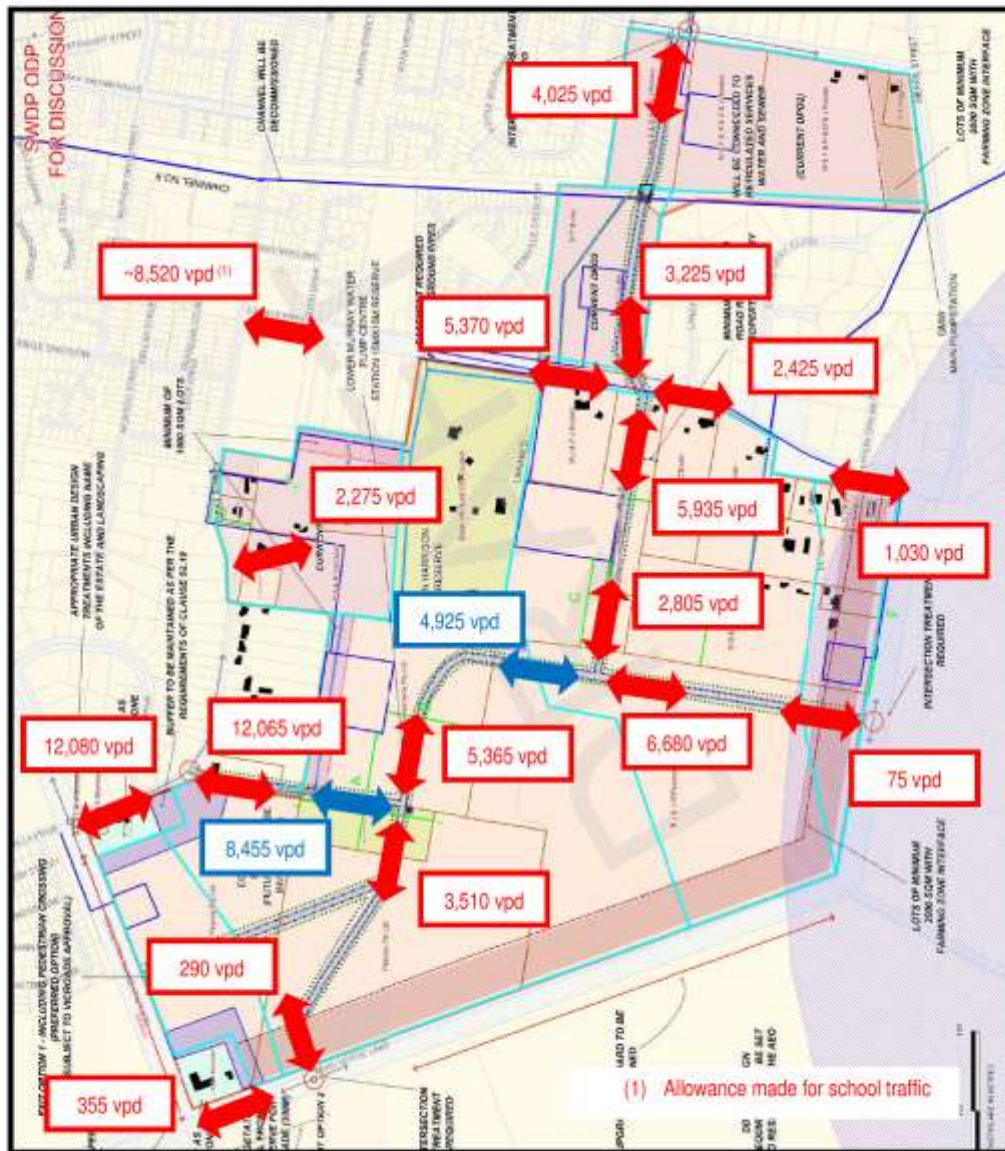


Figure 42: Predicted Precinct Daily Traffic Volumes - 14 Lots per ha
(Option 2 - Dead Horse Lane Link)

Clearly, the higher density results in greater traffic volumes being generated by the Swan Hill South West Development Precinct.

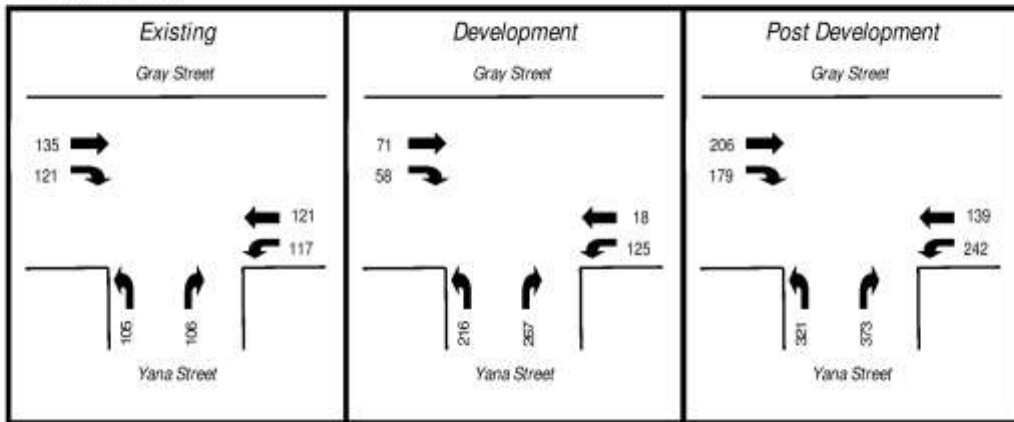
The single lane roundabouts recommended at intersections 3 (Coronation Avenue/Wattie Street/Link 1), 4 Yana Street/Link 2/Link 3), 12 (Link 3/Link 4/Link 5) and 13 ((Link 5/Link 6/Link 7) will have the capacity to accommodate the extra traffic generated by a higher residential density.

The higher density will increase traffic at intersections 5 (Grey Street/Yana Street), 7 (Gray Street/Feldtmann Lane (Link 6)) and 8 Sea Lake-Swan Hill Road/Gray Street/Boobiulla Drive) to the point where additional capacity analysis is warranted to determine the impact the higher density will have on the operation and form of these intersections.



Figures 43, 44 and 45 show the predicted traffic volumes with higher densities for Option 1 (Sea Lake-Swan Hill Road connection).

AM Peak Hour



PM Peak Hour

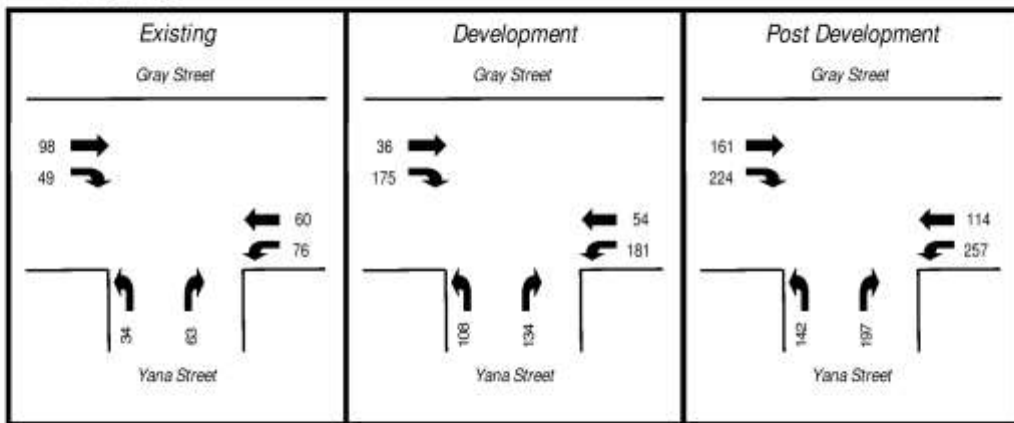
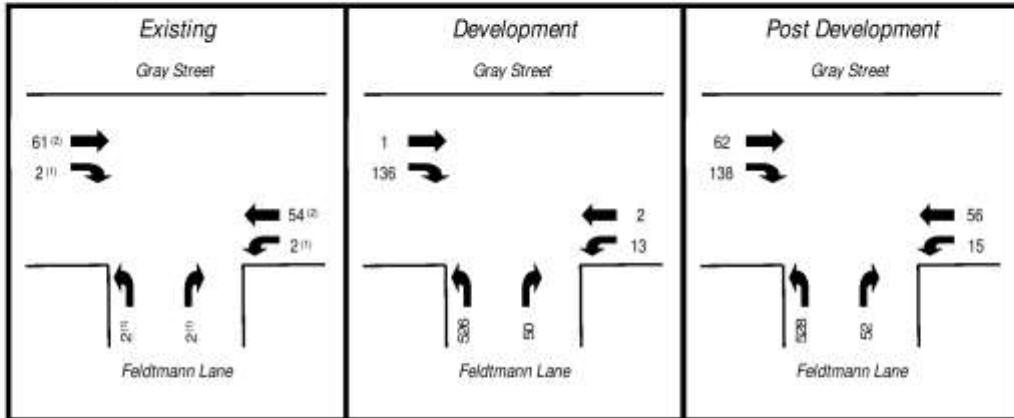


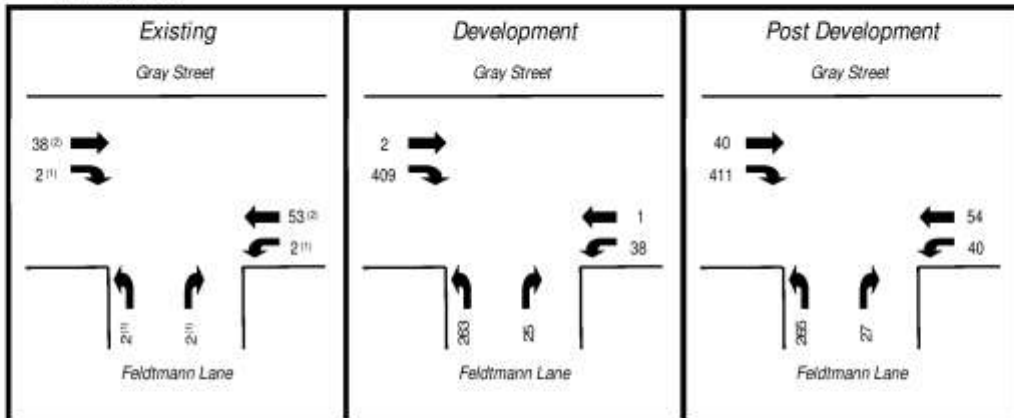
Figure 43: Traffic Volumes - Grey Street/Yana Street (Intersection #5) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)



AM Peak Hour



PM Peak Hour

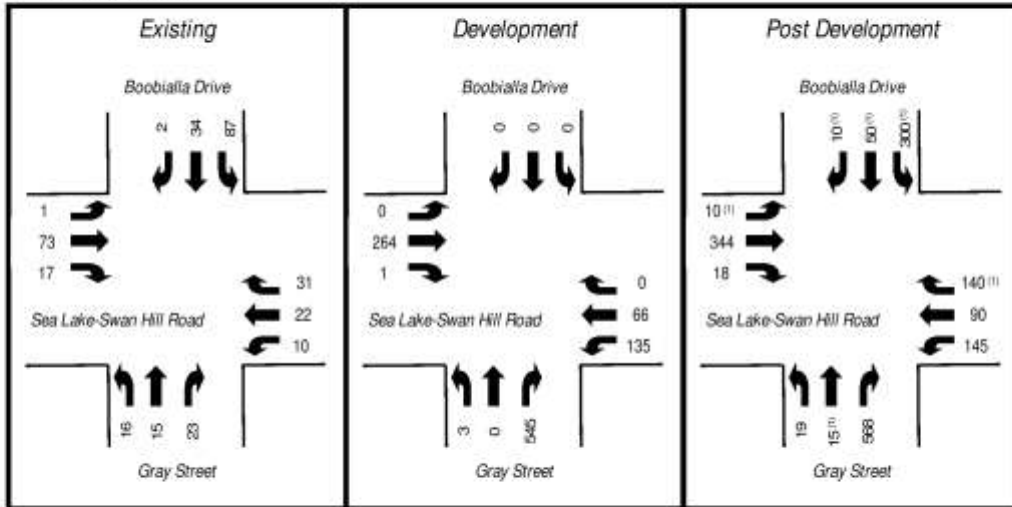


- (3) Assumed.
- (4) Derived from adjacent intersection.

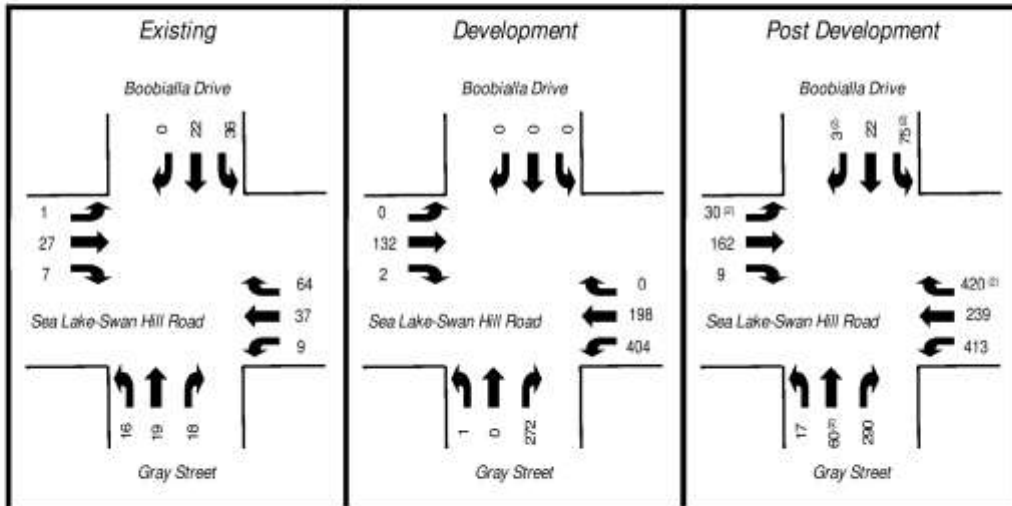
Figure 44: Traffic Volumes - Gray Street/Feldtmann Lane (Link 6) (Intersection #7) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)



AM Peak Hour



PM Peak Hour



- (3) From TTM Consulting (Vic) traffic report for Tower Hill Development.
- (4) Derived from TTM Consulting (Vic) traffic report for Tower Hill Development.

Figure 45: Traffic Volumes - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)



6.2. INTERSECTION REQUIREMENTS

The outputs of the capacity analyses for these intersections are contained in the separate Appendices report.

6.2.1. Gray Street/Yana Street (Intersection #5)

Capacity Analysis

The existing configuration of this intersection comprises a simple T-intersection with priority to Gray Street and separate left and right turn lanes in Yana Street.

The results of the analysis for this configuration are summarised in Table 23.

Table 23: Capacity Analysis - Gray Street/Yana Street - Existing Configuration (Intersection #5) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.74	12.9	42.8
	East	0.13	4.0	0.0	0.21	3.5	0.0
	West	0.16	4.9	6.5	0.27	4.5	12.3
	All Veh	0.16	6.2	6.5	0.74	8.2	42.8
PM	South	0.07	9.3	1.8	0.38	9.6	12.6
	East	0.08	4.6	0.0	0.21	3.9	0.0
	West	0.09	3.2	3.2	0.28	5.1	12.2
	All Veh	0.09	5.3	3.2	0.38	6.1	12.6

The analysis shows that under post-development traffic volumes, Gray Street operates with a low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on both approaches. Yana Street will experience a reduction in Level of Service in both peak periods, in particular the AM peak where the degree of saturation increases to 0.74.

It is noted that the model produced for this study does not allow for any redistribution of traffic that might occur due to congestion and/or delays at a particular intersection. Both these factors mean that the predicted traffic volumes turning from Yana Street (and into Yana Street) may be overestimated which, in turn, means that the traffic impact may be overstated.

To assess upgrade options, three upgrades have been assessed - left and right turn lanes in Gray Street, a roundabout and traffic signals. The results of the analyses for these configurations are shown in Tables 24, 25 and 26.



Table 24: Capacity Analysis - Gray Street/Yana Street (Intersection #5) - Lots per ha
Turn Lanes in Gray Street
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.70	12.0	39.4
	East	0.13	4.0	0.0	0.14	3.5	0.0
	West	0.16	4.9	6.5	0.15	3.3	4.9
	All Veh	0.16	6.2	6.5	0.70	7.5	39.4
PM	South	0.07	9.3	1.8	0.36	9.3	12.0
	East	0.08	4.6	0.0	0.15	3.8	0.0
	West	0.09	3.2	3.2	0.19	4.1	6.3
	All Veh	0.09	5.3	3.2	0.36	5.6	12.0

Table 25: Capacity Analysis - Gray Street/Yana Street (Intersection #5) - 14 Lots per ha
Roundabout
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.25	7.1	12.6
	East	0.13	4.0	0.0	0.32	4.6	17.1
	West	0.16	4.9	6.5	0.38	8.8	20.0
	All Veh	0.16	6.2	6.5	0.38	6.9	20.0
PM	South	0.07	9.3	1.8	0.13	7.2	6.0
	East	0.08	4.6	0.0	0.32	4.9	16.7
	West	0.09	3.2	3.2	0.32	8.1	16.1
	All Veh	0.09	5.3	3.2	0.32	6.7	16.7



Table 26: Capacity Analysis - Gray Street/Yana Street (Intersection #5) - 14 Lots per ha
Traffic Signals
(Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.16	10.1	4.0	0.50	17.1	50.6
	East	0.13	4.0	0.0	0.22	8.8	18.3
	West	0.16	4.9	6.5	0.51	17.5	28.3
	All Veh	0.16	6.2	6.5	0.51	15.1	50.6
PM	South	0.07	9.3	1.8	0.37	20.7	28.9
	East	0.08	4.6	0.0	0.19	7.1	11.9
	West	0.09	3.2	3.2	0.46	13.3	29.6
	All Veh	0.09	5.3	3.2	0.46	13.5	29.6

It is noted that the SIDRA analysis did not take into account the "peaking effect" of the adjacent school during the AM period. In practice, more of the existing traffic will occur closer to 9:00am than be evenly spread over the hour. Similarly, more of the development traffic may occur away from the school peak to avoid the delays that it creates. Thus, the proposed development will have less of an impact at this intersection during the AM peak.

These analyses show that, compared to the existing configuration of the intersection, for post-development traffic volumes:

- Turn lanes in Gray Street have limited impact on delays and queues to traffic leaving Yana Street, and on the operation of Gray Street;
- A roundabout reduces delays and queues in Yana Street at the expense of increased queues in both directions along Gray Street; and
- Traffic signals, whilst operating at Level of Service B in both the AM and PM peaks, increase delays and queues for all movements.

It is noted that the east approach in Gray Street is sufficiently wide to enable through vehicles to pass left turning vehicles, and on the west approach there is scope to ban kerbside parking to allow through traffic to pass stationary right turning traffic.

Recommended Intersection Treatment

It is recommended that the existing configuration of the Gray Street/Yana Street intersection continue to be provided.



6.2.2. Gray Street/Feldtmann Lane (Intersection #7)

Capacity Analysis

The predicted volume of right turning traffic from Gray Street is high. This intersection has therefore been modelled with a separate right turn lane in Grey Street and separate left and right turn lanes in Feldtmann Lane.

The results of the analysis are summarised in Table 27.

Table 27: Capacity Analysis - Gray Street/Feldtmann Lane (Intersection #7) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.00	8.7	0.0	0.49	6.1	20.9
	East	0.03	0.3	0.0	0.04	1.2	0.0
	West	0.03	0.3	0.0	0.09	4.0	2.9
	All Veh	0.03	0.6	0.0	0.49	5.2	20.9
PM	South	0.00	8.6	0.1	0.25	6.2	7.6
	East	0.03	0.3	0.0	0.05	2.4	0.0
	West	0.02	0.4	0.0	0.26	5.4	10.1
	All Veh	0.03	0.7	0.0	0.26	5.3	10.1

The analysis shows that under post-development traffic volumes, the intersection operates with a very low degree of saturation in both the AM and PM peak periods, with minimal delays and minimal queues on all approaches.

Recommended Intersection Treatment

It is recommended that a simple T-intersection continue to be provided at the Gray Street/Feldtmann Lane intersection. A separate right turn facility should be provided in Gray Street and separate left and right turn lanes in Feldtmann Lane. A left turn lane in Gray Street is not warranted on the basis of the predicted left turn volumes.

6.2.3. Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8)

Capacity Analysis

This existing cross road intersection is currently controlled by a single lane roundabout.

The results of the analysis for this configuration are summarised in Table 28.



Table 28: Capacity Analysis - Sea Lake-Swan Hill Road/Gray Street/Boobialla Drive (Intersection #8) - 14 Lots per ha (Option 1 - Sea Lake-Swan Hill Road Link)

Period	Approach	Existing			Post Development		
		Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)	Approach DoS	Approach Ave Delay (sec)	Approach 95 th %ile Queue (m)
AM	South	0.04	7.8	1.3	0.50	10.5	26.7
	East	0.05	8.1	1.6	0.27	6.0	13.3
	North	0.10	5.6	3.3	0.58	16.6	42.3
	West	0.07	5.9	2.3	0.49	10.2	29.8
	All Veh	0.10	6.5	3.3	0.58	10.7	42.3
	LoS	A			B		
PM	South	0.04	7.4	1.3	0.44	12.8	22.9
	East	0.08	8.5	2.6	0.68	6.0	58.8
	North	0.04	5.3	1.4	0.10	5.8	4.3
	West	0.03	6.1	0.9	0.27	8.9	13.2
	All Veh	0.08	7.2	2.6	0.68	7.8	58.8
	LoS	A			A		

The analysis shows that under existing and post-development traffic volumes, the intersection operates at a Level of Service B in the AM peak and a Level of Service A in the PM peak.

Recommended Intersection Treatment

It is recommended that the intersection remain under roundabout control. No upgrades are required from a capacity perspective.

"Trigger Point" for Upgrade

As no upgrades are required from a capacity perspective, there is no "trigger point".



7. COMMENTS ON SPECIFIC ITEMS

Traffix Group was requested by Council to comment on a number of specific items as follows.

Distance from Sea Lake-Swan Hill Road of First Intersection on Dead Horse Lane

Council has sought a response to the requirement by VicRoads for the first intersection on Dead Horse Lane south of Sea Lake-Swan Hill Road to be "relocated well away from Sea Lake-Swan Hill Road/Dead Horse Lane intersection, preferably in the order of more than 800m to support future operational efficiency of both Dead Horse Lane and its intersection with the Swan Hill-Sea Lake Road".

The requirement to offset a local road intersection more than 800m from Sea Lake Swan Hill Road is excessive. The traffic projections and the capacity analysis indicate that there will be low volumes of traffic through this intersection in the design year (2033) and that queues on the Dead Horse Lane approach will be one vehicle long. Also, the first intersection to the south will carry low volumes of traffic, and a simple T-intersection is all that is required.

The property on the southeast corner of this intersection has a frontage to Dead Horse Lane of some 135m and is to be retained. The first intersection to the south of Sea Lake-Swan Hill Road will therefore be greater than this distance from the main road, which is more than sufficient to ensure that both intersections can operate efficiently in the future.

Access to Sea Lake-Swan Hill Road

It is understood that the Swan Hill South West Development Precinct plan has undergone a number of iterations. An earlier version of the Swan Hill South West Development Precinct plan did not show an access to Sea Lake-Swan Hill Road between Gray Street and Dead Horse Lane, which VicRoads supported "in principle ... to minimise congestion and compromised future traffic lane configurations". The current plan shows such an access, and Council has sought a response to this.

Section 5.4 of this report compares the provision of a connection to Sea Lake-Swan Hill Road or a connection to Dead Horse Lane and concludes that a connection to Sea Lake-Swan Hill Road provides a superior road network whilst not detrimentally affecting the operation or capacity of Sea Lake-Swan Hill Road.

Recommended Speed Zones

The setting of speed zones on the declared road network is the responsibility of VicRoads and takes into account many factors. The assessment of the intersection requirements at Dead Horse Lane has been undertaken on the basis that, as the urban edge of Swan Hill would have moved to this location, a speed limit of 80 km/h is appropriate.



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SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

TRAFFIC IMPACT ASSESSMENT

APPENDICES REPORT

PREPARED FOR

SWAN HILL RURAL CITY COUNCIL

20 JUNE, 2014

GRP16371R9263B

Swan Hill South West Development Precinct
Traffic Impact Assessment



TRAFFIC IMPACT ASSESSMENT

APPENDICES REPORT

SWAN HILL SOUTH WEST DEVELOPMENT PRECINCT

Our Reference: GRP16371R9263B Appendices Report

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GRP16371R9263B

Swan Hill South West Development Precinct
Traffic Impact Assessment



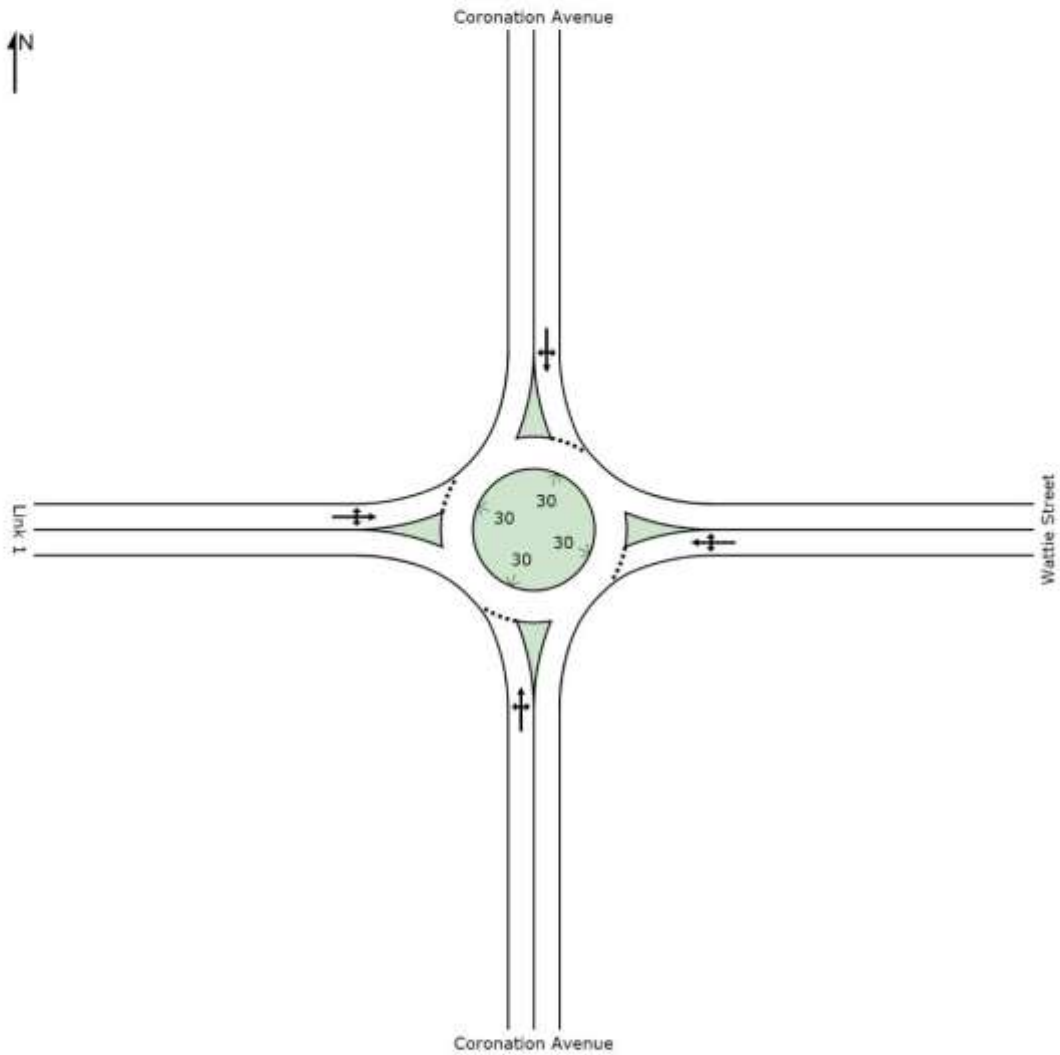
APPENDIX A
CAPACITY ANALYSIS RESULTS
OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK

GFP16371R9263B

SITE LAYOUT

Site: INT 3 - Coronation Avenue/Link 1 - AM Post Development

Coronation Avenue/Link 1 Roundabout



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 Site: INT 3 - Coronation Avenue/Link 1 - AM Post Development

Coronation Avenue/Link 1
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coronation Avenue											
1	L2	1	0.0	0.151	5.9	LOS A	0.8	5.7	0.30	1.03	49.6
2	T1	151	0.0	0.151	4.9	LOS A	0.8	5.7	0.30	1.03	49.6
3	R2	56	0.0	0.151	11.8	LOS B	0.8	5.7	0.30	1.03	49.6
Approach		207	0.0	0.151	6.8	LOS A	0.8	5.7	0.30	0.51	49.6
East: Wattie Street											
4	L2	17	0.0	0.084	5.8	LOS A	0.4	3.1	0.28	1.12	48.2
5	T1	40	0.0	0.084	4.8	LOS A	0.4	3.1	0.28	1.12	48.2
6	R2	57	0.0	0.084	11.7	LOS B	0.4	3.1	0.28	1.12	48.2
Approach		114	0.0	0.084	8.4	LOS A	0.4	3.1	0.28	0.56	48.2
North: Coronation Avenue											
7	L2	129	0.0	0.194	6.3	LOS A	1.1	7.8	0.41	1.09	49.1
8	T1	80	0.0	0.194	5.3	LOS A	1.1	7.8	0.41	1.09	49.1
9	R2	35	0.0	0.194	12.2	LOS B	1.1	7.8	0.41	1.09	49.1
Approach		244	0.0	0.194	6.8	LOS A	1.1	7.8	0.41	0.54	49.1
West: Link 1											
10	L2	138	0.0	0.243	6.6	LOS A	1.4	10.0	0.46	1.08	49.6
11	T1	160	0.0	0.243	5.6	LOS A	1.4	10.0	0.46	1.08	49.6
12	R2	1	0.0	0.243	12.5	LOS B	1.4	10.0	0.46	1.08	49.6
Approach		299	0.0	0.243	6.1	LOS A	1.4	10.0	0.46	0.54	49.6
All Vehicles		864	0.0	0.243	6.8	LOS A	1.4	10.0	0.38	0.54	49.3

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: INT 3 - Coronation Avenue/Link 1 - PM Post Development

Coronation Avenue/Link 1 Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coronation Avenue											
1	L2	1	0.0	0.077	6.4	LOS A	0.4	2.8	0.40	1.06	49.3
2	T1	75	0.0	0.077	5.4	LOS A	0.4	2.8	0.40	1.06	49.3
3	R2	19	0.0	0.077	12.3	LOS B	0.4	2.8	0.40	1.06	49.3
Approach		95	0.0	0.077	6.8	LOS A	0.4	2.8	0.40	0.53	49.3
East: Wattie Street											
4	L2	28	0.0	0.147	6.3	LOS A	0.8	5.5	0.38	1.08	49.3
5	T1	120	0.0	0.147	5.3	LOS A	0.8	5.5	0.38	1.08	49.3
6	R2	38	0.0	0.147	12.2	LOS B	0.8	5.5	0.38	1.08	49.3
Approach		186	0.0	0.147	6.8	LOS A	0.8	5.5	0.38	0.54	49.3
North: Coronation Avenue											
7	L2	129	0.0	0.223	5.5	LOS A	1.3	9.0	0.17	1.03	49.8
8	T1	114	0.0	0.223	4.5	LOS A	1.3	9.0	0.17	1.03	49.8
9	R2	105	0.0	0.223	11.4	LOS B	1.3	9.0	0.17	1.03	49.8
Approach		348	0.0	0.223	7.0	LOS A	1.3	9.0	0.17	0.51	49.8
West: Link 1											
10	L2	69	0.0	0.073	5.8	LOS A	0.4	2.6	0.28	0.92	50.5
11	T1	27	0.0	0.073	4.9	LOS A	0.4	2.6	0.28	0.92	50.5
12	R2	1	0.0	0.073	11.7	LOS B	0.4	2.6	0.28	0.92	50.5
Approach		98	0.0	0.073	5.6	LOS A	0.4	2.6	0.28	0.46	50.5
All Vehicles		727	0.0	0.223	6.7	LOS A	1.3	9.0	0.27	0.52	49.7

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Signalised Intersections.
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

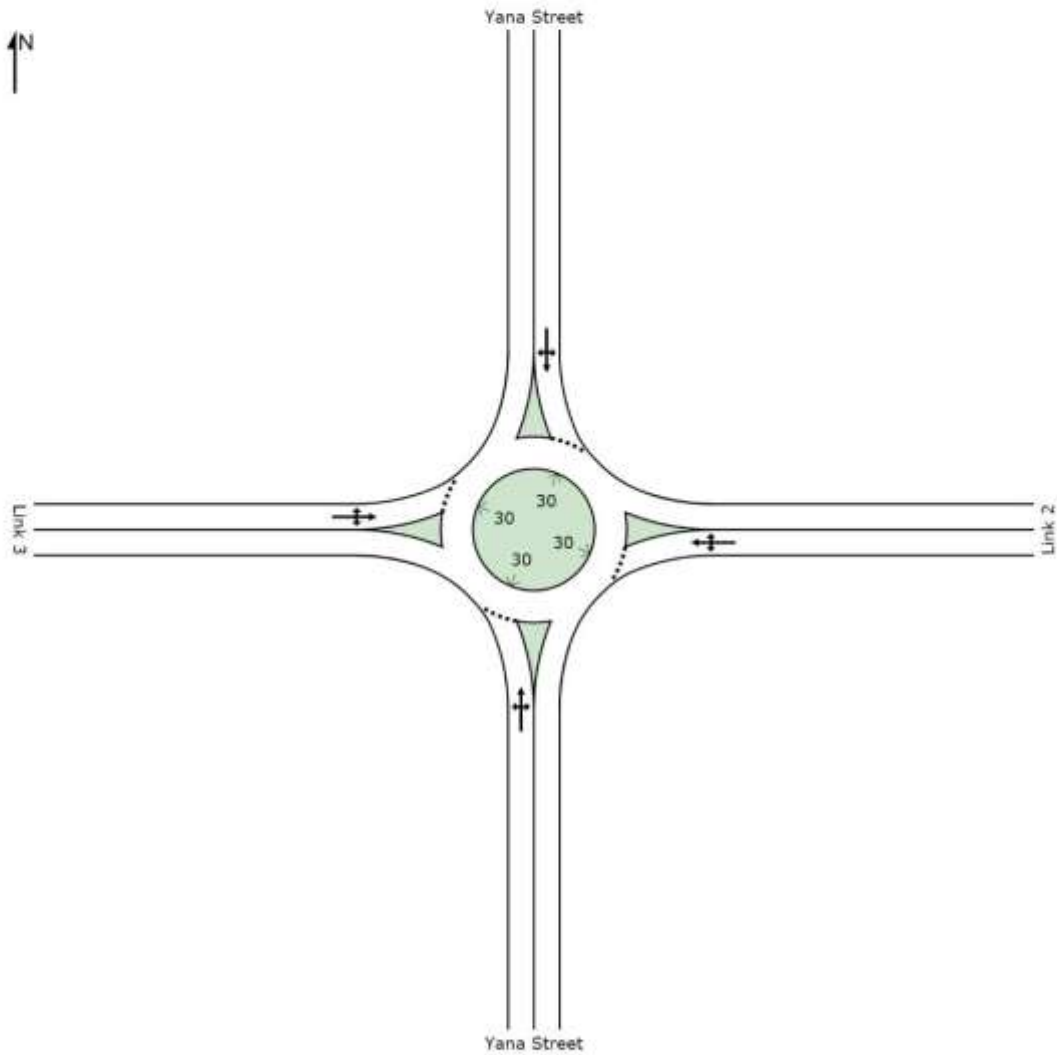
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SITE LAYOUT

Site: INT 4 - Yana Street/Link 2/Link 3- AM Post Development

Yana Street/Link 2/Link 3 Roundabout



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 Site: INT 4 - Yana Street/Link 2/Link 3- AM Post Development

Yana Street/Link 2/Link 3
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	1	0.0	0.151	5.7	LOS A	0.8	5.7	0.25	0.91	50.8
2	T1	187	0.0	0.151	4.8	LOS A	0.8	5.7	0.25	0.91	50.8
3	R2	26	0.0	0.151	11.6	LOS B	0.8	5.7	0.25	0.91	50.8
Approach		215	0.0	0.151	5.6	LOS A	0.8	5.7	0.25	0.46	50.8
East: Link 2											
4	L2	13	0.0	0.044	5.9	LOS A	0.2	1.6	0.30	0.88	50.7
5	T1	44	0.0	0.044	4.9	LOS A	0.2	1.6	0.30	0.88	50.7
6	R2	2	0.0	0.044	11.8	LOS B	0.2	1.6	0.30	0.88	50.7
Approach		59	0.0	0.044	5.4	LOS A	0.2	1.6	0.30	0.44	50.7
North: Yana Street											
7	L2	8	0.0	0.122	6.1	LOS A	0.7	4.7	0.37	1.11	48.7
8	T1	94	0.0	0.122	5.2	LOS A	0.7	4.7	0.37	1.11	48.7
9	R2	54	0.0	0.122	12.0	LOS B	0.7	4.7	0.37	1.11	48.7
Approach		156	0.0	0.122	7.6	LOS A	0.7	4.7	0.37	0.56	48.7
West: Link 3											
10	L2	211	0.0	0.295	6.4	LOS A	1.8	12.8	0.43	1.05	49.7
11	T1	168	0.0	0.295	5.4	LOS A	1.8	12.8	0.43	1.05	49.7
12	R2	1	0.0	0.295	12.3	LOS B	1.8	12.8	0.43	1.05	49.7
Approach		380	0.0	0.295	6.0	LOS A	1.8	12.8	0.43	0.52	49.7
All Vehicles		809	0.0	0.295	6.1	LOS A	1.8	12.8	0.36	0.51	49.8

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: INT 4 - Yana Street/Link 2/Link 3- PM Post Development

Yana Street/Link 2/Link 3
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	1	0.0	0.119	6.5	LOS A	0.6	4.4	0.43	1.06	49.6
2	T1	128	0.0	0.119	5.6	LOS A	0.6	4.4	0.43	1.06	49.6
3	R2	14	0.0	0.119	12.4	LOS B	0.6	4.4	0.43	1.06	49.6
Approach		143	0.0	0.119	6.2	LOS A	0.6	4.4	0.43	0.53	49.6
East: Link 2											
4	L2	18	0.0	0.128	6.7	LOS A	0.7	4.9	0.46	1.07	49.6
5	T1	126	0.0	0.128	5.7	LOS A	0.7	4.9	0.46	1.07	49.6
6	R2	6	0.0	0.128	12.6	LOS B	0.7	4.9	0.46	1.07	49.6
Approach		151	0.0	0.128	6.1	LOS A	0.7	4.9	0.46	0.53	49.6
North: Yana Street											
7	L2	4	0.0	0.222	5.7	LOS A	1.3	9.2	0.28	1.12	48.4
8	T1	158	0.0	0.222	4.8	LOS A	1.3	9.2	0.28	1.12	48.4
9	R2	158	0.0	0.222	11.6	LOS B	1.3	9.2	0.28	1.12	48.4
Approach		320	0.0	0.222	8.2	LOS A	1.3	9.2	0.28	0.56	48.4
West: Link 3											
10	L2	105	0.0	0.144	5.9	LOS A	0.8	5.7	0.33	0.94	50.4
11	T1	85	0.0	0.144	5.0	LOS A	0.8	5.7	0.33	0.94	50.4
12	R2	1	0.0	0.144	11.8	LOS B	0.8	5.7	0.33	0.94	50.4
Approach		192	0.0	0.144	5.5	LOS A	0.8	5.7	0.33	0.47	50.4
All Vehicles		805	0.0	0.222	6.8	LOS A	1.3	9.2	0.35	0.53	49.3

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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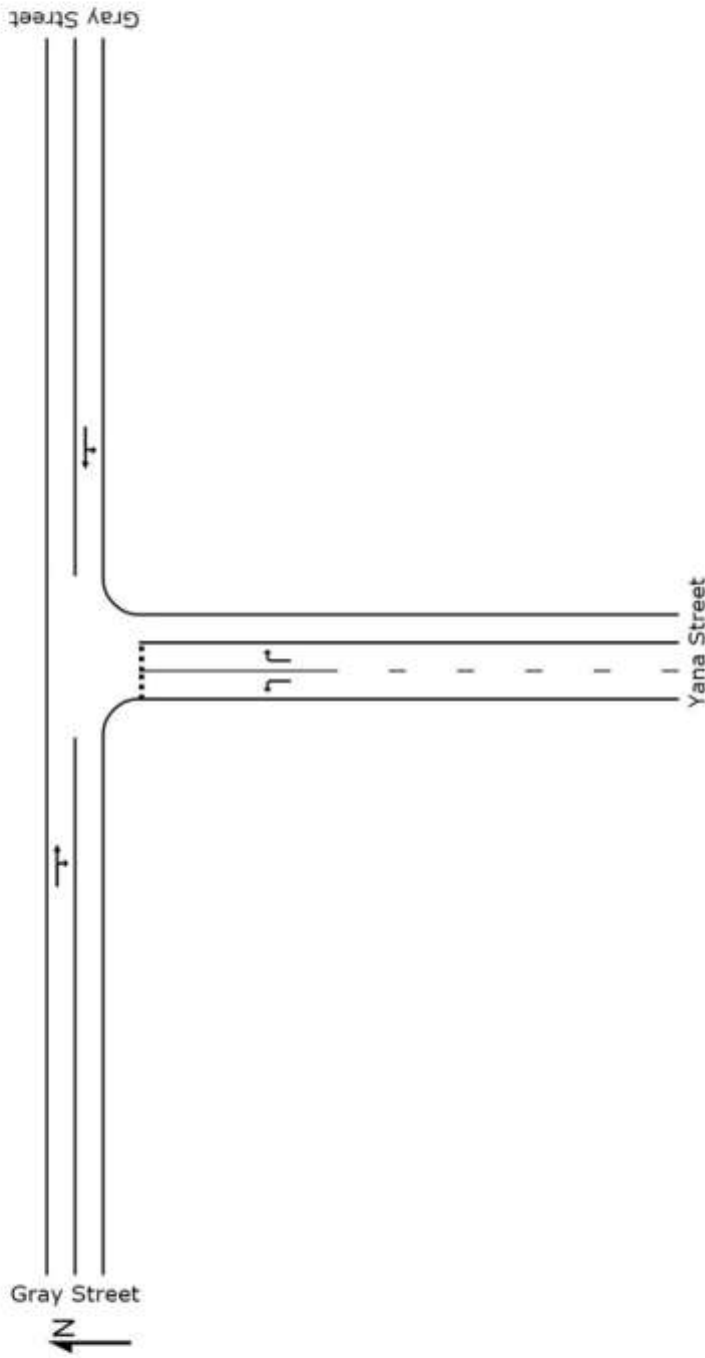
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SITE LAYOUT

▽ Site: Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.105	8.8	LOS A	0.4	2.8	0.25	0.64	47.9
3	R2	112	0.0	0.155	11.4	LOS B	0.6	4.0	0.50	0.80	45.6
Approach		222	0.0	0.155	10.1	LOS B	0.6	4.0	0.37	0.72	46.7
East: Gray Street											
4	L2	123	0.0	0.132	8.2	LOS A	0.0	0.0	0.00	0.41	54.0
5	T1	127	0.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.41	54.0
Approach		251	0.0	0.132	4.0	NA	0.0	0.0	0.00	0.41	54.0
West: Gray Street											
11	T1	142	0.0	0.164	0.9	LOS A	0.9	6.5	0.38	0.36	50.2
12	R2	127	0.0	0.164	9.2	LOS A	0.9	6.5	0.38	0.36	50.2
Approach		269	0.0	0.164	4.9	NA	0.9	6.5	0.38	0.36	50.2
All Vehicles		742	0.0	0.164	6.2	NA	0.9	6.5	0.25	0.48	50.3

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	282	0.0	0.274	9.1	LOS A	1.2	8.4	0.31	0.65	47.6
3	R2	325	0.0	0.591	17.6	LOS C	3.8	26.6	0.74	1.09	40.3
Approach		607	0.0	0.591	13.7	LOS B	3.8	26.6	0.54	0.89	43.4
East: Gray Street											
4	L2	223	0.0	0.196	8.2	LOS A	0.0	0.0	0.00	0.47	52.8
5	T1	147	0.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.47	52.8
Approach		371	0.0	0.196	4.9	NA	0.0	0.0	0.00	0.47	52.8
West: Gray Street											
11	T1	222	0.0	0.254	1.7	LOS A	1.6	11.5	0.52	0.36	49.1
12	R2	174	0.0	0.254	10.0	LOS B	1.6	11.5	0.52	0.36	49.1
Approach		396	0.0	0.254	5.4	NA	1.6	11.5	0.52	0.36	49.1
All Vehicles		1374	0.0	0.591	6.9	NA	3.8	26.6	0.39	0.62	47.2

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	36	0.0	0.032	8.5	LOS A	0.1	0.8	0.15	0.62	48.3
3	R2	66	0.0	0.072	9.8	LOS A	0.3	1.8	0.35	0.69	47.2
Approach		102	0.0	0.072	9.3	LOS A	0.3	1.8	0.28	0.67	47.6
East: Gray Street											
4	L2	80	0.0	0.075	8.2	LOS A	0.0	0.0	0.00	0.45	53.3
5	T1	63	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.45	53.3
Approach		143	0.0	0.075	4.6	NA	0.0	0.0	0.00	0.45	53.3
West: Gray Street											
11	T1	103	0.0	0.086	0.5	LOS A	0.5	3.2	0.26	0.27	52.5
12	R2	52	0.0	0.086	8.8	LOS A	0.5	3.2	0.26	0.27	52.5
Approach		155	0.0	0.086	3.2	NA	0.5	3.2	0.26	0.27	52.5
All Vehicles		400	0.0	0.086	5.3	NA	0.5	3.2	0.17	0.43	51.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA INTERSECTION 6.0.17.4466
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	122	0.0	0.115	8.8	LOS A	0.4	3.1	0.24	0.63	47.9
3	R2	174	0.0	0.279	13.0	LOS B	1.2	8.2	0.58	0.90	44.0
Approach		296	0.0	0.279	11.3	LOS B	1.2	8.2	0.44	0.79	45.6
East: Gray Street											
4	L2	225	0.0	0.184	8.2	LOS A	0.0	0.0	0.00	0.50	52.3
5	T1	123	0.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.50	52.3
Approach		348	0.0	0.184	5.3	NA	0.0	0.0	0.00	0.50	52.3
West: Gray Street											
11	T1	143	0.0	0.223	1.5	LOS A	1.3	9.2	0.48	0.45	48.8
12	R2	191	0.0	0.223	9.8	LOS A	1.3	9.2	0.48	0.45	48.8
Approach		334	0.0	0.223	6.3	NA	1.3	9.2	0.48	0.45	48.8
All Vehicles		978	0.0	0.279	7.4	NA	1.3	9.2	0.30	0.57	48.9

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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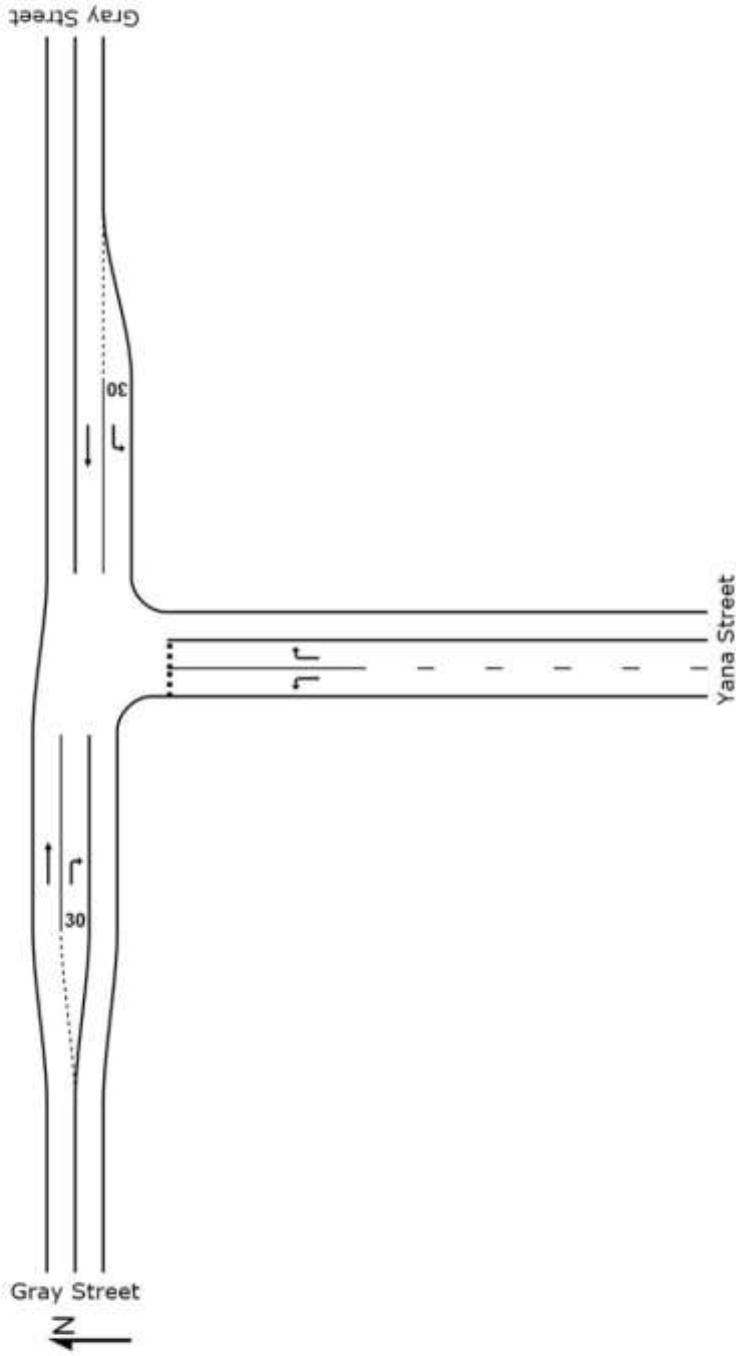
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.105	8.8	LOS A	0.4	2.8	0.25	0.64	47.9
3	R2	112	0.0	0.152	11.1	LOS B	0.6	4.0	0.49	0.78	45.9
Approach		222	0.0	0.152	10.0	LOS A	0.6	4.0	0.37	0.71	46.9
East: Gray Street											
4	L2	123	0.0	0.066	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	127	0.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		251	0.0	0.066	4.0	NA	0.0	0.0	0.00	0.33	54.0
West: Gray Street											
11	T1	142	0.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	127	0.0	0.088	9.1	LOS A	0.4	2.9	0.35	0.65	47.4
Approach		269	0.0	0.088	4.3	NA	0.4	2.9	0.17	0.31	53.3
All Vehicles		742	0.0	0.152	5.9	NA	0.6	4.0	0.17	0.43	51.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	282	0.0	0.274	9.1	LOS A	1.2	8.4	0.31	0.65	47.6
3	R2	325	0.0	0.564	16.6	LOS C	3.6	25.2	0.71	1.06	41.1
Approach		607	0.0	0.564	13.1	LOS B	3.6	25.2	0.53	0.87	43.9
East: Gray Street											
4	L2	223	0.0	0.120	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	147	0.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		371	0.0	0.120	4.9	NA	0.0	0.0	0.00	0.40	52.8
West: Gray Street											
11	T1	222	0.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	174	0.0	0.136	9.7	LOS A	0.6	4.4	0.44	0.70	47.0
Approach		396	0.0	0.136	4.2	NA	0.6	4.4	0.20	0.31	53.5
All Vehicles		1374	0.0	0.564	6.4	NA	3.6	25.2	0.29	0.58	48.6

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	36	0.0	0.032	8.5	LOS A	0.1	0.8	0.15	0.62	48.3
3	R2	66	0.0	0.072	9.6	LOS A	0.3	1.8	0.35	0.68	47.4
Approach		102	0.0	0.072	9.2	LOS A	0.3	1.8	0.28	0.66	47.7
East: Gray Street											
4	L2	80	0.0	0.043	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	63	0.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		143	0.0	0.043	4.6	NA	0.0	0.0	0.00	0.37	53.3
West: Gray Street											
11	T1	103	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	52	0.0	0.032	8.7	LOS A	0.1	1.0	0.25	0.62	47.8
Approach		155	0.0	0.053	2.9	NA	0.1	1.0	0.08	0.21	55.3
All Vehicles		400	0.0	0.072	5.1	NA	0.3	1.8	0.10	0.38	52.5

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	122	0.0	0.115	8.8	LOS A	0.4	3.1	0.24	0.63	47.9
3	R2	174	0.0	0.271	12.6	LOS B	1.1	7.9	0.57	0.88	44.5
Approach		296	0.0	0.271	11.0	LOS B	1.1	7.9	0.44	0.78	45.8
East: Gray Street											
4	L2	225	0.0	0.121	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	123	0.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		348	0.0	0.121	5.3	NA	0.0	0.0	0.00	0.43	52.4
West: Gray Street											
11	T1	143	0.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	191	0.0	0.146	9.6	LOS A	0.7	4.8	0.43	0.69	47.0
Approach		334	0.0	0.146	5.5	NA	0.7	4.8	0.25	0.39	51.8
All Vehicles		978	0.0	0.271	7.1	NA	1.1	7.9	0.22	0.52	50.0

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA INTERSECTION 6.0.17.4466
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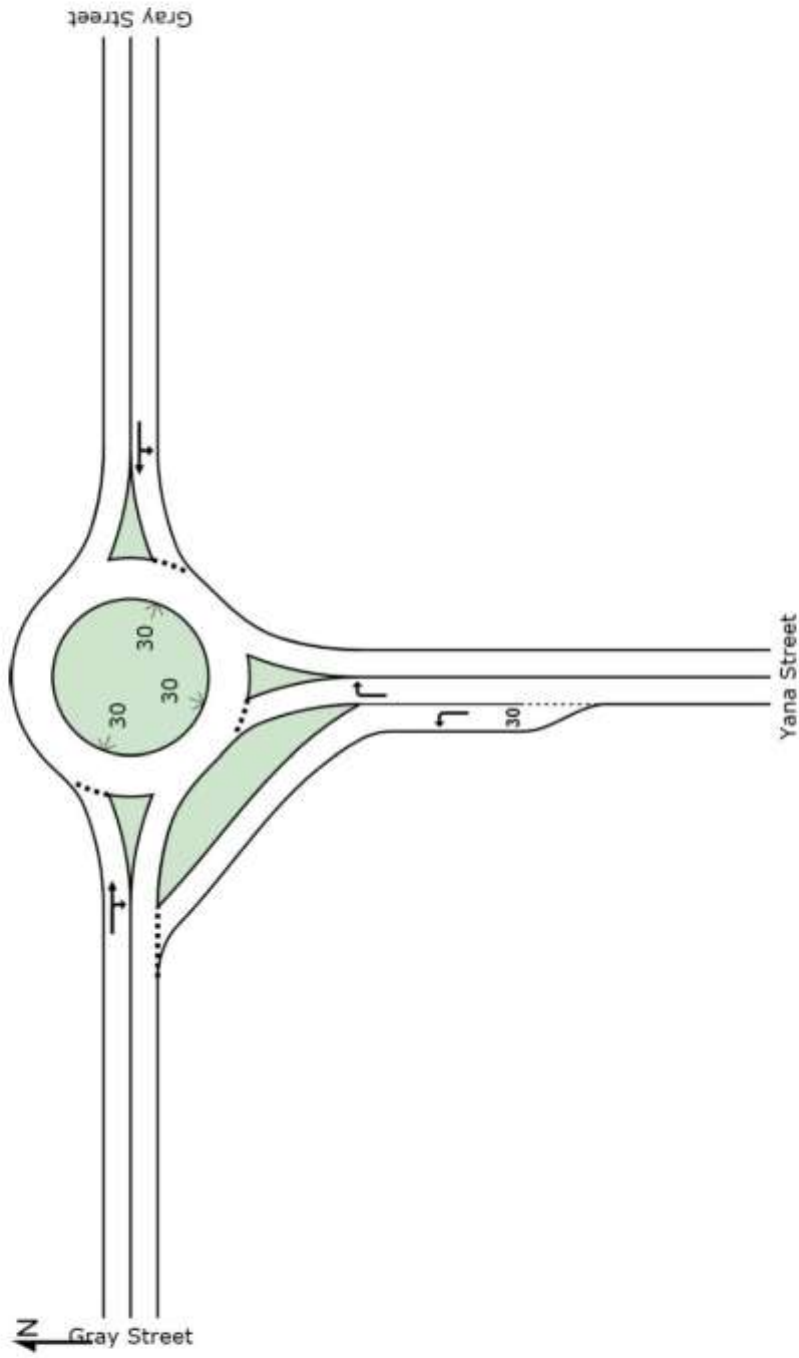
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

Site: INT 5 (3) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street Roundabout



Created: Monday, 12 May 2014 4:31:05 PM
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 Site: INT 5 (3) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.069	5.6	LOS A	0.4	2.9	0.30	0.90	50.4
3	R2	112	0.0	0.069	11.7	LOS B	0.4	2.9	0.30	1.23	45.4
Approach		222	0.0	0.069	8.6	LOS A	0.4	2.9	0.30	0.53	47.7
East: Gray Street											
4	L2	123	0.0	0.185	5.9	LOS A	1.2	8.4	0.35	0.92	50.4
5	T1	127	0.0	0.185	5.0	LOS A	1.2	8.4	0.35	0.92	50.4
Approach		251	0.0	0.185	5.5	LOS A	1.2	8.4	0.35	0.46	50.4
West: Gray Street											
11	T1	142	0.0	0.194	4.9	LOS A	1.3	8.8	0.32	1.11	48.3
12	R2	127	0.0	0.194	11.8	LOS B	1.3	8.8	0.32	1.11	48.3
Approach		269	0.0	0.194	8.2	LOS A	1.3	8.8	0.32	0.55	48.3
All Vehicles		742	0.0	0.194	7.4	LOS A	1.3	8.8	0.32	0.52	48.8

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 5 (3) Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	282	0.0	0.178	5.7	LOS A	1.2	8.5	0.36	0.95	49.9
3	R2	325	0.0	0.205	11.8	LOS B	1.4	10.0	0.37	1.25	45.1
Approach		607	0.0	0.205	9.0	LOS A	1.4	10.0	0.36	0.56	47.2
East: Gray Street											
4	L2	223	0.0	0.288	6.3	LOS A	2.1	15.0	0.47	1.02	49.4
5	T1	147	0.0	0.288	5.4	LOS A	2.1	15.0	0.47	1.02	49.4
Approach		371	0.0	0.288	5.9	LOS A	2.1	15.0	0.47	0.51	49.4
West: Gray Street											
11	T1	222	0.0	0.354	6.5	LOS A	2.6	18.1	0.62	1.35	46.9
12	R2	174	0.0	0.354	13.4	LOS B	2.6	18.1	0.62	1.35	46.9
Approach		396	0.0	0.354	9.5	LOS A	2.6	18.1	0.62	0.68	46.9
All Vehicles		1374	0.0	0.354	6.3	LOS A	2.6	18.1	0.47	0.58	47.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 5 (3) Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	36	0.0	0.021	5.4	LOS A	0.1	0.8	0.19	0.86	51.2
3	R2	66	0.0	0.039	11.4	LOS B	0.2	1.5	0.19	1.25	45.9
Approach		102	0.0	0.039	9.3	LOS A	0.2	1.5	0.19	0.56	47.5
East: Gray Street											
4	L2	80	0.0	0.096	5.5	LOS A	0.6	4.0	0.19	0.84	51.5
5	T1	63	0.0	0.096	4.6	LOS A	0.6	4.0	0.19	0.84	51.5
Approach		143	0.0	0.096	5.1	LOS A	0.6	4.0	0.19	0.42	51.5
West: Gray Street											
11	T1	103	0.0	0.106	4.7	LOS A	0.6	4.4	0.22	1.01	49.7
12	R2	52	0.0	0.106	11.5	LOS B	0.6	4.4	0.22	1.01	49.7
Approach		155	0.0	0.106	7.0	LOS A	0.6	4.4	0.22	0.51	49.7
All Vehicles		400	0.0	0.106	6.9	LOS A	0.6	4.4	0.20	0.49	49.7

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Signalised Intersections.
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 5 (3) Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	122	0.0	0.076	5.6	LOS A	0.5	3.3	0.30	0.90	50.3
3	R2	174	0.0	0.108	11.7	LOS B	0.7	4.9	0.31	1.24	45.4
Approach		296	0.0	0.108	9.2	LOS A	0.7	4.9	0.31	0.55	47.2
East: Gray Street											
4	L2	225	0.0	0.274	6.4	LOS A	1.9	13.6	0.47	1.04	49.4
5	T1	123	0.0	0.274	5.5	LOS A	1.9	13.6	0.47	1.04	49.4
Approach		348	0.0	0.274	6.1	LOS A	1.9	13.6	0.47	0.52	49.4
West: Gray Street											
11	T1	143	0.0	0.256	5.4	LOS A	1.7	12.2	0.43	1.20	47.2
12	R2	191	0.0	0.256	12.2	LOS B	1.7	12.2	0.43	1.20	47.2
Approach		334	0.0	0.256	9.3	LOS A	1.7	12.2	0.43	0.60	47.2
All Vehicles		978	0.0	0.274	6.1	LOS A	1.9	13.6	0.41	0.56	48.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 13 May 2014 11:13:57 AM
SIDRA INTERSECTION 6.0.17.4466
Project: P:\Synergy\Projects\GRP1\GRP16371\SIDRA\May 2014\Option 2\Sidra 5.sip6
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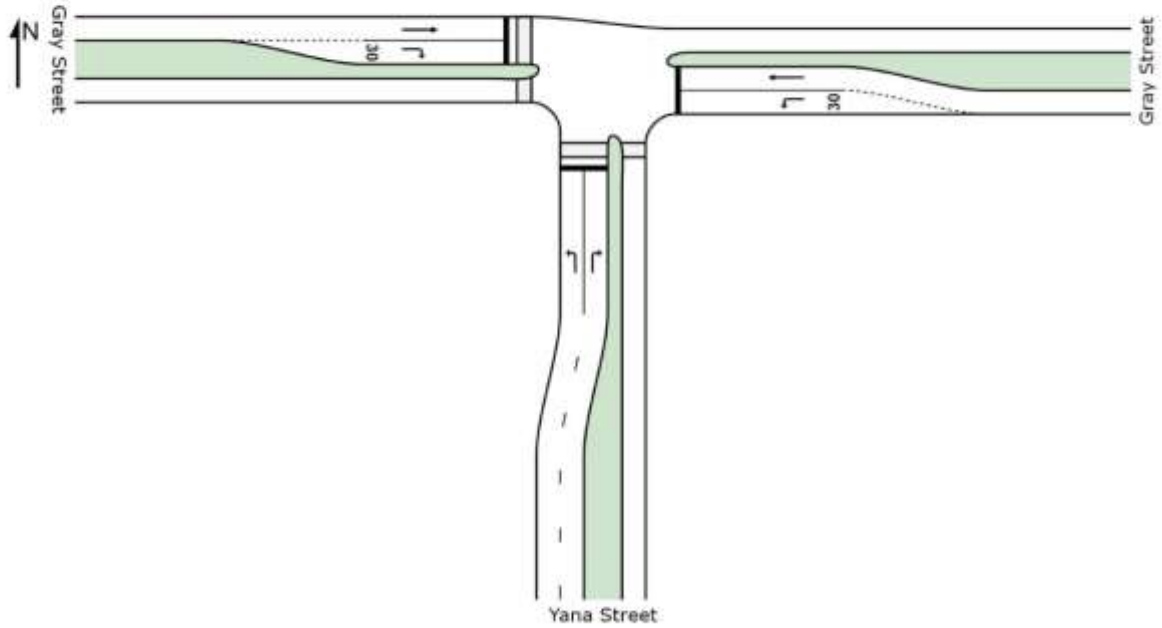
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

 Site: Intersection 5 Option 1 - AM Existing

Gray Street/Yana Street
Signals - Fixed Time



Created: Thursday, 19 June 2014 12:13:47 PM
SIDRA INTERSECTION 6.0.20.4660
Project: P:\Synergy\Projects\GRP1\GRP16371\SIDRA\June 2014\19.6.14\Sidra.sip6
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: Intersection 5 Option 1 - AM Post

Gray Street/Yana Street

Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	282	0.0	0.380	17.2	LOS B	5.0	34.9	0.75	0.78	45.8
3	R2	325	0.0	0.438	17.6	LOS B	5.9	41.5	0.77	0.79	45.4
Approach		607	0.0	0.438	17.4	LOS B	5.9	41.5	0.76	0.78	45.6
East: Gray Street											
4	L2	222	0.0	0.157	6.4	LOS A	0.8	5.3	0.29	0.65	52.7
5	T1	142	0.0	0.202	12.1	LOS B	2.4	17.1	0.73	0.58	50.0
Approach		364	0.0	0.202	8.7	LOS A	2.4	17.1	0.46	0.62	51.6
West: Gray Street											
11	T1	200	0.0	0.285	12.6	LOS B	3.6	24.9	0.75	0.62	49.7
12	R2	174	0.0	0.434	20.8	LOS C	3.5	24.8	0.83	0.79	43.6
Approach		374	0.0	0.434	16.4	LOS B	3.6	24.9	0.79	0.70	46.7
All Vehicles		1345	0.0	0.438	14.8	LOS B	5.9	41.5	0.69	0.72	47.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akoelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	16.8	LOS B	0.1	0.1	0.82	0.82	
P4	West Full Crossing	53	15.2	LOS B	0.1	0.1	0.78	0.78	
All Pedestrians		105	16.0	LOS B			0.80	0.80	

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.

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SIDRA INTERSECTION 6.0.20.4680

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**SIDRA
INTERSECTION 6**

PHASING SUMMARY

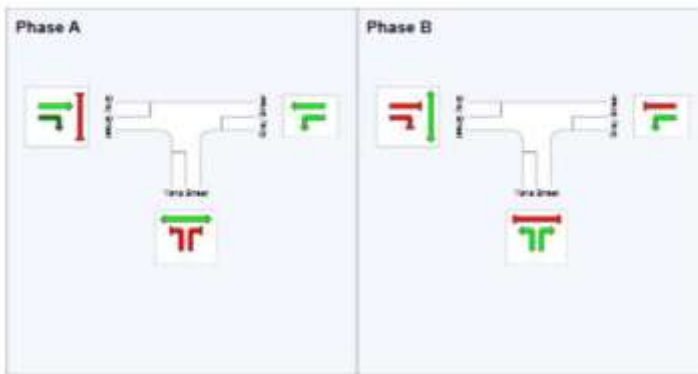
Site: Intersection 5 Option 1 - AM Post

Gray Street/Yana Street
 Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Phase times determined by the program
 Sequence: Two-Phase
 Movement Class: All Movement Classes
 Input Sequence: A, B
 Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	24
Green Time (sec)	18	20
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	24	26
Phase Split	48 %	52 %



	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class Running		Other Movement Class Stopped
	Mixed Running & Stopped Movement Classes		Phase Transition Applied
	Undetected Movement		

Processed: Thursday, 19 June 2014 12:02:10 PM
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**SIDRA
 INTERSECTION 6**

MOVEMENT SUMMARY

Site: Intersection 5 Option 1 - PM Post

Gray Street/Yana Street
 Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	121	0.0	0.217	20.1	LOS C	2.3	16.0	0.79	0.75	44.2
3	R2	174	0.0	0.312	20.6	LOS C	3.4	23.7	0.81	0.77	43.8
Approach		295	0.0	0.312	20.4	LOS C	3.4	23.7	0.80	0.76	43.9
East: Gray Street											
4	L2	225	0.0	0.160	6.4	LOS A	0.8	5.4	0.29	0.65	52.7
5	T1	106	0.0	0.119	8.4	LOS A	1.5	10.5	0.60	0.48	52.7
Approach		332	0.0	0.160	7.1	LOS A	1.5	10.5	0.39	0.59	52.7
West: Gray Street											
11	T1	132	0.0	0.147	8.5	LOS A	1.9	13.1	0.61	0.49	52.6
12	R2	189	0.0	0.359	16.0	LOS B	3.2	22.5	0.70	0.76	46.3
Approach		321	0.0	0.359	12.9	LOS B	3.2	22.5	0.67	0.65	48.7
All Vehicles		947	0.0	0.359	13.2	LOS B	3.4	23.7	0.61	0.67	48.4

Level of Service (LOS) Method: Delay (HCM 2000).
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akoelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	13.0	LOS B	0.1	0.1	0.72	0.72	
P4	West Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88	
All Pedestrians		105	16.2	LOS B			0.80	0.80	

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.

PHASING SUMMARY

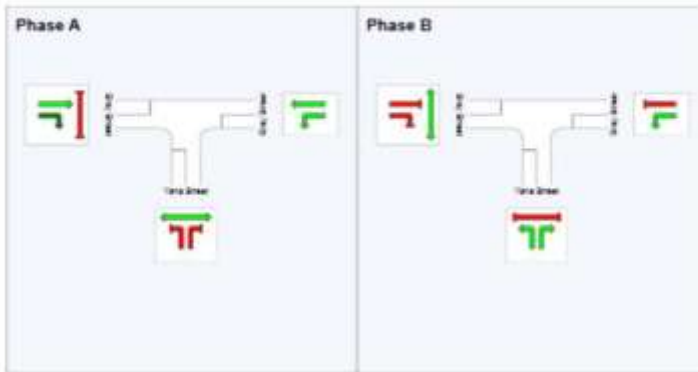
Site: Intersection 5 Option 1 - PM Post

Gray Street/Yana Street
 Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Phase times determined by the program
 Sequence: Two-Phase
 Movement Class: All Movement Classes
 Input Sequence: A, B
 Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	29
Green Time (sec)	23	15
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	29	21
Phase Split	58 %	42 %



	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class Running		Other Movement Class Stopped
	Mixed Running & Stopped Movement Classes		Phase Transition Applied
	Undetected Movement		

Processed: Thursday, 19 June 2014 12:04:25 PM
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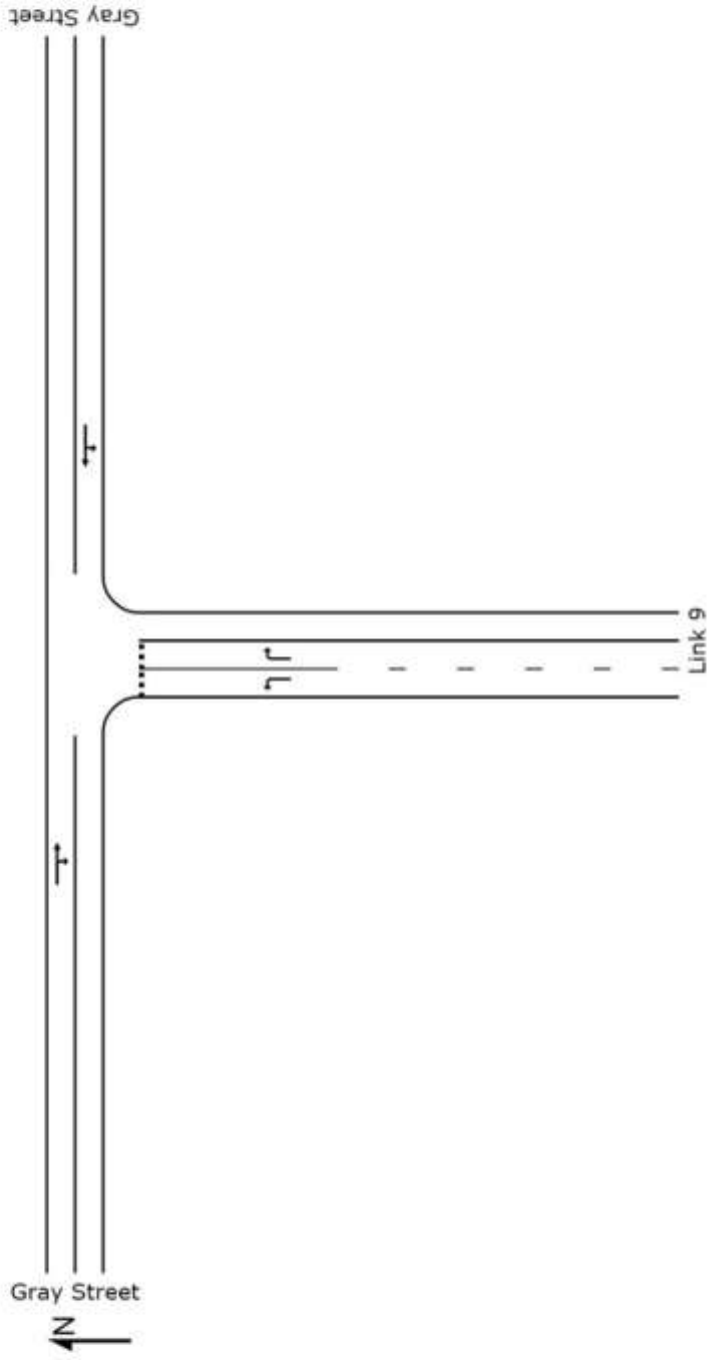
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**SIDRA
 INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 6 - Gray Street/Link 9- AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



Created: Monday, 12 May 2014 4:38:08 PM
 SIDRA INTERSECTION 6.0.17.4468
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 6 - Gray Street/Link 9 - AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 9											
1	L2	1	0.0	0.001	8.5	LOS A	0.0	0.0	0.17	0.60	48.2
3	R2	145	0.0	0.157	9.9	LOS A	0.6	4.3	0.37	0.71	47.1
Approach		146	0.0	0.157	9.8	LOS A	0.6	4.3	0.37	0.71	47.1
East: Gray Street											
4	L2	37	0.0	0.060	8.2	LOS A	0.0	0.0	0.00	0.29	56.0
5	T1	79	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.29	56.0
Approach		116	0.0	0.060	2.6	NA	0.0	0.0	0.00	0.29	56.0
West: Gray Street											
11	T1	152	0.0	0.078	0.4	LOS A	0.4	3.1	0.23	0.01	55.7
12	R2	1	0.0	0.078	8.7	LOS A	0.4	3.1	0.23	0.01	55.7
Approach		153	0.0	0.078	0.4	NA	0.4	3.1	0.23	0.01	55.7
All Vehicles		415	0.0	0.157	4.4	NA	0.6	4.3	0.21	0.33	52.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 13 May 2014 11:14:46 AM
SIDRA INTERSECTION 6.0.17.4466
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 6 - Gray Street/Link 9 - PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 9											
1	L2	1	0.0	0.001	8.7	LOS A	0.0	0.0	0.22	0.59	48.0
3	R2	73	0.0	0.080	9.8	LOS A	0.3	2.0	0.36	0.70	47.2
Approach		74	0.0	0.080	9.8	LOS A	0.3	2.0	0.36	0.69	47.2
East: Gray Street											
4	L2	109	0.0	0.122	8.2	LOS A	0.0	0.0	0.00	0.39	54.2
5	T1	122	0.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.39	54.2
Approach		232	0.0	0.122	3.9	NA	0.0	0.0	0.00	0.39	54.2
West: Gray Street											
11	T1	84	0.0	0.044	0.7	LOS A	0.3	1.8	0.33	0.01	53.9
12	R2	1	0.0	0.044	9.0	LOS A	0.3	1.8	0.33	0.01	53.9
Approach		85	0.0	0.044	0.8	NA	0.3	1.8	0.33	0.01	53.9
All Vehicles		391	0.0	0.122	4.3	NA	0.3	2.0	0.14	0.37	52.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 13 May 2014 11:15:24 AM
SIDRA INTERSECTION 6.0.17.4466

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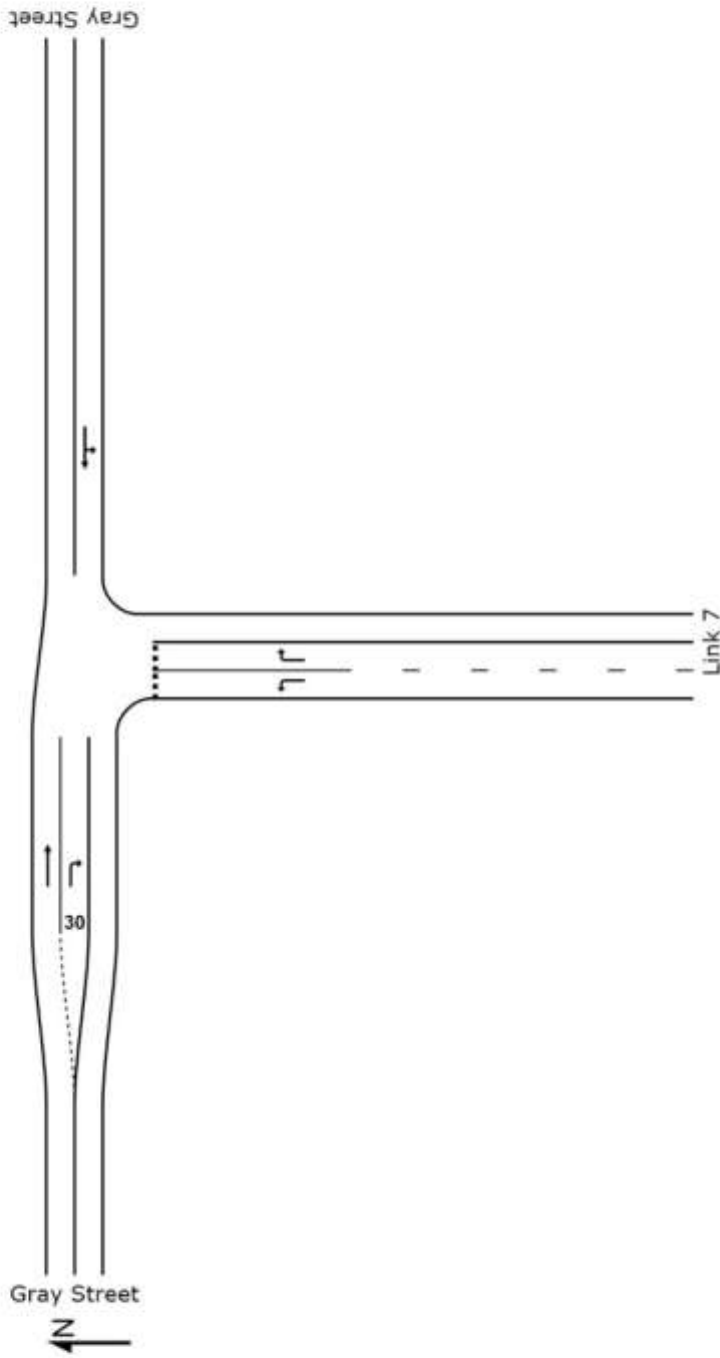
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 7 - Gray Street/Link 7 - AM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)



Created: Monday, 12 May 2014 4:48:27 PM

SIDRA INTERSECTION 6.0.17.4486

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - AM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Link 7											
1	L2	2	0.0	0.002	8.4	LOS A	0.0	0.0	0.14	0.61	48.3
3	R2	2	0.0	0.002	9.0	LOS A	0.0	0.0	0.22	0.62	47.8
Approach		4	0.0	0.002	8.7	LOS A	0.0	0.0	0.18	0.62	48.0
East: Gray Street											
4	L2	2	0.0	0.030	8.2	LOS A	0.0	0.0	0.00	0.04	59.5
5	T1	57	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		59	0.0	0.030	0.3	NA	0.0	0.0	0.00	0.04	59.5
West: Gray Street											
11	T1	64	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	8.4	LOS A	0.0	0.0	0.14	0.61	48.2
Approach		66	0.0	0.033	0.3	NA	0.0	0.0	0.00	0.02	59.5
All Vehicles		129	0.0	0.033	0.6	NA	0.0	0.0	0.01	0.05	59.1

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Monday, 12 May 2014 4:50:01 PM
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - AM Post Development

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Link 7											
1	L2	682	0.0	0.603	8.8	LOS A	4.5	31.3	0.30	0.61	47.6
3	R2	89	0.0	0.104	10.1	LOS B	0.4	2.7	0.40	0.72	46.8
Approach		772	0.0	0.603	9.0	LOS A	4.5	31.3	0.31	0.62	47.5
East: Gray Street											
4	L2	24	0.0	0.043	8.2	LOS A	0.0	0.0	0.00	0.27	56.3
5	T1	59	0.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.27	56.3
Approach		83	0.0	0.043	2.4	NA	0.0	0.0	0.00	0.27	56.3
West: Gray Street											
11	T1	65	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	176	0.0	0.105	8.6	LOS A	0.5	3.5	0.19	0.63	48.0
Approach		241	0.0	0.105	6.2	NA	0.5	3.5	0.14	0.46	50.8
All Vehicles		1096	0.0	0.603	7.9	NA	4.5	31.3	0.25	0.56	48.8

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Tuesday, 13 May 2014 11:17:24 AM
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - PM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	2	0.0	0.002	8.4	LOS A	0.0	0.0	0.14	0.61	48.3
3	R2	2	0.0	0.002	8.8	LOS A	0.0	0.0	0.19	0.63	47.9
Approach		4	0.0	0.002	8.6	LOS A	0.0	0.0	0.17	0.62	48.1
East: Gray Street											
4	L2	2	0.0	0.030	8.2	LOS A	0.0	0.0	0.00	0.04	59.5
5	T1	56	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		58	0.0	0.030	0.3	NA	0.0	0.0	0.00	0.04	59.5
West: Gray Street											
11	T1	40	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	8.4	LOS A	0.0	0.0	0.14	0.62	48.2
Approach		42	0.0	0.021	0.4	NA	0.0	0.0	0.01	0.03	59.3
All Vehicles		104	0.0	0.030	0.7	NA	0.0	0.0	0.01	0.06	58.9

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - PM Post Development

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	342	0.0	0.302	8.5	LOS A	1.4	9.9	0.19	0.62	48.1
3	R2	46	0.0	0.085	13.1	LOS B	0.3	2.0	0.57	0.85	44.0
Approach		388	0.0	0.302	9.1	LOS A	1.4	9.9	0.23	0.65	47.6
East: Gray Street											
4	L2	68	0.0	0.066	8.2	LOS A	0.0	0.0	0.00	0.44	53.4
5	T1	57	0.0	0.066	0.0	LOS A	0.0	0.0	0.00	0.44	53.4
Approach		125	0.0	0.066	4.5	NA	0.0	0.0	0.00	0.44	53.4
West: Gray Street											
11	T1	41	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	524	0.0	0.325	8.8	LOS A	1.9	13.3	0.30	0.63	47.6
Approach		565	0.0	0.325	8.2	NA	1.9	13.3	0.27	0.59	48.3
All Vehicles		1079	0.0	0.325	6.1	NA	1.9	13.3	0.23	0.59	48.6

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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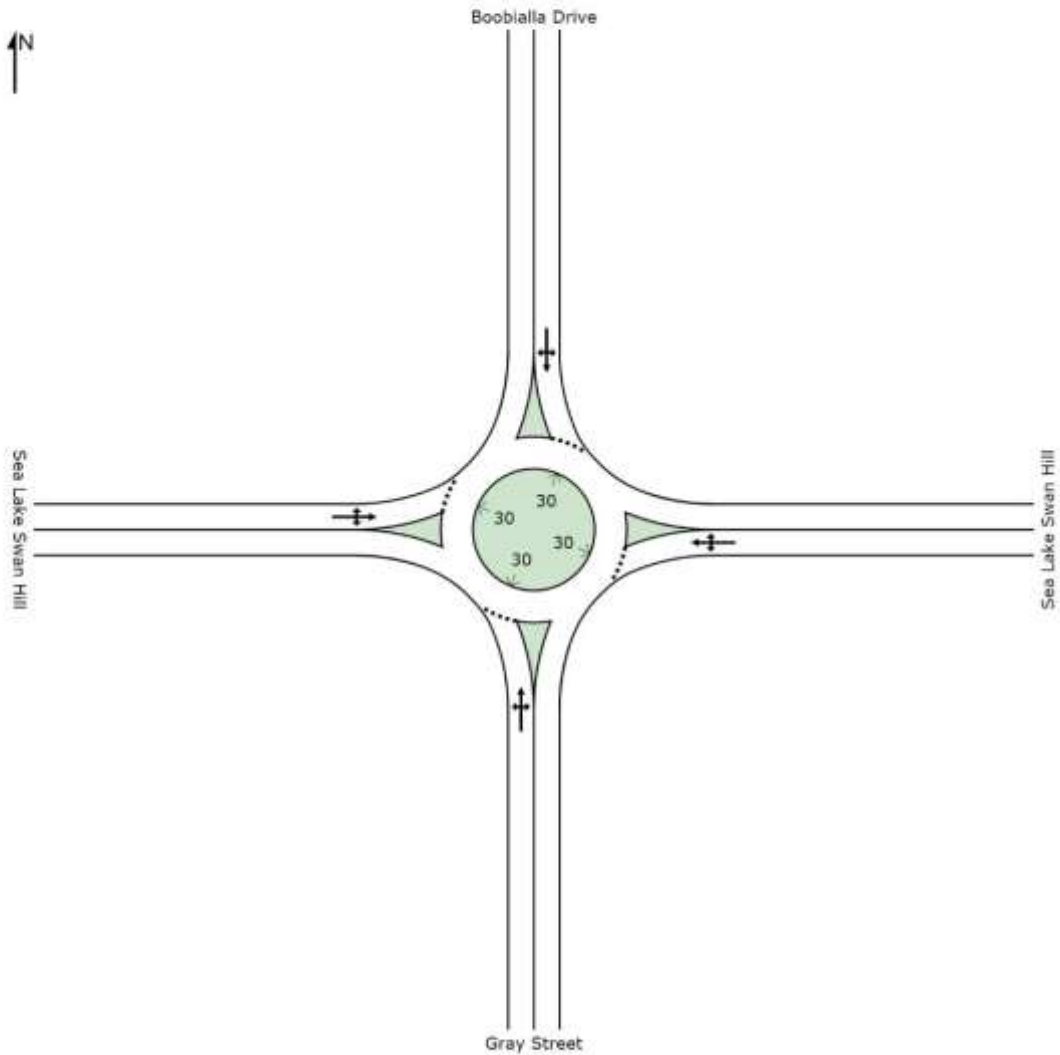
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive Roundabout



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.5	LOS A	0.2	1.3	0.17	1.08	49.1
2	T1	16	0.0	0.040	4.6	LOS A	0.2	1.3	0.17	1.08	49.1
3	R2	24	0.0	0.040	11.4	LOS B	0.2	1.3	0.17	1.08	49.1
Approach		57	0.0	0.040	7.8	LOS A	0.2	1.3	0.17	0.54	49.1
East: Sea Lake Swan Hill											
4	L2	11	0.0	0.046	5.5	LOS A	0.2	1.6	0.17	1.11	48.8
5	T1	23	0.0	0.046	4.6	LOS A	0.2	1.6	0.17	1.11	48.8
6	R2	33	0.0	0.046	11.4	LOS B	0.2	1.6	0.17	1.11	48.8
Approach		66	0.0	0.046	8.1	LOS A	0.2	1.6	0.17	0.55	48.8
North: Boobialla Drive											
7	L2	92	0.0	0.095	5.8	LOS A	0.5	3.3	0.26	0.92	50.6
8	T1	36	0.0	0.095	4.8	LOS A	0.5	3.3	0.26	0.92	50.6
9	R2	2	0.0	0.095	11.7	LOS B	0.5	3.3	0.26	0.92	50.6
Approach		129	0.0	0.095	5.6	LOS A	0.5	3.3	0.26	0.46	50.6
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.067	5.6	LOS A	0.3	2.3	0.19	0.93	50.8
11	T1	77	0.0	0.067	4.6	LOS A	0.3	2.3	0.19	0.93	50.8
12	R2	18	0.0	0.067	11.5	LOS B	0.3	2.3	0.19	0.93	50.8
Approach		96	0.0	0.067	5.9	LOS A	0.3	2.3	0.19	0.46	50.8
All Vehicles		348	0.0	0.095	6.5	LOS A	0.5	3.3	0.21	0.49	50.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	4	0.0	0.524	6.5	LOS A	4.2	29.5	0.51	1.32	44.7
2	T1	16	0.0	0.524	5.5	LOS A	4.2	29.5	0.51	1.32	44.7
3	R2	694	0.0	0.524	12.4	LOS B	4.2	29.5	0.51	1.32	44.7
Approach		714	0.0	0.524	12.2	LOS B	4.2	29.5	0.51	0.66	44.7
East: Sea Lake Swan Hill											
4	L2	183	0.0	0.243	5.7	LOS A	1.7	11.6	0.28	1.09	48.3
5	T1	26	0.0	0.243	4.7	LOS A	1.7	11.6	0.28	1.09	48.3
6	R2	147	0.0	0.243	11.6	LOS B	1.7	11.6	0.28	1.09	48.3
Approach		357	0.0	0.243	8.0	LOS A	1.7	11.6	0.28	0.55	48.3
North: Boobialla Drive											
7	L2	316	0.0	0.494	12.4	LOS B	4.3	30.2	0.90	1.90	44.8
8	T1	53	0.0	0.494	11.4	LOS B	4.3	30.2	0.90	1.90	44.8
9	R2	11	0.0	0.494	18.3	LOS B	4.3	30.2	0.90	1.90	44.8
Approach		379	0.0	0.494	12.4	LOS B	4.3	30.2	0.90	0.95	44.8
West: Sea Lake Swan Hill											
10	L2	11	0.0	0.162	10.5	LOS B	1.1	7.7	0.81	1.56	46.4
11	T1	88	0.0	0.162	9.6	LOS A	1.1	7.7	0.81	1.56	46.4
12	R2	19	0.0	0.162	16.4	LOS B	1.1	7.7	0.81	1.56	46.4
Approach		118	0.0	0.162	10.8	LOS B	1.1	7.7	0.81	0.78	46.4
All Vehicles		1567	0.0	0.524	11.2	LOS B	4.3	30.2	0.57	0.71	45.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.7	LOS A	0.2	1.3	0.24	1.05	49.2
2	T1	20	0.0	0.040	4.7	LOS A	0.2	1.3	0.24	1.05	49.2
3	R2	19	0.0	0.040	11.6	LOS B	0.2	1.3	0.24	1.05	49.2
Approach		56	0.0	0.040	7.4	LOS A	0.2	1.3	0.24	0.52	49.2
East: Sea Lake Swan Hill											
4	L2	9	0.0	0.075	5.4	LOS A	0.4	2.6	0.12	1.16	48.6
5	T1	39	0.0	0.075	4.5	LOS A	0.4	2.6	0.12	1.16	48.6
6	R2	67	0.0	0.075	11.3	LOS B	0.4	2.6	0.12	1.16	48.6
Approach		116	0.0	0.075	8.5	LOS A	0.4	2.6	0.12	0.58	48.6
North: Boobialla Drive											
7	L2	38	0.0	0.043	5.5	LOS A	0.2	1.4	0.17	0.86	51.5
8	T1	23	0.0	0.043	4.6	LOS A	0.2	1.4	0.17	0.86	51.5
9	R2	1	0.0	0.043	11.4	LOS B	0.2	1.4	0.17	0.86	51.5
Approach		62	0.0	0.043	5.3	LOS A	0.2	1.4	0.17	0.43	51.5
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.027	5.7	LOS A	0.1	0.9	0.23	0.94	50.4
11	T1	28	0.0	0.027	4.7	LOS A	0.1	0.9	0.23	0.94	50.4
12	R2	7	0.0	0.027	11.6	LOS B	0.1	0.9	0.23	0.94	50.4
Approach		37	0.0	0.027	6.1	LOS A	0.1	0.9	0.23	0.47	50.4
All Vehicles		271	0.0	0.075	7.2	LOS A	0.4	2.6	0.17	0.52	49.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	19	0.0	0.419	8.3	LOS A	2.9	20.3	0.69	1.56	44.8
2	T1	63	0.0	0.419	7.3	LOS A	2.9	20.3	0.69	1.56	44.8
3	R2	355	0.0	0.419	14.2	LOS B	2.9	20.3	0.69	1.56	44.8
Approach		437	0.0	0.419	12.9	LOS B	2.9	20.3	0.69	0.78	44.8
East: Sea Lake Swan Hill											
4	L2	526	0.0	0.611	5.6	LOS A	6.5	45.7	0.26	1.06	48.3
5	T1	46	0.0	0.611	4.6	LOS A	6.5	45.7	0.26	1.06	48.3
6	R2	442	0.0	0.611	11.5	LOS B	6.5	45.7	0.26	1.06	48.3
Approach		1015	0.0	0.611	8.1	LOS A	6.5	45.7	0.26	0.53	48.3
North: Boobialla Drive											
7	L2	79	0.0	0.098	7.0	LOS A	0.6	4.0	0.55	1.17	48.6
8	T1	23	0.0	0.098	6.1	LOS A	0.6	4.0	0.55	1.17	48.6
9	R2	3	0.0	0.098	12.9	LOS B	0.6	4.0	0.55	1.17	48.6
Approach		105	0.0	0.098	7.0	LOS A	0.6	4.0	0.55	0.59	48.6
West: Sea Lake Swan Hill											
10	L2	32	0.0	0.101	10.4	LOS B	0.7	4.6	0.78	1.48	46.4
11	T1	34	0.0	0.101	9.4	LOS A	0.7	4.6	0.78	1.48	46.4
12	R2	11	0.0	0.101	16.3	LOS B	0.7	4.6	0.78	1.48	46.4
Approach		76	0.0	0.101	10.8	LOS B	0.7	4.6	0.78	0.74	46.4
All Vehicles		1633	0.0	0.611	9.4	LOS A	6.5	45.7	0.42	0.61	47.2

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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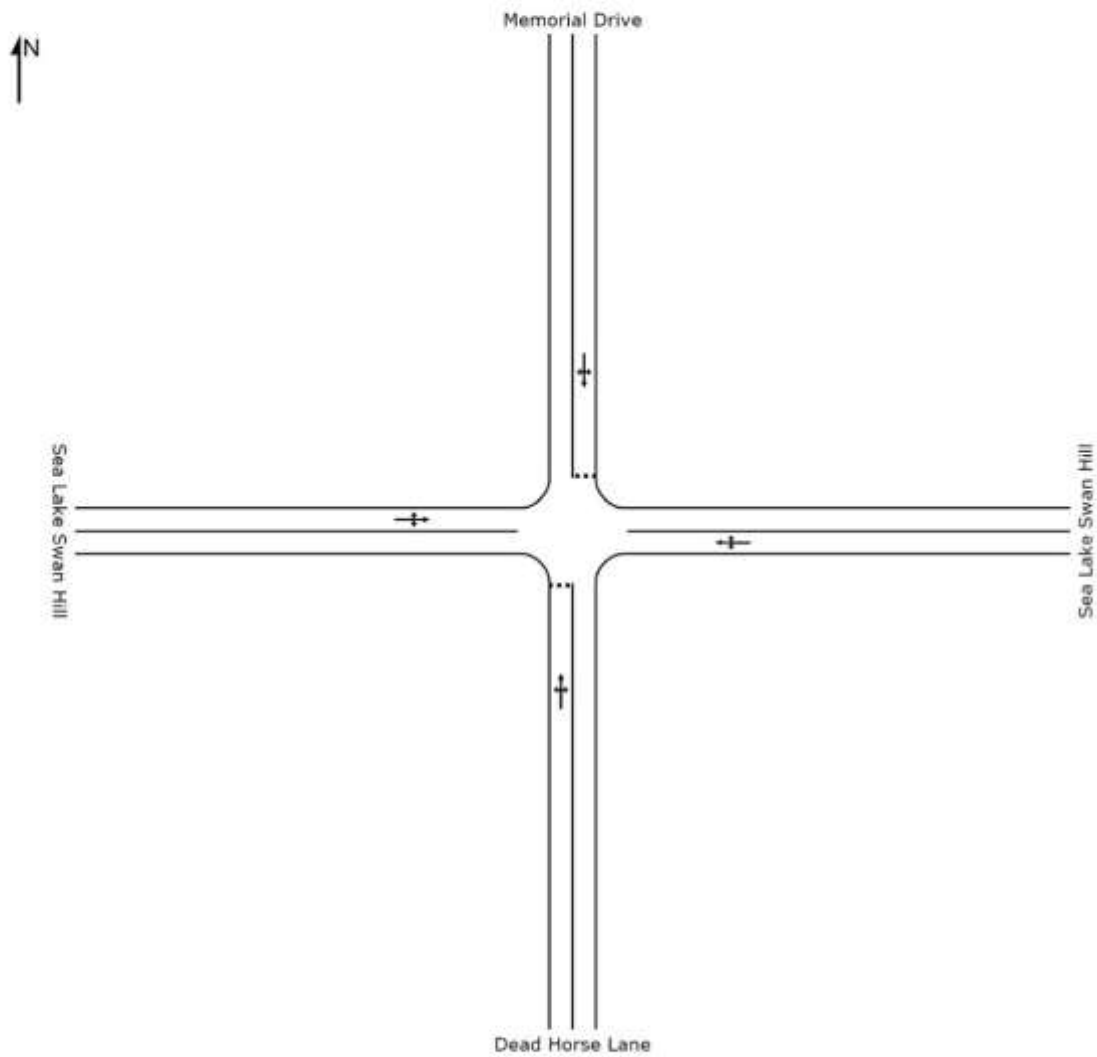
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	2	0.0	0.006	8.7	LOS A	0.0	0.1	0.16	0.61	48.6
2	T1	2	0.0	0.006	7.4	LOS A	0.0	0.1	0.16	0.61	48.6
3	R2	2	0.0	0.006	8.9	LOS A	0.0	0.1	0.16	0.61	48.6
Approach		6	0.0	0.006	8.4	LOS A	0.0	0.1	0.16	0.61	48.6
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.027	8.5	LOS A	0.1	1.0	0.20	0.15	54.7
5	T1	42	0.0	0.027	0.3	LOS A	0.1	1.0	0.20	0.15	54.7
6	R2	6	0.0	0.027	8.7	LOS A	0.1	1.0	0.20	0.15	54.7
Approach		51	0.0	0.027	1.7	NA	0.1	1.0	0.20	0.15	54.7
North: Memorial Drive											
7	L2	12	0.0	0.015	8.7	LOS A	0.1	0.4	0.20	0.61	48.2
8	T1	2	0.0	0.015	7.4	LOS A	0.1	0.4	0.20	0.61	48.2
9	R2	2	0.0	0.015	8.9	LOS A	0.1	0.4	0.20	0.61	48.2
Approach		16	0.0	0.015	8.5	LOS A	0.1	0.4	0.20	0.61	48.2
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.052	8.3	LOS A	0.3	1.9	0.13	0.04	57.1
11	T1	96	0.0	0.052	0.1	LOS A	0.3	1.9	0.13	0.04	57.1
12	R2	2	0.0	0.052	8.6	LOS A	0.3	1.9	0.13	0.04	57.1
Approach		100	0.0	0.052	0.5	NA	0.3	1.9	0.13	0.04	57.1
All Vehicles		173	0.0	0.052	1.8	NA	0.3	1.9	0.16	0.15	55.1

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Post Development

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	17	0.0	0.023	8.6	LOS A	0.1	0.6	0.14	0.63	48.4
2	T1	2	0.0	0.023	7.3	LOS A	0.1	0.6	0.14	0.63	48.4
3	R2	6	0.0	0.023	8.9	LOS A	0.1	0.6	0.14	0.63	48.4
Approach		25	0.0	0.023	8.6	LOS A	0.1	0.6	0.14	0.63	48.4
East: Sea Lake Swan Hill											
4	L2	3	0.0	0.032	8.5	LOS A	0.2	1.2	0.21	0.14	54.6
5	T1	51	0.0	0.032	0.3	LOS A	0.2	1.2	0.21	0.14	54.6
6	R2	6	0.0	0.032	8.8	LOS A	0.2	1.2	0.21	0.14	54.6
Approach		60	0.0	0.032	1.6	NA	0.2	1.2	0.21	0.14	54.6
North: Memorial Drive											
7	L2	12	0.0	0.015	8.7	LOS A	0.1	0.4	0.22	0.61	48.1
8	T1	2	0.0	0.015	7.5	LOS A	0.1	0.4	0.22	0.61	48.1
9	R2	2	0.0	0.015	9.0	LOS A	0.1	0.4	0.22	0.61	48.1
Approach		16	0.0	0.015	8.6	LOS A	0.1	0.4	0.22	0.61	48.1
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.059	8.3	LOS A	0.3	2.2	0.14	0.07	56.5
11	T1	106	0.0	0.059	0.2	LOS A	0.3	2.2	0.14	0.07	56.5
12	R2	6	0.0	0.059	8.6	LOS A	0.3	2.2	0.14	0.07	56.5
Approach		115	0.0	0.059	0.8	NA	0.3	2.2	0.14	0.07	56.5
All Vehicles		216	0.0	0.059	2.5	NA	0.3	2.2	0.17	0.20	54.2

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - PM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	2	0.0	0.006	8.6	LOS A	0.0	0.1	0.17	0.60	48.5
2	T1	2	0.0	0.006	7.3	LOS A	0.0	0.1	0.17	0.60	48.5
3	R2	2	0.0	0.006	8.8	LOS A	0.0	0.1	0.17	0.60	48.5
Approach		6	0.0	0.006	8.2	LOS A	0.0	0.1	0.17	0.60	48.5
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.037	8.3	LOS A	0.2	1.3	0.12	0.18	55.6
5	T1	56	0.0	0.037	0.1	LOS A	0.2	1.3	0.12	0.18	55.6
6	R2	12	0.0	0.037	8.6	LOS A	0.2	1.3	0.12	0.18	55.6
Approach		69	0.0	0.037	1.8	NA	0.2	1.3	0.12	0.18	55.6
North: Memorial Drive											
7	L2	6	0.0	0.009	8.5	LOS A	0.0	0.2	0.12	0.62	48.6
8	T1	2	0.0	0.009	7.2	LOS A	0.0	0.2	0.12	0.62	48.6
9	R2	2	0.0	0.009	8.7	LOS A	0.0	0.2	0.12	0.62	48.6
Approach		11	0.0	0.009	8.3	LOS A	0.0	0.2	0.12	0.62	48.6
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.021	8.3	LOS A	0.1	0.8	0.14	0.10	56.2
11	T1	37	0.0	0.021	0.2	LOS A	0.1	0.8	0.14	0.10	56.2
12	R2	2	0.0	0.021	8.6	LOS A	0.1	0.8	0.14	0.10	56.2
Approach		41	0.0	0.021	1.0	NA	0.1	0.8	0.14	0.10	56.2
All Vehicles		127	0.0	0.037	2.4	NA	0.2	1.3	0.13	0.21	54.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - PM Post Development

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	9	0.0	0.014	8.6	LOS A	0.1	0.4	0.17	0.62	48.3
2	T1	2	0.0	0.014	7.3	LOS A	0.1	0.4	0.17	0.62	48.3
3	R2	4	0.0	0.014	8.9	LOS A	0.1	0.4	0.17	0.62	48.3
Approach		16	0.0	0.014	8.5	LOS A	0.1	0.4	0.17	0.62	48.3
East: Sea Lake Swan Hill											
4	L2	5	0.0	0.042	8.3	LOS A	0.2	1.5	0.13	0.19	55.3
5	T1	63	0.0	0.042	0.1	LOS A	0.2	1.5	0.13	0.19	55.3
6	R2	12	0.0	0.042	8.6	LOS A	0.2	1.5	0.13	0.19	55.3
Approach		80	0.0	0.042	1.9	NA	0.2	1.5	0.13	0.19	55.3
North: Memorial Drive											
7	L2	6	0.0	0.010	8.5	LOS A	0.0	0.2	0.13	0.62	48.6
8	T1	2	0.0	0.010	7.3	LOS A	0.0	0.2	0.13	0.62	48.6
9	R2	2	0.0	0.010	8.8	LOS A	0.0	0.2	0.13	0.62	48.6
Approach		11	0.0	0.010	8.3	LOS A	0.0	0.2	0.13	0.62	48.6
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.032	8.4	LOS A	0.2	1.1	0.16	0.23	54.3
11	T1	44	0.0	0.032	0.2	LOS A	0.2	1.1	0.16	0.23	54.3
12	R2	14	0.0	0.032	8.6	LOS A	0.2	1.1	0.16	0.23	54.3
Approach		60	0.0	0.032	2.4	NA	0.2	1.1	0.16	0.23	54.3
All Vehicles		166	0.0	0.042	3.1	NA	0.2	1.5	0.14	0.27	53.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used, Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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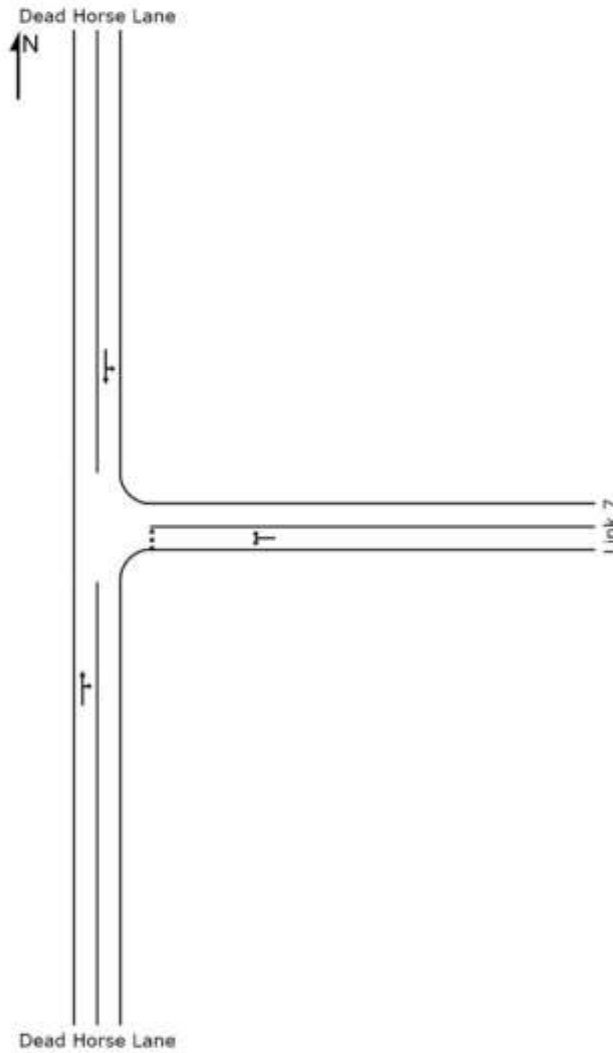
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 11 - Dead Horse Lane/Link 7 - AM Post Development

Dead Horse Lane/Link 7
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 11 - Dead Horse Lane/Link 7 - AM Post Development

Dead Horse Lane/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Dead Horse Lane											
2	T1	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.03	0.42	53.4
3	R2	1	0.0	0.001	8.5	LOS A	0.0	0.0	0.03	0.42	53.4
Approach		2	0.0	0.001	4.2	NA	0.0	0.0	0.03	0.42	53.4
East: Link 7											
4	L2	1	0.0	0.015	8.2	LOS A	0.0	0.3	0.02	0.69	48.5
6	R2	19	0.0	0.015	8.5	LOS A	0.0	0.3	0.02	0.69	48.5
Approach		20	0.0	0.015	8.4	LOS A	0.0	0.3	0.02	0.69	48.5
North: Dead Horse Lane											
7	L2	4	0.0	0.003	8.2	LOS A	0.0	0.0	0.00	0.58	50.8
8	T1	1	0.0	0.003	0.0	LOS A	0.0	0.0	0.00	0.58	50.8
Approach		5	0.0	0.003	6.5	NA	0.0	0.0	0.00	0.58	50.8
All Vehicles		27	0.0	0.015	7.8	NA	0.0	0.3	0.02	0.64	49.3

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 11 - Dead Horse Lane/Link 7 - PM Post Development

Dead Horse Lane/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
2	T1	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.06	0.41	53.1
3	R2	1	0.0	0.001	8.5	LOS A	0.0	0.0	0.06	0.41	53.1
Approach		2	0.0	0.001	4.3	NA	0.0	0.0	0.06	0.41	53.1
East: Link 7											
4	L2	1	0.0	0.008	8.2	LOS A	0.0	0.2	0.02	0.68	48.5
6	R2	9	0.0	0.008	8.5	LOS A	0.0	0.2	0.02	0.68	48.5
Approach		11	0.0	0.008	8.4	LOS A	0.0	0.2	0.02	0.68	48.5
North: Dead Horse Lane											
7	L2	14	0.0	0.008	8.2	LOS A	0.0	0.0	0.00	0.64	49.6
8	T1	1	0.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.64	49.6
Approach		15	0.0	0.008	7.6	NA	0.0	0.0	0.00	0.64	49.6
All Vehicles		27	0.0	0.008	7.7	NA	0.0	0.2	0.01	0.64	49.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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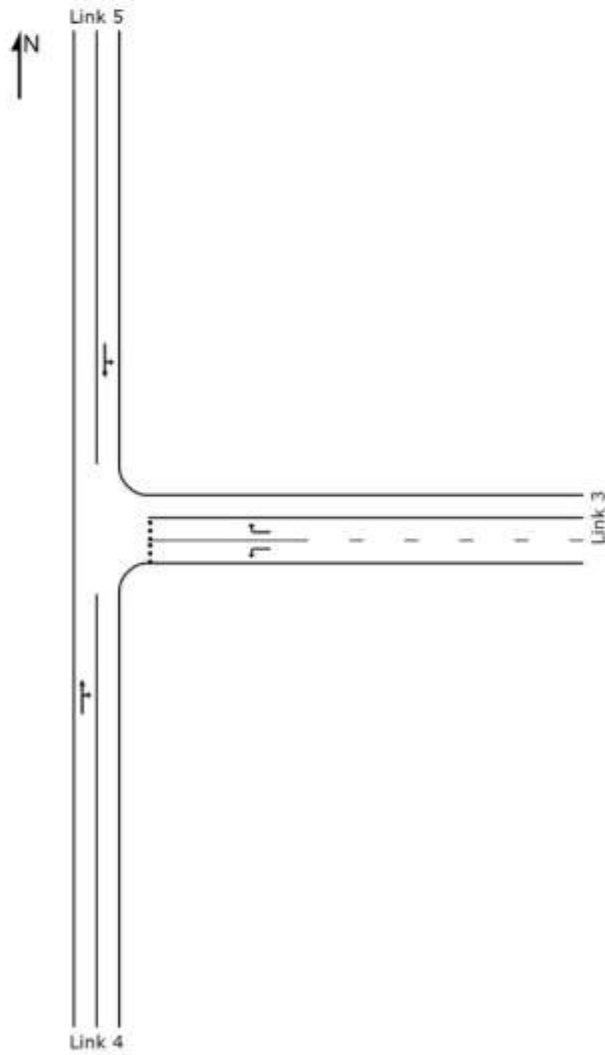
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 12 (1) - Link3/Link 4/Link 5 - AM Post Development

Link3/Link 4/Link 5
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 12 (1) - Link3/Link 4//Link 5 - AM Post Development

Link3/Link 4/Link 5
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 4											
2	T1	286	0.0	0.263	0.5	LOS A	1.7	11.8	0.26	0.28	52.4
3	R2	148	0.0	0.263	8.8	LOS A	1.7	11.8	0.26	0.28	52.4
Approach		435	0.0	0.263	3.4	NA	1.7	11.8	0.26	0.28	52.4
East: Link 3											
4	L2	37	0.0	0.024	8.4	LOS A	0.1	0.7	0.15	0.61	48.3
6	R2	12	0.0	0.015	10.7	LOS B	0.0	0.3	0.44	0.72	46.3
Approach		48	0.0	0.024	8.9	LOS A	0.1	0.7	0.22	0.64	47.8
North: Link 5											
7	L2	31	0.0	0.053	8.2	LOS A	0.0	0.0	0.00	0.27	56.2
8	T1	72	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.27	56.2
Approach		102	0.0	0.053	2.5	NA	0.0	0.0	0.00	0.27	56.2
All Vehicles		585	0.0	0.263	3.7	NA	1.7	11.8	0.21	0.31	52.6

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 12 (1) - Link3/Link 4//Link 5 - PM Post Development

Link3/Link 4/Link 5
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 4											
2	T1	143	0.0	0.139	1.1	LOS A	0.8	5.7	0.36	0.28	51.2
3	R2	74	0.0	0.139	9.4	LOS A	0.8	5.7	0.36	0.28	51.2
Approach		217	0.0	0.139	3.9	NA	0.8	5.7	0.36	0.28	51.2
East: Link 3											
4	L2	112	0.0	0.082	8.9	LOS A	0.3	2.3	0.30	0.64	47.6
6	R2	24	0.0	0.028	10.2	LOS B	0.1	0.6	0.40	0.71	46.8
Approach		136	0.0	0.082	9.1	LOS A	0.3	2.3	0.32	0.65	47.5
North: Link 5											
7	L2	18	0.0	0.120	8.2	LOS A	0.0	0.0	0.00	0.08	59.0
8	T1	215	0.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.08	59.0
Approach		233	0.0	0.120	0.6	NA	0.0	0.0	0.00	0.08	59.0
All Vehicles		585	0.0	0.139	3.8	NA	0.8	5.7	0.21	0.29	53.0

Level of Service (LOS) Method: Delay (HCM 2000).
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

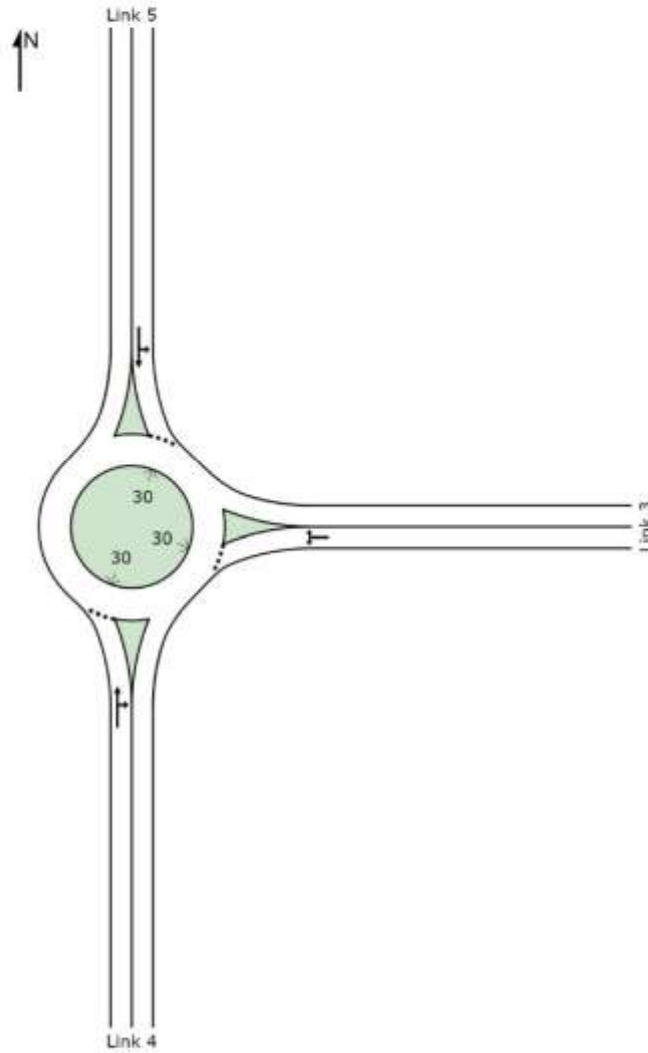
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SITE LAYOUT

Site: INT 12 (2) - Link3/Link 4/Link 5 - AM Post Development

Link3/Link 4/Link 5
Roundabout



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 12 (2) - Link3/Link 4//Link 5 - AM Post Development

Link3/Link 4/Link 5
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Link 4											
2	T1	286	0.0	0.253	4.4	LOS A	1.8	12.5	0.09	1.03	50.4
3	R2	148	0.0	0.253	11.3	LOS B	1.8	12.5	0.09	1.03	50.4
Approach		435	0.0	0.253	6.7	LOS A	1.8	12.5	0.09	0.51	50.4
East: Link 3											
4	L2	37	0.0	0.035	5.6	LOS A	0.2	1.4	0.23	1.00	49.5
6	R2	12	0.0	0.035	11.5	LOS B	0.2	1.4	0.23	1.00	49.5
Approach		48	0.0	0.035	7.0	LOS A	0.2	1.4	0.23	0.50	49.5
North: Link 5											
7	L2	31	0.0	0.078	6.0	LOS A	0.4	3.0	0.33	0.89	50.7
8	T1	72	0.0	0.078	5.1	LOS A	0.4	3.0	0.33	0.89	50.7
Approach		102	0.0	0.078	5.3	LOS A	0.4	3.0	0.33	0.44	50.7
All Vehicles		585	0.0	0.253	6.5	LOS A	1.8	12.5	0.14	0.50	50.4

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 12 (2) - Link3/Link 4//Link 5 - PM Post Development

Link3/Link 4/Link 5 Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 4											
2	T1	143	0.0	0.136	4.5	LOS A	0.9	6.2	0.13	1.01	50.1
3	R2	74	0.0	0.136	11.3	LOS B	0.9	6.2	0.13	1.01	50.1
Approach		217	0.0	0.136	6.8	LOS A	0.9	6.2	0.13	0.51	50.1
East: Link 3											
4	L2	112	0.0	0.110	6.4	LOS A	0.7	4.6	0.42	1.09	48.6
6	R2	24	0.0	0.110	12.3	LOS B	0.7	4.6	0.42	1.09	48.6
Approach		136	0.0	0.110	7.4	LOS A	0.7	4.6	0.42	0.55	48.6
North: Link 5											
7	L2	18	0.0	0.159	5.6	LOS A	1.0	6.8	0.24	0.81	51.6
8	T1	215	0.0	0.159	4.7	LOS A	1.0	6.8	0.24	0.81	51.6
Approach		233	0.0	0.159	4.8	LOS A	1.0	6.8	0.24	0.40	51.6
All Vehicles		585	0.0	0.159	6.1	LOS A	1.0	6.8	0.24	0.47	50.3

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Signalised Intersections.
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

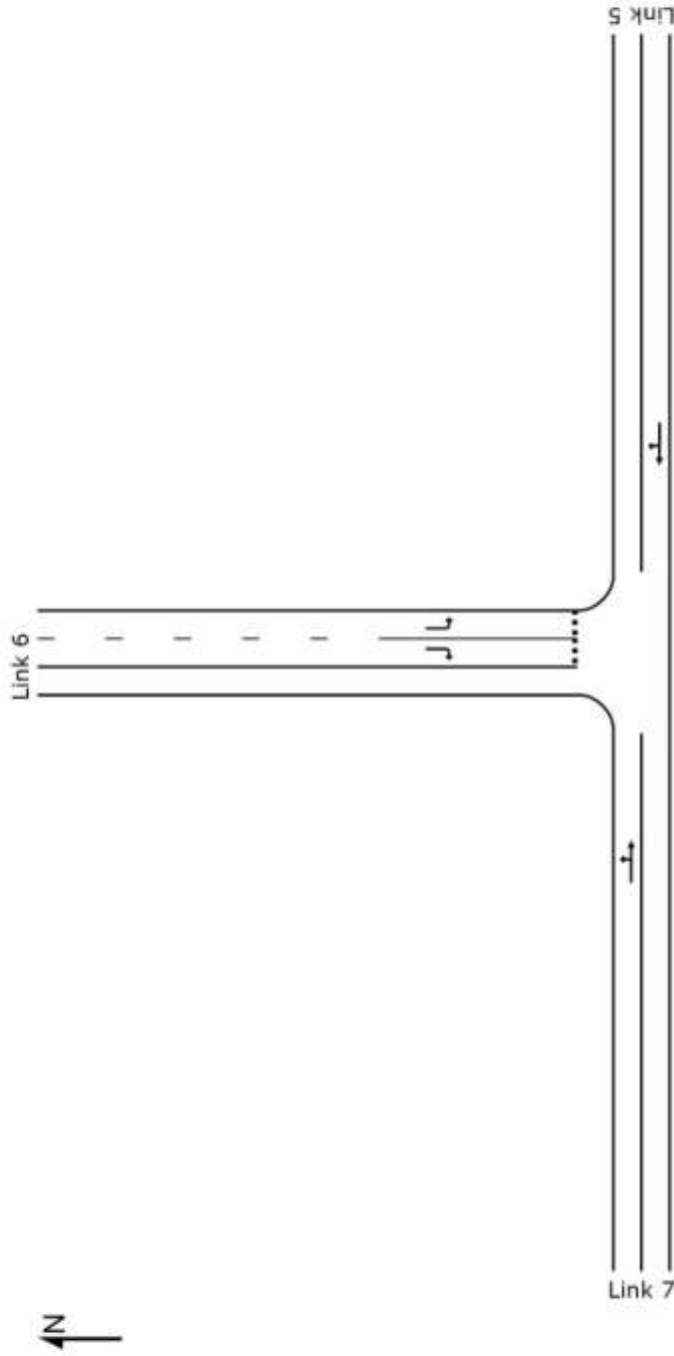
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SITE LAYOUT

▽ Site: INT 13 - Link 5/Link 6/ Link 7 - AM Post Development

Link 5/Link 6/ Link 7
Giveaway / Yield (Two-Way)



**SIDRA
INTERSECTION 6**

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MOVEMENT SUMMARY

Site: INT 13 - Link 5/Link 6/ Link 7 - AM Post Development

Link 5/Link 6/ Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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
East: Link 5											
5	T1	13	0.0	0.229	0.8	LOS A	1.2	8.3	0.35	0.63	47.6
6	R2	334	0.0	0.229	9.1	LOS A	1.2	8.3	0.35	0.63	47.6
Approach		346	0.0	0.229	8.8	NA	1.2	8.3	0.35	0.63	47.6
North: Link 6											
7	L2	85	0.0	0.052	8.2	LOS A	0.2	1.5	0.03	0.65	48.8
9	R2	97	0.0	0.115	10.5	LOS B	0.4	2.7	0.43	0.77	46.5
Approach		182	0.0	0.115	9.4	LOS A	0.4	2.7	0.24	0.71	47.6
West: Link 7											
10	L2	195	0.0	0.108	8.2	LOS A	0.0	0.0	0.00	0.66	49.2
11	T1	5	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.66	49.2
Approach		200	0.0	0.108	8.0	NA	0.0	0.0	0.00	0.66	49.2
All Vehicles		726	0.0	0.229	6.7	NA	1.2	8.3	0.23	0.66	48.0

Level of Service (LOS) Method: Delay (HCM 2000).
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 13 - Link 5/Link 6/ Link 7 - PM Post Development

Link 5/Link 6/ Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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
East: Link 5											
5	T1	7	0.0	0.107	0.3	LOS A	0.5	3.6	0.22	0.61	48.2
6	R2	168	0.0	0.107	8.6	LOS A	0.5	3.6	0.22	0.61	48.2
Approach		176	0.0	0.107	8.3	NA	0.5	3.6	0.22	0.61	48.2
North: Link 6											
7	L2	251	0.0	0.154	8.2	LOS A	0.7	4.9	0.05	0.64	48.7
9	R2	131	0.0	0.124	9.4	LOS A	0.4	3.0	0.30	0.69	47.4
Approach		381	0.0	0.154	8.6	LOS A	0.7	4.9	0.14	0.66	48.3
West: Link 7											
10	L2	98	0.0	0.058	8.2	LOS A	0.0	0.0	0.00	0.63	49.8
11	T1	9	0.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.63	49.8
Approach		107	0.0	0.058	7.5	NA	0.0	0.0	0.00	0.63	49.8
All Vehicles		664	0.0	0.154	6.3	NA	0.7	4.9	0.14	0.64	48.5

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Swan Hill South West Development Precinct
Traffic Impact Assessment



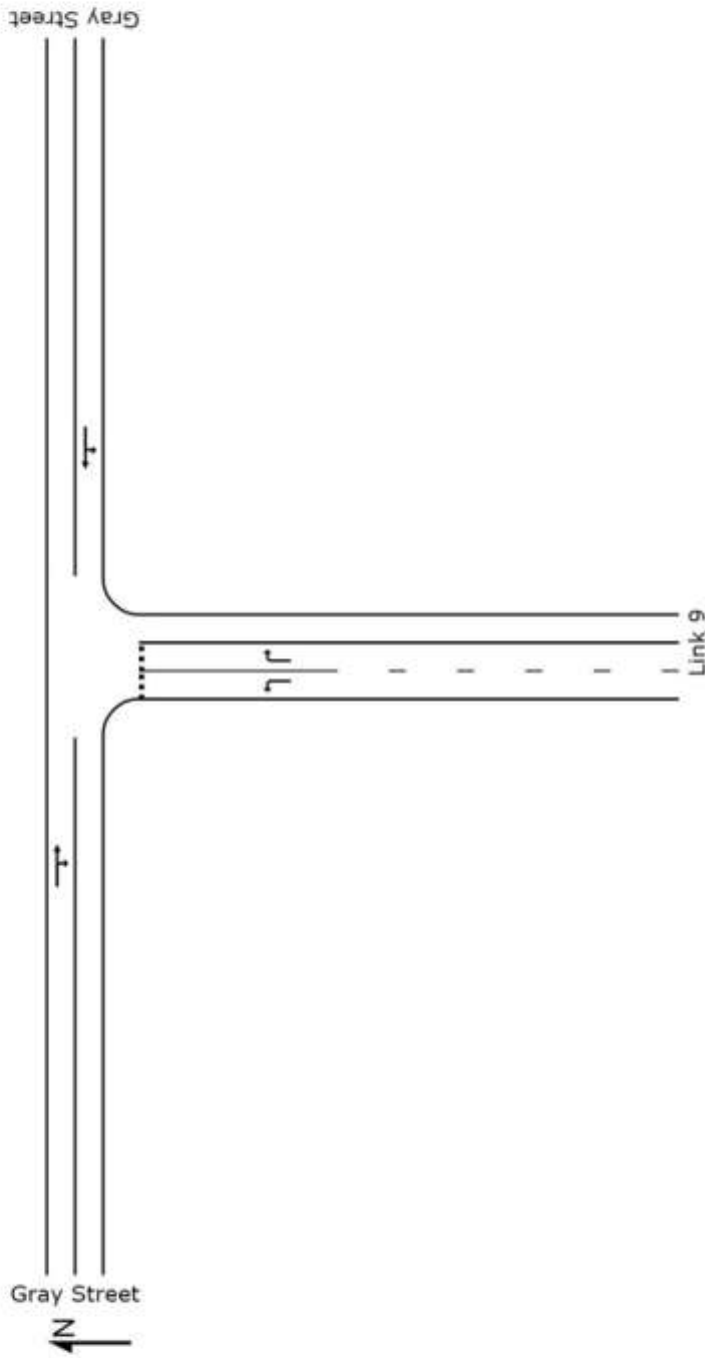
APPENDIX B
CAPACITY ANALYSIS RESULTS
OPTION 2 - DEAD HORSE LANE LINK

GFP16371R9263B

SITE LAYOUT

▽ Site: INT 6 - Gray Street/Link 9- AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



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**SIDRA
 INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 6 - Gray Street/Link 9- AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Link 9											
1	L2	1	0.0	0.001	8.4	LOS A	0.0	0.0	0.15	0.60	48.3
3	R2	145	0.0	0.147	9.5	LOS A	0.6	4.0	0.32	0.68	47.4
Approach		146	0.0	0.147	9.5	LOS A	0.6	4.0	0.32	0.68	47.4
East: Gray Street											
4	L2	36	0.0	0.054	8.2	LOS A	0.0	0.0	0.00	0.31	55.6
5	T1	67	0.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.31	55.6
Approach		103	0.0	0.054	2.8	NA	0.0	0.0	0.00	0.31	55.6
West: Gray Street											
11	T1	105	0.0	0.055	0.3	LOS A	0.3	2.1	0.21	0.01	56.0
12	R2	1	0.0	0.055	8.6	LOS A	0.3	2.1	0.21	0.01	56.0
Approach		106	0.0	0.055	0.4	NA	0.3	2.1	0.21	0.01	56.0
All Vehicles		356	0.0	0.147	4.8	NA	0.6	4.0	0.19	0.37	52.0

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 6 - Gray Street/Link 9- PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 9											
1	L2	1	0.0	0.001	8.5	LOS A	0.0	0.0	0.18	0.60	48.2
3	R2	73	0.0	0.075	9.5	LOS A	0.3	1.9	0.31	0.68	47.4
Approach		74	0.0	0.075	9.5	LOS A	0.3	1.9	0.31	0.67	47.4
East: Gray Street											
4	L2	109	0.0	0.103	8.2	LOS A	0.0	0.0	0.00	0.45	53.3
5	T1	86	0.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.45	53.3
Approach		196	0.0	0.103	4.6	NA	0.0	0.0	0.00	0.45	53.3
West: Gray Street											
11	T1	61	0.0	0.032	0.6	LOS A	0.2	1.3	0.30	0.02	54.4
12	R2	1	0.0	0.032	8.9	LOS A	0.2	1.3	0.30	0.02	54.4
Approach		62	0.0	0.032	0.7	NA	0.2	1.3	0.30	0.02	54.4
All Vehicles		332	0.0	0.103	4.9	NA	0.3	1.9	0.12	0.42	52.1

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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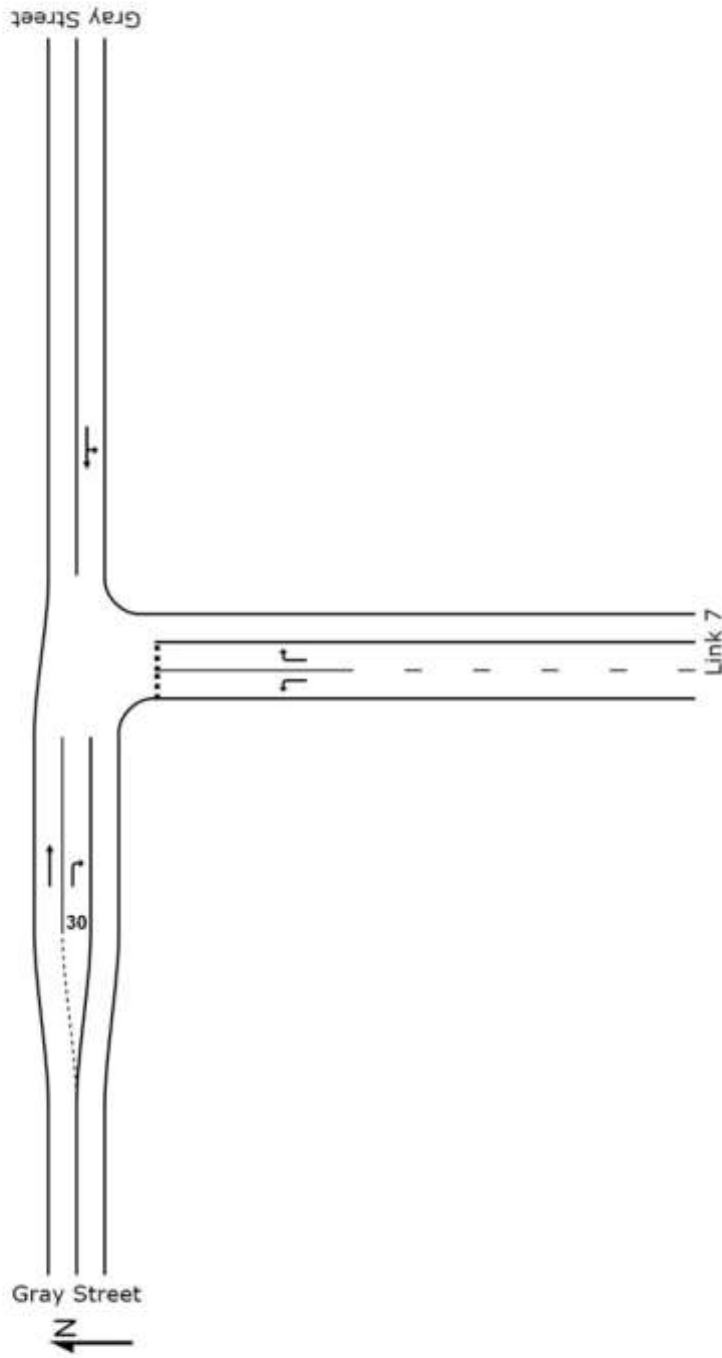
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 7 - Gray Street/Link 7 - AM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - AM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	2	0.0	0.002	8.4	LOS A	0.0	0.0	0.14	0.61	48.3
3	R2	2	0.0	0.002	9.0	LOS A	0.0	0.0	0.22	0.62	47.8
Approach		4	0.0	0.002	8.7	LOS A	0.0	0.0	0.18	0.62	48.0
East: Gray Street											
4	L2	2	0.0	0.030	8.2	LOS A	0.0	0.0	0.00	0.04	59.5
5	T1	57	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		59	0.0	0.030	0.3	NA	0.0	0.0	0.00	0.04	59.5
West: Gray Street											
11	T1	64	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	8.4	LOS A	0.0	0.0	0.14	0.61	48.2
Approach		66	0.0	0.033	0.3	NA	0.0	0.0	0.00	0.02	59.5
All Vehicles		129	0.0	0.033	0.6	NA	0.0	0.0	0.01	0.05	59.1

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - AM Post Development

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	429	0.0	0.380	8.6	LOS A	2.0	13.7	0.21	0.62	48.0
3	R2	43	0.0	0.046	9.6	LOS A	0.2	1.2	0.33	0.68	47.3
Approach		473	0.0	0.380	8.7	LOS A	2.0	13.7	0.22	0.63	48.0
East: Gray Street											
4	L2	13	0.0	0.037	8.2	LOS A	0.0	0.0	0.00	0.17	57.7
5	T1	59	0.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.17	57.7
Approach		72	0.0	0.037	1.4	NA	0.0	0.0	0.00	0.17	57.7
West: Gray Street											
11	T1	65	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	113	0.0	0.067	8.5	LOS A	0.3	2.2	0.17	0.62	48.1
Approach		178	0.0	0.067	5.4	NA	0.3	2.2	0.11	0.40	51.9
All Vehicles		722	0.0	0.380	7.2	NA	2.0	13.7	0.17	0.52	49.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - PM Existing

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	2	0.0	0.002	8.4	LOS A	0.0	0.0	0.14	0.61	48.3
3	R2	2	0.0	0.002	8.8	LOS A	0.0	0.0	0.19	0.63	47.9
Approach		4	0.0	0.002	8.6	LOS A	0.0	0.0	0.17	0.62	48.1
East: Gray Street											
4	L2	2	0.0	0.030	8.2	LOS A	0.0	0.0	0.00	0.04	59.5
5	T1	56	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		58	0.0	0.030	0.3	NA	0.0	0.0	0.00	0.04	59.5
West: Gray Street											
11	T1	40	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	8.4	LOS A	0.0	0.0	0.14	0.62	48.2
Approach		42	0.0	0.021	0.4	NA	0.0	0.0	0.01	0.03	59.3
All Vehicles		104	0.0	0.030	0.7	NA	0.0	0.0	0.01	0.06	58.9

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 7 - PM Post Development

Gray Street/Link 7
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Link 7											
1	L2	216	0.0	0.190	8.5	LOS A	0.8	5.5	0.17	0.62	48.2
3	R2	23	0.0	0.032	11.0	LOS B	0.1	0.8	0.46	0.73	46.0
Approach		239	0.0	0.190	8.7	LOS A	0.8	5.5	0.19	0.63	48.0
East: Gray Street											
4	L2	33	0.0	0.047	8.2	LOS A	0.0	0.0	0.00	0.32	55.4
5	T1	57	0.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.32	55.4
Approach		89	0.0	0.047	3.0	NA	0.0	0.0	0.00	0.32	55.4
West: Gray Street											
11	T1	41	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	334	0.0	0.200	8.6	LOS A	1.0	7.3	0.22	0.63	47.9
Approach		375	0.0	0.200	7.7	NA	1.0	7.3	0.19	0.56	49.0
All Vehicles		703	0.0	0.200	7.4	NA	1.0	7.3	0.17	0.55	49.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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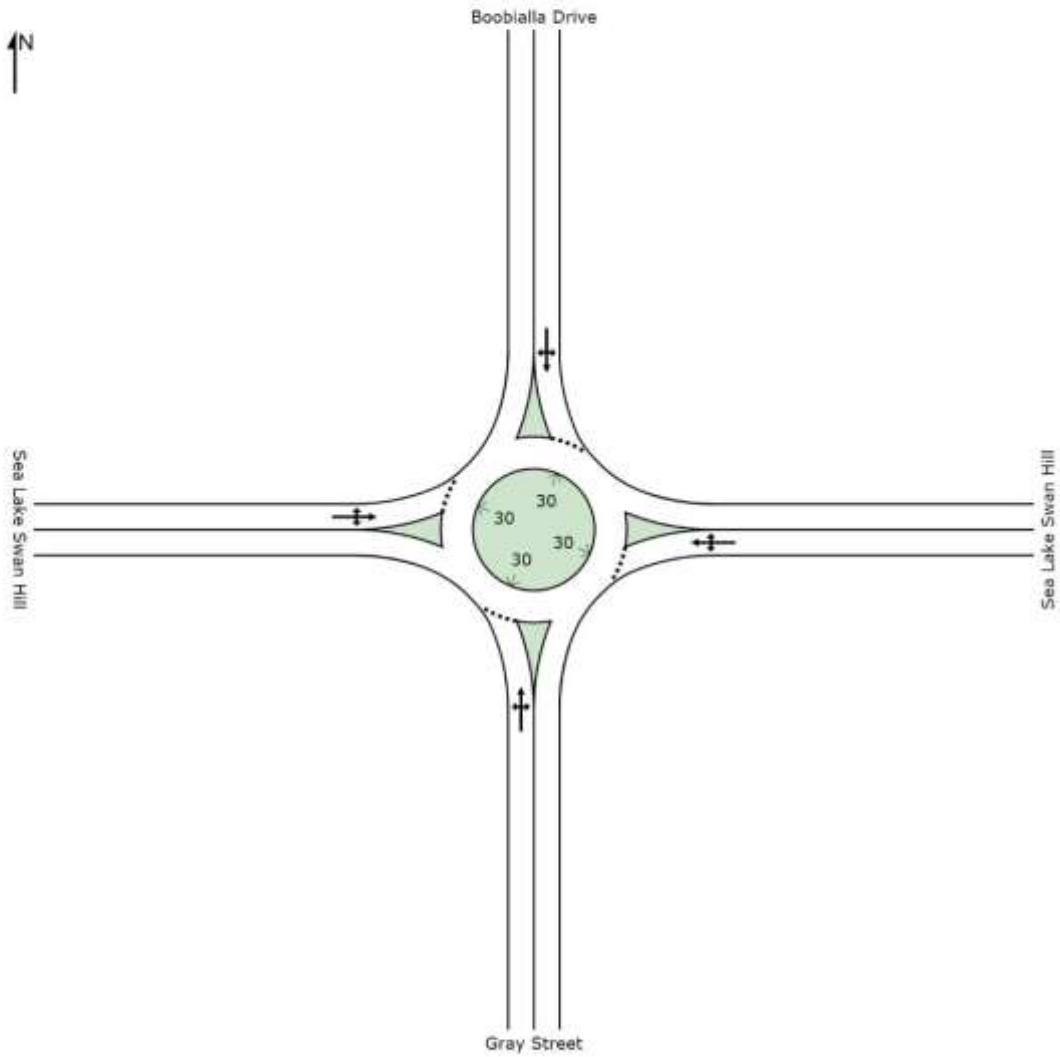
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive Roundabout



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.5	LOS A	0.2	1.3	0.17	1.08	49.1
2	T1	16	0.0	0.040	4.6	LOS A	0.2	1.3	0.17	1.08	49.1
3	R2	24	0.0	0.040	11.4	LOS B	0.2	1.3	0.17	1.08	49.1
Approach		57	0.0	0.040	7.8	LOS A	0.2	1.3	0.17	0.54	49.1
East: Sea Lake Swan Hill											
4	L2	11	0.0	0.046	5.5	LOS A	0.2	1.6	0.17	1.11	48.8
5	T1	23	0.0	0.046	4.6	LOS A	0.2	1.6	0.17	1.11	48.8
6	R2	33	0.0	0.046	11.4	LOS B	0.2	1.6	0.17	1.11	48.8
Approach		66	0.0	0.046	8.1	LOS A	0.2	1.6	0.17	0.55	48.8
North: Boobialla Drive											
7	L2	92	0.0	0.095	5.8	LOS A	0.5	3.3	0.26	0.92	50.6
8	T1	36	0.0	0.095	4.8	LOS A	0.5	3.3	0.26	0.92	50.6
9	R2	2	0.0	0.095	11.7	LOS B	0.5	3.3	0.26	0.92	50.6
Approach		129	0.0	0.095	5.6	LOS A	0.5	3.3	0.26	0.46	50.6
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.067	5.6	LOS A	0.3	2.3	0.19	0.93	50.8
11	T1	77	0.0	0.067	4.6	LOS A	0.3	2.3	0.19	0.93	50.8
12	R2	18	0.0	0.067	11.5	LOS B	0.3	2.3	0.19	0.93	50.8
Approach		96	0.0	0.067	5.9	LOS A	0.3	2.3	0.19	0.46	50.8
All Vehicles		348	0.0	0.095	6.5	LOS A	0.5	3.3	0.21	0.49	50.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	19	0.0	0.391	6.6	LOS A	2.7	18.6	0.49	1.36	45.0
2	T1	16	0.0	0.391	5.7	LOS A	2.7	18.6	0.49	1.36	45.0
3	R2	466	0.0	0.391	12.5	LOS B	2.7	18.6	0.49	1.36	45.0
Approach		501	0.0	0.391	12.1	LOS B	2.7	18.6	0.49	0.68	45.0
East: Sea Lake Swan Hill											
4	L2	120	0.0	0.235	5.7	LOS A	1.5	10.7	0.27	1.09	48.5
5	T1	78	0.0	0.235	4.7	LOS A	1.5	10.7	0.27	1.09	48.5
6	R2	147	0.0	0.235	11.6	LOS B	1.5	10.7	0.27	1.09	48.5
Approach		345	0.0	0.235	8.0	LOS A	1.5	10.7	0.27	0.55	48.5
North: Boobialla Drive											
7	L2	79	0.0	0.174	9.8	LOS A	1.1	7.9	0.75	1.50	47.1
8	T1	53	0.0	0.174	8.8	LOS A	1.1	7.9	0.75	1.50	47.1
9	R2	11	0.0	0.174	15.7	LOS B	1.1	7.9	0.75	1.50	47.1
Approach		142	0.0	0.174	9.9	LOS A	1.1	7.9	0.75	0.75	47.1
West: Sea Lake Swan Hill											
10	L2	11	0.0	0.354	9.0	LOS A	2.5	17.2	0.75	1.50	47.5
11	T1	295	0.0	0.354	8.1	LOS A	2.5	17.2	0.75	1.50	47.5
12	R2	19	0.0	0.354	14.9	LOS B	2.5	17.2	0.75	1.50	47.5
Approach		324	0.0	0.354	8.5	LOS A	2.5	17.2	0.75	0.75	47.5
All Vehicles		1313	0.0	0.391	9.9	LOS A	2.7	18.6	0.53	0.67	46.7

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.7	LOS A	0.2	1.3	0.24	1.05	49.2
2	T1	20	0.0	0.040	4.7	LOS A	0.2	1.3	0.24	1.05	49.2
3	R2	19	0.0	0.040	11.6	LOS B	0.2	1.3	0.24	1.05	49.2
Approach		56	0.0	0.040	7.4	LOS A	0.2	1.3	0.24	0.52	49.2
East: Sea Lake Swan Hill											
4	L2	9	0.0	0.075	5.4	LOS A	0.4	2.6	0.12	1.16	48.6
5	T1	39	0.0	0.075	4.5	LOS A	0.4	2.6	0.12	1.16	48.6
6	R2	67	0.0	0.075	11.3	LOS B	0.4	2.6	0.12	1.16	48.6
Approach		116	0.0	0.075	8.5	LOS A	0.4	2.6	0.12	0.58	48.6
North: Boobialla Drive											
7	L2	38	0.0	0.043	5.5	LOS A	0.2	1.4	0.17	0.86	51.5
8	T1	23	0.0	0.043	4.6	LOS A	0.2	1.4	0.17	0.86	51.5
9	R2	1	0.0	0.043	11.4	LOS B	0.2	1.4	0.17	0.86	51.5
Approach		62	0.0	0.043	5.3	LOS A	0.2	1.4	0.17	0.43	51.5
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.027	5.7	LOS A	0.1	0.9	0.23	0.94	50.4
11	T1	28	0.0	0.027	4.7	LOS A	0.1	0.9	0.23	0.94	50.4
12	R2	7	0.0	0.027	11.6	LOS B	0.1	0.9	0.23	0.94	50.4
Approach		37	0.0	0.027	6.1	LOS A	0.1	0.9	0.23	0.47	50.4
All Vehicles		271	0.0	0.075	7.2	LOS A	0.4	2.6	0.17	0.52	49.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	18	0.0	0.300	9.0	LOS A	2.0	13.8	0.72	1.61	44.0
2	T1	20	0.0	0.300	8.1	LOS A	2.0	13.8	0.72	1.61	44.0
3	R2	240	0.0	0.300	14.9	LOS B	2.0	13.8	0.72	1.61	44.0
Approach		278	0.0	0.300	14.1	LOS B	2.0	13.8	0.72	0.81	44.0
East: Sea Lake Swan Hill											
4	L2	338	0.0	0.591	5.6	LOS A	6.2	43.3	0.25	1.06	48.4
5	T1	201	0.0	0.591	4.6	LOS A	6.2	43.3	0.25	1.06	48.4
6	R2	442	0.0	0.591	11.5	LOS B	6.2	43.3	0.25	1.06	48.4
Approach		981	0.0	0.591	8.0	LOS A	6.2	43.3	0.25	0.53	48.4
North: Boobialla Drive											
7	L2	316	0.0	0.310	7.3	LOS A	2.0	14.3	0.60	1.28	48.2
8	T1	23	0.0	0.310	6.4	LOS A	2.0	14.3	0.60	1.28	48.2
9	R2	3	0.0	0.310	13.2	LOS B	2.0	14.3	0.60	1.28	48.2
Approach		342	0.0	0.310	7.3	LOS A	2.0	14.3	0.60	0.64	48.2
West: Sea Lake Swan Hill											
10	L2	32	0.0	0.202	9.2	LOS A	1.3	9.0	0.72	1.45	47.7
11	T1	137	0.0	0.202	8.2	LOS A	1.3	9.0	0.72	1.45	47.7
12	R2	9	0.0	0.202	15.1	LOS B	1.3	9.0	0.72	1.45	47.7
Approach		178	0.0	0.202	8.8	LOS A	1.3	9.0	0.72	0.72	47.7
All Vehicles		1779	0.0	0.591	8.9	LOS A	6.2	43.3	0.44	0.61	47.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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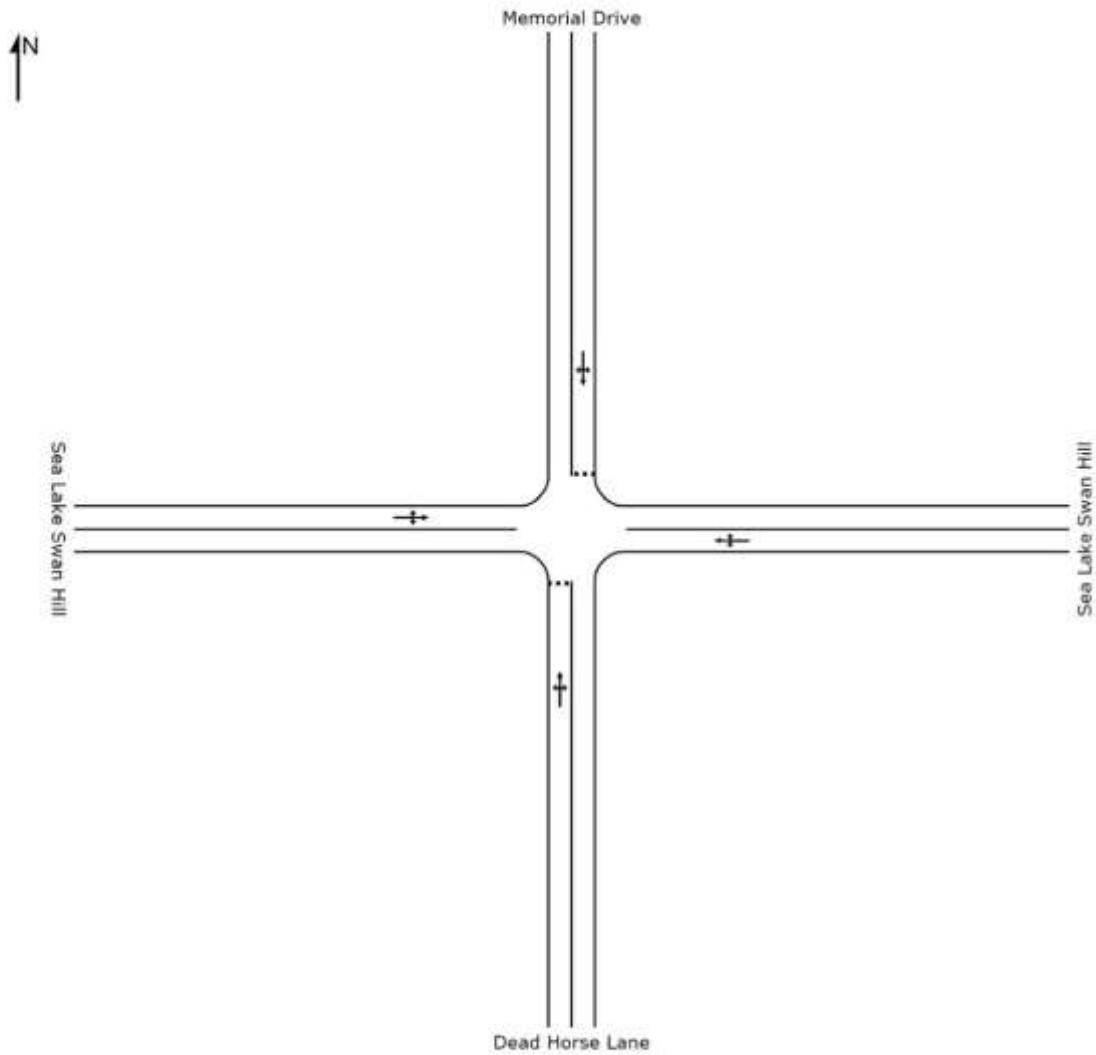
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	2	0.0	0.006	8.7	LOS A	0.0	0.1	0.16	0.61	48.6
2	T1	2	0.0	0.006	7.4	LOS A	0.0	0.1	0.16	0.61	48.6
3	R2	2	0.0	0.006	8.9	LOS A	0.0	0.1	0.16	0.61	48.6
Approach		6	0.0	0.006	8.4	LOS A	0.0	0.1	0.16	0.61	48.6
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.027	8.5	LOS A	0.1	1.0	0.20	0.15	54.7
5	T1	42	0.0	0.027	0.3	LOS A	0.1	1.0	0.20	0.15	54.7
6	R2	6	0.0	0.027	8.7	LOS A	0.1	1.0	0.20	0.15	54.7
Approach		51	0.0	0.027	1.7	NA	0.1	1.0	0.20	0.15	54.7
North: Memorial Drive											
7	L2	12	0.0	0.015	8.7	LOS A	0.1	0.4	0.20	0.61	48.2
8	T1	2	0.0	0.015	7.4	LOS A	0.1	0.4	0.20	0.61	48.2
9	R2	2	0.0	0.015	8.9	LOS A	0.1	0.4	0.20	0.61	48.2
Approach		16	0.0	0.015	8.5	LOS A	0.1	0.4	0.20	0.61	48.2
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.052	8.3	LOS A	0.3	1.9	0.13	0.04	57.1
11	T1	96	0.0	0.052	0.1	LOS A	0.3	1.9	0.13	0.04	57.1
12	R2	2	0.0	0.052	8.6	LOS A	0.3	1.9	0.13	0.04	57.1
Approach		100	0.0	0.052	0.5	NA	0.3	1.9	0.13	0.04	57.1
All Vehicles		173	0.0	0.052	1.8	NA	0.3	1.9	0.16	0.15	55.1

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - AM Post Development

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	3	0.0	0.007	8.8	LOS A	0.0	0.2	0.19	0.61	48.4
2	T1	2	0.0	0.007	7.5	LOS A	0.0	0.2	0.19	0.61	48.4
3	R2	2	0.0	0.007	9.0	LOS A	0.0	0.2	0.19	0.61	48.4
Approach		7	0.0	0.007	8.5	LOS A	0.0	0.2	0.19	0.61	48.4
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.038	8.5	LOS A	0.2	1.4	0.22	0.11	54.9
5	T1	64	0.0	0.038	0.3	LOS A	0.2	1.4	0.22	0.11	54.9
6	R2	6	0.0	0.038	8.8	LOS A	0.2	1.4	0.22	0.11	54.9
Approach		73	0.0	0.038	1.3	NA	0.2	1.4	0.22	0.11	54.9
North: Memorial Drive											
7	L2	12	0.0	0.015	8.8	LOS A	0.1	0.4	0.22	0.61	48.1
8	T1	2	0.0	0.015	7.5	LOS A	0.1	0.4	0.22	0.61	48.1
9	R2	2	0.0	0.015	9.0	LOS A	0.1	0.4	0.22	0.61	48.1
Approach		16	0.0	0.015	8.6	LOS A	0.1	0.4	0.22	0.61	48.1
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.059	8.4	LOS A	0.3	2.2	0.16	0.04	56.5
11	T1	109	0.0	0.059	0.2	LOS A	0.3	2.2	0.16	0.04	56.5
12	R2	3	0.0	0.059	8.6	LOS A	0.3	2.2	0.16	0.04	56.5
Approach		115	0.0	0.059	0.6	NA	0.3	2.2	0.16	0.04	56.5
All Vehicles		211	0.0	0.059	1.7	NA	0.3	2.2	0.19	0.13	54.9

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - PM Existing

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	2	0.0	0.006	8.6	LOS A	0.0	0.1	0.17	0.60	48.5
2	T1	2	0.0	0.006	7.3	LOS A	0.0	0.1	0.17	0.60	48.5
3	R2	2	0.0	0.006	8.8	LOS A	0.0	0.1	0.17	0.60	48.5
Approach		6	0.0	0.006	8.2	LOS A	0.0	0.1	0.17	0.60	48.5
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.037	8.3	LOS A	0.2	1.3	0.12	0.18	55.6
5	T1	56	0.0	0.037	0.1	LOS A	0.2	1.3	0.12	0.18	55.6
6	R2	12	0.0	0.037	8.6	LOS A	0.2	1.3	0.12	0.18	55.6
Approach		69	0.0	0.037	1.8	NA	0.2	1.3	0.12	0.18	55.6
North: Memorial Drive											
7	L2	6	0.0	0.009	8.5	LOS A	0.0	0.2	0.12	0.62	48.6
8	T1	2	0.0	0.009	7.2	LOS A	0.0	0.2	0.12	0.62	48.6
9	R2	2	0.0	0.009	8.7	LOS A	0.0	0.2	0.12	0.62	48.6
Approach		11	0.0	0.009	8.3	LOS A	0.0	0.2	0.12	0.62	48.6
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.021	8.3	LOS A	0.1	0.8	0.14	0.10	56.2
11	T1	37	0.0	0.021	0.2	LOS A	0.1	0.8	0.14	0.10	56.2
12	R2	2	0.0	0.021	8.6	LOS A	0.1	0.8	0.14	0.10	56.2
Approach		41	0.0	0.021	1.0	NA	0.1	0.8	0.14	0.10	56.2
All Vehicles		127	0.0	0.037	2.4	NA	0.2	1.3	0.13	0.21	54.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 9 - Swan Hill Road/Dead Horse Lane/Memorial Drive - PM Post Development

Swan Hill Road/Dead Horse Lane/Memorial Drive
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dead Horse Lane											
1	L2	3	0.0	0.007	8.7	LOS A	0.0	0.2	0.19	0.61	48.4
2	T1	2	0.0	0.007	7.4	LOS A	0.0	0.2	0.19	0.61	48.4
3	R2	2	0.0	0.007	8.9	LOS A	0.0	0.2	0.19	0.61	48.4
Approach		7	0.0	0.007	8.4	LOS A	0.0	0.2	0.19	0.61	48.4
East: Sea Lake Swan Hill											
4	L2	2	0.0	0.044	8.3	LOS A	0.2	1.6	0.15	0.15	55.5
5	T1	71	0.0	0.044	0.2	LOS A	0.2	1.6	0.15	0.15	55.5
6	R2	12	0.0	0.044	8.6	LOS A	0.2	1.6	0.15	0.15	55.5
Approach		84	0.0	0.044	1.5	NA	0.2	1.6	0.15	0.15	55.5
North: Memorial Drive											
7	L2	6	0.0	0.010	8.6	LOS A	0.0	0.2	0.15	0.61	48.5
8	T1	2	0.0	0.010	7.3	LOS A	0.0	0.2	0.15	0.61	48.5
9	R2	2	0.0	0.010	8.8	LOS A	0.0	0.2	0.15	0.61	48.5
Approach		11	0.0	0.010	8.4	LOS A	0.0	0.2	0.15	0.61	48.5
West: Sea Lake Swan Hill											
10	L2	2	0.0	0.031	8.4	LOS A	0.2	1.1	0.17	0.08	55.9
11	T1	55	0.0	0.031	0.2	LOS A	0.2	1.1	0.17	0.08	55.9
12	R2	3	0.0	0.031	8.6	LOS A	0.2	1.1	0.17	0.08	55.9
Approach		60	0.0	0.031	0.9	NA	0.2	1.1	0.17	0.08	55.9
All Vehicles		162	0.0	0.044	2.1	NA	0.2	1.6	0.16	0.18	54.8

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Swan Hill South West Development Precinct
Traffic Impact Assessment



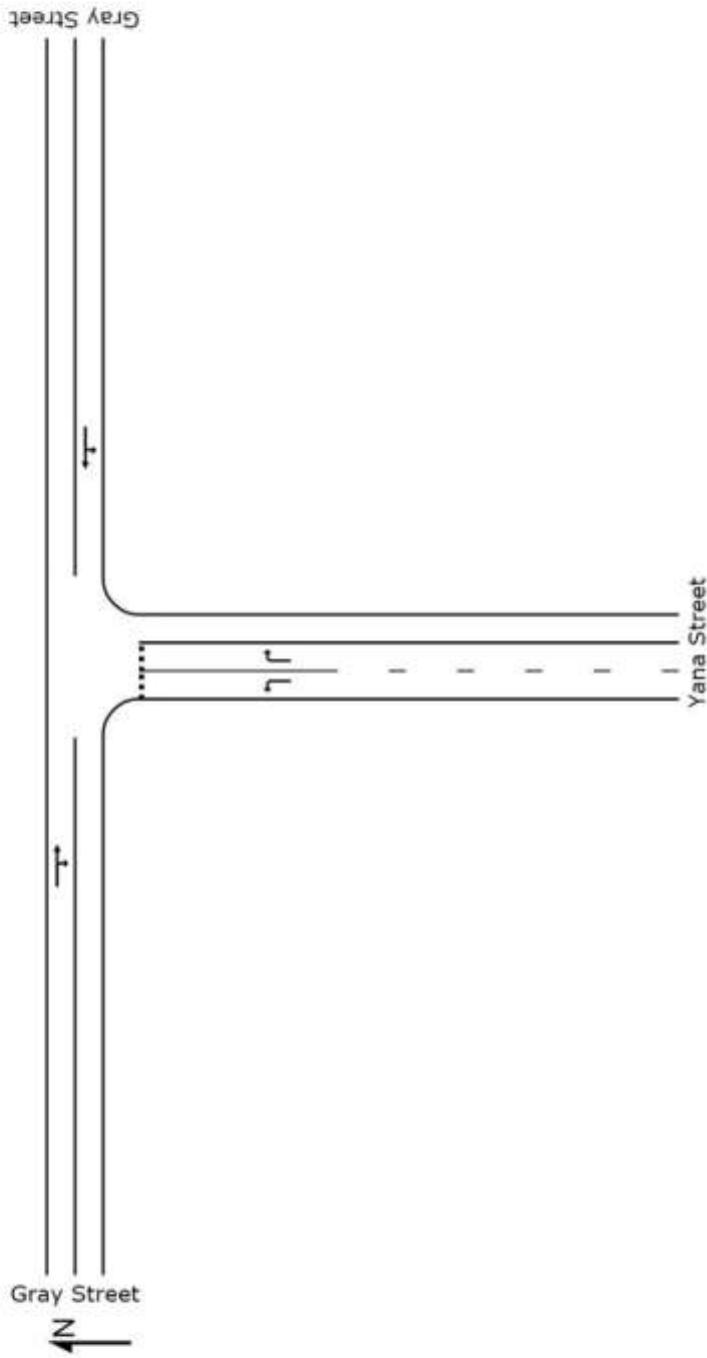
APPENDIX C
CAPACITY ANALYSIS RESULTS
OPTION 1 - SEA LAKE-SWAN HILL ROAD LINK
14 LOTS PER HA

GFP16371R9263B

SITE LAYOUT

▽ Site: Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



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SIDRA INTERSECTION 6

INTERSECTION 6

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.105	8.8	LOS A	0.4	2.8	0.25	0.64	47.9
3	R2	112	0.0	0.155	11.4	LOS B	0.6	4.0	0.50	0.80	45.6
Approach		222	0.0	0.155	10.1	LOS B	0.6	4.0	0.37	0.72	46.7
East: Gray Street											
4	L2	123	0.0	0.132	8.2	LOS A	0.0	0.0	0.00	0.41	54.0
5	T1	127	0.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.41	54.0
Approach		251	0.0	0.132	4.0	NA	0.0	0.0	0.00	0.41	54.0
West: Gray Street											
11	T1	142	0.0	0.164	0.9	LOS A	0.9	6.5	0.38	0.36	50.2
12	R2	127	0.0	0.164	9.2	LOS A	0.9	6.5	0.38	0.36	50.2
Approach		269	0.0	0.164	4.9	NA	0.9	6.5	0.38	0.36	50.2
All Vehicles		742	0.0	0.164	6.2	NA	0.9	6.5	0.25	0.48	50.3

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	338	0.0	0.328	6.5	LOS A	1.5	10.6	0.33	0.60	52.6
3	R2	393	0.0	0.738	18.3	LOS C	6.1	42.8	0.83	1.25	44.7
Approach		731	0.0	0.738	12.9	LOS B	6.1	42.8	0.60	0.94	48.1
East: Gray Street											
4	L2	255	0.0	0.212	5.6	LOS A	0.0	0.0	0.00	0.37	55.2
5	T1	146	0.0	0.212	0.0	LOS A	0.0	0.0	0.00	0.37	56.7
Approach		401	0.0	0.212	3.5	NA	0.0	0.0	0.00	0.37	55.8
West: Gray Street											
11	T1	217	0.0	0.269	1.9	LOS A	1.8	12.3	0.55	0.33	55.6
12	R2	188	0.0	0.269	7.5	LOS A	1.8	12.3	0.55	0.33	53.9
Approach		405	0.0	0.269	4.5	NA	1.8	12.3	0.55	0.33	54.8
All Vehicles		1537	0.0	0.738	8.2	NA	6.1	42.8	0.43	0.63	51.6

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	36	0.0	0.032	8.5	LOS A	0.1	0.8	0.15	0.62	48.3
3	R2	66	0.0	0.072	9.8	LOS A	0.3	1.8	0.35	0.69	47.2
Approach		102	0.0	0.072	9.3	LOS A	0.3	1.8	0.28	0.67	47.6
East: Gray Street											
4	L2	80	0.0	0.075	8.2	LOS A	0.0	0.0	0.00	0.45	53.3
5	T1	63	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.45	53.3
Approach		143	0.0	0.075	4.6	NA	0.0	0.0	0.00	0.45	53.3
West: Gray Street											
11	T1	103	0.0	0.086	0.5	LOS A	0.5	3.2	0.26	0.27	52.5
12	R2	52	0.0	0.086	8.8	LOS A	0.5	3.2	0.26	0.27	52.5
Approach		155	0.0	0.086	3.2	NA	0.5	3.2	0.26	0.27	52.5
All Vehicles		400	0.0	0.086	5.3	NA	0.5	3.2	0.17	0.43	51.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (1) - Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	149	0.0	0.141	6.2	LOS A	0.5	3.8	0.24	0.57	52.9
3	R2	207	0.0	0.381	12.2	LOS B	1.8	12.6	0.66	0.93	48.4
Approach		357	0.0	0.381	9.6	LOS A	1.8	12.6	0.49	0.78	50.2
East: Gray Street											
4	L2	271	0.0	0.207	5.6	LOS A	0.0	0.0	0.00	0.41	55.0
5	T1	120	0.0	0.207	0.0	LOS A	0.0	0.0	0.00	0.41	56.4
Approach		391	0.0	0.207	3.9	NA	0.0	0.0	0.00	0.41	55.4
West: Gray Street											
11	T1	169	0.0	0.281	1.9	LOS A	1.7	12.2	0.54	0.41	55.1
12	R2	236	0.0	0.281	7.4	LOS A	1.7	12.2	0.54	0.41	53.5
Approach		405	0.0	0.281	5.1	NA	1.7	12.2	0.54	0.41	54.1
All Vehicles		1153	0.0	0.381	6.1	NA	1.8	12.6	0.34	0.52	53.3

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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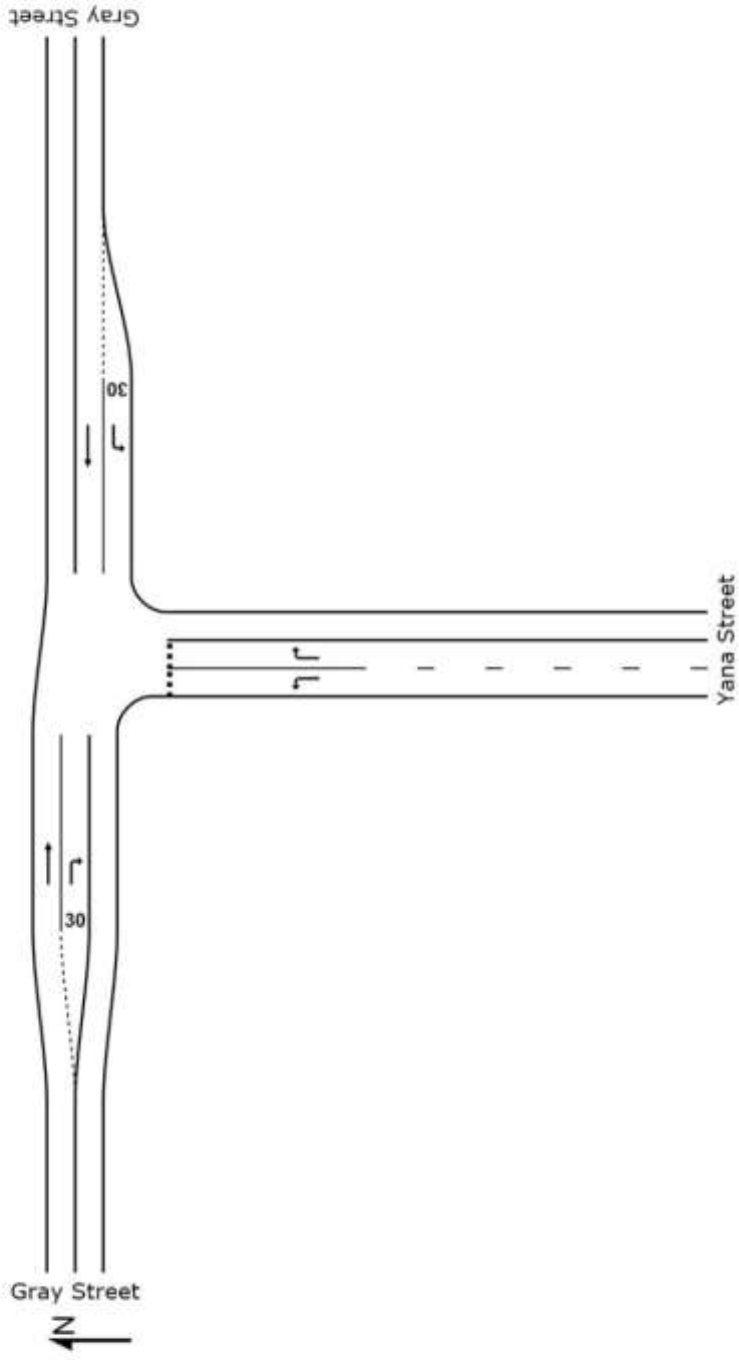
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.105	8.8	LOS A	0.4	2.8	0.25	0.64	47.9
3	R2	112	0.0	0.152	11.1	LOS B	0.6	4.0	0.49	0.78	45.9
Approach		222	0.0	0.152	10.0	LOS A	0.6	4.0	0.37	0.71	46.9
East: Gray Street											
4	L2	123	0.0	0.066	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	127	0.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		251	0.0	0.066	4.0	NA	0.0	0.0	0.00	0.33	54.0
West: Gray Street											
11	T1	142	0.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	127	0.0	0.088	9.1	LOS A	0.4	2.9	0.35	0.65	47.4
Approach		269	0.0	0.088	4.3	NA	0.4	2.9	0.17	0.31	53.3
All Vehicles		742	0.0	0.152	5.9	NA	0.6	4.0	0.17	0.43	51.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	338	0.0	0.328	6.5	LOS A	1.5	10.6	0.33	0.60	52.6
3	R2	393	0.0	0.701	16.8	LOS C	5.6	39.4	0.79	1.18	45.9
Approach		731	0.0	0.701	12.0	LOS B	5.6	39.4	0.58	0.91	48.7
East: Gray Street											
4	L2	255	0.0	0.137	5.6	LOS A	0.0	0.0	0.00	0.58	53.6
5	T1	146	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		401	0.0	0.137	3.5	NA	0.0	0.0	0.00	0.37	55.8
West: Gray Street											
11	T1	217	0.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	188	0.0	0.152	7.0	LOS A	0.7	4.9	0.47	0.66	52.0
Approach		405	0.0	0.152	3.3	NA	0.7	4.9	0.22	0.31	56.0
All Vehicles		1537	0.0	0.701	7.5	NA	5.6	39.4	0.33	0.61	52.2

Level of Service (LOS) Method: Delay (HCM 2000).
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	36	0.0	0.032	8.5	LOS A	0.1	0.8	0.15	0.62	48.3
3	R2	66	0.0	0.072	9.6	LOS A	0.3	1.8	0.35	0.68	47.4
Approach		102	0.0	0.072	9.2	LOS A	0.3	1.8	0.28	0.66	47.7
East: Gray Street											
4	L2	80	0.0	0.043	8.2	LOS A	0.0	0.0	0.00	0.67	48.9
5	T1	63	0.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		143	0.0	0.043	4.6	NA	0.0	0.0	0.00	0.37	53.3
West: Gray Street											
11	T1	103	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	52	0.0	0.032	8.7	LOS A	0.1	1.0	0.25	0.62	47.8
Approach		155	0.0	0.053	2.9	NA	0.1	1.0	0.08	0.21	55.3
All Vehicles		400	0.0	0.072	5.1	NA	0.3	1.8	0.10	0.38	52.5

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Monday, 12 May 2014 4:29:51 PM
SIDRA INTERSECTION 6.0.17.4466
Project: P:\Synergy\Projects\GRP1\GRP16371\SIDRA\May 2014\Sidra 4.sip6
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 5 (2) Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total 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: Yana Street											
1	L2	149	0.0	0.141	6.2	LOS A	0.5	3.8	0.24	0.57	52.9
3	R2	207	0.0	0.363	11.6	LOS B	1.7	12.0	0.63	0.91	49.0
Approach		357	0.0	0.363	9.3	LOS A	1.7	12.0	0.47	0.76	50.5
East: Gray Street											
4	L2	271	0.0	0.146	5.6	LOS A	0.0	0.0	0.00	0.58	53.6
5	T1	120	0.0	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		391	0.0	0.146	3.8	NA	0.0	0.0	0.00	0.40	55.4
West: Gray Street											
11	T1	169	0.0	0.087	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	236	0.0	0.188	7.0	LOS A	0.9	6.3	0.47	0.67	52.0
Approach		405	0.0	0.188	4.1	NA	0.9	6.3	0.28	0.39	55.1
All Vehicles		1153	0.0	0.363	5.6	NA	1.7	12.0	0.24	0.51	53.7

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA INTERSECTION 6.0.20.4660
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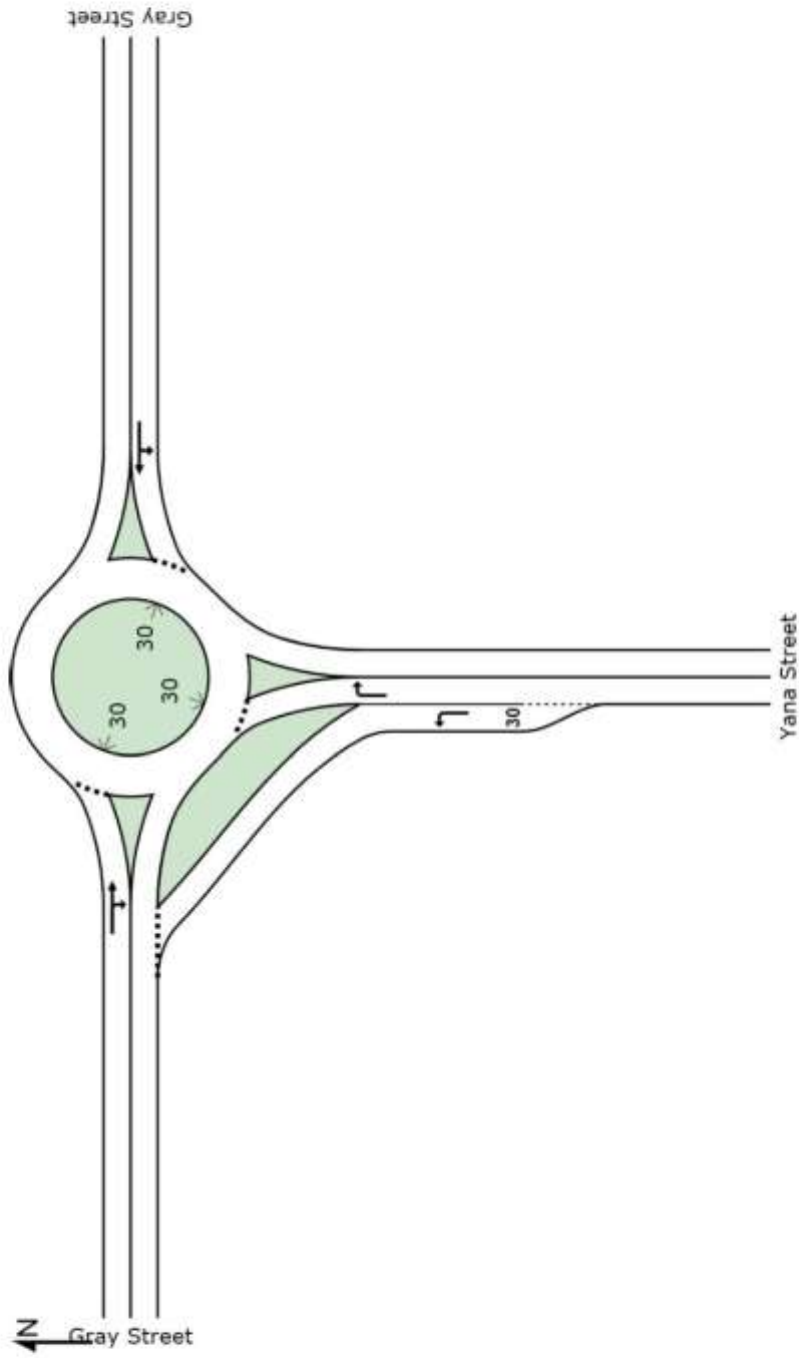
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

Site: INT 5 (3) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street Roundabout



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 SIDRA INTERSECTION 6.0.17.4468
 Project: P:\Synergy\Projects\GRP1\SIDRA\May 2014\SIDRA 4.sjp6
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 Site: INT 5 (3) Gray Street/Yana Street - AM Existing

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	111	0.0	0.069	5.6	LOS A	0.4	2.9	0.30	0.90	50.4
3	R2	112	0.0	0.069	11.7	LOS B	0.4	2.9	0.30	1.23	45.4
Approach		222	0.0	0.069	8.6	LOS A	0.4	2.9	0.30	0.53	47.7
East: Gray Street											
4	L2	123	0.0	0.185	5.9	LOS A	1.2	8.4	0.35	0.92	50.4
5	T1	127	0.0	0.185	5.0	LOS A	1.2	8.4	0.35	0.92	50.4
Approach		251	0.0	0.185	5.5	LOS A	1.2	8.4	0.35	0.46	50.4
West: Gray Street											
11	T1	142	0.0	0.194	4.9	LOS A	1.3	8.8	0.32	1.11	48.3
12	R2	127	0.0	0.194	11.8	LOS B	1.3	8.8	0.32	1.11	48.3
Approach		269	0.0	0.194	8.2	LOS A	1.3	8.8	0.32	0.55	48.3
All Vehicles		742	0.0	0.194	7.4	LOS A	1.3	8.8	0.32	0.52	48.8

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA INTERSECTION 6.0.17.4466

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 5 (3) Gray Street/Yana Street - AM Post Development

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	338	0.0	0.213	3.9	LOS A	1.5	10.6	0.37	0.45	55.4
3	R2	393	0.0	0.247	9.8	LOS A	1.8	12.6	0.38	0.60	52.9
Approach		731	0.0	0.247	7.1	LOS A	1.8	12.6	0.38	0.53	54.0
East: Gray Street											
4	L2	255	0.0	0.317	4.5	LOS A	2.4	17.1	0.50	0.50	54.5
5	T1	146	0.0	0.317	4.7	LOS A	2.4	17.1	0.50	0.50	56.2
Approach		401	0.0	0.317	4.6	LOS A	2.4	17.1	0.50	0.50	55.1
West: Gray Street											
11	T1	217	0.0	0.384	6.2	LOS A	2.9	20.0	0.68	0.68	53.4
12	R2	188	0.0	0.384	11.9	LOS B	2.9	20.0	0.68	0.68	53.8
Approach		405	0.0	0.384	8.8	LOS A	2.9	20.0	0.68	0.68	53.6
All Vehicles		1537	0.0	0.384	6.9	LOS A	2.9	20.0	0.49	0.56	54.2

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

 Site: INT 5 (3) Gray Street/Yana Street - PM Existing

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Yana Street											
1	L2	36	0.0	0.021	5.4	LOS A	0.1	0.8	0.19	0.86	51.2
3	R2	66	0.0	0.039	11.4	LOS B	0.2	1.5	0.19	1.25	45.9
Approach		102	0.0	0.039	9.3	LOS A	0.2	1.5	0.19	0.56	47.5
East: Gray Street											
4	L2	80	0.0	0.096	5.5	LOS A	0.6	4.0	0.19	0.84	51.5
5	T1	63	0.0	0.096	4.6	LOS A	0.6	4.0	0.19	0.84	51.5
Approach		143	0.0	0.096	5.1	LOS A	0.6	4.0	0.19	0.42	51.5
West: Gray Street											
11	T1	103	0.0	0.106	4.7	LOS A	0.6	4.4	0.22	1.01	49.7
12	R2	52	0.0	0.106	11.5	LOS B	0.6	4.4	0.22	1.01	49.7
Approach		155	0.0	0.106	7.0	LOS A	0.6	4.4	0.22	0.51	49.7
All Vehicles		400	0.0	0.106	6.9	LOS A	0.6	4.4	0.20	0.49	49.7

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Monday, 12 May 2014 4:33:00 PM

SIDRA INTERSECTION 6.0.17.4466

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 5 (3) Gray Street/Yana Street - PM Post Development

Gray Street/Yana Street
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Yana Street											
1	L2	149	0.0	0.093	3.7	LOS A	0.6	4.2	0.31	0.42	55.7
3	R2	207	0.0	0.129	9.6	LOS A	0.9	6.0	0.32	0.59	53.2
Approach		357	0.0	0.129	7.2	LOS A	0.9	6.0	0.31	0.52	54.2
East: Gray Street											
4	L2	271	0.0	0.322	4.9	LOS A	2.4	16.7	0.54	0.53	54.4
5	T1	120	0.0	0.322	5.0	LOS A	2.4	16.7	0.54	0.53	56.1
Approach		391	0.0	0.322	4.9	LOS A	2.4	16.7	0.54	0.53	54.9
West: Gray Street											
11	T1	169	0.0	0.321	4.8	LOS A	2.3	16.1	0.49	0.59	53.9
12	R2	236	0.0	0.321	10.5	LOS B	2.3	16.1	0.49	0.59	54.3
Approach		405	0.0	0.321	8.1	LOS A	2.3	16.1	0.49	0.59	54.1
All Vehicles		1153	0.0	0.322	6.7	LOS A	2.4	16.7	0.45	0.55	54.4

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Signalised Intersections.
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Wednesday, 18 June 2014 8:55:13 AM
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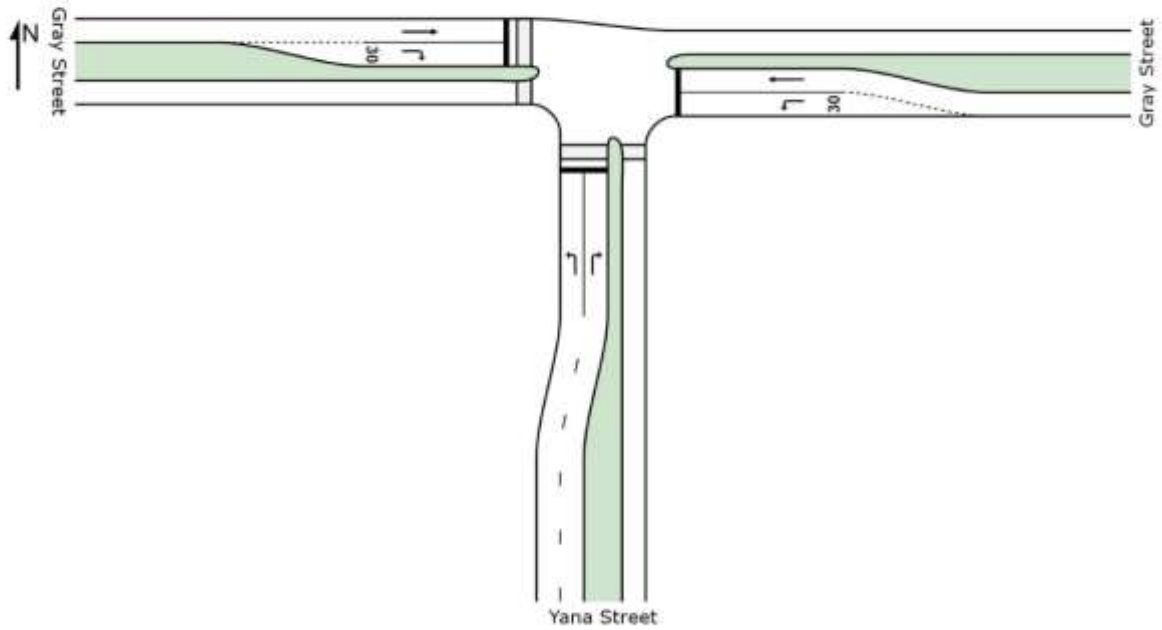
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SITE LAYOUT

 **Site: Intersection 5 Option 1 - AM Existing**

Gray Street/Yana Street
Signals - Fixed Time



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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: Intersection 5 Option 1 - AM Post - 14 lots per Ha

Gray Street/Yana Street

Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn w/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: Yana Street											
1	L2	338	0.0	0.433	16.9	LOS B	6.0	41.9	0.75	0.78	46.0
3	R2	393	0.0	0.503	17.3	LOS B	7.2	50.6	0.78	0.80	45.6
Approach		731	0.0	0.503	17.1	LOS B	7.2	50.6	0.77	0.79	45.8
East: Gray Street											
4	L2	255	0.0	0.180	6.5	LOS A	0.9	6.2	0.29	0.65	52.7
5	T1	146	0.0	0.221	13.0	LOS B	2.6	18.3	0.75	0.60	49.4
Approach		401	0.0	0.221	8.8	LOS A	2.6	18.3	0.46	0.64	51.5
West: Gray Street											
11	T1	217	0.0	0.327	13.5	LOS B	4.0	28.3	0.78	0.65	49.1
12	R2	188	0.0	0.512	22.1	LOS C	4.0	28.3	0.67	0.80	43.0
Approach		405	0.0	0.512	17.5	LOS B	4.0	28.3	0.63	0.72	46.0
All Vehicles		1537	0.0	0.512	15.1	LOS B	7.2	50.6	0.70	0.73	47.2

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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	South Full Crossing	53	17.7	LOS B	0.1	0.1	0.64	0.84	
P4	West Full Crossing	53	14.5	LOS B	0.1	0.1	0.76	0.76	
All Pedestrians		105	16.1	LOS B			0.80	0.80	

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.

PHASING SUMMARY

Site: Intersection 5 Option 1 - AM Post - 14 lots per Ha

Gray Street/Yana Street

Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Phase times determined by the program

Sequence: Two-Phase

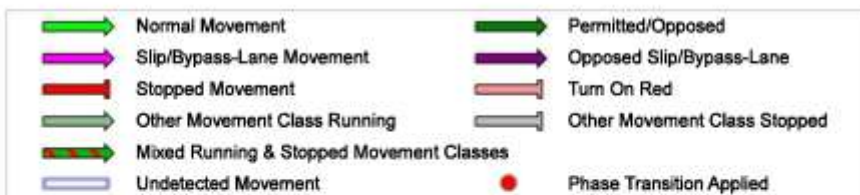
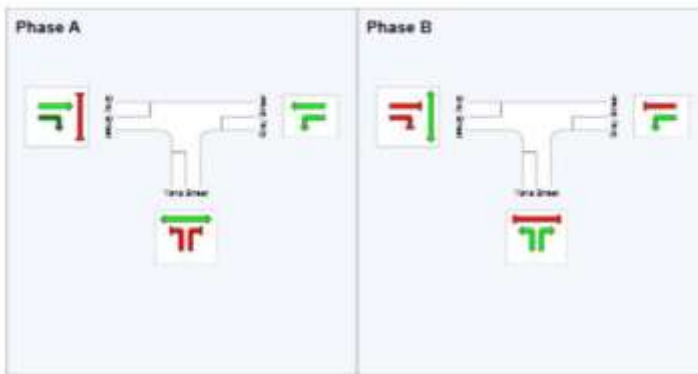
Movement Class: All Movement Classes

Input Sequence: A, B

Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	23
Green Time (sec)	17	21
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	23	27
Phase Split	46 %	54 %



Processed: Thursday, 19 June 2014 12:11:36 PM

SIDRA INTERSECTION 6.0.20.4860

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: Intersection 5 Option 1 - PM Post - 14 lots per Ha

Gray Street/Yana Street

Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	Flow HV %	Deg. 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: Yana Street											
1	L2	149	0.0	0.268	20.4	LOS C	2.9	20.1	0.80	0.76	44.1
3	R2	207	0.0	0.372	20.9	LOS C	4.1	28.9	0.83	0.78	43.6
Approach		357	0.0	0.372	20.7	LOS C	4.1	28.9	0.82	0.77	43.8
East: Gray Street											
4	L2	271	0.0	0.192	6.5	LOS A	1.0	6.7	0.30	0.65	52.7
5	T1	120	0.0	0.134	8.4	LOS A	1.7	11.9	0.61	0.48	52.7
Approach		391	0.0	0.192	7.1	LOS A	1.7	11.9	0.39	0.60	52.7
West: Gray Street											
11	T1	169	0.0	0.189	8.7	LOS A	2.5	17.3	0.62	0.51	52.5
12	R2	236	0.0	0.459	16.6	LOS B	4.2	29.6	0.75	0.78	46.0
Approach		405	0.0	0.459	13.3	LOS B	4.2	29.6	0.69	0.67	48.5
All Vehicles		1153	0.0	0.459	13.5	LOS B	4.2	29.6	0.63	0.68	48.2

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akoelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	13.0	LOS B	0.1	0.1	0.72	0.72	
P4	West Full Crossing	53	19.4	LOS B	0.1	0.1	0.88	0.88	
All Pedestrians		105	16.2	LOS B			0.80	0.80	

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: Thursday, 19 June 2014 12:13:28 PM

SIDRA INTERSECTION 6.0.20.4680

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**SIDRA
INTERSECTION 6**

PHASING SUMMARY

Site: Intersection 5 Option 1 - PM Post - 14 lots per Ha

Gray Street/Yana Street

Signals - Fixed Time Cycle Time = 50 seconds (Practical Cycle Time)

Phase times determined by the program

Sequence: Two-Phase

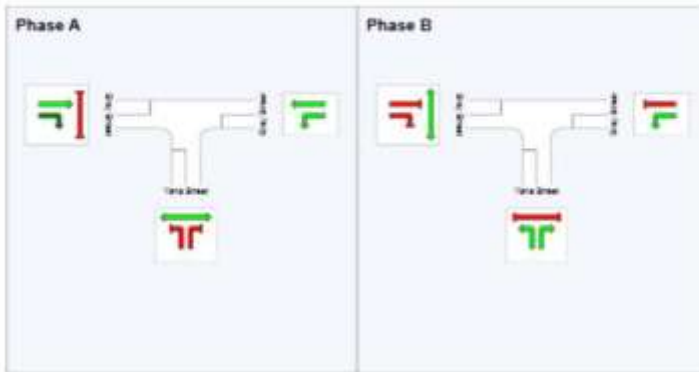
Movement Class: All Movement Classes

Input Sequence: A, B

Output Sequence: A, B

Phase Timing Results

Phase	A	B
Reference Phase	Yes	No
Phase Change Time (sec)	0	29
Green Time (sec)	23	15
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	29	21
Phase Split	58 %	42 %



	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class Running		Other Movement Class Stopped
	Mixed Running & Stopped Movement Classes		Phase Transition Applied
	Undetected Movement		

Processed: Thursday, 19 June 2014 12:13:28 PM
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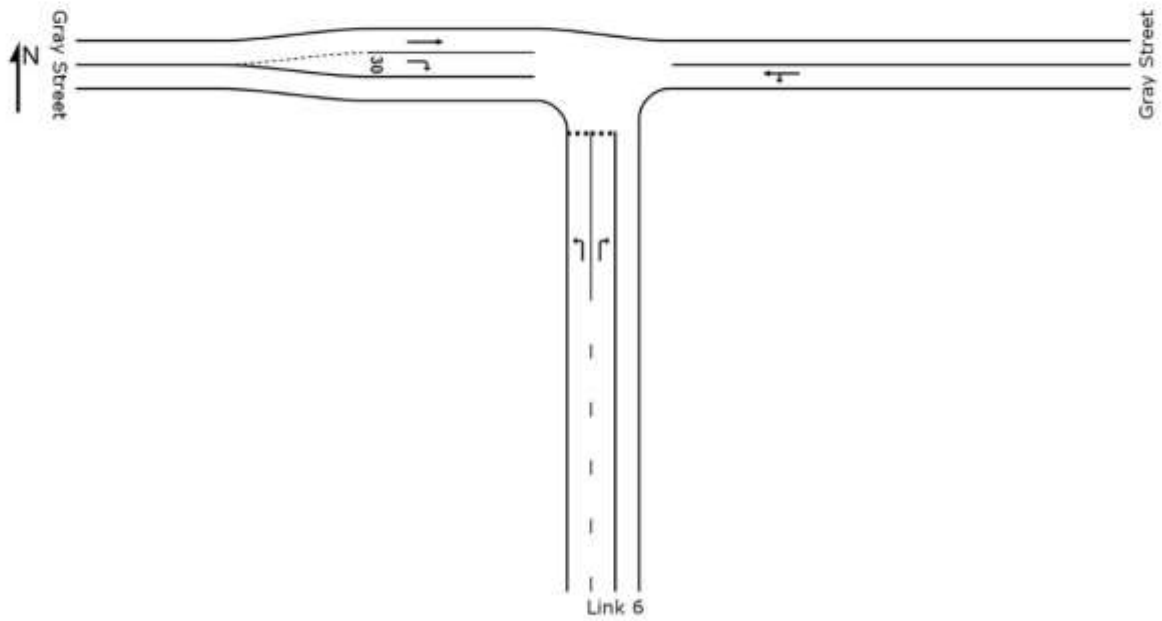
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**SIDRA
 INTERSECTION 6**

SITE LAYOUT

▽ Site: INT 7 - Gray Street/Link 6 - AM Existing

Gray Street/Link 6
Giveaway / Yield (Two-Way)



Created: Wednesday, 18 June 2014 11:04:18 AM
SIDRA INTERSECTION 6.0.20.4660
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 6 - AM Existing

Gray Street/Link 6
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	Flow HV %	Deg. 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: Link 6											
1	L2	2	0.0	0.002	5.8	LOS A	0.0	0.0	0.14	0.53	53.2
3	R2	2	0.0	0.002	6.0	LOS A	0.0	0.0	0.22	0.55	52.5
Approach		4	0.0	0.002	5.9	LOS A	0.0	0.0	0.18	0.54	52.9
East: Gray Street											
4	L2	2	0.0	0.030	5.5	LOS A	0.0	0.0	0.00	0.02	58.2
5	T1	57	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		59	0.0	0.030	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: Gray Street											
11	T1	64	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	5.7	LOS A	0.0	0.0	0.14	0.53	53.0
Approach		66	0.0	0.033	0.2	NA	0.0	0.0	0.00	0.02	59.7
All Vehicles		129	0.0	0.033	0.4	NA	0.0	0.0	0.01	0.04	59.5

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Wednesday, 18 June 2014 11:05:39 AM
SIDRA INTERSECTION 6.0.20.4660
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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 6 - AM Post Development

Gray Street/Link 6
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	HV %	Deg. 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: Link 6											
1	L2	556	0.0	0.491	6.0	LOS A	3.0	20.9	0.25	0.55	52.8
3	R2	55	0.0	0.061	6.9	LOS A	0.2	1.5	0.36	0.63	52.1
Approach		611	0.0	0.491	6.1	LOS A	3.0	20.9	0.26	0.55	52.8
East: Gray Street											
4	L2	16	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.13	57.3
5	T1	59	0.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.13	58.9
Approach		75	0.0	0.039	1.2	NA	0.0	0.0	0.00	0.13	58.5
West: Gray Street											
11	T1	65	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	145	0.0	0.086	5.7	LOS A	0.4	2.9	0.18	0.55	52.9
Approach		211	0.0	0.086	4.0	NA	0.4	2.9	0.12	0.38	54.9
All Vehicles		896	0.0	0.491	5.2	NA	3.0	20.9	0.20	0.48	53.7

Level of Service (LOS) Method: Delay (HCM 2000).
 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 is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Wednesday, 18 June 2014 11:04:55 AM
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MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 6 - PM Existing

Gray Street/Link 6
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	Flow HV %	Deg. 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: Link 6											
1	L2	2	0.0	0.002	5.8	LOS A	0.0	0.0	0.14	0.53	53.2
3	R2	2	0.0	0.002	5.8	LOS A	0.0	0.0	0.19	0.55	52.6
Approach		4	0.0	0.002	5.8	LOS A	0.0	0.0	0.17	0.54	52.9
East: Gray Street											
4	L2	2	0.0	0.030	5.5	LOS A	0.0	0.0	0.00	0.02	58.2
5	T1	56	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		58	0.0	0.030	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: Gray Street											
11	T1	40	0.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	5.6	LOS A	0.0	0.0	0.14	0.53	53.0
Approach		42	0.0	0.021	0.3	NA	0.0	0.0	0.01	0.03	59.6
All Vehicles		104	0.0	0.030	0.5	NA	0.0	0.0	0.01	0.04	59.4

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

▽ Site: INT 7 - Gray Street/Link 6 - PM Post Development

Gray Street/Link 6
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total 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: Link 6											
1	L2	279	0.0	0.246	5.9	LOS A	1.1	7.6	0.18	0.55	53.1
3	R2	28	0.0	0.045	8.9	LOS A	0.2	1.1	0.51	0.73	50.6
Approach		307	0.0	0.246	6.2	LOS A	1.1	7.6	0.21	0.57	52.8
East: Gray Street											
4	L2	42	0.0	0.052	5.5	LOS A	0.0	0.0	0.00	0.25	56.2
5	T1	57	0.0	0.052	0.0	LOS A	0.0	0.0	0.00	0.25	57.8
Approach		99	0.0	0.052	2.4	NA	0.0	0.0	0.00	0.25	57.1
West: Gray Street											
11	T1	42	0.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	433	0.0	0.262	5.9	LOS A	1.4	10.1	0.24	0.55	52.7
Approach		475	0.0	0.262	5.4	NA	1.4	10.1	0.22	0.51	53.3
All Vehicles		881	0.0	0.262	5.3	NA	1.4	10.1	0.19	0.50	53.5

Level of Service (LOS) Method: Delay (HCM 2000).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Wednesday, 18 June 2014 11:07:37 AM
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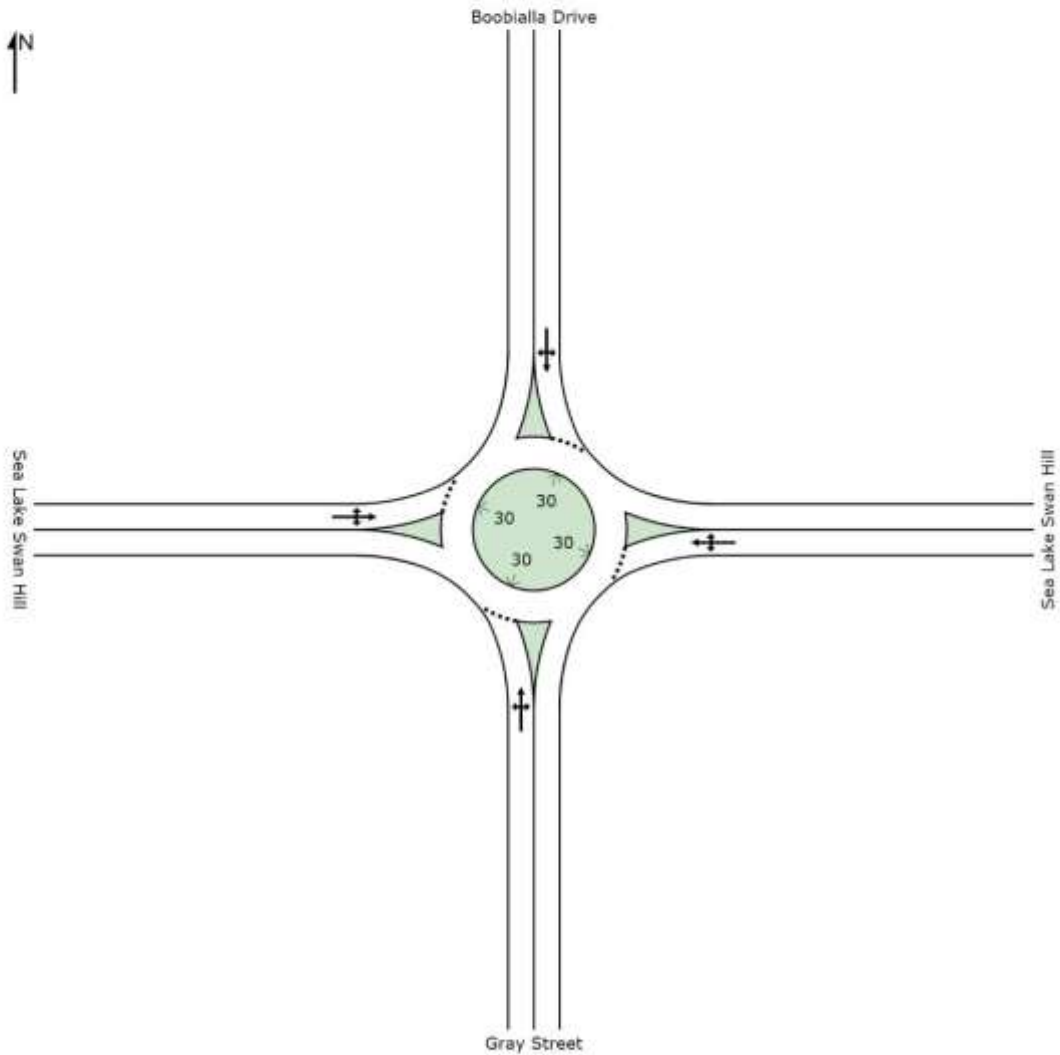
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**SIDRA
INTERSECTION 6**

SITE LAYOUT

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive Roundabout



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SIDRA INTERSECTION 6.0.17.4466

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.5	LOS A	0.2	1.3	0.17	1.08	49.1
2	T1	16	0.0	0.040	4.6	LOS A	0.2	1.3	0.17	1.08	49.1
3	R2	24	0.0	0.040	11.4	LOS B	0.2	1.3	0.17	1.08	49.1
Approach		57	0.0	0.040	7.8	LOS A	0.2	1.3	0.17	0.54	49.1
East: Sea Lake Swan Hill											
4	L2	11	0.0	0.046	5.5	LOS A	0.2	1.6	0.17	1.11	48.8
5	T1	23	0.0	0.046	4.6	LOS A	0.2	1.6	0.17	1.11	48.8
6	R2	33	0.0	0.046	11.4	LOS B	0.2	1.6	0.17	1.11	48.8
Approach		66	0.0	0.046	8.1	LOS A	0.2	1.6	0.17	0.55	48.8
North: Boobialla Drive											
7	L2	92	0.0	0.095	5.8	LOS A	0.5	3.3	0.26	0.92	50.6
8	T1	36	0.0	0.095	4.8	LOS A	0.5	3.3	0.26	0.92	50.6
9	R2	2	0.0	0.095	11.7	LOS B	0.5	3.3	0.26	0.92	50.6
Approach		129	0.0	0.095	5.6	LOS A	0.5	3.3	0.26	0.46	50.6
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.067	5.6	LOS A	0.3	2.3	0.19	0.93	50.8
11	T1	77	0.0	0.067	4.6	LOS A	0.3	2.3	0.19	0.93	50.8
12	R2	18	0.0	0.067	11.5	LOS B	0.3	2.3	0.19	0.93	50.8
Approach		96	0.0	0.067	5.9	LOS A	0.3	2.3	0.19	0.46	50.8
All Vehicles		348	0.0	0.095	6.5	LOS A	0.5	3.3	0.21	0.49	50.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Monday, 12 May 2014 5:03:37 PM

SIDRA INTERSECTION 6.0.17.4466

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - AM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. 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: Gray Street											
1	L2	20	0.0	0.498	5.0	LOS A	3.8	26.7	0.57	0.67	50.8
2	T1	16	0.0	0.498	5.1	LOS A	3.8	26.7	0.57	0.67	52.2
3	R2	598	0.0	0.498	10.8	LOS B	3.8	26.7	0.57	0.67	52.6
Approach		634	0.0	0.498	10.5	LOS B	3.8	26.7	0.57	0.67	52.5
East: Sea Lake Swan Hill											
4	L2	153	0.0	0.268	3.8	LOS A	1.9	13.3	0.29	0.50	53.9
5	T1	95	0.0	0.268	3.9	LOS A	1.9	13.3	0.29	0.50	55.6
6	R2	147	0.0	0.268	9.6	LOS A	1.9	13.3	0.29	0.50	56.0
Approach		395	0.0	0.268	6.0	LOS A	1.9	13.3	0.29	0.50	55.1
North: Boobialla Drive											
7	L2	316	0.0	0.578	16.4	LOS B	6.0	42.3	0.99	1.12	47.2
8	T1	53	0.0	0.578	16.5	LOS B	6.0	42.3	0.99	1.12	48.5
9	R2	11	0.0	0.578	22.2	LOS C	6.0	42.3	0.99	1.12	48.8
Approach		379	0.0	0.578	16.6	LOS B	6.0	42.3	0.99	1.12	47.4
West: Sea Lake Swan Hill											
10	L2	11	0.0	0.492	9.8	LOS A	4.3	29.8	0.89	0.92	51.5
11	T1	362	0.0	0.492	10.0	LOS A	4.3	29.8	0.89	0.92	53.1
12	R2	19	0.0	0.492	15.6	LOS B	4.3	29.8	0.89	0.92	53.4
Approach		392	0.0	0.492	10.2	LOS B	4.3	29.8	0.89	0.92	53.0
All Vehicles		1799	0.0	0.578	10.7	LOS B	6.0	42.3	0.67	0.78	52.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Existing

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Gray Street											
1	L2	17	0.0	0.040	5.7	LOS A	0.2	1.3	0.24	1.05	49.2
2	T1	20	0.0	0.040	4.7	LOS A	0.2	1.3	0.24	1.05	49.2
3	R2	19	0.0	0.040	11.6	LOS B	0.2	1.3	0.24	1.05	49.2
Approach		56	0.0	0.040	7.4	LOS A	0.2	1.3	0.24	0.52	49.2
East: Sea Lake Swan Hill											
4	L2	9	0.0	0.075	5.4	LOS A	0.4	2.6	0.12	1.16	48.6
5	T1	39	0.0	0.075	4.5	LOS A	0.4	2.6	0.12	1.16	48.6
6	R2	67	0.0	0.075	11.3	LOS B	0.4	2.6	0.12	1.16	48.6
Approach		116	0.0	0.075	8.5	LOS A	0.4	2.6	0.12	0.58	48.6
North: Boobialla Drive											
7	L2	38	0.0	0.043	5.5	LOS A	0.2	1.4	0.17	0.86	51.5
8	T1	23	0.0	0.043	4.6	LOS A	0.2	1.4	0.17	0.86	51.5
9	R2	1	0.0	0.043	11.4	LOS B	0.2	1.4	0.17	0.86	51.5
Approach		62	0.0	0.043	5.3	LOS A	0.2	1.4	0.17	0.43	51.5
West: Sea Lake Swan Hill											
10	L2	1	0.0	0.027	5.7	LOS A	0.1	0.9	0.23	0.94	50.4
11	T1	28	0.0	0.027	4.7	LOS A	0.1	0.9	0.23	0.94	50.4
12	R2	7	0.0	0.027	11.6	LOS B	0.1	0.9	0.23	0.94	50.4
Approach		37	0.0	0.027	6.1	LOS A	0.1	0.9	0.23	0.47	50.4
All Vehicles		271	0.0	0.075	7.2	LOS A	0.4	2.6	0.17	0.52	49.6

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Monday, 12 May 2014 5:08:37 PM

SIDRA INTERSECTION 6.0.17.4466

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**SIDRA
INTERSECTION 6**

MOVEMENT SUMMARY

Site: INT 8 - Sea Lake Swan Hill Road/Gray Street/Boobialla Drive - PM Post Development

Sea Lake Swan Hill Road/Gray Street/Boobialla Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flow Total veh/h	Flow HV %	Deg. 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: Gray Street											
1	L2	18	0.0	0.438	8.2	LOS A	3.3	22.9	0.81	0.86	49.9
2	T1	63	0.0	0.438	8.3	LOS A	3.3	22.9	0.81	0.86	51.3
3	R2	305	0.0	0.438	14.0	LOS B	3.3	22.9	0.81	0.86	51.6
Approach		386	0.0	0.438	12.8	LOS B	3.3	22.9	0.81	0.86	51.5
East: Sea Lake Swan Hill											
4	L2	435	0.0	0.676	3.7	LOS A	8.4	58.8	0.30	0.47	53.9
5	T1	252	0.0	0.676	3.8	LOS A	8.4	58.8	0.30	0.47	55.5
6	R2	442	0.0	0.676	9.5	LOS A	8.4	58.8	0.30	0.47	55.9
Approach		1128	0.0	0.676	6.0	LOS A	8.4	58.8	0.30	0.47	55.0
North: Boobialla Drive											
7	L2	79	0.0	0.104	5.6	LOS A	0.6	4.3	0.59	0.60	54.1
8	T1	23	0.0	0.104	5.7	LOS A	0.6	4.3	0.59	0.60	55.8
9	R2	3	0.0	0.104	11.4	LOS B	0.6	4.3	0.59	0.60	56.2
Approach		105	0.0	0.104	5.8	LOS A	0.6	4.3	0.59	0.60	54.5
West: Sea Lake Swan Hill											
10	L2	32	0.0	0.272	8.5	LOS A	1.9	13.2	0.81	0.79	52.3
11	T1	171	0.0	0.272	8.6	LOS A	1.9	13.2	0.81	0.79	53.9
12	R2	9	0.0	0.272	14.3	LOS B	1.9	13.2	0.81	0.79	54.3
Approach		212	0.0	0.272	8.9	LOS A	1.9	13.2	0.81	0.79	53.7
All Vehicles		1832	0.0	0.676	7.8	LOS A	8.4	58.8	0.48	0.60	54.0

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Signalised Intersections.

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Processed: Wednesday, 18 June 2014 10:28:51 AM
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 Project: P:\Synergy\Projects\GRP1\GRP16371\SIDRA\June 2014\Sidra.sip6
 8000058, TRAFFIX GROUP PTY LTD, PLUS / Floating

**SIDRA
INTERSECTION 6**

SECTION C – DECISIONS WHICH NEED ACTION/RATIFICATION

C.14.11 COUNCILLOR ASSEMBLIES - RECORD OF ATTENDANCE AND AGENDA ITEMS

Responsible Officer: Chief Executive Officer
File Number: 22-13-12
Attachments: 1 Councillor Assemblies Attendance and Agenda

Declarations of Interest: Officer
Dean Miller - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

The Local Government Act 1989 requires that the details of Councillor Assemblies be reported to Council meetings on a monthly basis.

Discussion

The State Government has amended the Local Government Act 1989 which requires Council to report on Councillor Assemblies.

Whilst Minutes do not have to be recorded, Agenda items and those in attendance must be, and a report presented to Council.

An assembly of Councillors is defined as a meeting that is planned or scheduled at which at least half of the Council and one Officer are in attendance, and where the matters being considered that are intended or likely to be the subject of a Council decision.

No formal decisions can be made at an assembly but rather direction can be given that is likely to lead to a formal decision of Council.

Details of the most recent assemblies of Council are attached.

Consultation

Nil

Financial Implications

Nil

Social Implications

Nil

Economic Implications

Nil

Environmental Implications

Nil

Risk Management Implications

Nil

Council Plan Strategy Addressed

Councillor and Staff accountability - We will represent the interests of our community and will conduct our affairs openly and with integrity, reflecting high levels of good governance.

Options

Council must comply with the requirements of the Local Government Act 1989.

Recommendations

That Council note the contents of the report.

9/14 Motion

MOVED Cr Norton

That Council note the contents of the report.

SECONDED Cr Katis

The Motion was put and CARRIED

COUNCILLOR ASSEMBLIES ATTENDANCE AND AGENDA
24 June 2014 at 1pm
TOWN HALL (COUNCIL CHAMBERS), SWAN HILL

AGENDA ITEMS

- Robinvale Golf Club - Activating Gaming Entitlements
- Lake Boga Caravan Park Tender update
- Economic Development Strategy Implementation Report
- Development Plan Overlay 6 – Bunnings
- SWDP Plan
- 2014 General Revaluation

ADDITIONAL ITEMS DISCUSSED

- Nil

ATTENDANCE

Councillors

- Cr Jessie Kiley
- Cr John Katis
- Cr Jim Crowe
- Cr Les McPhee
- Cr Gary Norton
- Cr Greg Cruickshank

Apologies

- Cr Michael Adamson

Officers

- Dean Miller, Chief Executive Officer
- David Lenton, Director Corporate Services
- Brett Luxford, Director of Development and Planning
- David Leahy, Director of Infrastructure
- Janelle Earle, Economic Development Manager
- Vige Satkunarajah, Development Manager
- Steve Matthews, Economic & Community Development Manager

Other

- Gary Jukes, Robinvale Golf Club
- Franz Tursi, Franz J Tursi & Associates
- Ben Sawyer, Franz J Tursi & Associates
- David Smith, Robinvale Golf Club
- Peter McIntosh, Robinvale Golf Club
- Ralph Kop, Planning Consultant

CONFLICT OF INTEREST

- Cr Les McPhee – Robinvale Golf Club - Activating Gaming Entitlements

**COUNCILLOR ASSEMBLIES ATTENDANCE AND AGENDA
1 July 2014 at 1pm
TOWN HALL (COUNCIL CHAMBERS), SWAN HILL**

AGENDA ITEMS

- Public Participation Policy
- GrainCorp – Project Regeneration
- Swan Hill Bridge – Potential way forward
- Lake Boga Development Plan update
- Bunnings Development Plan (submissions received)

ADDITIONAL ITEMS DISCUSSED

- Nil

ATTENDANCE

Councillors

- Cr Jessie Kiley
- Cr John Katis
- Cr Greg Cruickshank
- Cr Gary Norton
- Cr Jim Crowe

Apologies

- Cr Michael Adamson
- Cr Les McPhee

Officers

- Dean Miller, Chief Executive Officer
- David Lenton, Director Corporate Services
- Brett Luxford, Director of Development and Planning
- David Leahy, Director of Infrastructure
- Fiona Gormann, Community Planning & Development Officer
- Stefan Louw, Planning Team Leader

Other

-

CONFLICT OF INTEREST

- Nil

**COUNCILLOR ASSEMBLIES ATTENDANCE AND AGENDA
8 July 2014 at 1pm
TOWN HALL (COUNCIL CHAMBERS), SWAN HILL**

AGENDA ITEMS

- Rural Land Use Strategy
- Fourth Quarter Key Strategic Initiatives
- Cleaning of Council Buildings, Public Toilets & BBQ's
- Youth Engagement Policy

ADDITIONAL ITEMS DISCUSSED

- Nil

ATTENDANCE

Councillors

- Cr Jessie Kiley
- Cr Les McPhee
- Cr John Katis
- Cr Greg Cruickshank
- Cr Gary Norton
- Cr Jim Crowe

Apologies

- Cr Michael Adamson

Officers

- Dean Miller, Chief Executive Officer
- Brett Luxford, Director of Development and Planning
- David Leahy, Director of Infrastructure
- Helen Morris, Organisational Development Manager
- Andrew Bruggy, Assets Coordinator
- Jan McEwan, Family Youth & Children Manager
- Gaye Cutajar, Technical Officer Engineering

Other

- Christine Rankin, Planning Consultant

CONFLICT OF INTEREST

- Nil

SECTION D – NOTICES OF MOTION

SECTION E – URGENT ITEMS NOT INCLUDED IN AGENDA

B.14.41 DRAFT 2014/15 ANNUAL BUDGET WRITTEN SUBMISSIONS

Responsible Officer: Director Corporate Services
File Number: 42-09-71
Attachments:
1 Submission 1_Janet Field
2 Submission 2_Joan Slater
3 Submission 3_Steven Pentreath
4 Submission 4_Deanne Earle
5 Submission 5_Montana Earle

Declarations of Interest: Officer
David Lenton - as the responsible officer, I declare that I have no disclosable interests in this matter.

Summary

Budget submissions are now attached for report B.14.36 “*Receive and Hear Submissions to the Draft 2014/15 Annual Budget*”.

Discussion

The closing date for written budget submissions was Monday 14 July 2014 at 4pm, which was after the distribution of the Council Ordinary Meeting Agenda.

Consultation

Nil

Financial Implications

Nil

Social Implications

Nil

Economic Implications

Nil

Environmental Implications

Nil

Risk Management Implications

Nil

Council Plan Strategy Addressed

Responsible management of resources - We will continually improve the management of our finances, assets, systems and technology to achieve and maintain Best Value in our operations.

Options

Nil

Recommendation

That Council receive the attached submissions.

Recommendation

That Council receive the attached submissions.

This report was heard during public question time.

Doc ID 461124 Printed from Infovision EDMS at : 09:13AM on Fri 11 Jul 2014

04 JUL 2014 42-09-71
DCS
FM , DCCS, CEO,
EA



Please find attached my Budget
2014-15 submission.

I would appreciate the opportunity
to speak briefly to Council
about my submission if there
is time.

Yours sincerely
Janet Field

Doc ID 461124 Printed from Infovision EDMS at : 09:13AM on Fri 11 Jul 2014

**SUBMISSION TO THE SHRCC REGARDING DRAFT BUDGET 2014-15 -
LIBRARY FUNDING**

I submit that in preparing the 2014-15 Budget, Council should **withdraw the cut to the Swan Hill Regional Library Service.**

Although Council has maintained library hours for the community, the information session (19/6/14) indicated that the library budget would be reduced by \$20,000. No basis was stated for this figure. At the meeting, Council was described as being "in a healthy financial position" with a \$55 million budget and a surplus. Cuts have apparently been made across the board to keep rates as low as possible. This is an admirable goal for which ratepayers can indeed be grateful.

However, the Swan Hill Regional Library, as a key deliverer of a large number of social, educational and recreational services, should be exempt from any such cuts for the following reasons:

- The Library is one of the few outposts of Council that *actually engages with the public. In many ways, it is Council's shopfront.*
- The Library services the full range of socio-economic groups in the community.
- Usage of Library services is very high as indicated by the difficulty finding a park near the library on most days.
- The Library's work is supported by a number of enthusiastic volunteers.
- There are programs at the library for every sector of the community:
 1. Parents with children (Baby Rhyme time, Move and Groove for Toddlers, Saturday Story time, Holiday Children's Programs, Outreach for small children with language difficulties)
 2. Adolescents (Computer lessons, Loud at the Library for teenagers in bands.)
 3. Adults & Mature Age (Book Club, U3A, Genealogy, Board Game Days, Computer lessons, Knit and Natter, Visiting Authors).
 4. Multicultural Support for asylum seekers and their families (English lessons, Women's Days)

I urge Council to abandon this cut. It risks damaging morale amongst staff and volunteers & may begin the insidious process of "death by a thousand cuts" at a time when community use of the library is booming. Council can instead make an active choice to demonstrate full support for one of its most effective and broadly used services.



Janet Field

4/7/14

11-7-2014

13 Cadell St
Swan Hill 3585
50332003

To All Councillors

To Councillor Mr Leo McPhee

To Councillor Mr Gary Porter

To Councillor Mr Jim Crowe

To Councillor Mr Greg Breichshank

To Councillor Mr Dean Millar

To Councillor Mrs Jessie Healy

To Councillor Mr Michael Adamson

To Councillor Mr John Hatis

Dear Management

Recently it had been brought to notice that there is no Bus seats and shelters at bus stops around Swan Hill

I also believe that bus service has been operating approx 25 years of service or very close to that and people waiting for the bus standing out in all types of weather rain, hail, and shine, cold frosty mornings and cold wind, in heat waves etc in summer time

Also we all pay rates directly and indirectly surely you can afford seats and shelters now and then to keep the public HAPPY

There is one bus shelter in Chapman street but there approx 20 year or so I know it has been there many years and there has been no damage done to it Seat could need a coat of paint but its ok

It was suggested to take up a Petition regarding seats and shelters to get public views on the situation very few people refused to sign petition

There is no barriers on petition because people who live away from Swan Hill say oh I have family or friends here I would love to support them also many city's from Kerang etc come here to do there shopping Barham etc too

2

And may be come to live in Swan Hill later in life yes I would want a seat and shelter to sit there wait for the bus to come. I like Swan Hill

Also to this is giving you an idea of what going on in and around Swan Hill.

Also to I am going to pass on to you people suggestion what people have said to me.

It has been suggested to look on Web site in New Zealand to has excellent Bus shelters on display.

The yellow lines on footpaths are dangerous in wet weather one lady said she slipped on them but did not say where?

Also Gales car park across from Sams etc in Berridge Street she got out of her car there and went to step down on footpath and fell and hurt her self knee & back. It was suggested why isn't a white lines there to remind people of the step down to footpath. Many homes now being built have got no steps in there and people do forget about steps.

Many people wanted to sign petition but would not because of privacy laws nor give there telephone number many people would not put there telephone number when they signed petition.

Many people suggested to have seats example the one are up at Aldi at their ~~entrance~~ ^{entrance} to there store.

3/

- 1) More Public Seating around town also Seating at Play Ground in Marlton.
- 2) More Disable Parking bays around town.
- 3) Seats at West Park Bank, one is not enough.
- 4) Seats at M^cNeal Street Doctor Clinic at M^cNeal Street also shelter.
- 5) Seat and shelter at Wood Road; Lake Boga gets the lot so I'm sold.
- 6) Prangle needs seats and shelter at Bus stop.
- 7) Lyak West needs seats and shelter at Bus stop.
- 8) A Gentleman would not sign petition because he pays over Three Thousand Dollars in Rates and connecting ^{and} to grade the road for them.
- 9) Bus required at Beverford and also Bus stop at Beverford None then.
- 10) T-Line
- 11) T-Line Bus won't stop at Prangle Night Service a pensioner has to paid \$150.00 taxi fare to Prangle Phone Number 04 27060544 if you want anymore information also person signed petition (your choice) \$150.00 is a lot of money specially when you are a Pensioner I was sold this person is a pensioner.

4

Also when I did petition for Mr Peter Crisp for social
waste Alders. I phone ~~home~~ ^{Peter} when a lady said to me that
her children can sign a petition if they are with a parent
and under the age of 18 years. I do have a couple or
so have sign our petition.

Also in a couple of weeks there is over 12 hundred signed
copies to be given to council.

Many people made comment about regarding Campbell
Street and Beveridge Street and St Paul Street
regarding structures structure etc in that area.

so please help with Bus seat and shelters help Swan-
hill a happy place to live in and give your ^{self} ~~self~~
a pat on the back for doing so.

I had better stop and do a few chores for myself.

Take Care all
Safe journey where ever you all may
Travel
From Joan Slater.

P.S Good Luck.

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
K. Dixon	[REDACTED]	[REDACTED]	K. Dixon
M. Rutherford			M. Rutherford
Levin Ferguson			Levin Ferguson
Rene Kurzner			Rene Kurzner
Grace			Grace
P. Craig			P. Craig
J. Cooney			J. Cooney
J. Oliver			J. Oliver
J. [unclear]			J. [unclear]
A. Stanson			A. Stanson
J. Stanson			J. Stanson
D. [unclear]			D. [unclear]
R. Level			R. Level
C. Steel			C. Steel
J. [unclear]			J. [unclear]
M. [unclear]			M. [unclear]
D. Bishop	D. Bishop		

Librian Meeting at Bus stops

Name	Address	Phone number	Signature
H. Murphy			<i>H. Murphy</i>
24/6/2014			<i>[Signature]</i>
24-6-2014			<i>[Signature]</i>
24-6-2014			<i>[Signature]</i>
V. LAWRENCE			<i>[Signature]</i>
D. Riley			<i>[Signature]</i>
Pat O'Shea			<i>[Signature]</i>
Adam Cornish			<i>Adam Cornish</i>
SMOY GR			<i>[Signature]</i>
D. White			<i>[Signature]</i>
Sara Critton			<i>[Signature]</i>
Val Tillet			<i>[Signature]</i>
Ed Blasey			<i>Ed. R. Blasey</i>
J. Galt			<i>[Signature]</i>
Goldsmith			<i>[Signature]</i>
L. Buons			<i>L. Buons</i>
B. Beggs			<i>B. Beggs</i>
N.J. LOCK			<i>[Signature]</i>
T. O'BREE			<i>[Signature]</i>
F. McInerney			<i>[Signature]</i>
H. BLANDT HEAR			<i>H. Blandt Heare</i>

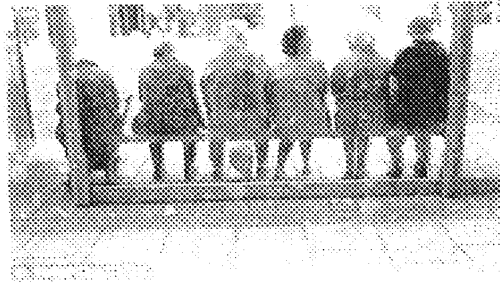
SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Debra Hutchins			D Hutchins
Leena Beeton			Leena Beeton
Brenda Guller			Brenda Guller
BIRDI TONKS			B. Tonks
GWENDA WATSON			G. Watson
RUTH MURRAY			Ruth Murray
KAZ SMITH			Karen Smith
D. RUSBY			
M. JAMES			M. James
John Van Heeman			John Van Heeman
MAY ALLEN			M. Allen
KEITH BRIDGES			K. Bridges
Owen Han			O. Han
Wayne Harris			W. Harris
R. VANAMANN	R. Vanamann		
J. GARRIE	J. Garvie		
CHOLM	C. Cholm		
S. FORDE	S. Forde		
D. FORDE	D. Forde		
M. Whitehill	M. Whitehill		

Petition for seeking of bus stop

Name	Address	Phone number	Signature
JAN KELLEN	[REDACTED]	[REDACTED]	<i>J. Kellen</i>
E. OPPENLANDER			<i>E. Oppenlander</i>
T. RICHARDSON			<i>T. Richardson</i>
D. O'SULLIVAN			<i>D. O'Sullivan</i>
F. O'BRIEN			<i>F. O'Brien</i>
R. LEEHAN			<i>R. Leeahan</i>
Bragdon Ardley			<i>Bragdon Ardley</i>
TRAVIS SMITH			<i>TRAVIS JOHN SMITH</i>
Marg Crilly			<i>Marg Crilly</i>
Alan Hill			<i>Alan Hill</i>
Peter Holden			<i>P. Holden</i>
Lorane Bryan			<i>L. Bryan</i>
Val Paul			<i>Val Paul</i>
L. KAPLAN			<i>L. Kaplan</i>
J. McALPINE			<i>J. McAlpine</i>
L. BOCHING			<i>L. Boching</i>
Rene Braun			<i>R. Braun</i>
Betty Archibald			
JANINE FORSTER	<i>J. Forster</i>		
Gwen Cass	<i>G. Cass</i>		
Brenda King	<i>B. King</i>		

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Dawnay Pearce	[REDACTED]	[REDACTED]	D Pearce
DENNIS Pearce			DW Pearce
Per on G... ..			P G...
R. Hill			R. Hill
Shirley M. Lee			S. M. Lee
Tim Burgess			T Burgess
INMA POLMER			I Polmer
Elizabeth Cox			Elizabeth Cox
Shirley M. Lee			S. M. Lee
Nicola Stoc			N Stoc
Conna hines			Conna hines
Helen Duns			H Duns
Pat Danvers			31302 P Danvers
Loth M... ..			Loth M...
Sue Bryan			Sue Bryan
Miss Bennet	Miss Bennet		
Jalida M... ..	Jalida M...		
Jill K... ..	Jill K...		
John M... ..	John M...		
Bob M... ..	Bob M...		
Bar. Robert	Bar. Robert		

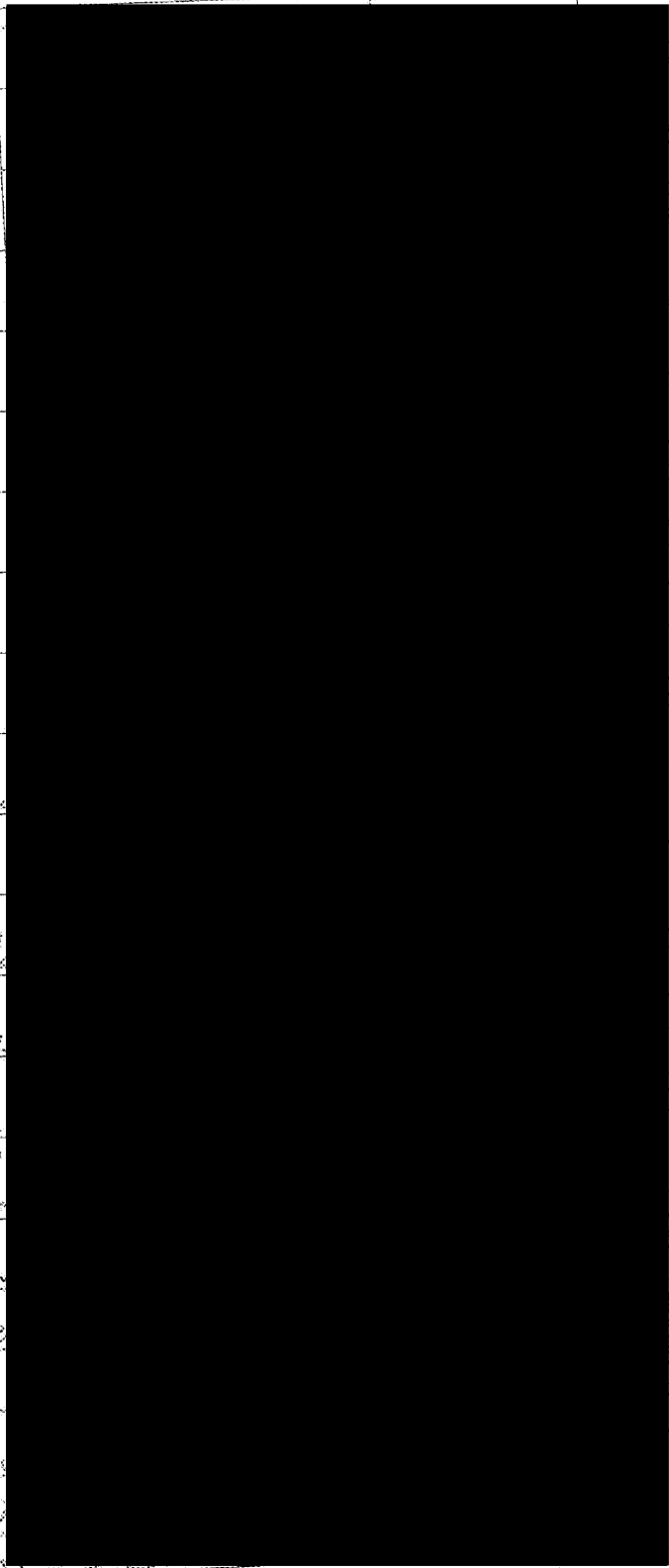

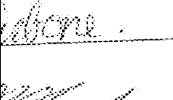
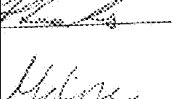
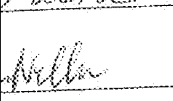
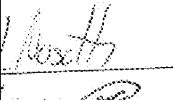
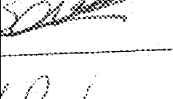
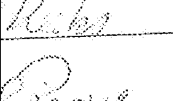
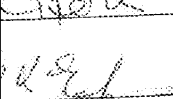
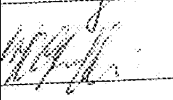
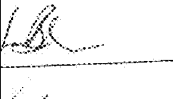
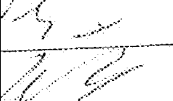
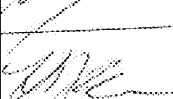
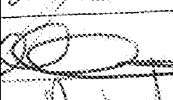
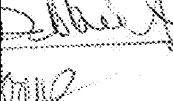
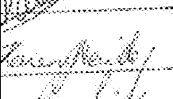
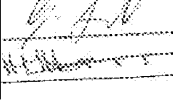


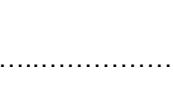

Roll call for meeting at bus stop

Name	Address	Phone	Signature
Z Ernst			Z Ernst
Toni Wiseman			Toni Wiseman
ERSIE WISEMAN			E.T. Wiseman
K. Kelly			K. Kelly
G Thompson			G Thompson
M. Nolan			M. Nolan
J Burgess			J Burgess
A ANDERSON			A. Anderson
Cardyn Eck			Cardyn Eck
Booke Chapman			Booke Chapman
Tony Pizzo			Tony Pizzo
James White			James White
Jessica White			Jessica White
Kylie Barley			Kylie Barley
C. Pindon			C. Pindon
S Hackett			S Hackett
NACEATIAH			NACEATIAH
SALTEC			SALTEC
Sebastian Beaton			Sebastian Beaton
Joan Slater			Joan Slater
(Nakeatto			(Nakeatto
Veronica Lynn			Veronica Lynn
Nancy			Nancy

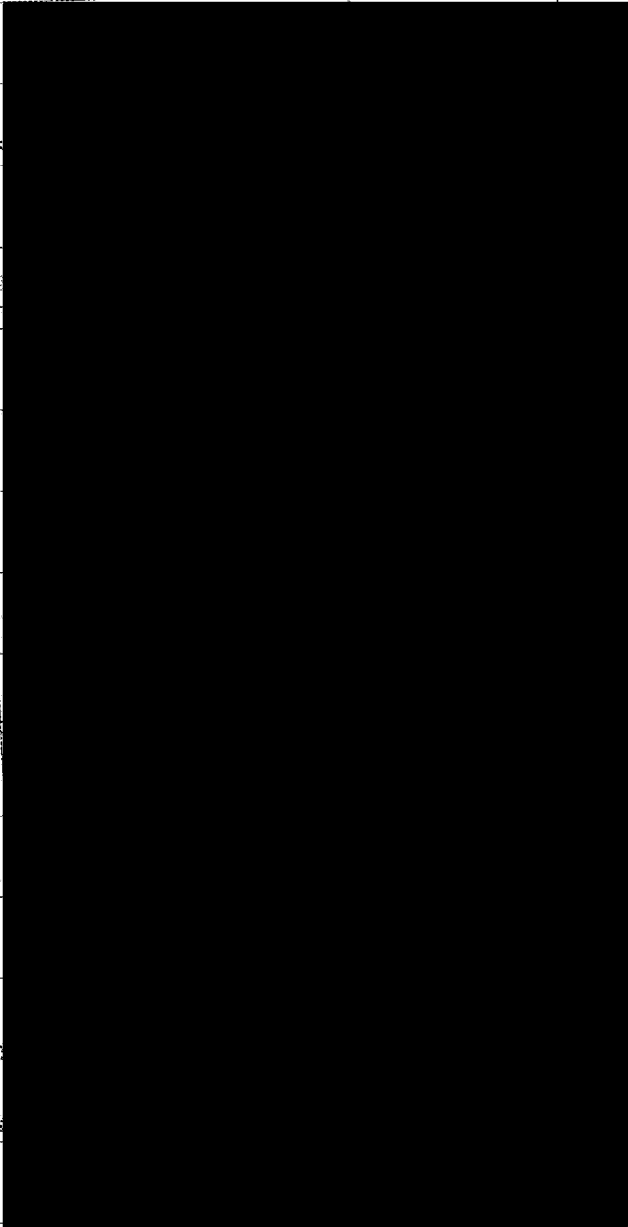
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
L. McWhorter			[Signature]
S. Fawcett			[Signature]
A. Fawcett			[Signature]
S. Saville			[Signature]
K. Wilson			[Signature]
D. P. Dwyer			[Signature]
Kate Reid			[Signature]
D. Mahood			[Signature]
K. Gillingham			[Signature]
G. Greenham			[Signature]
Richard M...			[Signature]
Nicole C...			[Signature]
Jenny D...			[Signature]
Peter W...			[Signature]
T. Holly			[Signature]
D. Greene			[Signature]
M. Trotter			[Signature]
D. Cox			[Signature]
TEDDY U...			[Signature]
Regina B...			[Signature]
Margie H...	[Signature]		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Jasmine Pelletier			
Jarvis J. Carbone			
J. Reals			
B. Milne			
G. Neller			
P. Kosith			
M. Stevens			
J. Reals			
C. Poirer			
B. Deff			
S. Sheriff			
Linda Bab			
Vivian Gu			
Rae Casse			
Hatha P			
Mandy Mc			
Debra J			
Lore			
Karen Ne			
Grant Sa			
Helen Ho			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Annex Bannet			[Signature]
Zilla Clark			[Signature]
NEWMAN			[Signature]
C. Gibson			[Signature]
M Goodbody			[Signature]
R O'Brien			[Signature]
M B'loan			[Signature]
J Hendon			[Signature]
D Williams			[Signature]
K McCartney			[Signature]
R Lutton			[Signature]
Russell Coburn			[Signature]
Zane Wilcox			[Signature]
Philippe White			[Signature]
R. DAVISON		[Signature]	

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone Number	Signature
Melissa Grasse			Melissa Grasse
Hazel Pratten			Hazel Pratten
CARMEL WILSON			Carmel Wilson
Shirley McCallman			Shirley McCallman
Shelley Clarke			Shelley Clarke
ROBERT CLARKE			Robert Clarke
MARINA			Marina
E. BARWICK			E. Barwick
J. MORRIS-LOBB			J. Morris-Lobb
Leah McCall			Leah McCall
LEANNE GILMAN			Leanne Gilman
Toni Campbell			Toni Campbell
YOUNG WEAVER			Young Weaver
DIONNE HEAD			Dionne Head
ERIN HOLD			Erin Hold
H M Brewer			H M Brewer
Jade Williams			Jade Williams
Sue Hughes			Sue Hughes
Chinterbeke			Chinterbeke
N. GUTSHAM			N. Gutsham
C. GUTSHAM	C. Gutsham		
ID McCrelland	ID McCrelland		
R. Astor	R. Astor		
S. Astor	S. Astor		
L. Lowe	L. Lowe		
BOB BREWER	Bob Brewer		
Gaylene Davis	Gaylene Davis		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone Number	Signature
R. BENFRIST			<i>R. Benfrist</i>
L. Graham			<i>L. Graham</i>
R. Linnings			<i>R. Linnings</i>
Z. Stanton			<i>Z. Stanton</i>
JAMIE CRASBE			<i>J. Crasbe</i>
LEAZI THREACOLD			<i>Leazi Threacold</i>
Andrew Cook			<i>Andrew Cook</i>
JENNIE FINLAYSON			<i>Jennie Finlayson</i>
Maureen Minette			<i>Maureen Minette</i>
Sue Charles			<i>Sue Charles</i>
Dina McCarroll			<i>Dina McCarroll</i>
Bil McMahon			<i>Bil McMahon</i>
L. DI PALMA			<i>L. Di Palma</i>
L. di Smith			<i>L. di Smith</i>
Marcus Irvine			<i>Marcus Irvine</i>
Johny Foy			<i>Johny Foy</i>
Megan Day			<i>Megan Day</i>
CRISTY EDWARDS			<i>Cristy Edwards</i>
Bethinda Devine			<i>Bethinda Devine</i>
Jamie Hoop			<i>Jamie Hoop</i>
Orlando Jh	<i>Orlando Jh</i>		
Yvette Thompson	<i>Yvette Thompson</i>		
ARLOW HAWKINS	<i>Arlow Hawkins</i>		
Beverly Hawkins	<i>Beverly Hawkins</i>		
Rae Norris	<i>Rae Norris</i>		
Les Norris	<i>Les Norris</i>		
JAN KIBELA	<i>Jan Kibela</i>		

30

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Wong	24		[Signature]
Boss	10		[Signature]
Cooper			[Signature]
William			[Signature]
Robyn			[Signature]
Kenneth			[Signature]
Ninnis			[Signature]
N. P. [unclear]			[Signature]
Robyn [unclear]			[Signature]
Tilman [unclear]			[Signature]
de [unclear]			[Signature]
To. [unclear]			[Signature]
Conrad [unclear]			[Signature]
Maureen [unclear]			[Signature]
R. [unclear]			[Signature]
B. [unclear]			[Signature]
K. [unclear]			[Signature]
Dean			DEAN
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]

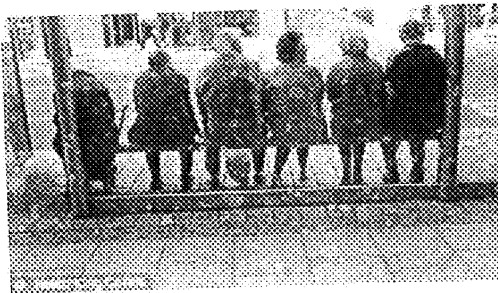
PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Jottam	[REDACTED]		Hansen
M. Street			M. Street
N. Maedel			[Signature]
B. Boer			[Signature]
L. Tonicker			[Signature]
L. Meier			[Signature]
Jerry Roberts			[Signature]
Doug Forsyth			[Signature]
Randy B. [unclear]			[Signature]
Hugh [unclear]			[Signature]
M. [unclear]			[Signature]
Stanna [unclear]			[Signature]
Ken Bell			[Signature]
Alan [unclear]			[Signature]
Gann [unclear]			[Signature]
Rebecca [unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]		[Signature]	
Alex Hughes		[Signature]	

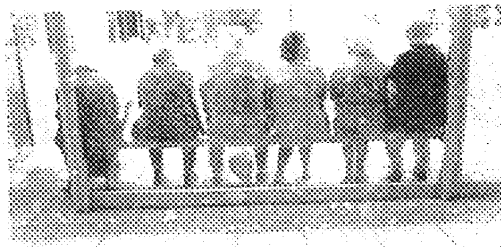
PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
19/11/14	[REDACTED]	[REDACTED]	[Signature]
Tom M. Stollard			[Signature]
Christine Ellis			[Signature]
H. Smith			[Signature]
[Signature]			[Signature]
W. G. Vause			[Signature]
K. Loft			[Signature]
B. O'Brien			[Signature]
Geoff			[Signature]
[Signature]			[Signature]
Wayne Gons			[Signature]
Alex Cook			[Signature]
Leanne Cook			[Signature]
M. Johnson			[Signature]
S. Elliott			[Signature]
[Signature]	[Signature]		
[Signature]	[Signature]		
[Signature]	[Signature]		
M. Kelly	[Signature]		
S. McKenzie	[Signature]		
Neil Oliver	[Signature]		

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
K. Dixon	[REDACTED]	[REDACTED]	L. Dixon
M. RUTHERFORD			Rutherford
Lester Ferguson			Lester Ferguson
Rene Kurzner			Rene Kurzner
G. Vale			G. Vale
P. Stewart			P. Stewart
J. Cochrane			J. Cochrane
J. Oliver			J. Oliver
J. [unclear]			J. [unclear]
M. Stevenson			M. Stevenson
J. Stevenson			J. Stevenson
D. Lever			D. Lever
R. Lever			R. Lever
A. Steele			A. Steele
J. Gornall-Riley			J. Gornall-Riley
M. Blambie	M. Blambie		
D. Bishop	D. Bishop		


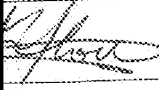
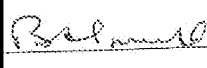

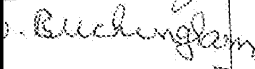
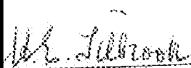
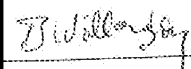


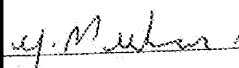
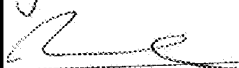
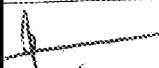
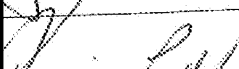
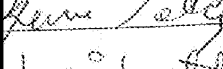
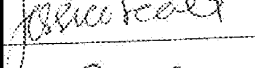
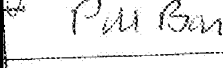
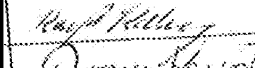
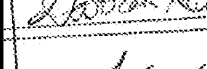
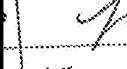
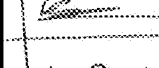

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Heanne M. Torland	[REDACTED]	[REDACTED]	[Signature]
Sumat Mendonca			[Signature]
Cethis Jonkers			[Signature]
Mackenzie Jonkers			[Signature]
Misty Males			[Signature]
Lyn Fitzpatrick			[Signature]
GEORGINA BAIK			[Signature]
STAN EDWARDS			[Signature]
Don Recci			[Signature]
Pamela Hill			[Signature]
Lyn Davies			[Signature]
Lovell Van Liessou			[Signature]
ALICIA BRYMER			[Signature]
A Gorman			[Signature]
R Hodder			[Signature]
G Simpson	[Signature]		
N. Smalley	[Signature]		
K Stoppel	[Signature]		
T Bell	[Signature]		
JOBRIEN	[Signature]		
M O'Brien	[Signature]		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Margaret Bradley Restaurant	[REDACTED]	[REDACTED]	M. P. Bradley
LAWBIE	[REDACTED]	[REDACTED]	[Signature]
Gloria Ryan HEATHER EVANS	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
KAREN MAGNUSSEN	[REDACTED]	[REDACTED]	Magnussen
Nanne Mullar	[REDACTED]	[REDACTED]	Mullar
Z Harold	[REDACTED]	[REDACTED]	[Signature]
SQuinn	[REDACTED]	[REDACTED]	[Signature]
IAN HEIGHWAY	[REDACTED]	[REDACTED]	[Signature]
Dot Field	[REDACTED]	[REDACTED]	[Signature]
Peter [unclear]	[REDACTED]	[REDACTED]	[Signature]
Blaze Hall	[REDACTED]	[REDACTED]	Blaze Hall
Bodie [unclear]	[REDACTED]	[REDACTED]	Bodie [unclear]
LINDA THORP	[REDACTED]	[REDACTED]	[Signature]
WALLY BUCKLE	[REDACTED]	[REDACTED]	[Signature]
LYNNE THORP	[REDACTED]	[REDACTED]	[Signature]
Jake Nedan	[REDACTED]	[REDACTED]	[Signature]
NEO Smith	[REDACTED]	[REDACTED]	[Signature]
Elin Smith	[REDACTED]	[REDACTED]	[Signature]
Aimee [unclear]	[REDACTED]	[REDACTED]	[Signature]

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
W Thomas N Thomas	161 T		
Kylie Thomas	161 T		
Ben Smith	12 C S		
A SUMMERHAYES	BE 41		
A. Buchingham	27,		
M. TILBROOK			
B. Willoughby	264		
P. Watts			
Yvonne Harrison	37		
Yvonne Meehan	B		
Belinda Cavie	73		
Judy Fuller	147		
Kerrie Petty	68		
Jessica Scott	111		
Pax BARR			
KAY KENEY	11		
DARRREN KEENE			
Tony Smith			
Beau Smith	D		
Nicole Brown			
Kylie Tippin			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
S. Bath	[REDACTED]	[REDACTED]	S. Bath
J. Bath			J. Bath
Nearlockyer			delegie
D. Ching			D. Ching
S. Parsons			[Signature]
K. Middlebrook			K. Middlebrook
T. McLean			T. McLean
E. Gallwey			E. Gallwey
R. Kendall			R. Kendall
K. Mearns			[Signature]
Kod p y Dav			[Signature]
P. H. Mublan			WR 7966
P. Mearns			[Signature]
W. H. H. H. H.			W. H. H. H. H.
Flo. Baggen			F. H. H. H. H.
R. Mearns			R. Mearns
Cynthia F. Nitro			Cynthia F. Nitro
Scott Walker			Scott Walker
Ronald Vong	Ronald Vong		

Voting Paper

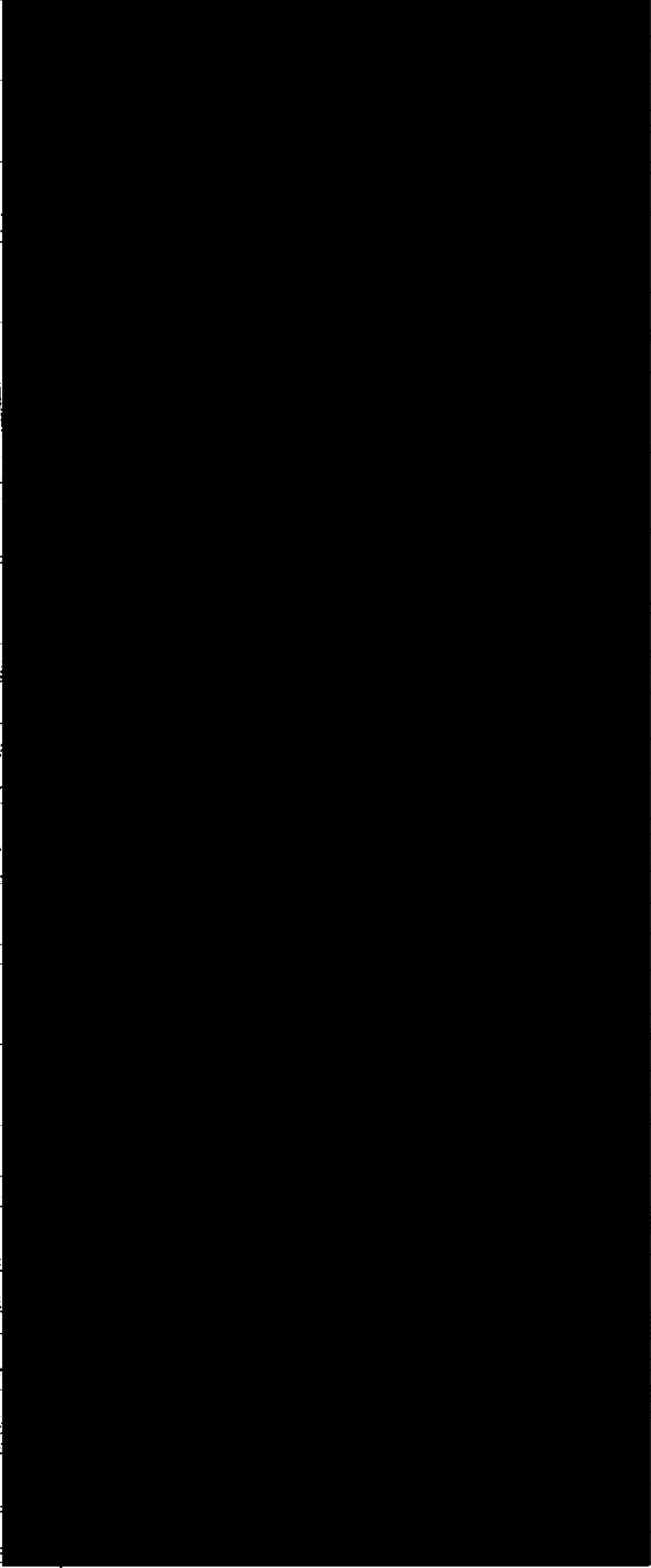
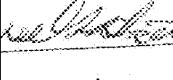
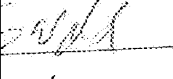
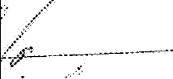
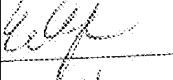
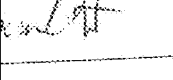
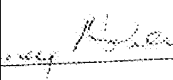
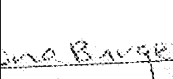
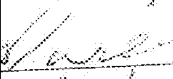
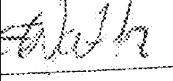

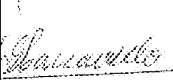
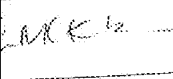

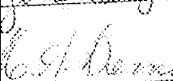
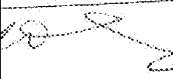
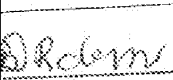
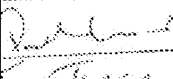
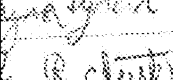
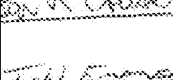
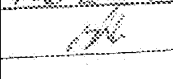
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Karen Shean			<i>[Signature]</i>
Terril Campbell			<i>T. Camp</i>
Burg Dalton			<i>B. Dalton</i>
<i>[Name]</i>			<i>[Signature]</i>
Ray Dalton			<i>Ray Dalton</i>
S. Stephenson			<i>[Signature]</i>
<i>[Name]</i>			<i>[Signature]</i>
<i>[Name]</i>			<i>[Signature]</i>
J. Kerwin			<i>[Signature]</i>
C. Massey			<i>[Signature]</i>
R. Lambert			<i>R. W. Lambert</i>
J. J. J. J.			<i>[Signature]</i>
C. Gardiner			<i>[Signature]</i>
J. Poshlo			<i>[Signature]</i>
KERWIN			<i>[Signature]</i>
KERWIN			<i>[Signature]</i>
T. Box			<i>[Signature]</i>
R. Box			<i>[Signature]</i>
Nudith chu			<i>[Signature]</i>
J. I. Burr			<i>[Signature]</i>
D. R. [Name]	<i>[Signature]</i>		
J. B. [Name]	<i>[Signature]</i>		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Tuette Vaupere			<i>T. Vaupere</i>
Justin O'Brien			<i>JOB</i>
L Roberts			<i>L Roberts</i>
J Roberts			<i>J Roberts</i>
M Frame			<i>M Frame</i>
D Morgan			<i>D Morgan</i>
H Blackmore			<i>H Blackmore</i>
B. MORGAN			<i>B Morgan</i>
Carol Buis			<i>Carol Buis</i>
DANA DUNN			<i>D Dunn</i>
Libby Kay			<i>Libby Kay</i>
DeWing Lt			<i>DeWing Lt</i>
Lee Lov			<i>Lee Lov</i>
B. Boyd			<i>B Boyd</i>
A. Boyd			<i>A Boyd</i>
Jean W. Schell			<i>J Schell</i>
Lyn Forsyth			<i>Lyn Forsyth</i>
K. McNeil			<i>K McNeil</i>
Lyn May	<i>Lyn May</i>		
Beverly Lewis	<i>Beverly Lewis</i>		
Van O'Brien	<i>Van O'Brien</i>		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Shene Mitchell			
Tye Walsh			
Travis Sapp			
Aidaa Ison			
E Bennett			
N. Hobley			
Shona Burgess			
DAVID WILKS			
Emily Walsh			
Mrs Durr			
Albionwell			
UMCKIBS			
John Baker			
Margaret Bennett			
Donna Dav			
DOHEN RO			
Paul Green			
MAN AUSTR			
Erica F...			
KNE 177			


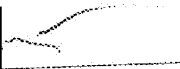
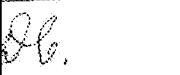
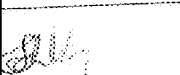
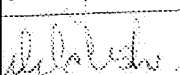
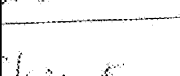
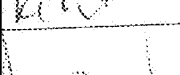
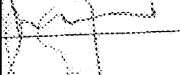
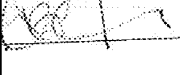
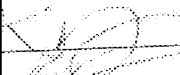
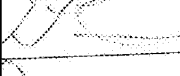
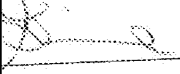

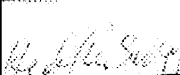
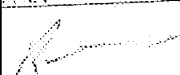
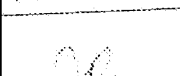
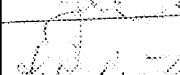
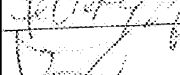
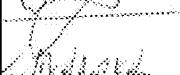
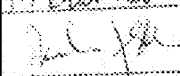
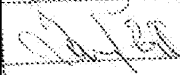
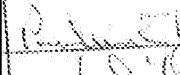
Hand
by

PETITION FOR SEATING AT BUS STOPS

Ann
2014

Name	Address	Phone number	Signature
Miriam McLean			
Connor McLean			
Leanne Decocke			
Gene Drummond			
Paula Hoary			
GREG OGLE			
EM HOPE			
Middle Hill			
Paula Prae			
Lee Lee			
Sue Fiear			
Lynne Budge			
Pam Jam			
Lynne M			
Deen Joris			
Hazel Ka			
Rachel Blea			
A. Blea			
Nailey Blea			
Tony Marley			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
M.A. O'BRYAN			
D. EODLING			
K. Schlitz			
W. Wildich			
J. Kent			
F. Freeman			
J. MARIE			
KIMM			
I. IRVIN			
D. IRVINE			
A. Scott			
H. Scott			
D. EVANS			
J. EVANS			
F. Zerafa			
W. Zerafa			
T. Mahlon			
M. Ellis			
I. R. H.			
P. Chaw			
M. Chaw			

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Brenda Altschager	[REDACTED]	[REDACTED]	[Signature]
JANE TRIMBLE			[Signature]
Wendy P. St			[Signature]
Travis Pasley			[Signature]
A. MURPHY			[Signature]
J. Murray			[Signature]
M. Smith			[Signature]
Eileen Hankin			[Signature]
N. Jackson			[Signature]
B. Nunn			[Signature]
G. Wood			[Signature]
J. F. Kelly			[Signature]
M. Dawes			[Signature]
Verna Irene			[Signature]
L. Rowray			[Signature]
M. Ward			[Signature]
J. Hanson			[Signature]
S. Blainthorpe			[Signature]
J. Sumner			[Signature]
B. Hill			[Signature]
D. Raven	[Signature]		

PETITION FOR SEATING AT BUS STOPS



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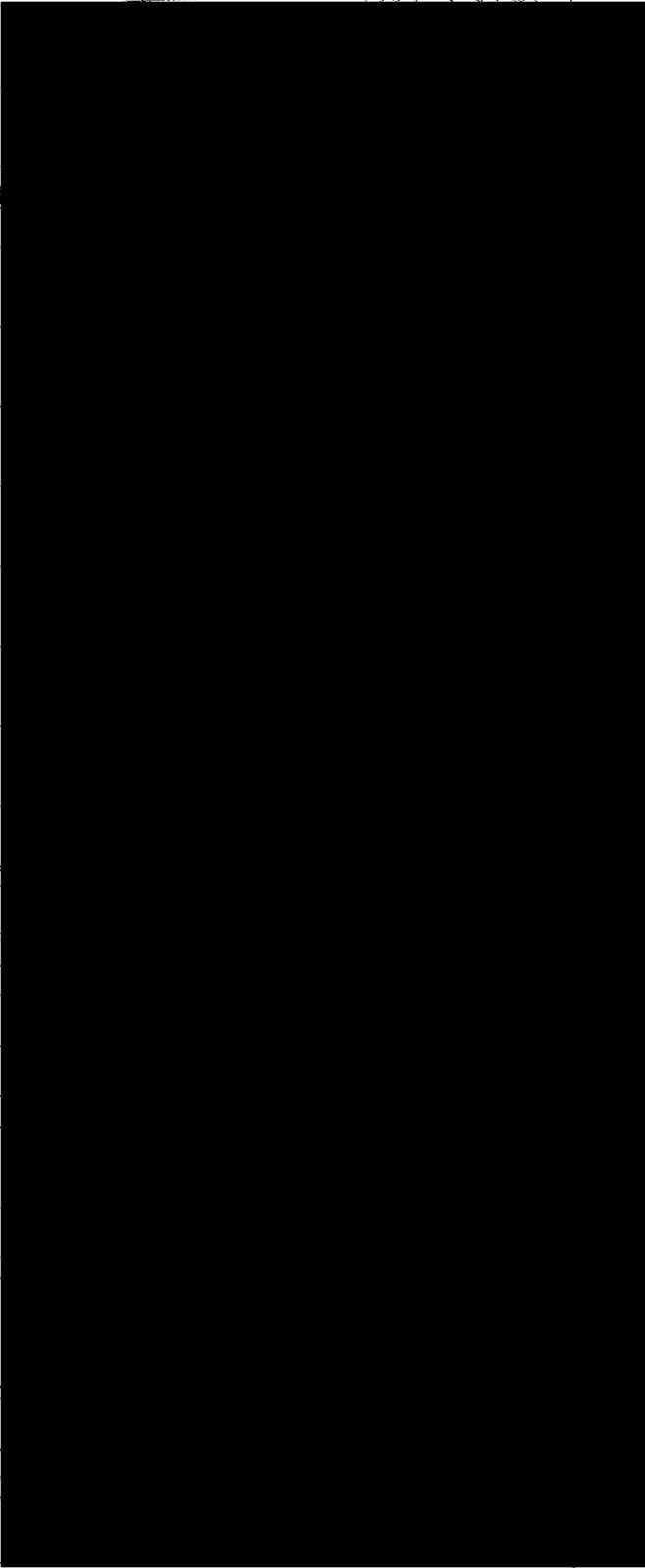
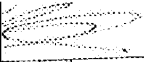


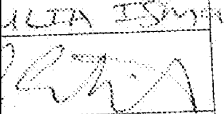
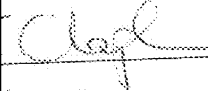

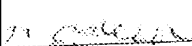
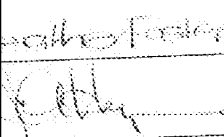


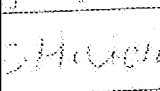
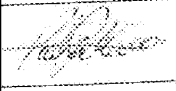
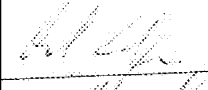
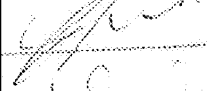
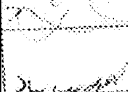
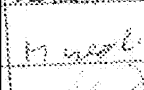
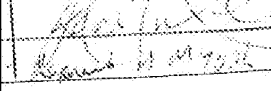

Name	Address	Phone number	Signature
M HOBBY	[REDACTED]	[REDACTED]	[Signature]
T Williams			[Signature]
D Ledwidge			[Signature]
A McCallum			[Signature]
P WILLIAMS			[Signature]
J Hobbs			[Signature]
Janine Bell			[Signature]
Len Berris			[Signature]
Celia [unclear]			[Signature]
Nicki [unclear]			[Signature]
Diana [unclear]			[Signature]
Robin [unclear]			[Signature]
Gillian [unclear]			[Signature]
Barb Haq			[Signature]
Nonda Kelly			[Signature]
Leah [unclear]			[Signature]
Wape [unclear]			[Signature]
Shaun M'Alis			[Signature]
Gwen [unclear]			[Signature]
Maddyson [unclear]			[Signature]

*Bus stop
stop sign*

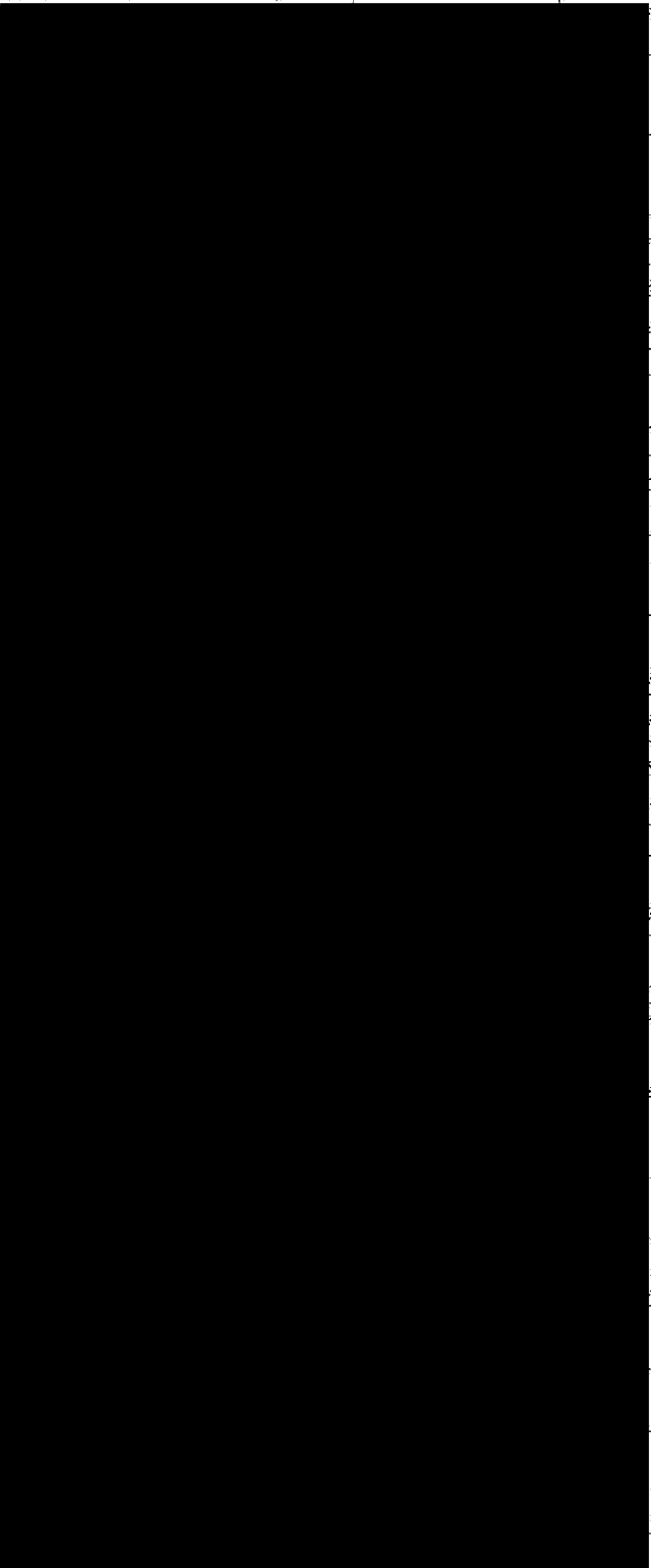
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Peter Elliott			<i>P. Elliott</i>
Joan Slater			<i>J Slater</i>
A. CHAFFRY			<i>A Chaffry</i>
R. MORTON			<i>R Morton</i>
R. MORTON			<i>R Morton</i>
L. MORTON			<i>L Morton</i>
G. STEWART			<i>G Stewart</i>
P. HARRIS			<i>P Harris</i>
J. TAYLOR			<i>J Taylor</i>
G. WISE			<i>G Wise</i>
S. ABDELLATIF			<i>S Abdellatif</i>
Abdullah			<i>Abdullah</i>
Alamp T. Barry (70)			<i>Alamp Barry</i>
P. ROSE			<i>P Rose</i>
D. Coghlan			<i>D Coghlan</i>
C. Coghlan			<i>C Coghlan</i>
J. NELSON			<i>J Nelson</i>
Jack Lawson			<i>Jack Lawson</i>
Clare Lawson			<i>Clare Lawson</i>
R. Finner			<i>R Finner</i>
Doolan	<i>Clady</i>		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Sue Klomp			
Sue Glane			
Debbie White			
JULIA ISMA			
Tennille Clapham			
Catherine Harrison			
Heather Foster			
Joanne Hampton			
Lyn Schuster			
S. Hutchings			
P. Wallace			
M. Andis			
L. Small			
K. Hill			
T. Hill			
M. Hill			
J. Hill			
K. Hill			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Mary Paterson			Paterson
Luce Lamm			Lb
Same ON			Larkin
M. W. Hill			ad /
B. Bishop			Bishop
² Bishop			
D. Golliffe			Golliffe
E. Tyson			Tyson
C. Betts			the Ditch
A. LEAHY			Ann Leahy
R. LEWIS			
J. CHRON			
G. Baker			B/B
Peter Gibson			Peter
M. Fitch			M. Fitch
B. Beck			B. Beck
R. Brown			R. Brown
H. Schmitt			H. Schmitt
S. Russo	Russell		
D. Carr	Donie		
P. DONAHUE	Dona		
9/13/0	9/13/0		

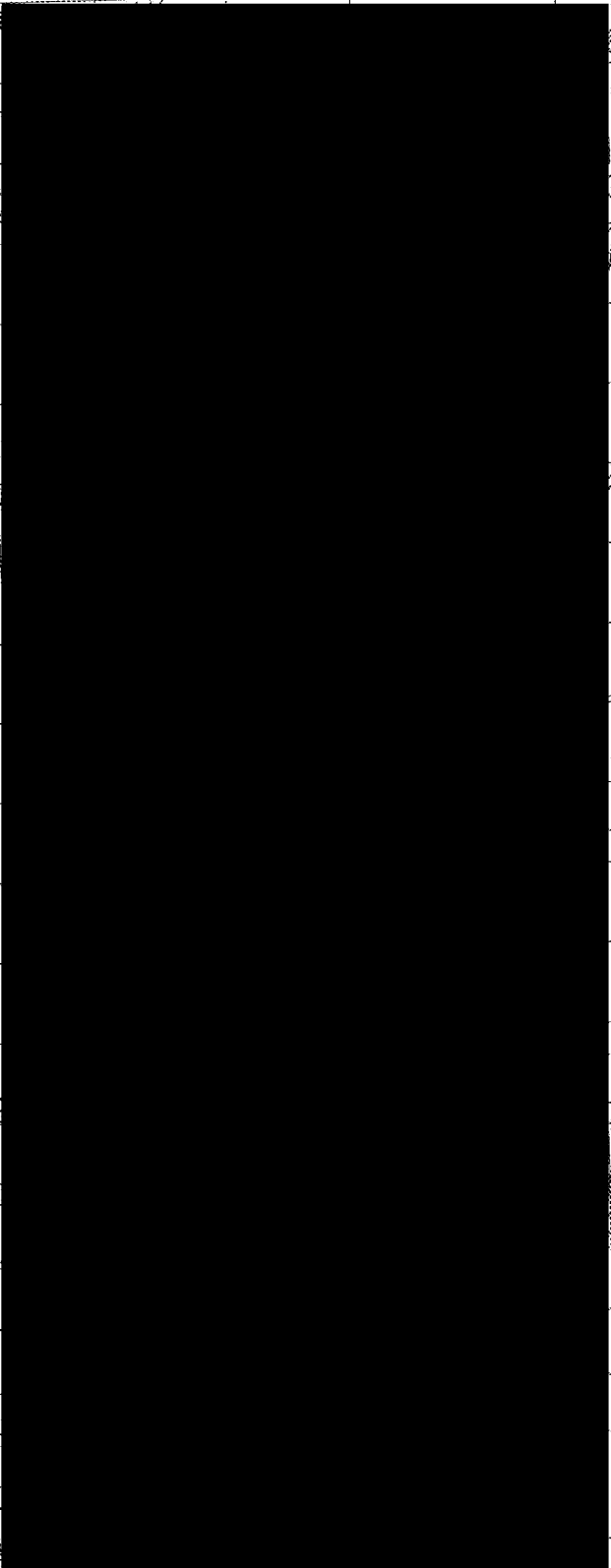

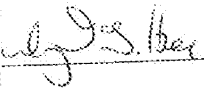

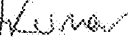
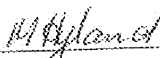


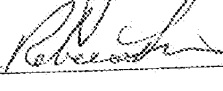



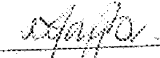
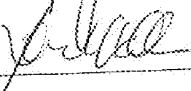
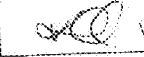




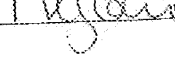

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
PHILIP DEANANT.			<i>[Signature]</i>
Sandra Lewis			<i>[Signature]</i>
Aimee Lewis			<i>[Signature]</i>
Paul Horton			<i>[Signature]</i>
Co Damant			<i>[Signature]</i>
Lisa Boehm			<i>[Signature]</i>
IAN GORDON			<i>[Signature]</i>
AMANDO CHARLSON			<i>[Signature]</i>
JAN CUMMINS			<i>[Signature]</i>
Ann Hays			<i>[Signature]</i>
Katie DOSTMAN			<i>[Signature]</i>
Sophie Eaton			<i>[Signature]</i>
Sharon Hare			<i>[Signature]</i>
A. O'Neill			<i>[Signature]</i>
<i>[Signature]</i>			<i>[Signature]</i>
Deirdre [unclear]			<i>[Signature]</i>
Christina [unclear]			<i>[Signature]</i>
Sharon Hays			<i>[Signature]</i>
Tina [unclear]			<i>[Signature]</i>
Maria [unclear]			<i>[Signature]</i>
Brian [unclear]	<i>[Signature]</i>		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Van Baldwell			
URSULA TWENTY			
TRACY ADAMS			
Carly Clarke			
PAUL Finnison			
M Impeony			
Melissa Pearce			
Sabine New			
Lillian Pierce			
Michael Malton			
greg lobb			
Mark Bin			
Lynda Rumbolt			
Kate John			
Debbie Free			
ERIN HAN			
Ann Free			
Allyce			
Shirley			
Fam Soc K. HILL			

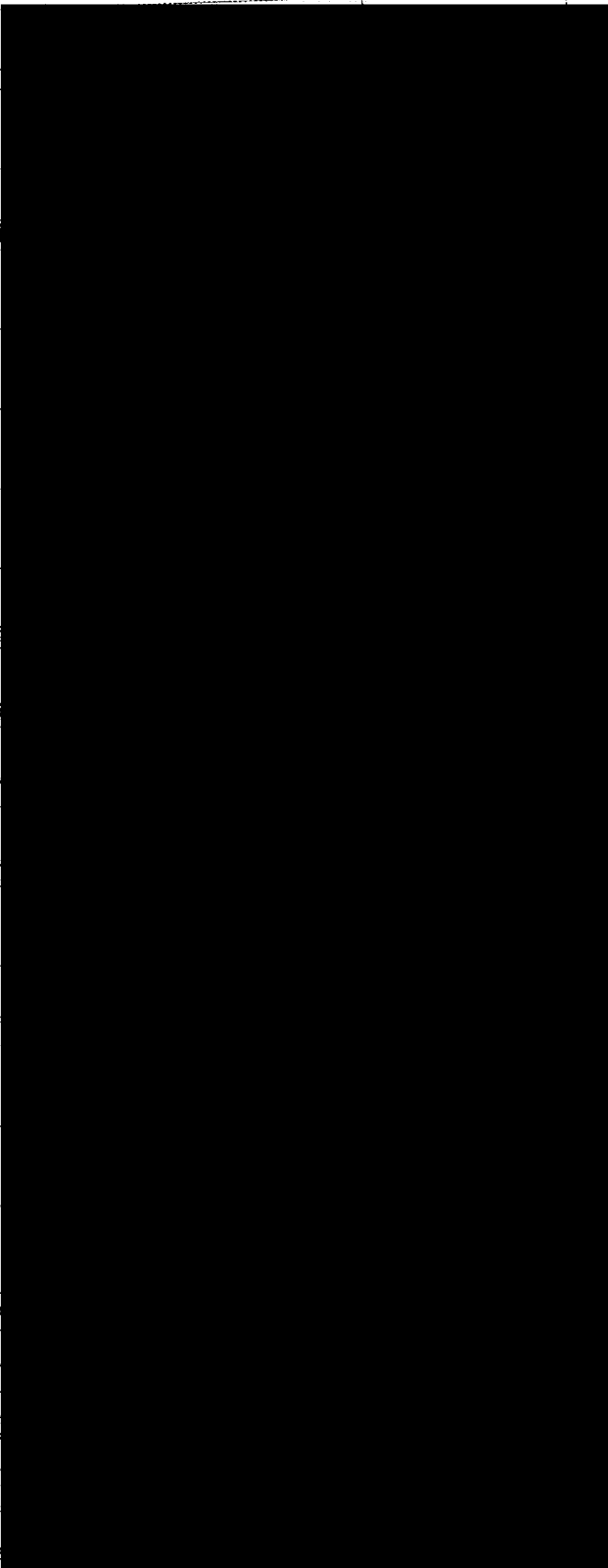
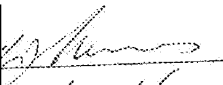

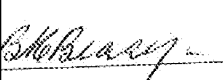
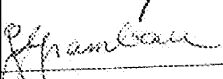
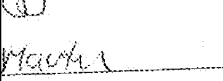
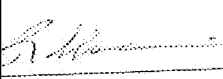


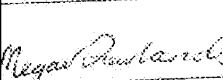


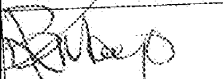
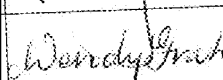

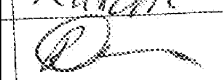
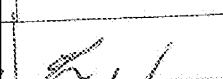
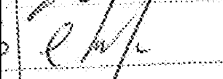
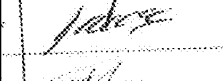

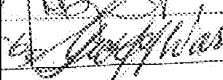

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
P Stroobants			
L. Gilbee			
S Algie			
J. Kumar			
M. Holland			
J. BAKER			
U Charles			
B. CROFT			
B. THOMAS			
P. Barr			
D. Brown			
CLD			
V. Taylor			
J. Wallace			
KMANNING			
P. Holland			
A. Phillips			
L. Perry			
R. Perry			
E. Howard			
V. Cairns			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
KRISTIE PARKER			<i>Kristie Parker</i>
Kathy Hobley			<i>Kathy Hobley</i>
Ian Tillet			<i>Ian Tillet</i>
Jodie Taylor			<i>Jodie Taylor</i>
ROCK SARR			<i>Rock Sarr</i>
HANNAH MESS			<i>Hannah Mess</i>
Holly Watt			<i>Holly Watt</i>
Brady Milne			<i>Brady Milne</i>
Duerson Goss			<i>Duerson Goss</i>
Dagh Cook			<i>Dagh Cook</i>
K. Cochran			<i>K. Cochran</i>
<i>de [unclear]</i>			<i>[unclear]</i>
L. Findlay			<i>L. Findlay</i>
K. Casey			<i>K. Casey</i>
D. Saffron			<i>D. Saffron</i>
G. Marshall			<i>G. Marshall</i>
P. Saffron			<i>P. Saffron</i>
J. Holder			<i>J. Holder</i>
Ch. Swinn	<i>Ch. Swinn</i>		
Alison Lewis	<i>Alison Lewis</i>		
Deanne [unclear]	<i>[unclear]</i>		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Norma Thomas			
ALICE			
BEV BEASLY			
(2) T.V. GRAMBAU			
J. Martin			
R. Wood			
Lorella Rowlands			
Mark Rowlands			
Megan Rowland			
Matt Rowlands			
JAMIE CRABBE			
B. Mayo			
Wendy Graham			
Troy Bond			
RONAN COBLAN			
Chris Wilson			
Chris Jackson			
x J. KLANBERG			
M. ALBERT			
x M. DUNN			
GEOFF W			


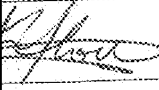
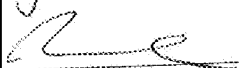
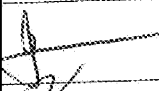
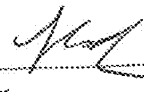


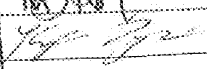
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Heanne M. Torland			
Sumat Mendonca			
Cetris Jonkers			
Mackenzie Jonkers			
Misty Males			
Lyn Fitzpatrick			
GEORGINA BAIK			
STAN EDWARDS			
Don Recci			
Pamela Hill			
Lyn Davies			
Lovell Van Liessou			
ALICIA BRYMER			
A Gorman			
R Hodder			
G Simpson			
N. Smalley			
K Stoppel			
T Bell			
JOBRIEN			
M O'Brien			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Margaret Bradley Restaurant	[REDACTED]	[REDACTED]	M. P. Bradley
LAWBIE	[REDACTED]	[REDACTED]	[Signature]
Gloria Ryan HEATHER EVANS	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
KAREN MAGNUSSEN	[REDACTED]	[REDACTED]	Magnussen
Nanne Mullar	[REDACTED]	[REDACTED]	Mullar
Z Harold	[REDACTED]	[REDACTED]	[Signature]
SQuinn	[REDACTED]	[REDACTED]	[Signature]
IAN NEIGHWATER	[REDACTED]	[REDACTED]	[Signature]
Dot Field	[REDACTED]	[REDACTED]	[Signature]
Peter [unclear]	[REDACTED]	[REDACTED]	[Signature]
Blaze Hall	[REDACTED]	[REDACTED]	Blaze Hall
Bodie [unclear]	[REDACTED]	[REDACTED]	Bodie [unclear]
LINDA THORP	[REDACTED]	[REDACTED]	[Signature]
WALLY BUCKLE	[REDACTED]	[REDACTED]	[Signature]
LYNNE THORP	[REDACTED]	[REDACTED]	[Signature]
Jake Nedan	[REDACTED]	[REDACTED]	[Signature]
NEO Smith	[REDACTED]	[REDACTED]	[Signature]
Elin Smith	[REDACTED]	[REDACTED]	[Signature]
Aimee [unclear]	[REDACTED]	[REDACTED]	[Signature]

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
W Thomas N Thomas	161 T		
Kylie Thomas	161 T		
Ben Smith	12 C S		Ben Smith
A SUMMERHAYES	BE 41		Summerhayes
A. Buchingham	27,		A. Buchingham
M. TILBROOK			M. Tilbrook
B. Willoughby	264		B. Willoughby
P. Watts			P. Watts
Yvonne Harrison	37		Yvonne Harrison
Yvonne Meehan	B		Y. Meehan
Belinda Cavie	73		
Judy Fuller	147		
Kerrie Petty	68		Kerrie Petty
Jessica Scott	111		Jessica Scott
Pax BARR			Pax Barr
KAY KEENEY	11		Kay Keene
DARRIN KEENE			
Tony Smith			
Beau Smith	D		
Nicole Brown			Nicole Brown
Kylie Tippin			

PETITION FOR SEATING AT BUS STOPS

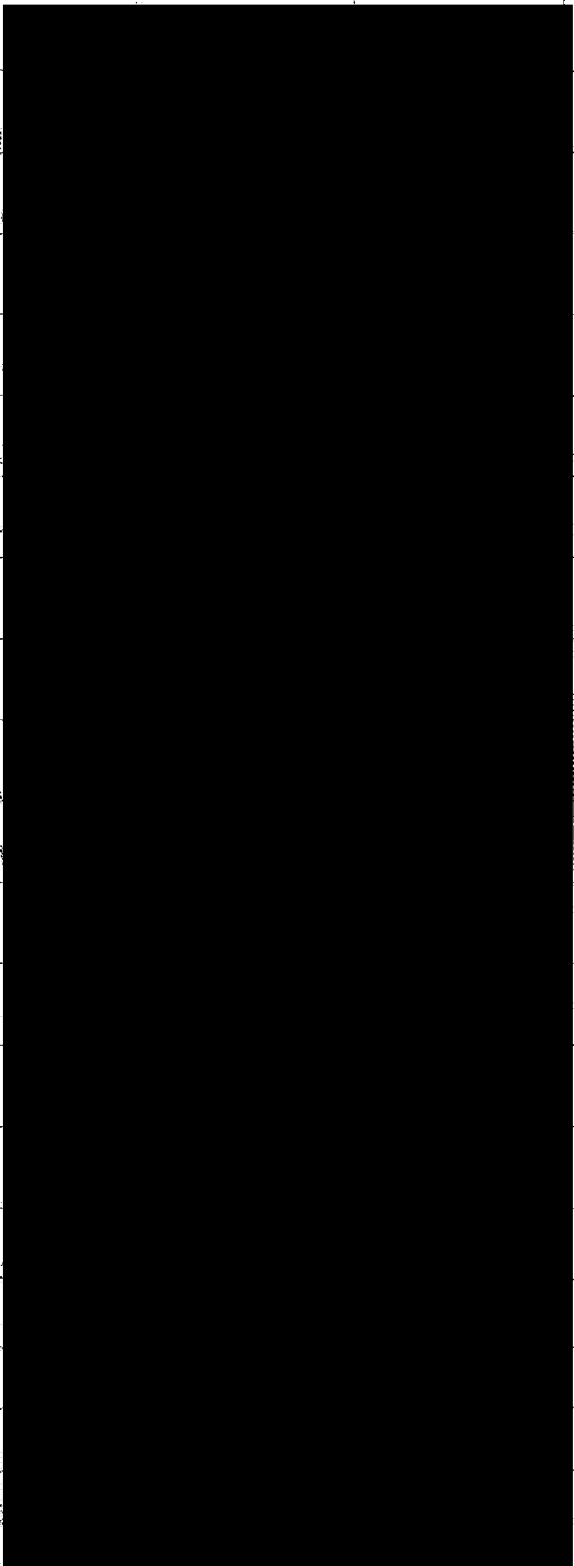
Name	Address	Phone number	Signature
S. Bath			S. Bath
J. Bath			J. Bath
Nearlockyer			Lockyer
D. Ching			D. Ching
S. Parsons			[Signature]
K. Middlebrook			K. Middlebrook
T. McLean			T. McLean
E. Gallwey			E. Gallwey
R. Kendall			R. Kendall
K. McLean			[Signature]
Kod p y Dav			[Signature]
P. H. McLean			P. H. McLean
P. McLean			P. McLean
W. H. McLean			W. H. McLean
Flo. Baggen			Flo. Baggen
R. McLean			R. McLean
Cynthia F. McLean	Cynthia F. McLean		
Scott Walker	Scott Walker		
Ronnie Vong	Ronnie Vong		

V. McLean

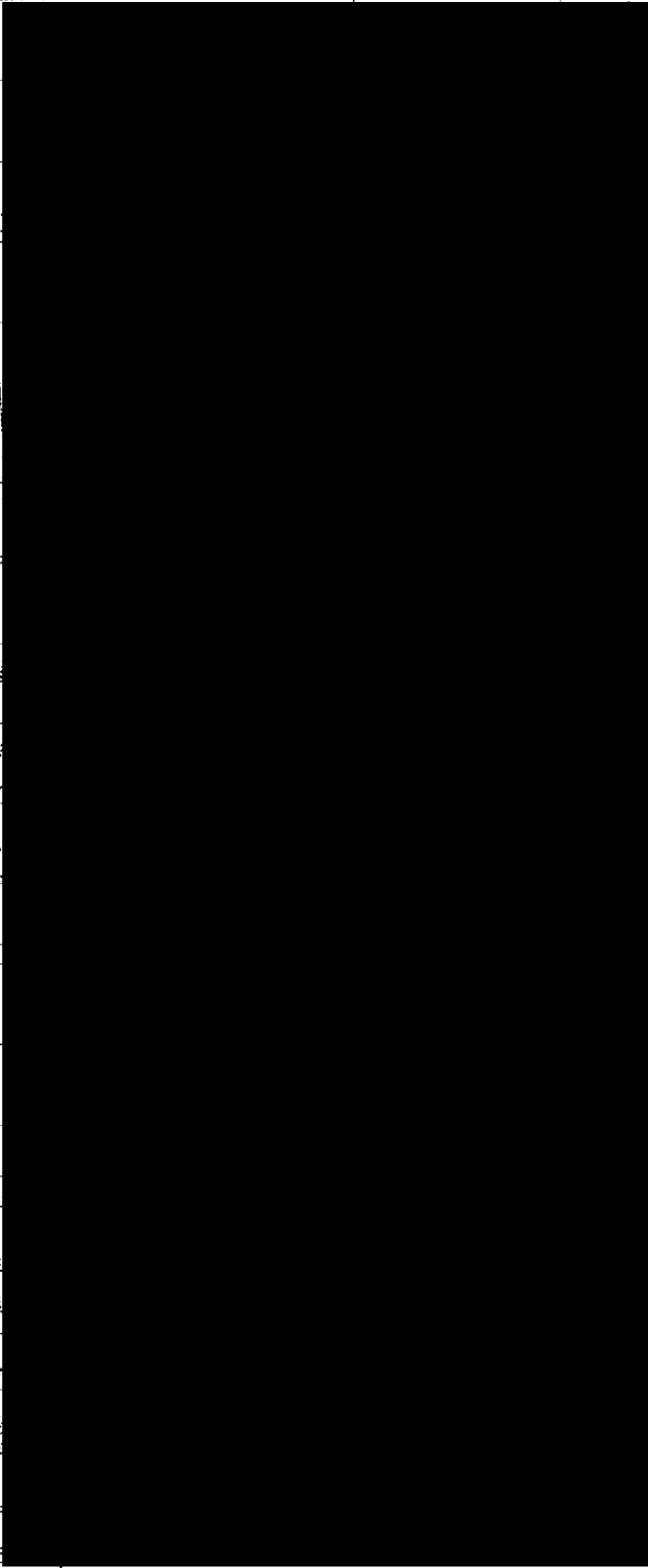
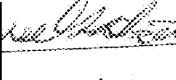
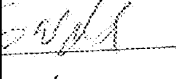
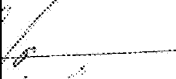
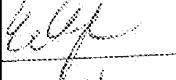
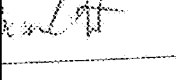
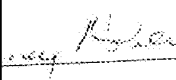
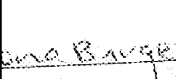
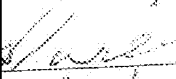
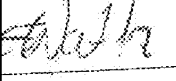

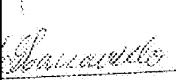
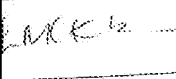

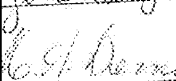
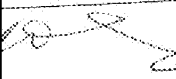
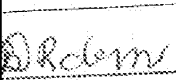
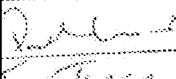
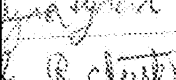
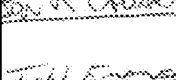
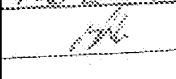
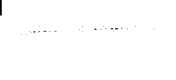
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Karen Shean			[Signature]
Terril Campbell			T. Camp
Burg Dalton			B Dalton
[Signature]			[Signature]
Ray Dalton			Ray Dalton
S Stephenson			[Signature]
[Signature]			[Signature]
[Signature]			[Signature]
J. Kerwin			J Kerwin
C. Massey			[Signature]
R Lambert			R W Lambert
J. J. J. J.			[Signature]
C. Gardiner			[Signature]
J. Poshlo			[Signature]
KERWIN			[Signature]
KERWIN			[Signature]
T. Box			[Signature]
R. Box			[Signature]
Nudith chur			[Signature]
J. I. Burr			[Signature]
D. R. [Signature]	[Signature]		
J. B. [Signature]	[Signature]		

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Tuette Vaupere			<i>Tuette Vaupere</i>
Justin O'Brien			<i>Justin O'Brien</i>
L Roberts			<i>L Roberts</i>
J Roberts			<i>J Roberts</i>
M Frame			<i>M Frame</i>
D Morgan			<i>D Morgan</i>
H Blackmore			<i>H Blackmore</i>
B. Macdonald			<i>B. Macdonald</i>
Carol Buis			<i>Carol Buis</i>
DANA DUNN			<i>DANA DUNN</i>
Libby Kay			<i>Libby Kay</i>
Devin Light			<i>Devin Light</i>
Lee Lov			<i>Lee Lov</i>
B. Boyd			<i>B. Boyd</i>
A. Boyd			<i>A. Boyd</i>
Jean W. Whelan			<i>Jean W. Whelan</i>
Lyn Forsyth			<i>Lyn Forsyth</i>
K. McNeill			<i>K. McNeill</i>
Lyn Murray	<i>Lyn Murray</i>		
Beverly Lewis	<i>Beverly Lewis</i>		
Van O'Brien	<i>Van O'Brien</i>		

PETITION FOR SEATING AT BUS STOPS

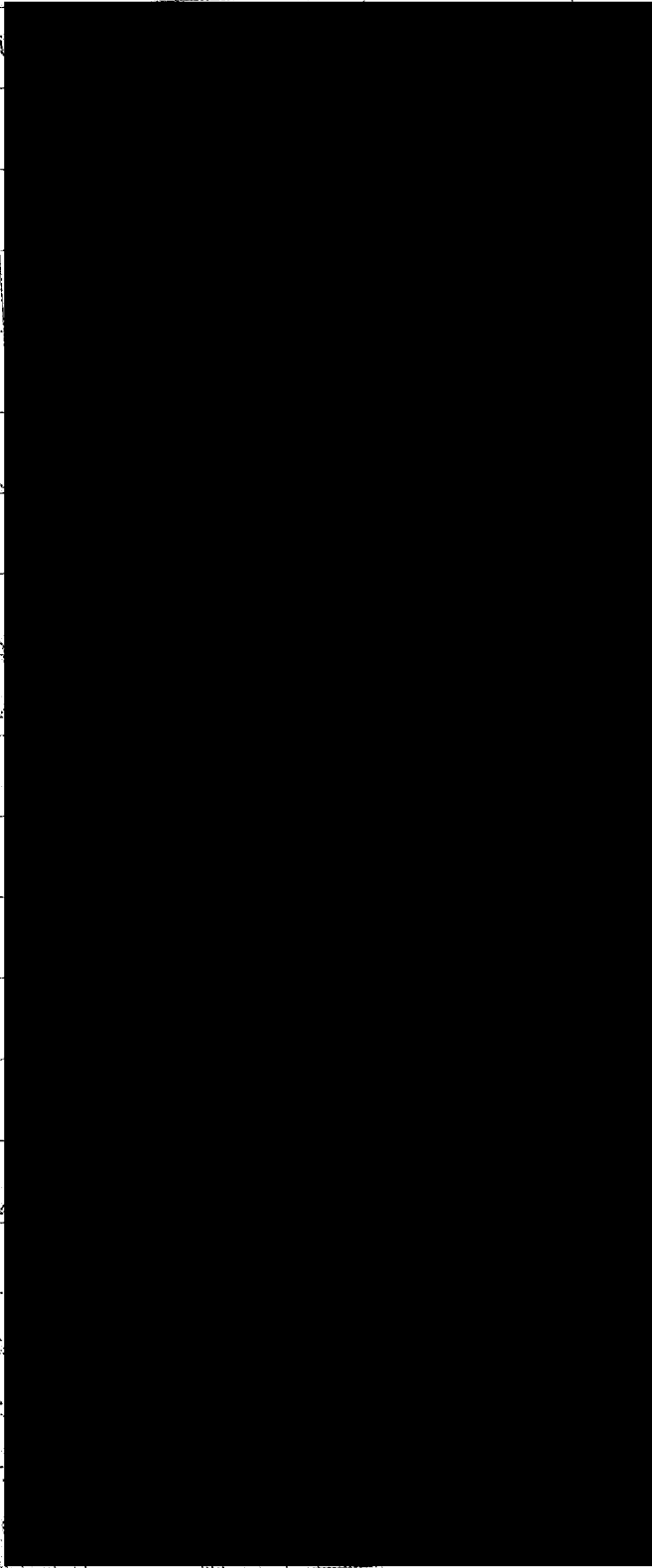
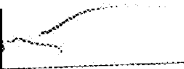
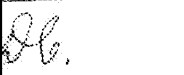
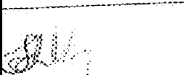
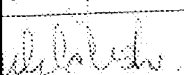
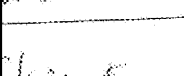
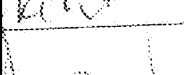
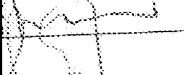
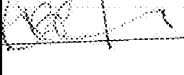
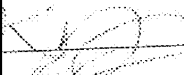
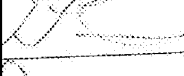
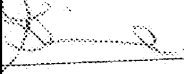

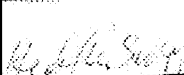
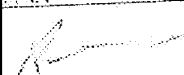
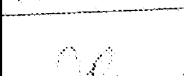
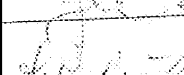
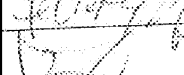
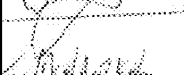
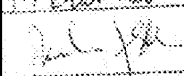
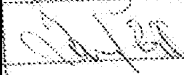
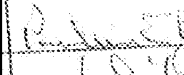
Name	Address	Phone number	Signature
Shene Mitchell			
Tye Walsh			
Travis Sapp			
Aidaa Ison			
E. Bennett			
N. Hobley			
Shona Burgess			
DAVID WILKS			
Emily Walsh			
Mrs. Darr			
Alberic			
UMCKIBS			
John Baker			
Margaret Bennett			
Donna Dav			
DOHEN RO			
Paul Green			
Martin Lane			
IAN AUSTIN			
Erica Fenn			
KME 1972			

PETITION FOR SEATING AT BUS STOPS

Ann
2014

Name	Address	Phone number	Signature
Miriam McLean			
Connor McLean			
Leanne Decocke			
Gene Drummond			
Paula Hoary			
GREG OGLE			
EM HOPE			
Middle Hill			
Paula Rae			
Lee Lee			
Sue Fearn			
Lynne Budge			
Pam Jam			
Lynne M			
Deen Joris			
Hazel Kay			
Rachel Blew			
A. Blewett			
Nailey Blew			
Tony Marley			

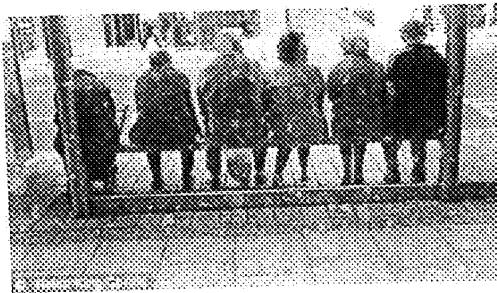
PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
M.A. O'BRYAN			
D. EODLING			
K. Schlitz			
W. Wildich			
J. Kent			
F. Freeman			
J. MARIE			
KIMM			
I. IRVIN			
D. IRVINE			
A. Scott			
H. Scott			
D. EVANS			
J. EVANS			
F. Zerafa			
W. Zerafa			
T. Mahlon			
M. Ellis			
I. R. H.			
P. Chaw			
M. Chaw			

PETITION FOR SEATING AT BUS STOPS

Name	Address	Phone number	Signature
Janet Smith			[Signature]
Doreen Powers			[Signature]
Sharon [unclear]			[Signature]
Leigh [unclear]			[Signature]
Leah Focle [unclear]			[Signature]
Kay [unclear]			[Signature]
Mary Alder			[Signature]
[unclear]			[Signature]
Marg [unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]
[unclear]			[Signature]

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Donna	[REDACTED]	[REDACTED]	[Signature]
Donna			[Signature]
Grace			[Signature]
Michelle			[Signature]
Kate			[Signature]
Paul			[Signature]
D. Roberts			[Signature]
L. Alvanon			[Signature]
SUE INCE			[Signature]
PAUL INCE			[Signature]
JAMES			[Signature]
A. Dee			[Signature]
D. Anderson			[Signature]
M. O'Sullivan			[Signature]
J. S. S. S.			[Signature]
A. HITTLE	[Signature]		
P. HITTLE	[Signature]		
R. C. H. M. O. Y.	[Signature]		
J. B. O. O. O. O.	[Signature]		
L. Rutherford	[Signature]		
B. W. E. S. T. R. A.	[Signature]		

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Scott Bennett	[REDACTED]	[REDACTED]	[Signature]
Colleen [unclear]			[Signature]
L. Wailes			[Signature]
Baptist			[Signature]
[unclear]			[Signature]
Rosie Camell			[Signature]
[unclear]			[Signature]
Muskruby			[Signature]
J. Coplan			[Signature]
KO'BRIEN			[Signature]
L.R. ANDERSON			[Signature]
D. Bartlett			[Signature]
Olivia King			[Signature]
Mandy [unclear]			[Signature]
Arthur [unclear]			[Signature]
Colleen [unclear]	[Signature]		
Chris [unclear]	[Signature]		
HORST KOTHE	[Signature]		
Mick Giam	[Signature]		
[unclear]	[Signature]		
[unclear]	[Signature]		

with name

PETITION FOR SEATING AT BUS STOPS



We, the citizens, request that Swan Hill Rural City Council provide seating at bus stops on routes serviced by the city bus. Shelters are required at the Wespac bank stop and at Alcheringa stop. Amongst those who rely upon this service are passengers who have health and mobility issues. Many find it difficult to stand for any length of time. To have seating available be of great benefit to them.

Name	Address	Phone number	Signature
Maree Baxter	[REDACTED]	[REDACTED]	Maree Baxter
Kevin Baxter			[Signature]
Daniel (C.A. 200)			[Signature]
C. Tolley			[Signature]
Alisha Hen			[Signature]
N. Cold			[Signature]
K. Stoveman			[Signature]
Heather Scott			[Signature]
M. Hale			[Signature]
B. STANDEN			[Signature]
lynosh			[Signature]
De. Deacon			[Signature]
ilhelberger			[Signature]
S. Babin			[Signature]
Barry Wilson			[Signature]
N. Sun			[Signature]
Albi K.			[Signature]
[Signature]			[Signature]
C. Paine			[Signature]
B. F. [Signature]			[Signature]
N. Lapcoyne	[Signature]		

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Name	Address	Phone number	Signature
Ami Johnston	[REDACTED]	[REDACTED]	[Signature]
Sharon Gore			[Signature]
Jennifer Jones			[Signature]
Kylie McKeen			[Signature]
A. Theobald			[Signature]
Kelly Taylor			[Signature]
Suzanne Adams			[Signature]
Judy Sutton			[Signature]
Mike Woodlett			[Signature]
Rebecca Star			[Signature]
R. Bush			[Signature]
R. Thomas			[Signature]
R. Sellick			[Signature]
Marg Robson			[Signature]
Ruby Mascher			[Signature]
James McShane			[Signature]
Dennis Moore			[Signature]
Mary Hoare			[Signature]
S. Eden	[Signature]		
J. Koshkani	[Signature]		

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Name	Address	Phone number	Signature
Sillian Williams	[REDACTED]	[REDACTED]	S. Williams
Zon Lever			Z. Lever
Narelle Brown			N. Brown
Toni Taylor			T. Taylor
Justice Taylor			J. Taylor
Bill McEwan			W. McEwan
Murray McKay			M. McKay
Barbara McKay			B. McKay
B. Halliwell			B. Halliwell
B. Hussey			B. Hussey
S. FRENCH			S. French
K. Hannan			K. Hannan
R. Johnson			R. Johnson
K. BURNBY			K. Burnby
B. HERITAGE			B. Heritage
A. Barrett			A. Barrett
D. STEED			D. Steed
G. LOFF			G. Loff
R. Stanton			R. Stanton
L. Keane			L. Keane
J. Keane	J. B. Keane		

mother
son

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Name	Address	Phone number	Signature
John Bell	[REDACTED]	[REDACTED]	[Signature]
Burne Cook			[Signature]
Sandra Phillips			[Signature]
Ian Phillips			[Signature]
Simon Young			[Signature]
Val Pandell			[Signature]
Nora [unclear]			[Signature]
FJ BRIGGS			[Signature]
GR Young			[Signature]
J STANLEY			[Signature]
K SCHWAB			[Signature]
A BLAKE			[Signature]
R CRISTO			[Signature]
CO Mearns			[Signature]
R Donaldson			[Signature]
D. Hayward			[Signature]
M ARNETT			[Signature]
J. ARNETT			[Signature]
D. MISCAMISH			[Signature]
Mary Goodwin			[Signature]
BORAN PAGE	[Signature]		

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Name	Address	Phone number	Signature
JEFF ROBERTS	[REDACTED]	[REDACTED]	[Signature]
WENDY STEVENS			[Signature]
Helen Donnan			[Signature]
Damon O'SHEA			[Signature]
Roscoe Day			[Signature]
Helen Day			[Signature]
Bob Cochrane			[Signature]
Todo Day			[Signature]
John Nicholson			[Signature]
ARAZN GARDNER			[Signature]
Lyn Harvey			[Signature]
Andee Paty			[Signature]
Lyn Walker			[Signature]
Alanna O'Leary			[Signature]
Marilyn Chisholm			[Signature]
Nancy Ward			[Signature]
Melissa Day			[Signature]
Lisa Smith			[Signature]
Zanna McCall	[Signature]		
Kirsty Hamilton	[Signature]		
Nelso McFadyly	[Signature]		

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Name	Address	Phone number	Signature
VANESSA WOODWARD	[REDACTED]		[Signature]
Mark			[Signature]
M.P. PIER			[Signature]
Margaret			[Signature]
Shirley Under			[Signature]
Lillian Fulton			[Signature]
Eric Tompkins			[Signature]
Eric			[Signature]
Thomas Lee			[Signature]
H. D. Castled.			[Signature]
J. Brunning			[Signature]
M. WELCH			[Signature]
E. SYDES			[Signature]
J. SYDES			[Signature]
M. KASABER			[Signature]
Angelo		[Signature]	
Kelby Paves		[Signature]	
Pauline Vase		[Signature]	
P. J. ...		[Signature]	

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Name	Address <i>SH</i>	Phone number	Signature
<i>Christine Jones</i>			<i>Christine Jones</i>
<i>Christine Jones</i>			<i>Christine Jones</i>
<i>Dennis Pearce</i>			<i>Dennis Pearce</i>
<i>R Carbau</i>			<i>R Carbau</i>
<i>James Rogers</i>			<i>J Rogers</i>
<i>DIANE EDWARDS</i>			<i>D Edwards</i>
<i>Jack Chambers</i>			<i>Jack Chambers</i>
<i>Chelsea Chambers</i>			<i>Chelsea Chambers</i>
<i>ANNE BARKER</i>			<i>A Barker</i>
<i>Judie Mitchel</i>			<i>Judie Mitchel</i>
<i>V. Pearce</i>			<i>Vivian Pearce</i>
<i>Milly Stone</i>			<i>Milly Stone</i>
<i>W. Blackthorn</i>			<i>W Blackthorn</i>
<i>Vanessa White</i>			<i>Vanessa White</i>
<i>Jessie Mann</i>			<i>Jessie Mann</i>
<i>Julie McLeer</i>	<i>Julie McLeer</i>		
<i>Nick Forrey</i>	<i>Nick Forrey</i>		
<i>Jen Trezise</i>	<i>Jen Trezise</i>		

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Name	Address	Phone number	Signature
A Horowitz	[REDACTED]	[REDACTED]	[Signature]
T. Reynolds			[Signature]
M. Mackay			[Signature]
G. Maddy			[Signature]
J. Maddy			[Signature]
B. M. M.			[Signature]
L. N. King			[Signature]
Mr. McCallum			[Signature]
Kim Martin			[Signature]
B. Howard			[Signature]
D. A. R. ...			[Signature]
S. De Traversa			[Signature]
John Bonito			[Signature]
James ...			[Signature]
S. ...			[Signature]
P. ...			[Signature]
W. ...			[Signature]
J. Pollard			[Signature]
Cheryl ...	[Signature]		
Nancy ...	[Signature]		

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Name	Address	Phone number	Signature
BOB WILKER	[REDACTED]	[REDACTED]	[Signature]
BOB WILKER			[Signature]
BOB WILKER			[Signature]
WILKINS			[Signature]
SIDNEY WILKINS			[Signature]
MARION WILKINS			[Signature]
KELLY WILKINS			[Signature]
P. WILKINS			[Signature]
LEONIE LILLIE			[Signature]
B. MARTINI			[Signature]
DEANNE WILSON			[Signature]
GOLLY WILSON			[Signature]
CLARE RAGGATH			[Signature]
GEOFF WILSON			[Signature]
JANE KERR			[Signature]
NICO MORTON			[Signature]
SHIRLEY HALE	[Signature]		
CHRIS BARNES	[Signature]		
JOHN DICKINSON	[Signature]		
LEONIE FULFORD	[Signature]		

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Name	Address	Phone number	Signature
Russell Parnon	[REDACTED]	[REDACTED]	[Signature]
C. Harriman	[REDACTED]	[REDACTED]	[Signature]
B. Harriman	[REDACTED]	[REDACTED]	[Signature]
A. B. Harriman	[REDACTED]	[REDACTED]	[Signature]
R. Wilson	[REDACTED]	[REDACTED]	[Signature]
J. Linn	[REDACTED]	[REDACTED]	[Signature]
F. SHIELDS	[REDACTED]	[REDACTED]	[Signature]
J. PYRES	[REDACTED]	[REDACTED]	[Signature]
B. WYNN	[REDACTED]	[REDACTED]	[Signature]
A. ENGLE	[REDACTED]	[REDACTED]	[Signature]
L. Branton	[REDACTED]	[REDACTED]	[Signature]
M. Kelly	[REDACTED]	[REDACTED]	[Signature]
S. Kelly	[REDACTED]	[REDACTED]	[Signature]
Michael Allan	[REDACTED]	[REDACTED]	[Signature]
Jeanette Allan	[REDACTED]	[REDACTED]	[Signature]
Iris Brown	[REDACTED]	[REDACTED]	[Signature]
GREG MAY	[REDACTED]	[REDACTED]	[Signature]
MARION	[REDACTED]	[REDACTED]	[Signature]
ROYER, Ungar	[REDACTED]	[REDACTED]	[Signature]
Dal KETTS	[REDACTED]	[REDACTED]	[Signature]
ARCHARD	[REDACTED]	[REDACTED]	[Signature]

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Name	Address	Phone number	Signature
Myra Marshall	[REDACTED]	[REDACTED]	<i>M Marshall</i>
C. NODEN			<i>C. Noden</i>
M. G. ZAVAN			<i>M. G. Zavan</i>
Chris Vanhousen			<i>Chris Vanhousen</i>
M. C. MURPHY			<i>M. C. Murphy</i>
J. HOFFMANN			<i>J. Hoffmann</i>
R. SWINBANK			<i>R. Swinbank</i>
J. RUTTEN			<i>J. Rutten</i>
D. WHITE			<i>D. White</i>
T. Womer			<i>T. Womer</i>
K. MITCHELL			<i>K. Mitchell</i>
John Kelly			<i>J. Kelly</i>
MILMA VERRON			<i>M. Verron</i>
L. CUNNINGHAM			<i>L. Cunningham</i>
S. MARCOTTA			<i>S. Marcotta</i>
E. STANBURY			<i>E. Stanbury</i>
L. DOYLE			<i>L. Doyle</i>
E. M. PAIR			<i>E. M. Pair</i>
Pam Pair			<i>Pam Pair</i>
M. CAMERON			<i>M. Cameron</i>
C. PAUL	<i>C. Paul</i>		

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Name	Address	Phone number	Signature
April Fulton	[REDACTED]		<i>April Fulton</i>
Chris McQuinn			<i>Chris McQuinn</i>
MARANDA RAY			<i>Maranda Ray</i>
BEVER DAVENPORT			<i>Bever Davenport</i>
DANN BRIDGMAN			<i>Dann Bridgman</i>
Dee-Dee Andrews			<i>Dee-Dee Andrews</i>
Lance Taylor			<i>Lance Taylor</i>
Rita Higgins			<i>Rita Higgins</i>
DAVID BLAKEMAN			<i>David Blakeman</i>
Kevin Holt			<i>Kevin Holt</i>
TRACEY KOLT			<i>Tracey Kolt</i>
Lure-Vann			<i>Lure-Vann</i>
STEVE LUSSEN			<i>Steve Lussen</i>
Simon Tomarich			<i>Simon Tomarich</i>
Annabelle Clarke			<i>Annabelle Clarke</i>
Nikita O'Shea			<i>Nikita O'Shea</i>
Cynthia Treweek			<i>Cynthia Treweek</i>
J H BULL			<i>J H Bull</i>
J. Waldron		<i>J. Waldron</i>	
A. Pettman		<i>A. Pettman</i>	
W. Corbett		<i>W. Corbett</i>	

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Name	Address	Phone number	Signature
Chris Vardas	[REDACTED]	[REDACTED]	[Signature]
Le Coathrow			[Signature]
R. Koughman			[Signature]
Wynne Bunch			[Signature]
B. WALSH			[Signature]
L. WALSH			[Signature]
H. BODDALL			[Signature]
N. & F. Pollock			[Signature]
Bar. Preece			[Signature]
Les Tompsett			[Signature]
Sarah Jones			[Signature]
John Boyd			[Signature]
J. WATKINS			[Signature]
G. Ramsey			[Signature]
Wynne Bunch			[Signature]
A. Jones			[Signature]
Meredith Brundage			[Signature]
J. Bunting			[Signature]
Beavis			[Signature]
R. EVANS			[Signature]
[Signature]	[Signature]		

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Name	Address	Phone number	Signature
Sue Bryner	[REDACTED]		Sue Bryner
KASSY BRYNER		Kassy Bryner	
MARIE WARDLE		Marie Wardle	
Rachelle Mary Ann		Rachelle Mary Ann	
Ray Wain		Ray Wain	
Linda		Linda	
Joan Scott		Joan Scott	
Jan Scott		Jan Scott	
Yvonne Alford		Yvonne Alford	
Blackfield		Blackfield	
Rosal Ross		Rosal Ross	
Riley Curwin		Riley Curwin	
Pat Ward		Pat Ward	
Ellen		Ellen	
Tracy Smith		Tracy Smith	
Barbara		Barbara	
Sue Mack		Sue Mack	
Joy Meade		Joy Meade	
Barbara		Barbara	
W. Roberts		W. Roberts	
C. Clark	C. Clark		

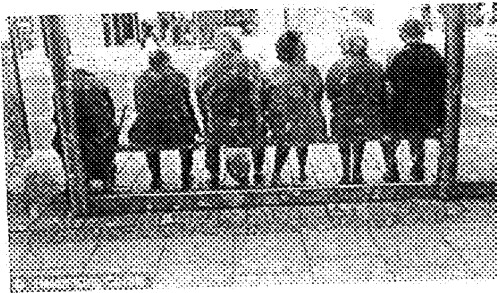
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Name	Address	Phone number	Signature
Nancy Dool	[REDACTED]	[REDACTED]	[Signature]
Dawn Storey	[REDACTED]	[REDACTED]	[Signature]
MEG STOREY	[REDACTED]	[REDACTED]	[Signature]
PAULINE MCGEE	[REDACTED]	[REDACTED]	[Signature]
LINDSAY MCGRAE	[REDACTED]	[REDACTED]	[Signature]
Aden Trafford	[REDACTED]	[REDACTED]	[Signature]
Cathy Hampton	[REDACTED]	[REDACTED]	[Signature]
Robyn Wilkie	[REDACTED]	[REDACTED]	[Signature]
GLENN WINDFORD	[REDACTED]	[REDACTED]	[Signature]
JANE KENNEDY	[REDACTED]	[REDACTED]	[Signature]
Gaye KIDD	[REDACTED]	[REDACTED]	[Signature]
JANE STRAUSS	[REDACTED]	[REDACTED]	[Signature]
Janet Brown	[REDACTED]	[REDACTED]	[Signature]
Kathleen Adkins	[REDACTED]	[REDACTED]	[Signature]
Karen Copple	[REDACTED]	[REDACTED]	[Signature]
Jane Cooper	[REDACTED]	[REDACTED]	[Signature]
Ann Wilson	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]
[Signature]	[REDACTED]	[REDACTED]	[Signature]

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Name	Address	Phone number	Signature
K. M. J. D...	[REDACTED]	[REDACTED]	[Signature]
D. SHIFFER			[Signature]
M. Maher			[Signature]
J. Park			[Signature]
D. ...			[Signature]
MS HOUSE			[Signature]
L. Toppin			[Signature]
ALEC SMITH			[Signature]
...			[Signature]
L. Spring			[Signature]
Lindy Ford			[Signature]
...			[Signature]
Alyssa Talbot			[Signature]
M. ...			[Signature]
B. ...			[Signature]
C. ...			[Signature]
J. BRITTEN			[Signature]
S. ...			[Signature]
i. Michalezy			[Signature]
D. Weaver			[Signature]
J. ...	[Signature]		

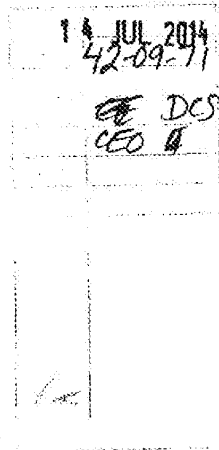
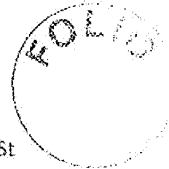
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Name	Address	Phone number	Signature
Tina Plawster	[REDACTED]	[REDACTED]	[Signature]
D. Hammond			[Signature]
Walt Kuttler			[Signature]
Ted Plawster			[Signature]
Rodney Jones			[Signature]
Annette Van der			[Signature]
Feolan Kwan			[Signature]
D. Smith			[Signature]
MARCIE VANZON			[Signature]
MARCK LAMP			[Signature]
[Signature]			[Signature]
Brook Gyles			[Signature]
V. Anderson			[Signature]
V. Corles			[Signature]
G. Williams			[Signature]
[Signature]			[Signature]
[Signature]			[Signature]
B. Wayte			[Signature]
G. PERCY			[Signature]
D. PERCY			[Signature]
T. WAGG	[Signature]		

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S Pentreath
15 McPherson St
Swan Hill 3585

Swan Hill Rural City Council
CEO
Splatt St
Swan Hill 3585

10 July 2014

Dear Mr Miller and Councillors

RE: 2014-15 DRAFT BUDGET

In response to the recently released draft budget I would like to make comment on the following points.

PIONEER SETTLEMENT

I believe the proposed introduction of the donation entry for locals would potentially be detrimental to the perception of the Pioneer Settlement in the eyes of the ratepayers. This donation fee is in addition the rates and levies contributed by rate payers.

The comparison to the Art Gallery donation box at the recent public forum is actually incomparable as the Art Gallery is free entry or by donation. In addition to the donation box, the Art Gallery also has a Membership Program with many privileges and the donations are tax deductible.

In any case, the Pioneer Settlement currently has a voluntary donation box for the restoration of the Gem.

My belief is that the Pioneer Settlement needs to concentrate on attracting more people through the gate to special events with entrance fees; for example, the Food and Wine Show and hiring of venues.

The Pioneer Settlement has a potential regular market of approximately 10,000 people – the residents of Swan Hill. Accordingly it has to be made affordable for that market.

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My next concern in relation to this is the exorbitant cost of hire of the venues, in particular the Dumosa Hall. The current price is excessive at \$650 (plus \$110 over four hours) without Council's proposed increase which increases to \$680.

HERITAGE PRESERVATION GRANT PROGRAM

I would like to see a Heritage Preservation Grant Program implemented in the Council budget to preserve heritage listed places. It could include a dollar-for-dollar grant program and/or loan program.

Should the money not be allocated in a financial year it could be forwarded to the Pioneer Settlement for restoration purposes or to Council assets of heritage significance.

Thank you for the opportunity to submit this proposal.


Steven Pentreath

Deanne Earle
PO Box 239
Woorinen South, Vic. 3588

5/13/2014

Mr Dean Miller
Chief Executive Officer
Swan Hill Rural City Council
PO Box 488
SWAN HILL, Vic. 3585

Dear Sir,

I wish to tender my submission in relation to the SHRCC 2014/2015 Draft Budget.

I wish to congratulate the Council on their decision to allocate funding to assist in the investigation of sewerage to the Woorinen South Township.

I wish to register my disappointment in council not taking over the funding for the Youth Support Officer position within council. With the increase in the instances of Youth self-harm, suicide and depression in our area I am concerned that by council cutting its workforce within the Youth Support Program by half, It could be sending the message to outside funding bodies and Mental Health Organisations that council does not care about the problems in our area.

With other youth service providers in our area at risk of losing funding at the end of 2014 I believe council should be proactive in maintaining its services in this area.

I question whether council undertook an assessment of the importance and positive outcomes this position provided to the youth of Swan Hill.

With council cutting the staff in the Youth Support Program by 50% this will severely impact the ability of the remaining employee to research and apply for other youth based funding. Not to mention limiting the delivery of programs such as Coaching Young People for success which is a vital program being delivered in local Schools to adolescents at risk of disengaging from education and society.



It has been reported that some councilors believe "Only ferals use Youth Inc" regardless of social standing all youth of Swan Hill should be entitled to feel supported and valued. I believe comments such as this prove that some of our councilors are out of touch in regards to issues that affect the Youth in the Swan Hill region.

Thank you for considering my submission.

Regards,

Deanne Earle

Montana Earle
PO Box 239
Woorinen South, Vic. 3588

5/13/2014

Mr Dean Miller
Chief Executive Officer
Swan Hill Rural City Council
PO Box 488
SWAN HILL, Vic. 3585

Dear Sir,

As a member of the Swan Hill NOVO Youth Council I would like to submit the attached petition as a show of support for the Youth Support Program.

As a young person living in Swan Hill I am worried about the increase in Youth Self Harm, Teenage Pregnancies, Drug abuse and Suicide. Statistics show all these issues are on the increase and Swan Hill has some of the highest rates in Victoria.

I am worried that the loss of the Youth Support Officer position at Youth Inc. will mean fewer events will be run in Swan Hill for the youth. I have spoken to a lot of kids who have attended programs that have been run by Youth Inc. and the feedback has been positive.

I have been a Member of Youth Council for over 12 months and in this time only Cr McPhee and Cr Cruickshank have attended any of our meetings. Do the other Councilors even understand what is delivered at Youth Inc. or care what Youth Council is trying to do?

I ask council to please reinstate the Youth Support Officer position .

Yours sincerely,

Montana Earle



PETITION

To the Councillors of the Swan Hill Rural City Council,


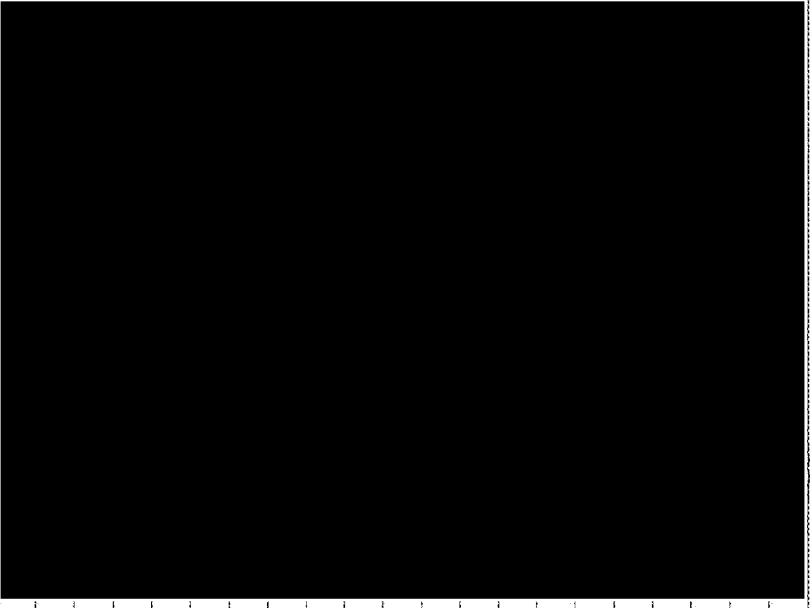







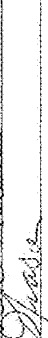
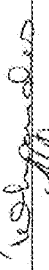


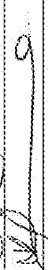
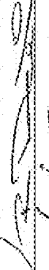







We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Jody Hanson	<i>[Signature]</i>		
Monica Meyers	<i>[Signature]</i>		
Griffin Cambridge	<i>[Signature]</i>		47
Del Raine	<i>[Signature]</i>		46
Christine Oliver	<i>[Signature]</i>		65
Kevin McDonald	<i>[Signature]</i>		57
Chapron Telford	<i>[Signature]</i>		18
LINA KNUDSEN	<i>[Signature]</i>		46
Grace Smith	<i>[Signature]</i>		46
Dianne Warmer	<i>[Signature]</i>		76
RANDY BARNES	<i>[Signature]</i>		69
Jackie Rowan	<i>[Signature]</i>		47
Alva Spass	<i>[Signature]</i>		25
Eileen Wightford	<i>[Signature]</i>		51
Beth Anderson	<i>[Signature]</i>		
Krista Hill	<i>[Signature]</i>		
Jane Hanson	<i>[Signature]</i>		
Dawn White	<i>[Signature]</i>		
Helen Kirkman	<i>[Signature]</i>		
MARISIA MIDDLE	<i>[Signature]</i>		30
PAUL ANDERSON	<i>[Signature]</i>		43

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Cassie Andrews			41
Rheannon Gleeson			24
Shelley Webster			51
Sharon Pearce			51
Gracy Pearson			35
Pete Keenan			17
Amelita Mitchell			19
Mel Jessup			50
Sarina Mousara			63
Alfreda Schack			48
Diane Fraser			59
Wenderson			37
Tony Arnold			23
Mary Korman			20
Cheryl Korman			24
Katrina Salano			50+
Raylene Pedini			31
Brooke Tracey			14
JAMIE GOODWIN			38
Karen Wilson			29
Lisa McDougall			

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	(Street, town) Address	Age (Optional)
EDUARDO ORLANDO	<i>Eduardo Orlando</i>		50
John Cook	<i>John Cook</i>		19
BOB SMYTH	<i>Bob Smyth</i>		-
Charles Des Hester	<i>Charles Des Hester</i>		13
Charmie Trevelin	<i>Charmie Trevelin</i>		16
Kate Murtley	<i>Kate Murtley</i>		15
Jasmine Priede	<i>Jasmine Priede</i>		15
J HALL	<i>J HALL</i>		48
Regina Moore	<i>Regina Moore</i>		15
Donna Wright	<i>Donna Wright</i>		16
Tyler McGregor	<i>Tyler McGregor</i>		16
Lily Holloway	<i>Lily Holloway</i>		16
Caitlyn Reilly	<i>Caitlyn Reilly</i>		16
Claire Threlgold	<i>Claire Threlgold</i>		16
Hayley Sinapius	<i>Hayley Sinapius</i>		15
Jenae Beags	<i>Jenae Beags</i>		15
James Nicholls	<i>James Nicholls</i>		15
Breake Smith	<i>Breake Smith</i>		14
Bryden Innes	<i>Bryden Innes</i>		16
Blake Highway	<i>Blake Highway</i>		15
Bill Withoos	<i>Bill Withoos</i>		16

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	email	Age (Optional)		
Taylah Baird		[REDACTED]	[REDACTED]	14		
Tara Higgins				13		
Morgan Silvester				13		
Genesis Ciancio				16		
Shannon Arch				14		
Hannah Everitt				13		
Jemma Flower				13		
Bailey Blewett				13		
Bella Leach				14		
Denisha May				16		
Tara Gillies				16		
Deborah Sampayan				17		
Emily Carroll				16		
CASH UNGER				13		
Sam Giscard				14		
Sam Giscard						
Bree Schultz						27
Robert Walker						24
Shannon Day						24
Bridget Adams Brown						24
Sarah Clark				24		

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Kasey O'Bree	Kasey O'Bree		14
Megan Rowlands	Megan Rowlands		14
Bev Scott	Bev Scott		34
Sam Smith	Sam Smith		13
Zoe Johnson	Zoe Johnson		14
Brytown Wood	Brytown Wood		13
Leigh Beattie	Leigh Beattie		14
Billy Wandler	Billy Wandler		3.8
Tasneem Saad	Tasneem Saad		14
Elizabeth Fulton	Elizabeth Fulton		13
Stuart McGeer	Stuart McGeer		44
NERIDA HOARE	N. Hoare		50
Monica Threadgold	M. Threadgold		14
Lyette Healyman	Lyette Healyman		13
Jordan King	Jordan King		13
Ronnie Nikolic	Ronnie Nikolic		17
Danny Gardner	Danny Gardner		44
Costene Sampayan	Costene Sampayan		13
Shannon Fox	Shannon Fox	13	
Jenna Bibby	Jenna Bibby	13	
Clare Abble Marsh	Clare Abble Marsh	44	

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Email	Address	Age (Optional)
PAULETTE VARGAS	<i>P Vargas</i>			30
MEAGAN MCGREGOR	<i>M McGreg</i>			35
LEANNE DAVEY	<i>L Davey</i>			42
GEORGIA CLARKE	<i>G Clarke</i>			20
LAURA FLEMING	<i>L Fleming</i>			20
Rachael Pumphrey	<i>R Pumphrey</i>			44
Tamara Shepherd	<i>T Shepherd</i>			19
Margaret Wilson	<i>M Wilson</i>			47
LOUISE ROTHOE	<i>L Rothoe</i>			32
Arpia Mygoun	<i>A Mygoun</i>			—
Erin Cuthbert	<i>E Cuthbert</i>			—
Quinn Fleming	<i>Q Fleming</i>			20
Michelle Fleming	<i>M Fleming</i>			13
Miss Durne	<i>M Durne</i>			14
Laura Luby	<i>L Luby</i>			14
Rebekah Jones	<i>R Jones</i>			16
Nikka Arnott	<i>N Arnott</i>			42
Aimee O'Connor	<i>A O'Connor</i>			14
Taylor Kover	<i>T Kover</i>			21
Kelsey McCoy	<i>K McCoy</i>			23
Raquel Graham	<i>R Graham</i>			—

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Email	Age (Optional)
Morgan Silvester	Morgan			14
Sally Matthews	Sally Matthews			14
Cinara Vargas	Cinara			14
Shelby Olney	Shelby Olney			14
Chayse Freeman	Chayse Freeman			16
Montana Earle	Montana Earle			16
Felicity Lauer	Felicity Lauer			15
Ryanne Jennings	Ryanne Jennings			58
Deborah Spin	Deborah Spin			14
Nahia Nguyen	Nahia			39
Leanne Silvester	Leanne Silvester			13
Ely Daverata	Ely Daverata			14
Katy Hylak	Katy			14
Ronan Quinn	Ronan			14
Julie Rowe	Julie Rowe			54
Keely Magnusson	Keely Magnusson			14
Olivia Alexander	Olivia Alexander			14
Sarah Deolan	Sarah Deolan			14
Amy Lewis	Amy Lewis			13
Ally Voigt	Ally Voigt			

WIRENE

PETITION

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To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.





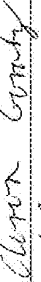


optional

Name	Signature	Email Address	Age (Optional)
Chelsea James	<i>Chelsea James</i>		12
Rhiann O'Meara	<i>Rhiann O'Meara</i>		13
Teaghan Glare	<i>Teaghan Glare</i>		12
Tanea Klakker	<i>Tanea Klakker</i>		12
Natalie Fazzalari	<i>Natalie Fazzalari</i>		12
Tessa Dwyer	<i>Tessa Dwyer</i>		12
Kasey Frost	<i>Kasey Frost</i>		24
Bella Fedele	<i>Bella Fedele</i>		13
Amber Gascoyne	<i>Amber Gascoyne</i>		12
Katie Milkinson	<i>Katie Milkinson</i>		12
Camilla Abraham	<i>Camilla Abraham</i>		12
Kathleen Brennan	<i>Kathleen Brennan</i>		12
Amaka Tassie	<i>Amaka Tassie</i>		12
Kate Whitliff	<i>Kate Whitliff</i>		13
Mia Whitliff	<i>Mia Whitliff</i>		13
Ryan Fox	<i>Ryan Fox</i>		13
Rupert Rose	<i>Rupert Rose</i>		14
Sabina Jafavi	<i>Sabina Jafavi</i>		15
Vijja Patel	<i>Vijja Patel</i>		14
Polly Zoh	<i>Polly Zoh</i>		16
Daigian Swacha	<i>Daigian Swacha</i>		2.5

PETITION


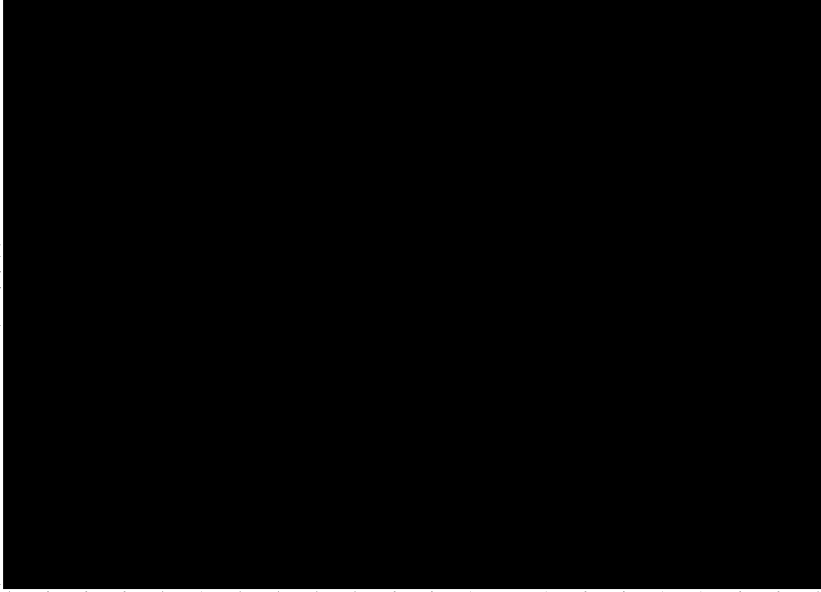

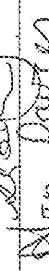
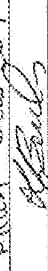

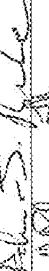



To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Cheryl Mott			16
Cheryl Freeman			16
Joseph Fox			16
AARON GARAHY			24
Karen Mott			56
LEIGHAN MOTT			52
			27

PETITION

To the Councillors of the Swan Hill Rural City Council,
 We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Tiffany Bolton			
Sue Grimley			
SANDRA GODWIN			
ALAN DAVIES	Alan Davies		
LOUI BROOKS			
Brad Hutchinson			
Arleen Burke	Arleen Burke		
Andrew Menzies			
Jenny Bryant	Jenny Bryant		
Lee Ryan	Lee Ryan		
Griff Ryan	Griff Ryan		
Jo Tavenga			
Michelle Subillife			
Eddie Ford	Eddie Ford		
Wesley Dutton	Wesley Dutton		
Adam Didcock	Adam Didcock		
Mark Stevenson	Mark Stevenson		
Boban Stevenson			
Lidi Stevens	Lidi Stevens		

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	(optional) Address	Age (Optional)
Russ Hargreaves	<i>[Signature]</i>		50
Anton Foster	<i>[Signature]</i>		26
Kade Bonfield	<i>[Signature]</i>		17
Paul Bonfield	<i>[Signature]</i>		12
Kathryn Ballantine	<i>[Signature]</i>		24
Michelle Jackson	<i>[Signature]</i>		10
Michelle Brown	<i>[Signature]</i>		18
Leanne Jackson	<i>[Signature]</i>		17
Michelle Ballantine	<i>[Signature]</i>		18
Chelsea Hargreaves	<i>[Signature]</i>		23
Rachel O'Leary	<i>[Signature]</i>		12
Tessa Myers	<i>[Signature]</i>		13
Lara Lally	<i>[Signature]</i>		14
Fery Whitby	<i>[Signature]</i>		5/
Stephanie Hanson	<i>[Signature]</i>		22
Travis Barber	<i>[Signature]</i>		15
De Silvester	<i>[Signature]</i>		17

PETITION

To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Email	Address / Optional	Age (Optional)
Ronan Jones	Ronan			12
Sue Purhill	Sue			Not telling
Kerley Tiffet	Kerley			14
Lily Chapmanere	Lily			
Jade Taylor	Jade Taylor			14
Melissa Rushin	Melissa Rushin			14
Malia Coaling	Malia Coaling			13
David McDonald	David McDonald			12
Ronan Quinn	Ronan			14
Madison Wiley-Davies	Madison Wiley-Davies			14
Brady Neek	Brady			14
Simone Steer	Simone Steer			14
Kate Davsie	Kate Davsie			14
Riley Mead	R. Mead			14
John Spils	J. Spils			5
Cherry Johnson	Cherry Johnson			56
Tom Matthews	Tom Matthews			59
Wayne Matthews	Wayne Matthews			60
				29



PETITION

To the Councillors of the Swan Hill Rural City Council,

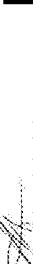




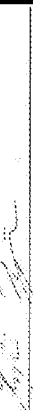







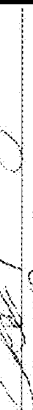
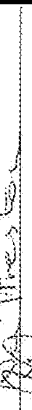
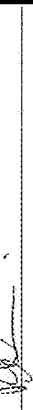
We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Kerry Roberts		[Redacted Address Column]	27
Karen Brown			27
Lara Galley			27
Oscar Glass			13
Colin McCannell			14
Liane Abbington			16
Charlie King			14
Kylie Graham			21
Colleen Wray			16
Frances Rowling			13
Rachel Elck			50s
Alan Brown Bryan			21
Jack Ritchie			14
Amy Davies			33
Annette Scafo			

PETITION







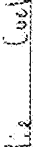


To the Councillors of the Swan Hill Rural City Council,

We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Loni Lambert			50+
Leslie Shannan Kelson			50+
WENDY FOOT			58
Belinda Horknes			33
Brenda Stichter			33
Ruthie Tassman			43
Jessica Rose			18
KYM EGAN			43
Beckie Williamson			56
Ann Young			64
Belene Hartshorn			56
Deb Knorr-McCarthy			50+
Monique Ryan			46
TARIN TAYLOR			36
Nan Pearson			63
Beckie Lambert			50

PETITION

To the Councillors of the Swan Hill Rural City Council,
 We, the undersigned, call on the Swan Hill Rural City Council to stop the proposed cutting of funds to the Swan Hill Rural City Council Youth Support program.

Name	Signature	Address	Age (Optional)
Bradie Cuchname			16
Rhonda Swan			29
Late Crocker			15
Teresa Leachla			25
Karinda Gallo			15
Blake Heighway			15
Rhonda Bracks			15
Kenny Dickson			48
Angus Swens			39
KBO Johnson			27
Lea Reynolds			25
Simon Oldfield			
Lynda McFarlan			24
Kassy East			49
Yvonne Bayer			53
Kelvin Penhew			20
Sed O'Brien			

SECTION F – TO CONSIDER & ORDER ON COUNCILLOR REPORTS

Cr Norton

Budget Information Session – Swan Hill
Nyah District Lions Club change over meeting
MAV Rural Planning Conference
MAV Board meeting
Nyah District Action Group meeting

Cr Katis

Meeting with Peter Crisp MP
Grant announcement for CCTV Cameras in Robinvale
Victorian Flooding Strategy in Mildura
NAIDOC raising of the flag ceremony, Robinvale

Cr Crowe

Sunrise Rotary changeover dinner

Cr Cruickshank

Loddon Mallee Resource & Recovery Forum
Raw Talent program
Swan Hill Motorcross National Championships
Business Breakfast at Spoons

Cr Adamson

On leave of absence

Cr Kiley

NGA Conference in Canberra
Swan Hill Inc Board meeting
Farmer's Market Feasibility Study

Cr McPhee

ABC Radio interview
Budget media meeting with Guardian
Book launch at Library (Ariel's Charm)
Meeting with CEO re Transcontinental Rail Link and North West Rail Strategy
Association of Independent Retirees meeting
Funding announcement by Peter Walsh (Bicycle Track from Swan Hill to Lake Boga)

ALGA Conference in Canberra (refer report below)
Budget Information Session in Swan Hill
Budget Information Session in Robinvale
Meeting with Peter Crisp
Funding announcement by Peter Walsh (showgrounds lighting of football ground)
3SH Radio interview
Mayor/CEO Meeting
Opening of St Mary's McKillop College Science Wing
ABC Radio interview
Opening of family room at Woorinen South Pre-School
Business breakfast at Spoons
Interview regarding multiculturalism in Swan Hill
Send off for Janelle Earle at EDU
Travel to Yamagata (refer report below)
NAIDOC march & opening at Town Hall
Mayor/CEO meeting
ABC Radio interview
Racecourse Committee meeting (possible use of land at south entrance to Swan Hill)
Mayor/CEO meeting

ALGA Conference – Canberra 15th to 18th June 2014

15th June

- Flew out of Melbourne at 1.25pm to Canberra, with Councillor Kiley and CEO.
- Attended welcome event that evening at Convention Centre.

16th June

- Cr Kiley, CEO and I had a meeting at Parliament House with Hon Jamie Briggs, also present was Andrew Broad. Discussion around Natural Gas for Murray River Towns and how it came about. Requested representation from Federal Government to State Government to ensure Swan Hill is included in the first phase of the rollout.
- MRGC Mayor's and CEO's met with the Deputy Prime Minister, Hon Warren Truss, at Parliament House, Andrew Broad was also in attendance. We discussed the following issues:
 - Regional Development Australia Committees, future model and timing.
 - Regional Infrastructure and Development Grants, timing and model.
 - Renewal Funding, Roads to recovery and bridges.
 - Financial Assistance Grants, impacts on Local Government.
 - National Infrastructure Investments;
 - River Crossings(Echuca, Swan Hill, Yarrawonga, etc)
 - Transcontinental Rail Link, freight and passenger impacts

- Cr Kiley, CEO and I attended at the ABS House and met with senior staff from the Australian Statisticians Department. Discussion around how we believe the ABS statistics are incorrect in respect to the numbers of people living in the Robinvale area. The impact this has on the funding we receive and how can we help in future to ensure the statistics provide a more accurate picture.
- Cr Kiley, CEO and I met with the Advisor to Fiona Nash at Parliament House, Andrew Broad was also in attendance. Advocated on behalf of the Swan Hill Hospital, for funding to further develop the hospital.
- Attended ALGA dinner at the Convention Centre.

17th June

- MRGC Mayor's and CEO's met with Craig Knowles, the Chair, Murray Darling Basin Authority. The following issues were discussed:
 - Introduce MRGC
 - Socio-economic data
 - Murray Darling Association
 - Murray Darling Basin Authority Liaison
 - Water saving works and measures
 - Water Market Mechanisms
- MRGC Mayor's and CEO's met with Commonwealth Environment Water Holder. The following issues were discussed:
 - Introduce MRGC
 - Current status of Commonwealth water holder
 - Water Market and how water is sold by Commonwealth
 - Management of environmental water
 - Further engagement opportunities
- Dinner in the Great Hall at Parliament House.

18th June

- Return to Melbourne

When we were not involved in meetings, time was spent at the conference listening to a variety of speakers and motions put forward by Councils from around Australia, which directs what ALGA will advocate for on our behalf.

The dinners and breaks during the conference are a great opportunity for networking with Councillors from across Australia, and it certainly reinforces that our Council is working well and using our different views to advantage.

Yamagata Trip - 27th June to 4th July 2014

27th June

- Depart from Tullamarine Airport to Sydney then Tokyo

28th June

- Arrive Narita Airport, Tokyo
- Travel by bus to Yamagata
- Welcome at Yamagata City Hall
- Depart to host family, had traditional dinner with host family

29th June

- Visit to Zao (City Flower Garden), saw the six sister city gardens including the Swan Hill garden.
- Visit to Yamadera:
 -
 - Lunch at restaurant at base of temple
 - attended a Japanese tea ceremony
 - watched a musical recital with Japanese traditional instruments
 - climbed stairs to temple at Yamadera
- Yamagata-Swan Hill Club welcome party with students and leaders. Entertained with a dance by a Maiko, followed by everyone doing the Hanagasa hat dance in a congo style around the room.

30th June

- Spent the day travelling with students and leaders
- Met Mayor and Chairperson at City Hall
- Tour of City Hall Building
- Attended Daiichi Elementary School, who did a Sumo display. We then looked at classes throughout school, while Aussie students were involved with children.
- Civic welcome dinner for students and leaders

1st July

- Attended 125th Anniversary Ceremony of the Establishment of Yamagata City. Awarded an Honorary Citizenship of Yamagata Award

- Inspection of Yamagata Agriculture Department, visited rose and vegetable farms
- Dinner with Mayor, followed by drinks with Australian leaders

2nd July

- Tour of Yamagata International Relations Centre, oversees the six sister city relationships Yamagata has around the world
- Tour of Industries in Yamagata
- Attended spa with host family, followed by rotating sushi bar for dinner with host family

3rd July

- Bullet train to Tokyo
- Tour of Emperor's Palace
- Visit to Temple via underground railway
- Flew out of Tokyo to Sydney then Melbourne

4th July

- Arrived in Melbourne, then drove home

This trip was very enjoyable and certainly a great opportunity to experience a different culture. I discussed with the Mayor the opportunities for both our cities and industries to learn from each other and the possibilities for economical development.

The best part of this experience was living with my hosts, the Takahashi family. I certainly thanked them for their hospitality and the way in which I was received into their family home. Their names were; Kozo (father), Masako (mother), Keisuke (Son), Junko (Daughter-in-law), Tomoki (eldest grandson) and Masaki (youngest grandson).

Paul Martin was the head leader and he was actually one of the students that went on the first exchange back in 1986. The experience gained by the hundreds of students who have been involved in this exchange over the years is difficult to measure, but I'm sure it helps them in appreciating what we have in our Municipality and they have become ambassadors for Swan Hill. Without this sister city relationship they would not have had this opportunity.

SECTION G – IN CAMERA ITEMS

10/14 Motion

MOVED Cr Kiley

That Council close the meeting to the public on the grounds that the report(s) included concerns contractual matters.

SECONDED Cr Adamson

The Motion was put and CARRIED

B.14.40 IN CAMERA CONSIDERATION OF CONFIDENTIAL REPORT

There being no further business, Mayor Cr Les McPhee closed the meeting at 6:21pm.