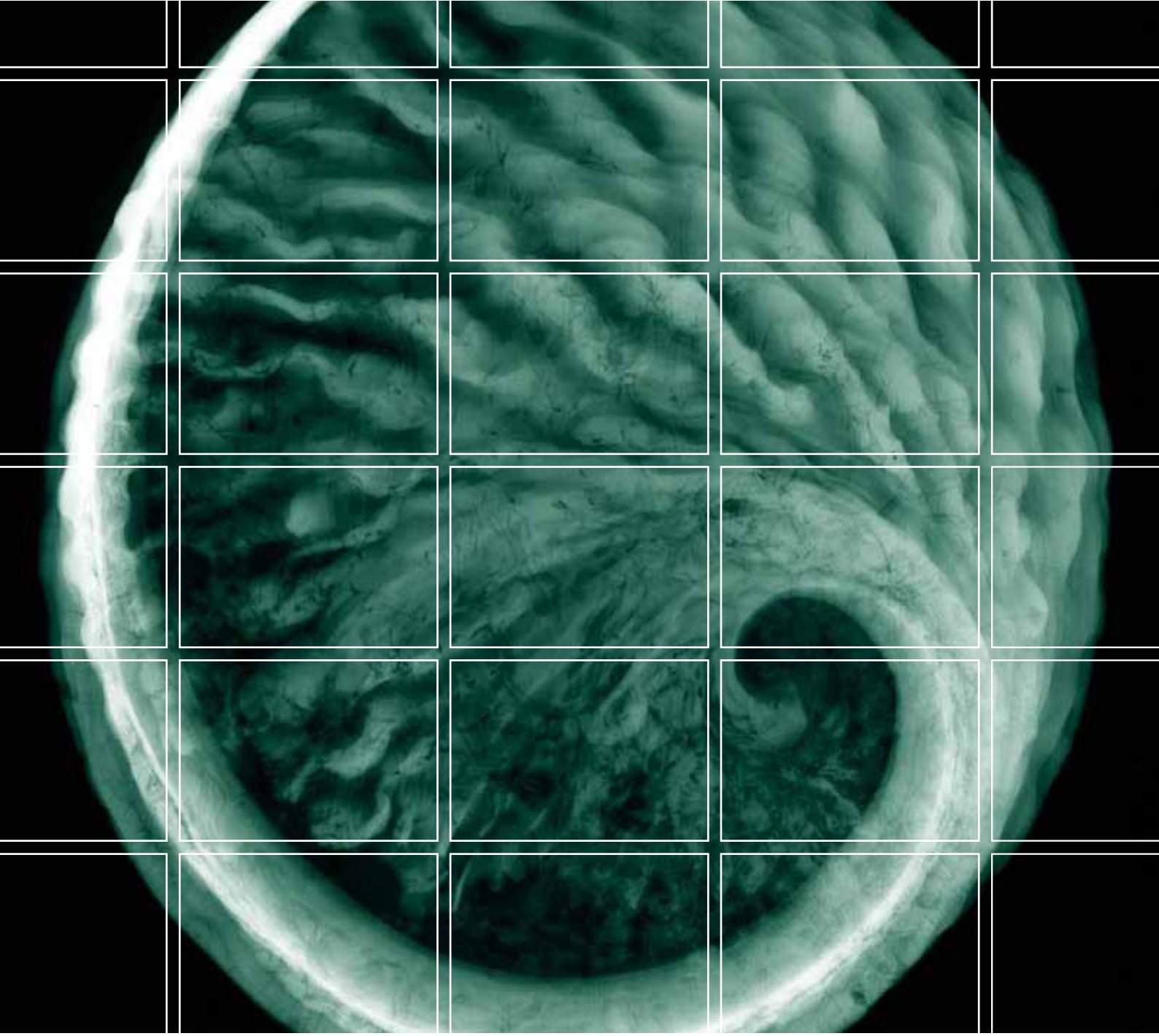

'Rosarii' Proposed Residential Subdivision Lot 2 DP 581117, Gregory Street, South West Rocks

Traffic Impact Assessment

Macleay Valley Property Group

January 2007

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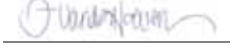
ERM

Approved by:	*Fiona van der Hoeven*
Position:	Project Director
Signed:	
Date:	*9 January, 2007*

Environmental Resources Management Australia Pty Ltd Quality System

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FINAL REPORT

Macleay Valley Property Group

'Rosarii' Proposed Residential Subdivision Lot 2 DP 581117, Gregory Street, South West Rocks

Traffic Impact Assessment

January 2007

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1 INTRODUCTION

This chapter provides background information on the project, the site and proposed development.

1.1 BACKGROUND

Macleay Valley Property Group commissioned Environmental Resources Management Australia (ERM) to undertake a traffic impact assessment for a proposed 45-lot residential subdivision to be constructed over three stages on Lot 2 DP 581117, Gregory Street, South West Rocks. The property is indicated on *Figure 1* (referred to as 'the site' throughout this report).

The site is located at South West Rocks, on the north-eastern corner of Gregory Street (also known as South West Rocks Road) and Arakoon Roads. The subdivision includes three stages to create a total of 45 residential allotments with primary vehicular access to Gregory Street via Cooper Street.

This report was prepared in accordance with NSW RTA *Guide to Traffic Generating Developments* (2002) guidelines and the Director General's Requirements issued by the NSW Department of Planning, dated 5 July 2006.

Chapter 1 of this report provides background information of the site and an outline of the proposed development. *Chapter 2* provides an examination of the existing road network and access conditions. An assessment of traffic impacts is provided in *Chapter 3* and the final chapter, *Chapter 4*, draws conclusions on the suitability of the proposed development having regard to traffic considerations.

1.2 SITE DESCRIPTION

The site is Lot 2 DP 581117, Gregory Street, South West Rocks, within the Kempsey Local Government Area (LGA).

It is bound by Arakoon Road to the south, Gregory Street to the west and Cooper Street to the north. Existing urban development is located directly to the east of the site, across Cooper Street to the northwest and across Gregory Street to the west.

The site has existing access from Cooper Street and there is currently one dwelling on the site. The balance is vacant land.

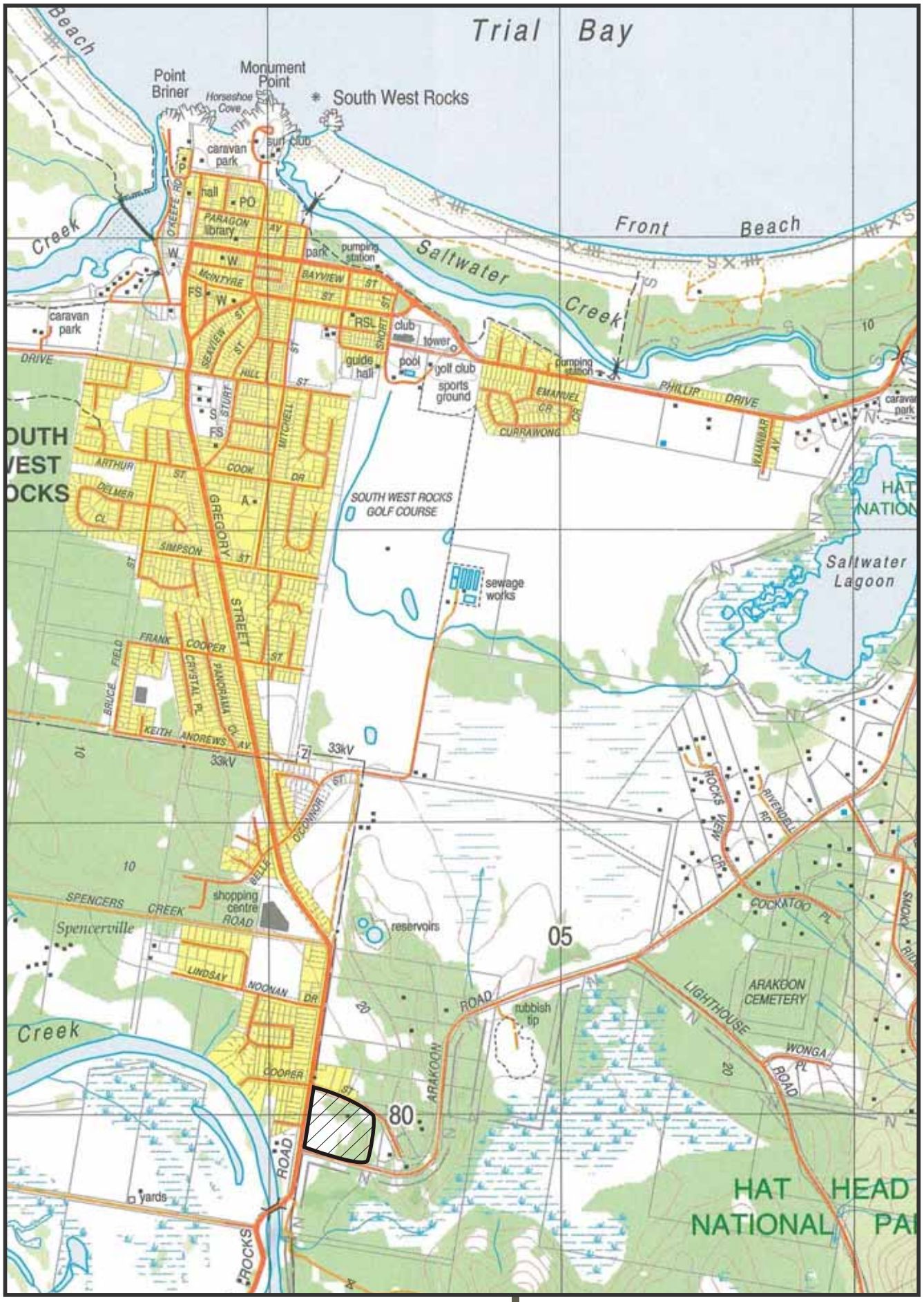


Figure 1 **Location of the study area**

ERM

0 500m

1.3 PROPOSED DEVELOPMENT

1.3.1 Overall Description

The proposed subdivision involves the subdivision of Lot 2 DP 581117 into 45 residential allotments and a lot for the existing Council sewer pump station. This will occur in three stages:

- Stage 1: annexing of the existing dwelling on the property (8057 m^2), creating a development lot and creating a lot for the existing Council sewer pumping station;
- Stage 2: development of 20 low-density residential allotments; and
- Stage 3: development of 24 low-density residential allotments and a lot for the detention basin.

A new access road to the site from Cooper Street will be required as part of Stages 2 and 3. Based on advice included in the Director General's Requirements, the new access road is not proposed to access Arakoon Road.

The allotments will be within 400 metres walking distance to and existing bus stop along Gregory Street and as such no bus route is proposed through the site.

1.3.2 Proposed Road Network

Rose Atkins Consulting Surveyors prepared a road layout for the site (*Figure 2*). The proposed road layout services proposed residential areas while allowing an allotment layout sympathetic with the topography of the site. Two-way roads are utilised throughout the subdivision.

Internal Roads

The road layout includes the following internal roads to service the development:

- *Internal Road No. 1* serves up to 41 allotments (approximately 360 vehicles/day), falling into the 'Local Street' category. The road reserve is 16 metres wide with a 9 metre pavement width.

- *Cooper Street* adjacent to Gregory Street would change from servicing approximately 10 allotments to 54 following Stage 3. The pavement width would be widened 9 metres in Stage 2 of the development.

- *Internal Road No. 2* serves up to about 22 allotments, (approximately 200 vehicles/day) and *Internal Road No. 3* serves only 6 allotments (54 veh/day). These roads can be classified as 'access places', requiring a road reserve of 15 metres with a pavement width of 7 metres.

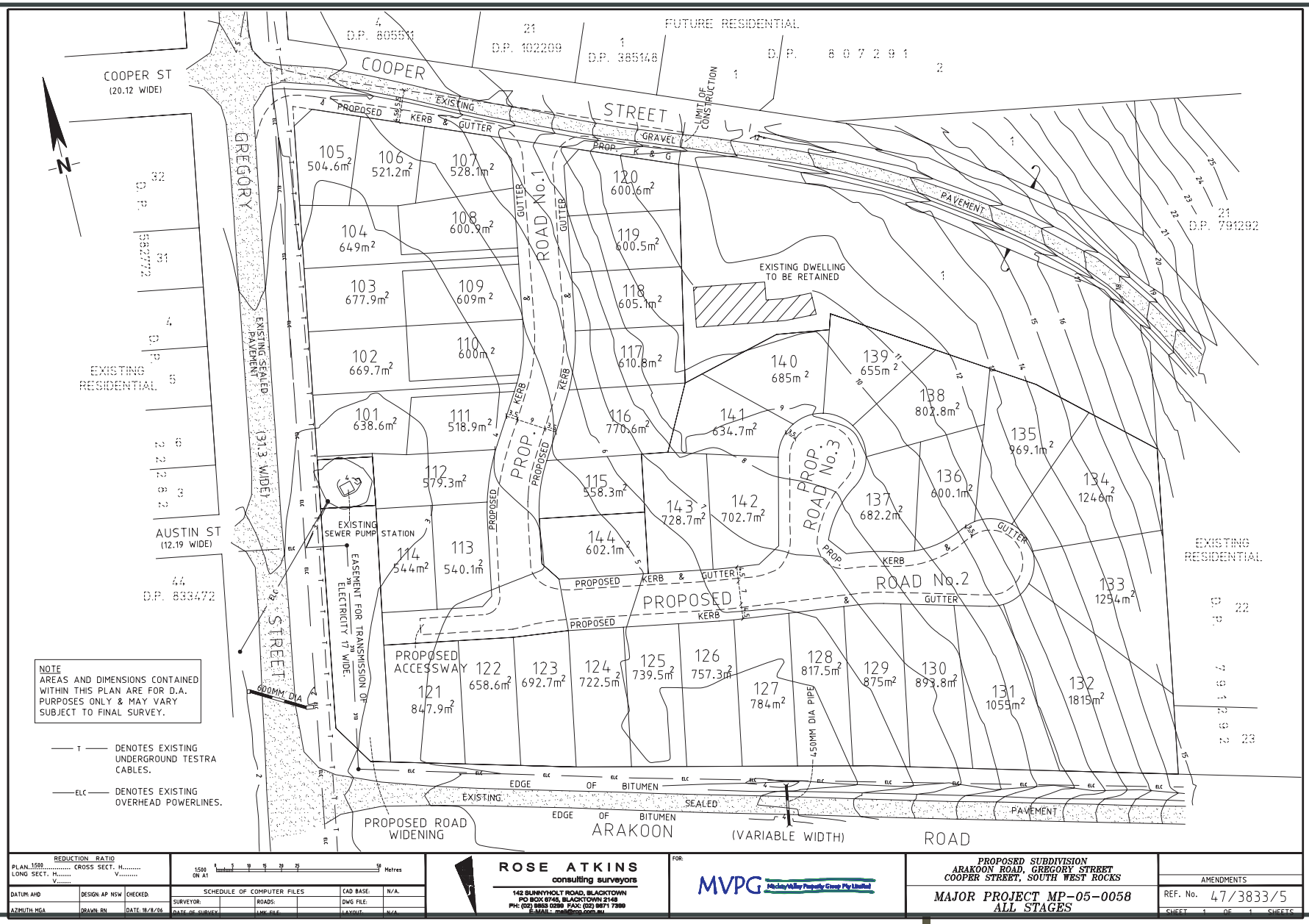


Figure 2 **Proposed Internal Layout**

Intersections

A new intersection of Cooper Street and Internal Road No. 1 would be required in Stage 2 of the development. Internal intersections are indicated in the proposed subdivision plans (*Figure 2*), and would use give way T-intersections throughout.

Potential works to upgrade the Cooper Street/Gregory Street intersection are examined below in *Section 2.5*.

Pedestrian and Cyclist Access and Mobility

The design of the subdivision allows pedestrian movements throughout the subdivision and to Gregory Street in two locations, namely via Cooper Street and across the detention basin. Footpaths will be provided along one side of the internal roads and along the frontage of Gregory Street (within the Gregory Street reservation.

Public Transport

The majority of the residential area is within 400 metres of the existing bus routes (Gregory Street) and bus stop in accordance with Kempsey DCP No 36 requirements.

1.4 CONSULTATION UNDERTAKEN

1.4.1 Kempsey Shire Council

In discussions with Council staff, (T. Castle, pers comm) regarding traffic and transport within the locality, it was indicated that:

- it was preferable for the development not link to Arakoon Road;
- pedestrian and cyclist access should be included, where appropriate;
- it is possible that major residential redevelopment to the north, opposite the site on Cooper Street (east), would not utilise Cooper Street; and
- a roundabout was considered a possible option for the future form of the intersection of Gregory Street and Cooper Street, subject to the traffic assessment results.

1.4.2 NSW Department Of Planning

NSW Department of Planning provided Director General's requirements for the application. In relation to traffic and access, this included the addressing of the following issues:

- **Subdivision layout, Desired Future Character and Sustainability:**
  - pedestrian and bicycle movements to, within and through the site.
- **Traffic Management and Access:**
  - consideration of relevant RTA and Council codes;
  - access points;
  - treatments for Coopers Street/Gregory Street intersection;
  - illustrate pedestrian and cyclist linkages; and
  - access for public transport.

It was indicated that the preference of the Department was to avoid a new road connection to Arakoon Road.

1.4.3 Roads And Traffic Authority (RTA)

In a letter dated 15 December 2006 the RTA advised that South West Rocks is a classified road under the care and control of Kempsey Shire Council and as such Council is responsible for the approval role for works along the road.

2 EXISTING ROAD NETWORK AND PREDICTED ROAD VOLUMES

This chapter describes the existing road network and future road volumes, access and transport network.

2.1 INTERNAL ROADS

Currently a single dwelling is located on the site with vehicular access obtained from Cooper Street (east of Gregory Street). A Council sewer pumping station is located adjacent to Gregory Street.

2.2 EXTERNAL ROADS AND INTERSECTIONS

The external road network is indicated in *Figure 1*. This includes:

- **Cooper Street (east of Gregory Street)**: This road operates as a local road servicing 10 residential allotments. The road reserve is 20m wide with 6 to 7 metre wide pavement. It has a 50 km/hr speed limit;
- **Cooper Street (west of Gregory Street)**: This road serves 20 allotments. The reserve is 20m wide with a relatively narrow (5.5 to 6m) sealed pavement. It has a 50 km/hr speed limit;
- **Gregory Street** is the main arterial road into South West Rocks with 60 km/hr speed limit. Adjacent to the site this road consists of a two-lane road with adequate lane width and formed gravel shoulders. Road frontage directly to residential dwellings is provided opposite the site, on the west side of Gregory Street.
- **Arakoon Road** links Gregory Street/South West Rocks Road with the residential and rural residential areas of Arakoon to the east. It also caters for tourist vehicle movements to Lighthouse Road, Hat Head National Park and the Arakoon State Recreation Area. The speed limit adjacent to the site is 80km/hr.

The primary access to the site is from the Cooper Street/Gregory Street intersection. This intersection is a simple four-way give-way intersection with no turning lanes (ie all approaches are two lane roads).

The site is located adjacent to the Arakoon Road/Gregory Street intersection. This is a give-way T-intersection.

2.3 *ADJACENT DEVELOPMENTS*

It is understood that there is a development application lodged with Kempsey City Council for a 17 lot subdivision of land on the north side of Cooper Street (DA number 2004/35), which will have only temporary access to Cooper Street. This is considered in the cumulative impact assessment, below.

2.4 *ROAD VOLUME DATA*

Having regard to population projections which indicate a year 2016 population of between 7,500 and 9,000 residents, it is envisaged that traffic growth will continue to occur on the collector road network of South West Rocks, particularly Gregory Street.

The historic growth trends in daily traffic volumes on the major road network have been determined from Council surveys and are summarised in *Table 2.1*. Results were augmented by a peak hour intersection survey undertaken by ERM at the Cooper Street/Gregory Street intersection. This intersection traffic survey was undertaken on Tuesday 5 September 2006.

Base data for year 2006 and 2016 traffic flows were estimated using the following:

- Gregory Street flows adjacent to the site were estimated based on the Council data survey undertaken just south of Arakoon Road in 1995 and the 2006 ERM traffic survey of the Cooper Street/Gregory Street intersection. These surveys indicated traffic flows increased by approximately 3% per annum (89 vehicles) over this period. This trend was extended to year 2016;

- Cooper Street (east) flows were based on the number of residential allotments in the Cooper Street (east) catchment, estimated at the standard RTA traffic generation rates (nine trips per dwelling per day), and for each development yield scenario as discussed in the section above; and

- Arakoon Road flows were estimated through linear projections from Council data obtained in previous years (1995, 2003).

Table 2.1 Road Volume Data and Predicted Year 2016 Flows (Vehicles/day), Base Case

Road	Location	1995 Data	2002 Data	2003 Data	2006 Estimate	2016 Estimate
Arakoon Road	East of Gregory Street	558	-	768	846(1)	1,110 (1)
Gregory Street	South of Arakoon Road	2,936	-	-	-	-
	North of Arakoon Road	-	-	-	3,910 (2)	4,795 (3)
	South of Belle O'Connor Street	-	5,985	-	-	-
Cooper Street (4)	East of Gregory Street: 10 dwellings	-	-	-	90	90
	West of Gregory Street: 20 dwellings	-	-	-	180	180

(1) Estimated from Traffic Growth trends, Year 1995 to 2003

(2) ERM traffic count 6/9/06 where peak hour traffic flows are estimated at 10% of daily flows

(3) Estimated based on linear increase between 1995 and 2006 data

(4) Cooper Street traffic flows estimated at 9 trips/dwelling (RTA 2002)

This data indicates a steady increase in traffic volumes on Gregory Street near Arakoon Road to approximately 4,800 movements per day in year 2016. Without any further major developments, Cooper Street traffic volumes would remain relatively static. Potential further Cooper Street (east) development scenarios are considered in *Section 3.5*.

2.5 CRITICAL INTERSECTION OPERATION: COOPER STREET/GREGORY STREET INTERSECTION

This intersection is currently arranged as a four-way give-way intersection with no auxiliary turning lanes. Grades are generally flat, with a slight down hill grade (3 degrees) on the Cooper Street (east) approach.

Intersection sight distance at the intersection is well in excess of required105m (RTA 2002), safe intersection sight distances for 60 km/hr zones. Views of Gregory Street extend to 450m to the north and 375m to the south.

Data about the road network were obtained from ERM's morning peak hour traffic survey undertaken at the intersection on Tuesday 5 September 2006. The survey identified:

- the weekday morning peak hour as 8.00am to 9.00 am;
- a peak hour traffic flow of up to 391 vehicles in Gregory Street;

- a directional split in Gregory Street of 60% and southbound/40%northbound;

- a directional split for those turning into and out of Cooper Street was approximately 50%/50% north/south, and 50%/50% in/out; and

- the heavy vehicle composition to be 6.4% of total traffic in Gregory Street.

The above data for the peak hour period was utilised as the basis for year 2006 input flows. A linear annual increase was assumed for traffic until year 2016.

Intersection operation was modelled using aaSIDRA. This modelling software calculates a Level of Service (LOS) based on the average vehicular delay for turning vehicles. The assessment criteria used to interpret the aaSIDRA model results are presented in *Table 2.2,* which indicate the relationship between the average delay and the LOS as presented in RTA (2002).

Table 2.2 Intersection Level of Service (LOS) Criteria

LOS	Average delay per vehicle (secs/veh)	Comments for Give Way & Stop Signs	Comments for Roundabouts
A	Less than 14	Good	Good
B	15 to 28	Acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory, but accident study required	Satisfactory
D	43 to 56	Near capacity & accident study required	Near capacity
E	57 to 70	At capacity, requires other control mode	At capacity, requires other control mode

Notes: Table adapted from RTA *Guide to Traffic Generating Developments* (2002).

The traffic data as stated in *Section 2.4* and the following parameters were adopted for use in the aaSIDRA model:

- the speed limit of Gregory Street is 60 km/hr, with Cooper Street being 50 km/hr; and

- the heavy vehicle compositions in Gregory Street were approximated from the ERM traffic survey results (6.4% rounded up to 7% for aaSIDRA modelling). Cooper Street composition was effectively 0% heavy vehicles.

In the assessment it was considered appropriate to also examine the average delays for right-turning vehicles into Gregory Street from Cooper Street (east) separately from left-turning movements so that the true level of delay could be assessed. To achieve this, the model was established with two turning lanes into Gregory Street from Cooper Street (east). This produced separation of average delay results for each movement (right or left) for discussion purposes.

The aaSIDRA modelling results are provided in *Table 2.3* below.

Table 2.3 Intersection Performance (Base Cases)

Scenario	Degree of Saturation	Level of Service	Worst Case Average Delay(s)
Year 2006 AM peak (Current Conditions)	0.126	A	10.7
Year 2016 AM peak (Future Baseline Conditions)	0.158	A	11.6

The results for the 2006 and 2016 base cases indicate a highest average delay of 10.7 and 11.6 seconds respectively for the worst case turning movement (right turn out of Cooper Street east). The intersection was found to operate at a Level of Service 'A' for the morning peak hour in 2006 and continue to operate at a Level of Service 'A' in 2016.

2.6 PUBLIC TRANSPORT, CYCLING AND PEDESTRIAN FACILITIES

2.6.1 Bus Routes

Existing bus routes along Gregory Street between the South West Rocks town centre and Kempsey are serviced by Cavanagh's Coaches three times daily. Busways also operates in the locality. The nearest existing public bus stop to the site is located on the eastern side of Gregory Street to the north of the site. School buses operate along Gregory Street and utilise the bus stop north of the Cooper Street/Gregory Street intersection.

2.6.2 Pedestrian And Cyclist Links

There are no off-road pedestrian or cyclist links along Gregory Street or Arakoon Road at present. The nearest off-road facilities are located along Gregory Street adjacent to the shopping centre, north of Spencers Creek Road. During traffic surveys, pedestrian movements were observed to occur along the grassed Gregory Street road verge. They were associated with both resident movements (recreation) and school children. The road verge of Arakoon Road is subject to cut and fill for the road and does not easily allow pedestrian movements.

The *South West Rocks Pedestrian Access Mobility Plan* (Cardno MBK 2003) indicates a refuge is proposed on Gregory Street north of Cooper Street to assist children across the road to the bus stop. It indicates Gregory Street in the vicinity of the site is of 'low priority' for the development of new infrastructure, and that it is dominated by shopping-related movements.

Nearby pedestrian and cyclist attractors include 'The Rocks' Shopping Centre to the north, residential areas along Gregory Street (Cooper Street, Wilfred Partridge Street) and the Lindsay Noonan Drive industrial area. There are also some tourist and recreational road cyclist movements along Gregory Street/South West Rocks Road.

Future development of attractors in the immediate area is relatively constrained. The primary potential area is the development of residential areas directly north of the site on the east side of Gregory Street.

3 TRAFFIC IMPACT ASSESSMENT

This chapter assesses the proposed development in relation to compliance with planning requirements and relationship to the external road, access and transport network.

3.1 PLANNING CONSIDERATIONS

The following planning documents were taken into consideration in the proposed subdivision road and access design.

3.1.1 Kempsey DCP No 36 - Guidelines For Engineering And Subdivision

Kempsey Development Control Plan No 36 – Guidelines for Engineering and Subdivision provides assistance with the design and construction of engineering works associated with subdivisions and developments.

Section D1 of DCP 36 contains requirements that apply to the geometric design of roads. Clause D1.02 states that the provision of a road system within a subdivision should:

- provide convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
- provide safe, logical and hierarchical transport linkages with existing street system;
- provide appropriate access for buses, emergency and service vehicles;
- provide for a quality product that minimises maintenance costs;
- provide a convenient way for public utilities;
- provide an opportunity for street landscaping;
- provide convenient parking for visitors; and
- have appropriate regard for the climate, geology, flora, fauna and topography of the area.

Table D1.5 of DCP 36 specifies minimum road reserve and carriageway widths that apply to urban roads. These minimum road widths are documented in *Table 3.1.*

Table 3.1 Typical Minimum Widths of Urban Roads, Kempsey DCP 36

Category of Road	Traffic Volume (Vehicles/day)	Carriageway Width Minimum in metres	Total Road Width including Road Reserve
Type 1: Access Place	200	7	15
Type 2: Local Street	2,000	9	16
Type 3: Collector Road	6,000	11	19
Type 5: Arterial (2 lane)	10,000	15 including median	22
Type 6: Arterial (4 lane)	>10,000	25 including median	34

Source: *Kempsey Development Control Plan No 36*

Implications for the Development

The proposed subdivision is designed to meet the minimum road and carriageway width requirements of this DCP. The design also allows permeability for pedestrians, landscaping opportunities and is sympathetic with the topography of the site.

3.1.2 *Kempsey And South West Rocks Pedestrian And Mobility Plan (PMP, Cardno MBK 2003) And Kempsey Shire 2005 – 2010 Transportation Infrastructure Strategic Plan (TISP 2005)*

The PMP (2003) maps pedestrian routes around South West Rocks. Gregory Street along the site frontage is mapped as a lower priority 'shopping route'. A school crossing point is indicated across Gregory Street just north of Cooper Street.

The TISP (2005) was based on the findings of the PMP (2003) and supports the development of the Shire through planning, provision and maintenance of infrastructure for transportation and pedestrian access. It outlines Council's five-year goals for roads, bridges, car parking, footpaths and cycleways in the Shire.

In relation to the site, the following works are specifically planned over between 2005 and 2010:

- 2008/2009: Gregory Street, construction of kerb and gutter between Spencers Creek Road and Cooper Street.

No pedestrian infrastructure in the vicinity of the site has been specifically allowed for.

Implications for the Development

Currently there appear to be no scheduled plans for the upgrade of the intersections or the pedestrian network immediately adjacent to the site. Gregory Street to the north of Cooper Street would be subject to kerb and gutter works, which would improve drainage and formalise the road verge.

3.2 TRAFFIC GENERATION AND DISTRIBUTION

3.2.1 Construction Traffic

Construction traffic would travel to and from the site over the construction period to establish the estate. It is estimated that the construction works for the subdivision would take 5 months to complete.

Vehicles to access the site during construction activities include:

- heavy vehicles importing fill;
- floating of construction plant;
- importing other materials for use; and
- light vehicles for construction personnel.

It is proposed that all trips would utilise Cooper Street access rather than directly from Gregory Street or Arakoon Road. They should be limited to normal construction hours as agreed with Council. Alternative access directly from Gregory Street or Arakoon Road is possible, if required by Council.

A *Traffic Management Plan* should be prepared for the construction activities in accordance with Council requirements to ensure traffic safety and residential amenity.

3.2.2 Operational Phase

The predicted traffic generation during the operational phase is based on RTA traffic guidelines (RTA 2002).

The traffic generation rates adopted in this analysis for the proposed development are indicated in *Table 3.2*.

Table 3.2 Adopted Traffic Generation Rates for Proposed Residential Development

Development Component	Daily Generation Rate (1)	Total Daily Generation	Weekday Peak Hour Generation	Total Peak Hour Generation
Residential Dwellings (44 new lots)	9 trips/dwelling	396	0.85 trips/dwelling	38

Notes: (1) Based on RTA (2002)

3.2.3 *Distribution Of Operational Traffic*

It was assumed that:

- directional flows for background traffic in Gregory Street and Cooper Street was in accordance with that distribution determined from the ERM traffic survey;
- as the development is relatively small and without internal commercial and open space areas, the proportion of internal and external site traffic generation was assumed to be 100%external; and
- north/south and in/out directional splits for traffic generated from the site was assumed to be 50%/50%, equal to that of current traffic recorded during the ERM intersection survey.

3.3 *ADEQUACY OF EXTERNAL NETWORK*

3.3.1 *Additional Traffic On External Road Network*

The predicted increases in daily traffic flows external to the site are indicated in *Table 3.3*. Estimates of generation will provide an increased total of 396 vehicles per day to Gregory Street following Stage 3 development. Additional development north of Cooper Street was not included in these calculations.

Table 3.3 Additional Daily Traffic Volumes, Year 2016 including Development

Road	Location	Base Case Year 2006 Estimate	Base Case Year 2016 Estimate	Year 2016 Additional Development Traffic (trips)	% Increase Due to Additional Development
Gregory Street	North of Cooper Street	3,910	4,795	+198	4.1
	South of Cooper Street	3,910	4,795	+198	4.1
Cooper Street (east)	East of Gregory Street	90	90	+396	440

In percentage terms, the future traffic increase in comparison to the base year 2016 traffic volumes will be significant (typically over five percent) on Cooper Street but negligible on Gregory Street. The implications of these traffic increases are discussed in terms of intersection performance in the following section.

3.4 INTERSECTION OPERATION AND CAPACITY

3.4.1 Cooper Street/Gregory Street Intersection

Assessment Methodology

Future intersection performance was assessed using the aaSIDRA traffic modelling software. Analysis was undertaken on the following scenarios:

- year 2006 (existing) traffic volumes, based on ERM traffic surveys;
- year 2016 (base case), projected from ERM and Council data;
- year 2016 with development traffic added; and
- Year 2016 traffic volumes with through traffic doubled, to test sensitivity and operation during the summer tourist peak.

Traffic model input and output values for each scenario under morning (AM) peak hour conditions are provided in *Annex A*. Heavy vehicle composition was estimated at 7 percent of total traffic flows on Gregory Street, rounded up from the recorded 6.4%.

Results

The intersection analysis results are summarised in terms of degree of saturation, average vehicular delay and level of service for each intersection in *Table 3.4.*

Table 3.4 Intersection Performance with Proposed Development

Scenario	Degree of Saturation	Level of Service	Average Delay(s)
Year 2006 AM peak (Current Conditions)	0.126	A	10.7
Year 2016 AM peak (Base case)	0.158	A	11.6
Year 2016 AM peak + development	0.160	A	13.0
Year 2016 AM Peak + development with doubled through traffic for tourist peak	0.310	B	26.2

The results indicate the development results in a marginal increase (up to 1.4 seconds on average) of the worst case average delay (right turn out of Cooper Street east) at the intersection under 2016 conditions. The Level of Service was maintained at 'A' under these scenarios. The intersection still performed well (Level of Service B) under conditions of doubled through - traffic, indicative of heightened traffic during tourist or summer peak traffic periods.

3.5 CUMULATIVE IMPACTS

The scenario of the proposed 17 lot development occurring along Cooper Street (east) (DA number 2004/35), was incorporated into the analysis.

The aaSIDRA model results incorporating the additional Cooper Street (east) traffic are provided in *Table 3.5*.

Table 3.5 Intersection Performance with Proposed Development and Cumulative Development Scenario

Scenario	Degree of Saturation	Level of Service	Average Delay(s)
Base Case: Year 2006 AM peak (Current Conditions)	0.126	A	10.7
Cumulative Base Case: Year 2016 AM peak with cumulative development *	0.156	A	12.3
Year 2016 AM peak with development and cumulative development *	0.162	A	13.2

* - cumulative development scenarios area based on an additional 17 residential allotments accessing Cooper Street (east)

These results indicate that under additional traffic load from other potential development in Cooper Street (east), the intersection continues to perform at high Levels of Service (A/B).

3.6 DISCUSSION - COOPER STREET/GREGORY STREET INTERSECTION

From the results above, the Cooper Street/Gregory Street four-way give-way intersection will operate high Levels of Service (A/B) into the future including traffic generation from the development and other potential development in the Cooper Street (east) catchment. No major upgrades (ie a roundabout) are warranted at this location based purely on intersection performance. The give-way arrangement avoids impeding through traffic along Gregory Street.

To further increase the safety at this intersection, it is recommended that the Cooper Street (east) approach along the development frontage of new Stage 2 allotments be re-sealed and widened to relevant AUSPEC and RTA (1999) design guidelines as part of Stage 2 of the development.

3.7 INTERNAL LAYOUT

The proposed subdivision internal road network meets Kempsey Council DCP requirements. No further alterations are recommended.

3.8 PEDESTRIANS, BUS STOPS AND CYCLIST ACCESS

It is considered that pedestrian movements to and from the subdivision will be relatively limited due to the distance of the site from major employment centres, shopping destinations and other residential areas. Common pedestrian movements are likely to link to public transport, including school children.

Given there is no off-road cyclist network in the locality, cyclist movements will be restricted to the road network. Several cyclists were observed during the ERM traffic count, utilising Gregory Street to either travel to school or for recreational/sporting use.

The proposed subdivision is designed to allow pedestrian and cycle movement to and from Gregory Street. The lots are within walking distance (400 metres) of the nearest bus stop just north of Cooper Street (east).

3.9 RECOMMENDATIONS

The following recommendations are made in relation to the development:

- **Construction Phase:** a Traffic Management Plan (or traffic section of the construction management plan) should be prepared prior to any works to ensure construction activities do not result in unacceptable traffic safety risks;

- **Cooper Street/Gregory Street Intersection:** that the give way intersection arrangement be retained; and

- **Cooper Street (east):** The Cooper Street (east) approach to Gregory Street along the development frontage of new Stage 2 allotments be re-sealed and widened to relevant AUSPEC and RTA (1999) design guidelines as part of Stage 2 of the development.

4 *CONCLUSION*

The traffic generation from the proposed 'Rosarii' residential development is predicted to result in a maximum of 396 additional daily vehicle movements to Gregory Street via Cooper Street (east).

In percentage terms, the future traffic increase in comparison to the base year 2016 traffic volumes will be noticeable (typically over five percent) only on Cooper Street, while negligible on Gregory Street.

Traffic modelling results indicate the existing Cooper Street/Gregory Street/four-way give-way intersection could cater for year 2016 base case traffic at a Level of Service 'A' with minimal delays and spare capacity. The proposed development would not alter this Level of Service.

It is recommended that:

- **Construction Phase:** a Traffic Management Plan (or traffic section of the construction management plan) should be prepared prior to any works to ensure construction activities to no pose unacceptable traffic safety risks;

- **Cooper Street/Gregory Street Intersection:** that the give way intersection arrangement be retained, subject to Council and RTA agreement; and

- **Cooper Street (east):** The Cooper Street (east) approach to Gregory Street along the development frontage of new Stage 2 allotments be re-sealed and widened to relevant AUSPEC and RTA (1999) design guidelines as part of Stage 2 of the development.

REFERENCES

AUSTROADS (1988) **Guide to Traffic Engineering Practice: Intersections at Grade,** Part 5

Cardno MBK (2003) Draft **South West Rocks Pedestrian Access Mobility Plan,** prepared for Kempsey Shire Council

Kempsey Council (2005) **Shire 2005 – 2010 Transportation Infrastructure Strategic Plan**

RTA (2002) **Guide to Traffic Generating Developments**, Roads & Traffic Authority of New South Wales.

RTA (1999) **Road Design Guide**, Roads & Traffic Authority of New South Wales.

Annex A

Traffic Model Inputs And Results

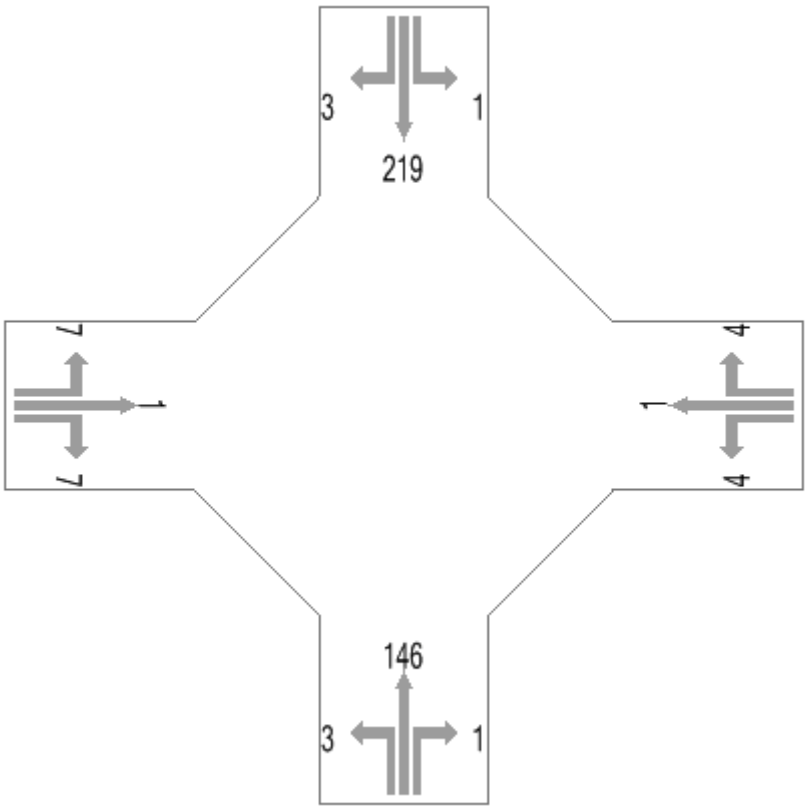
SIDRA INTERSECTION

Input Volumes

Total flow rates as given by the user (veh/60 min)

Proposed Rosarii Development

Base Case Year 2006 AM



Intersection Type

Give-way

No color code in this display

SIDRA SOLUTIONS

A0574, ERM Australia Pty Ltd, Small Office
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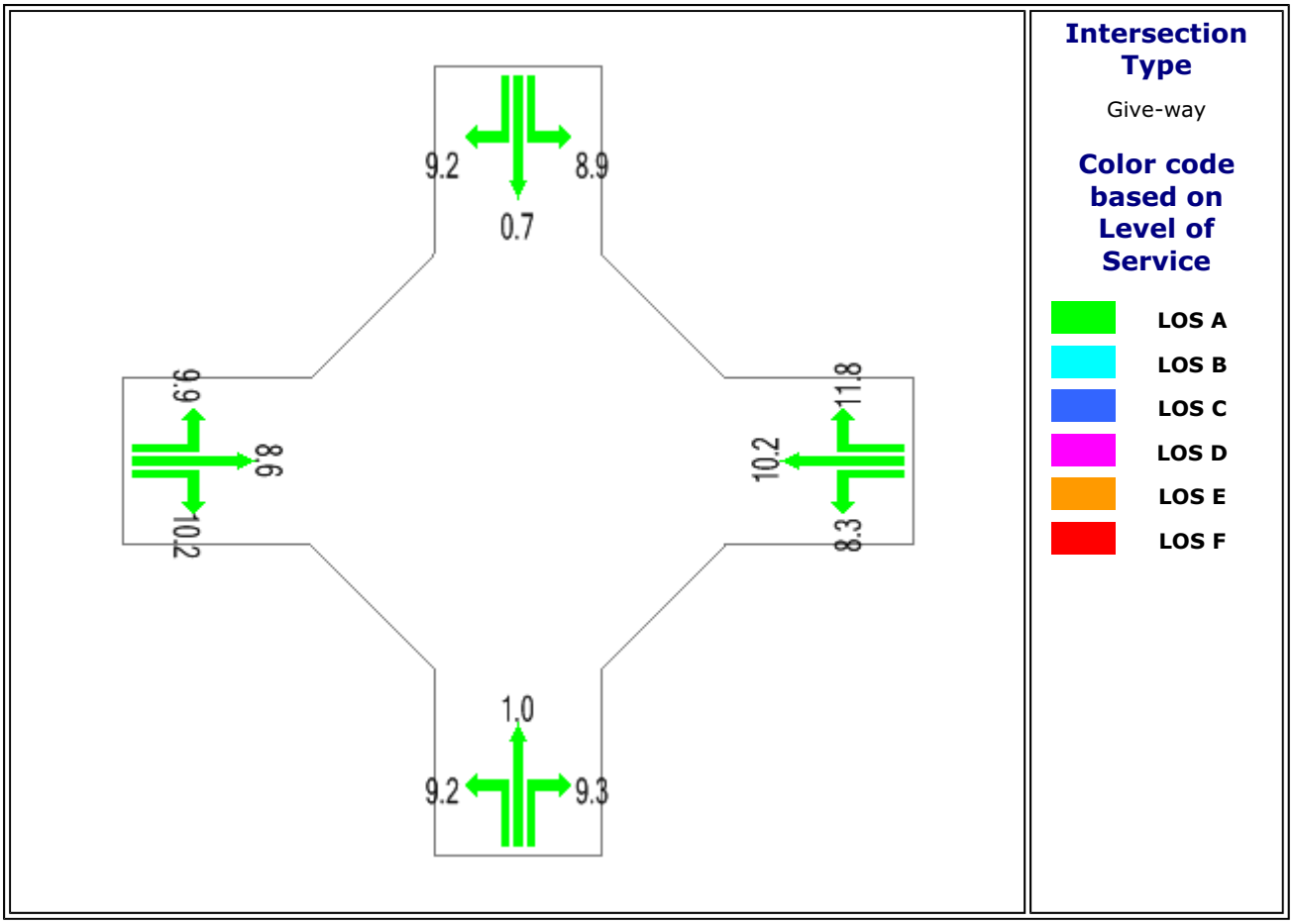
SIDRA INTERSECTION

Control Delay (Average)

Average control delay per vehicle (seconds)

Proposed Rosarii Development

Base Case Year 2006 AM



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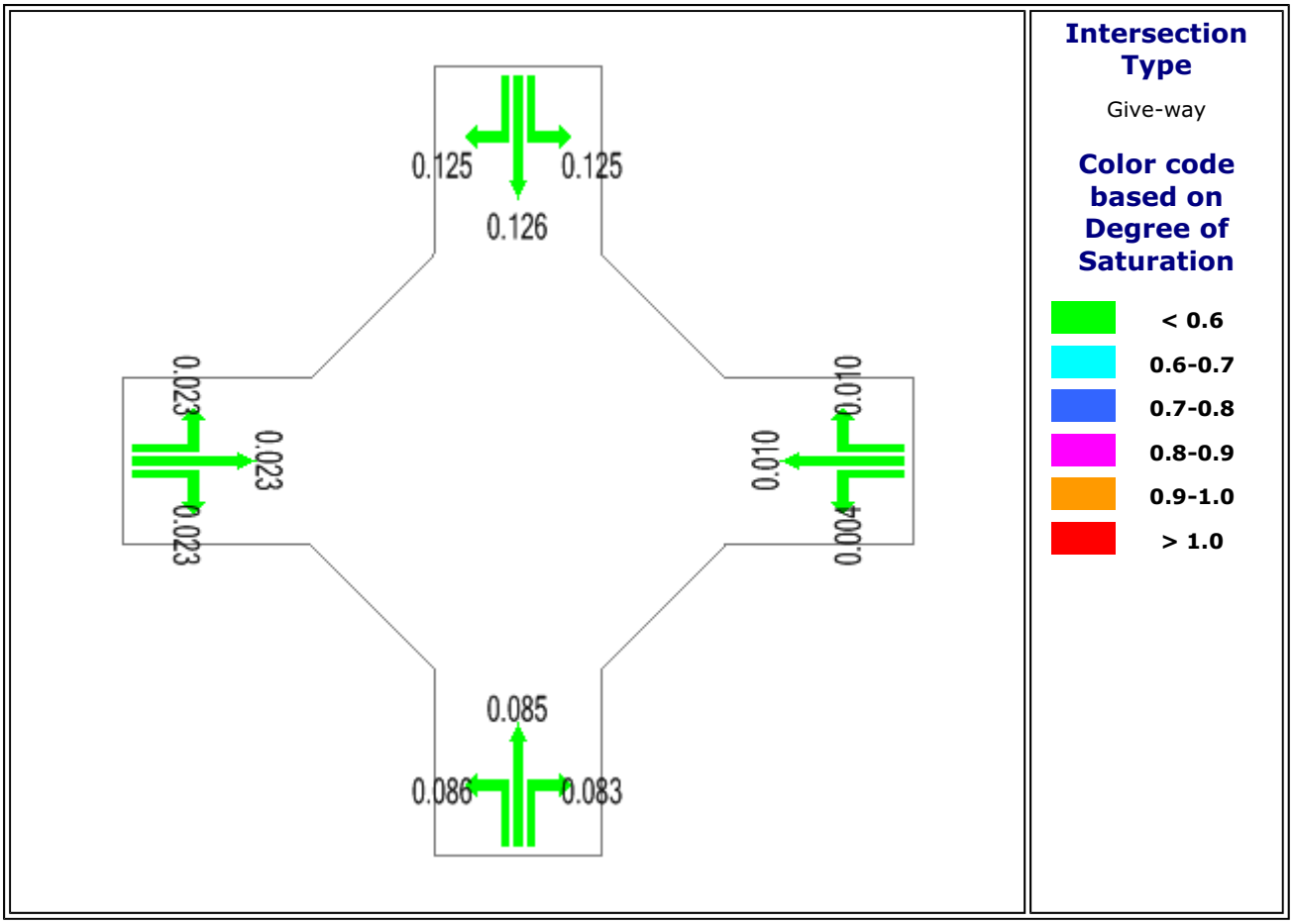
SIDRA INTERSECTION

Degree of Saturation

Demand Volume / Capacity (v/c) ratio

Proposed Rosarii Development

Base Case Year 2006 AM



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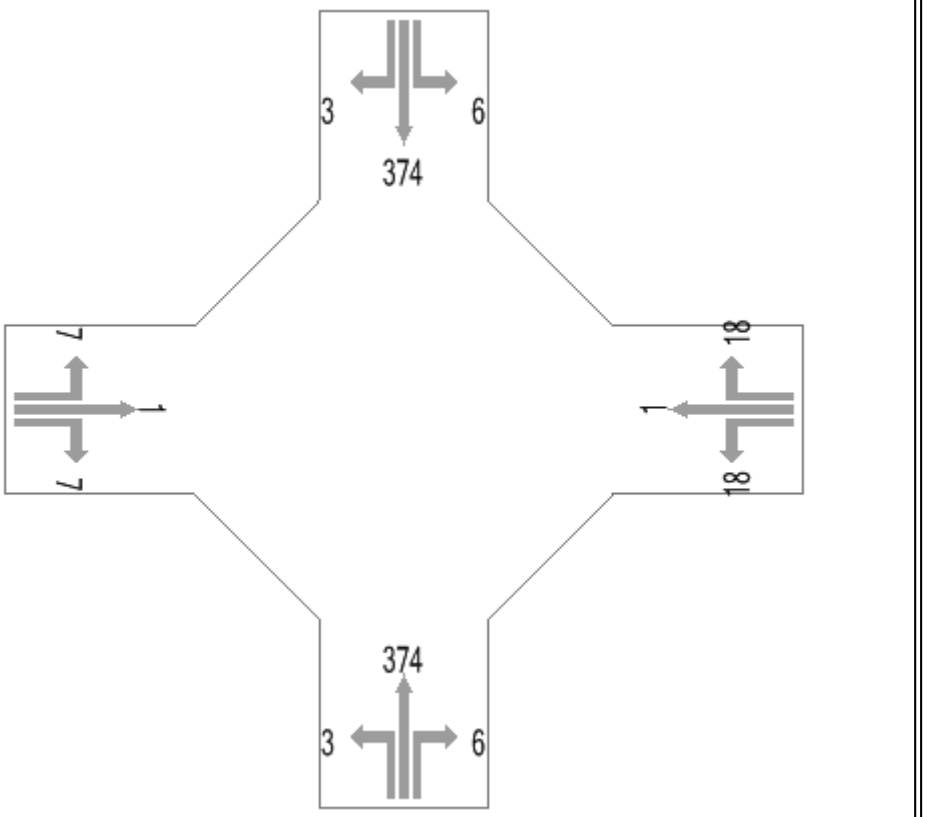
SIDRA INTERSECTION

Input Volumes

Total flow rates as given by the user (veh/60 min)

Proposed Rosarii Development

With Development Year 2006 AM



Intersection Type

Give-way

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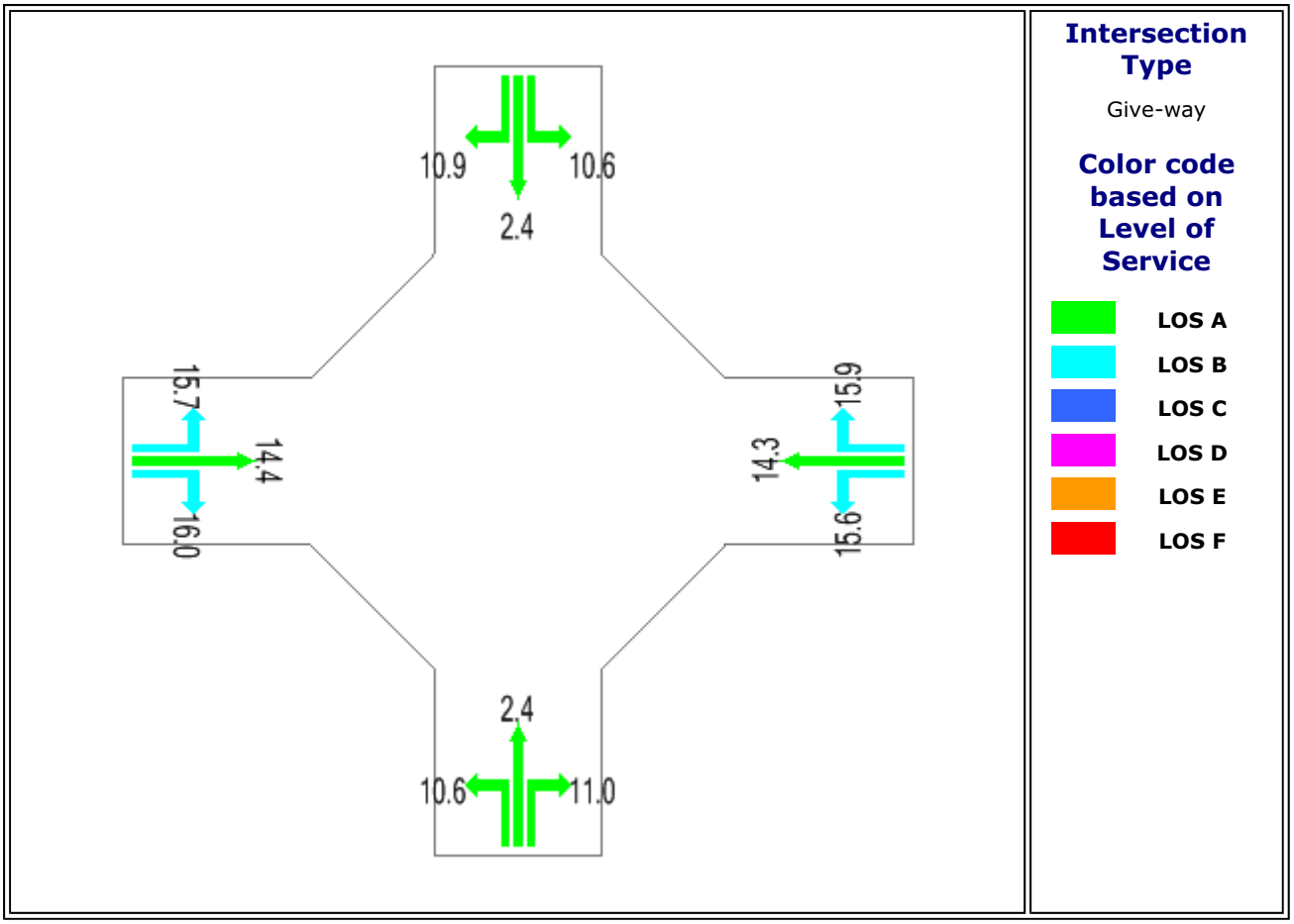
Proposed Rosarii Development

With Development Year 2006 AM



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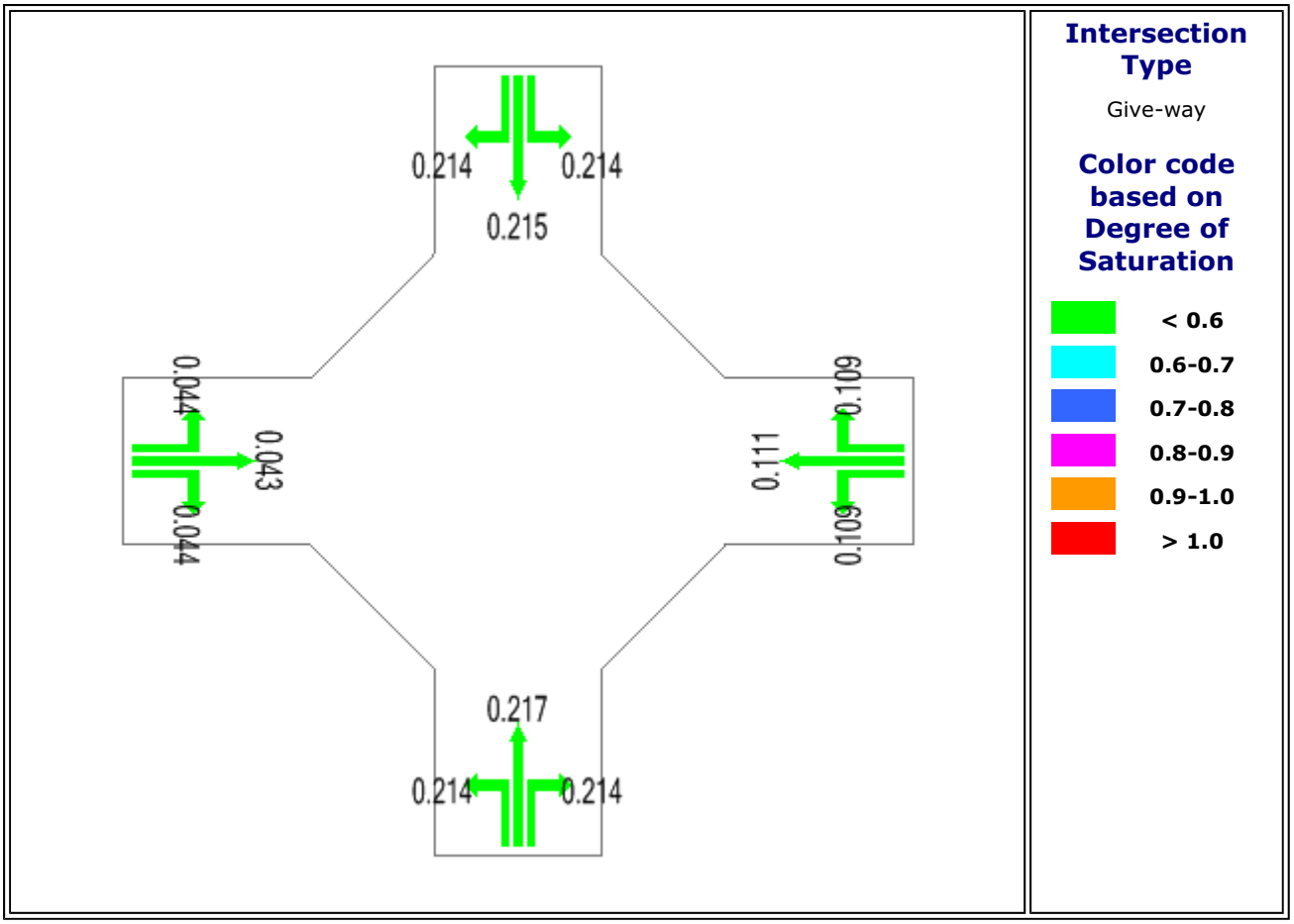
With Development Year 2006 AM



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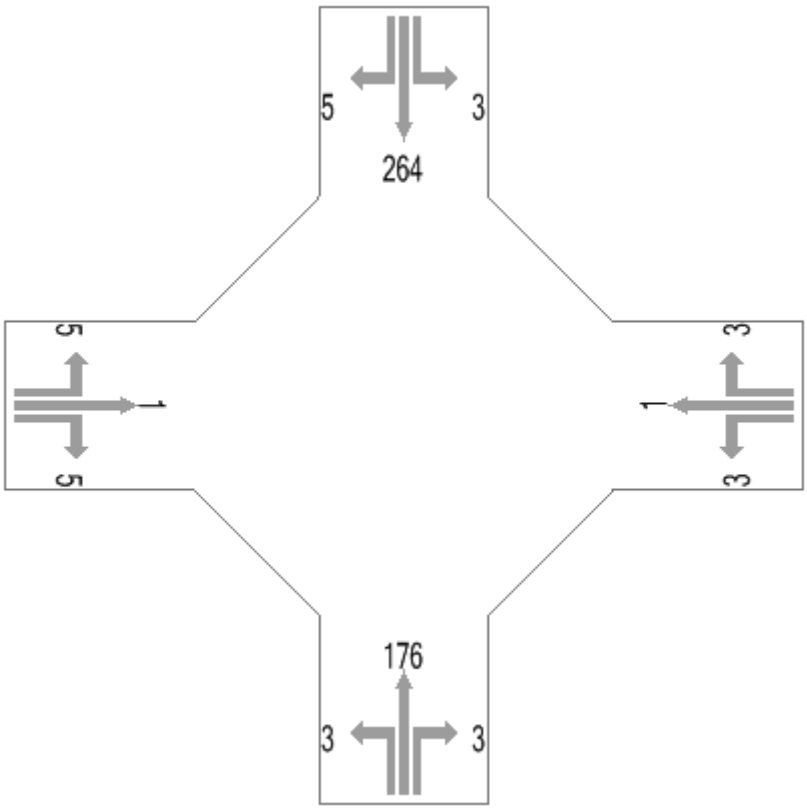
Proposed Rosarii Development

Year 2016 Base Case (AM)



Intersection Type

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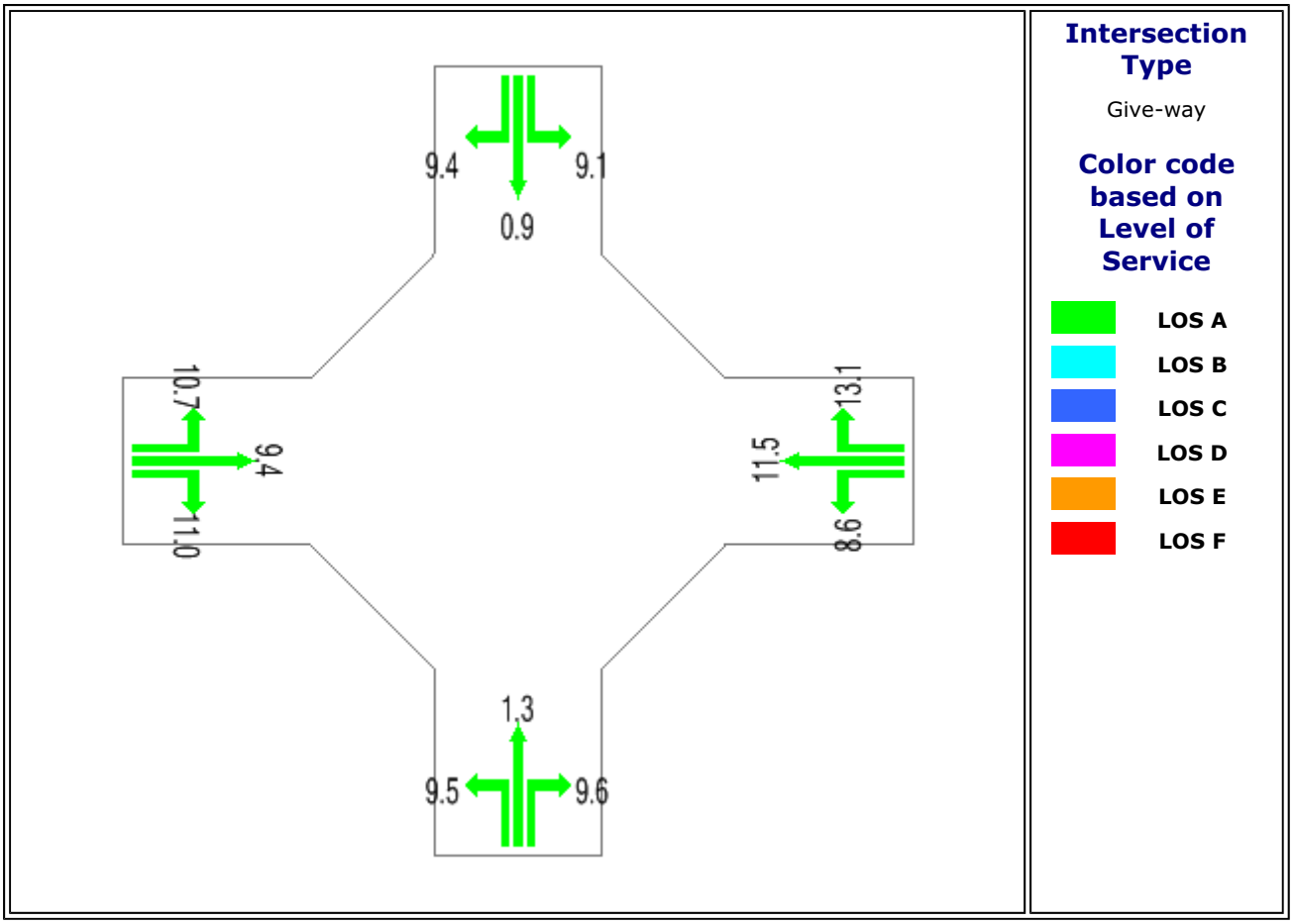

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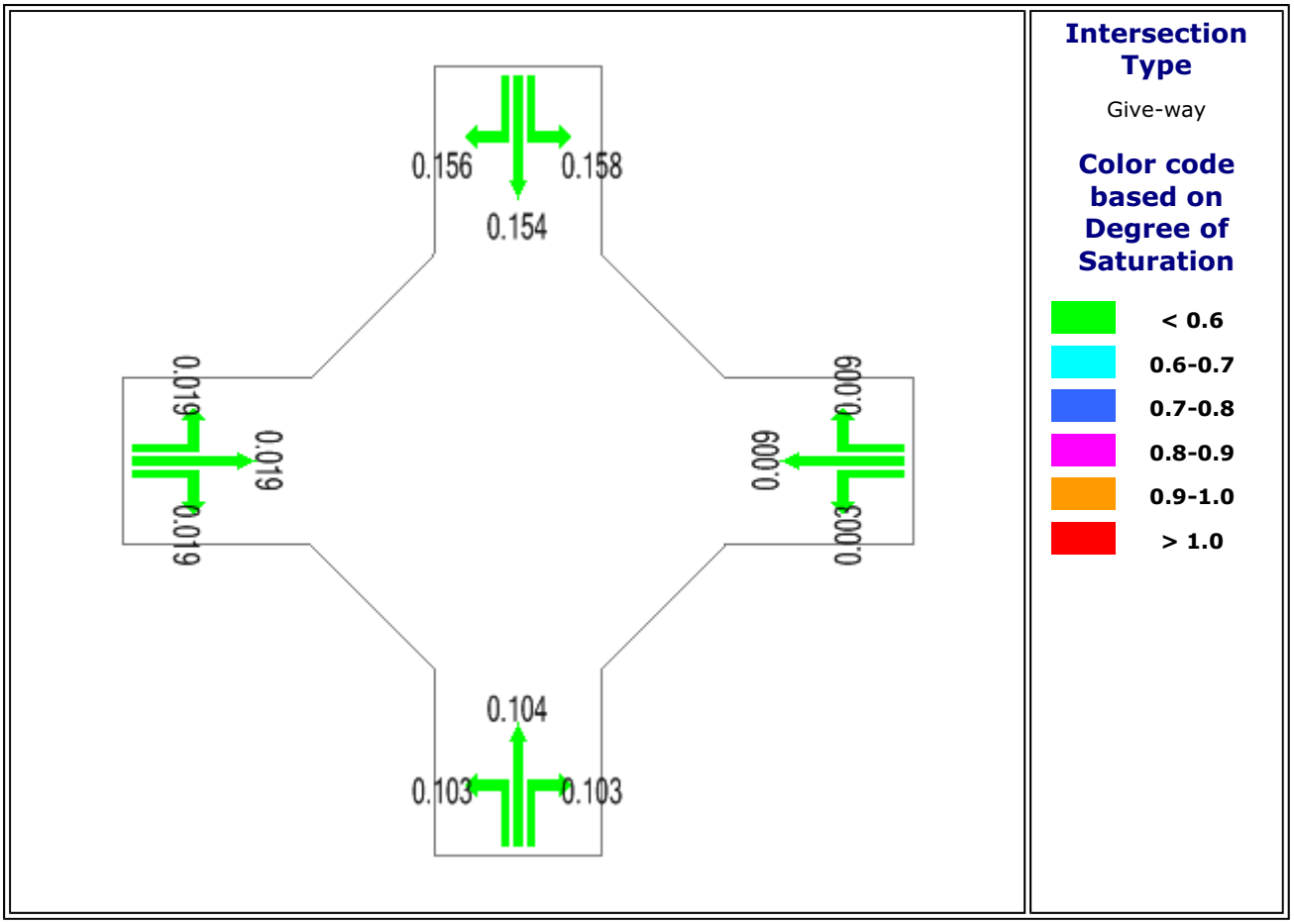

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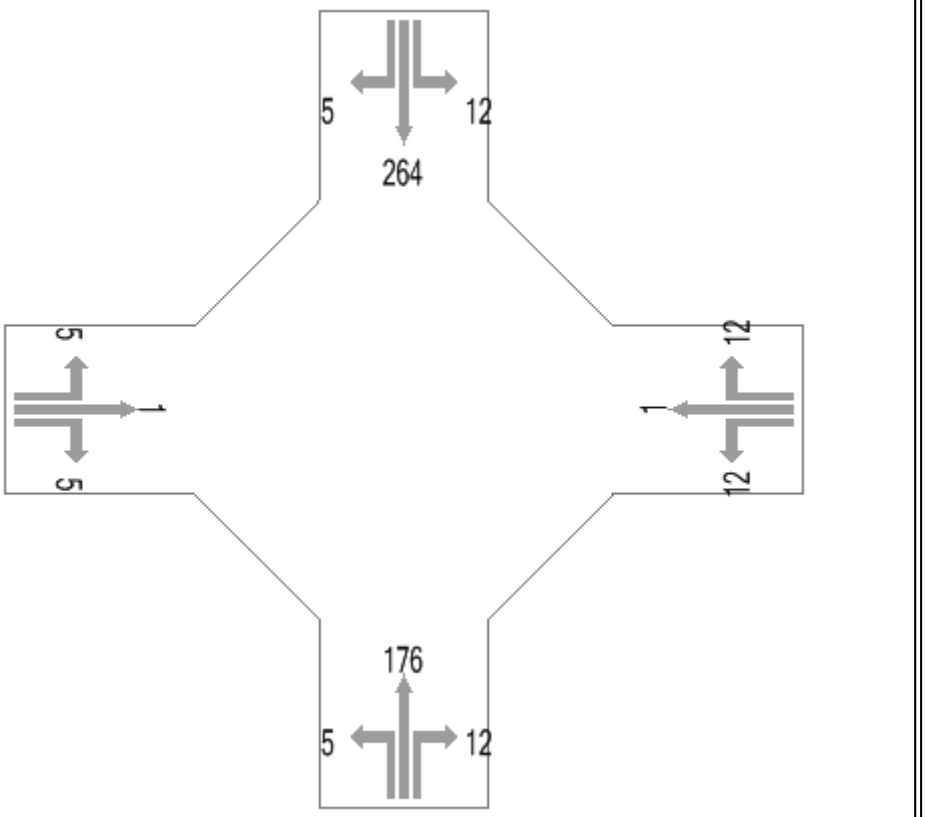
Proposed Rosarii Development

Year 2016 with Development AM



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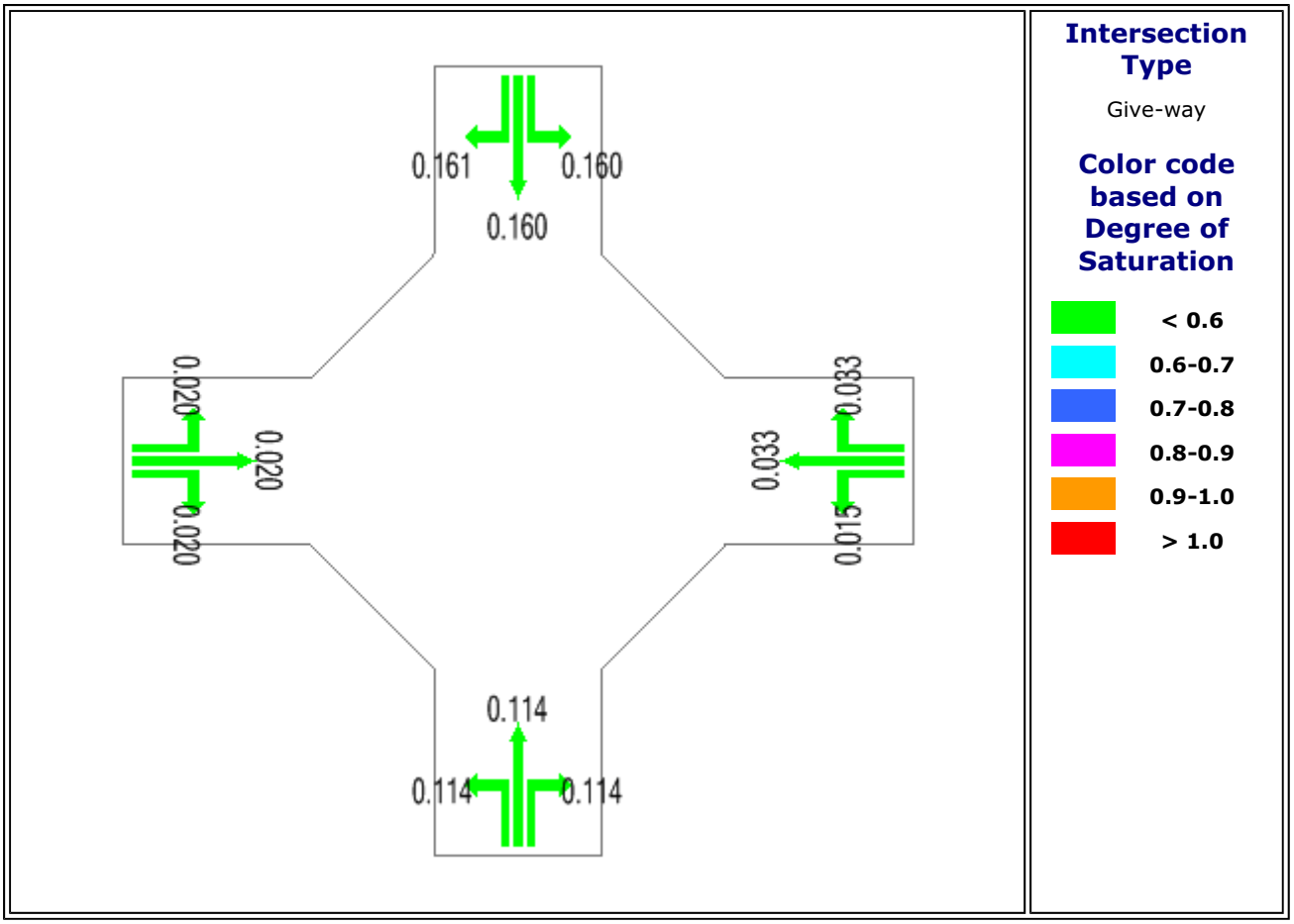

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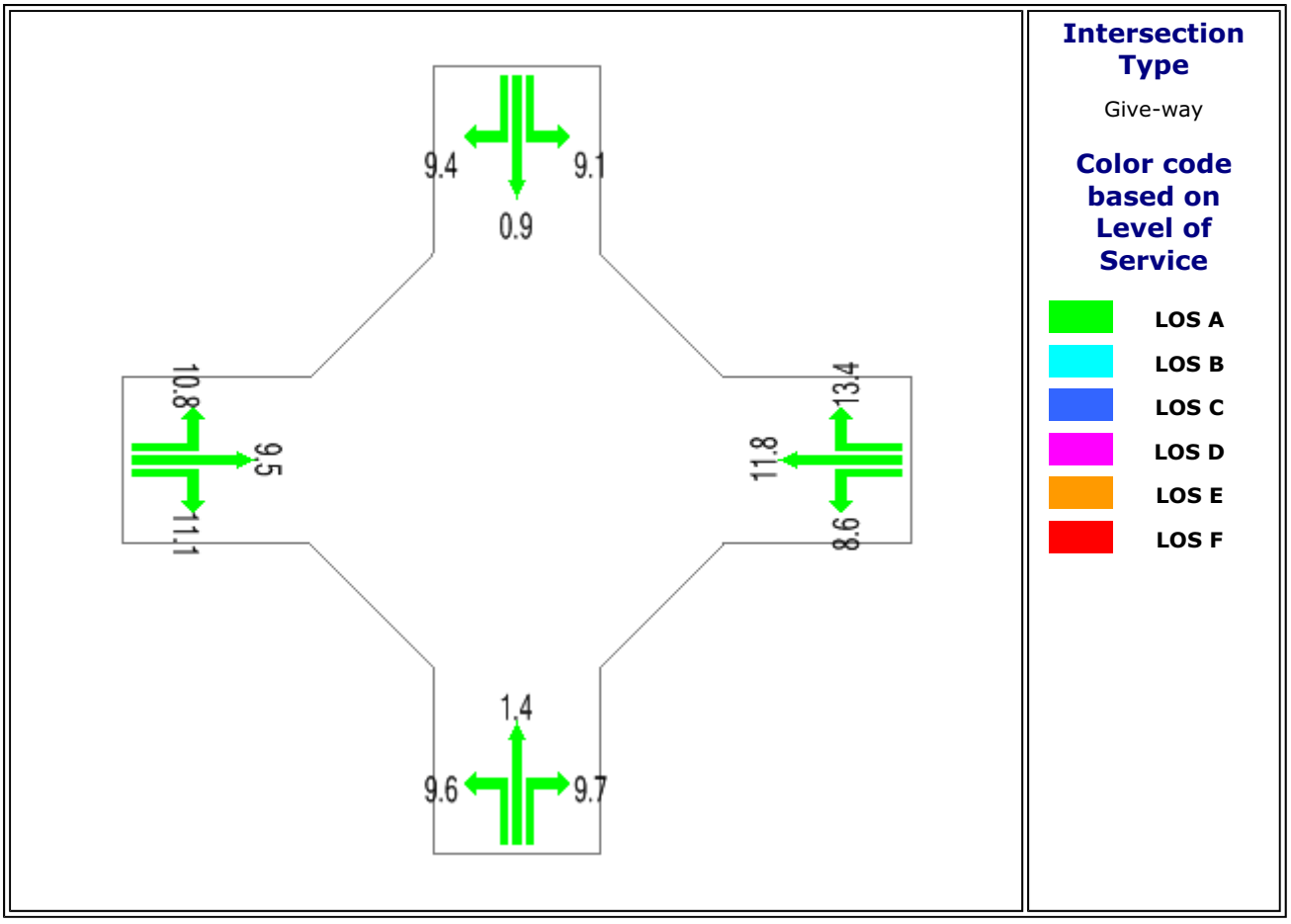

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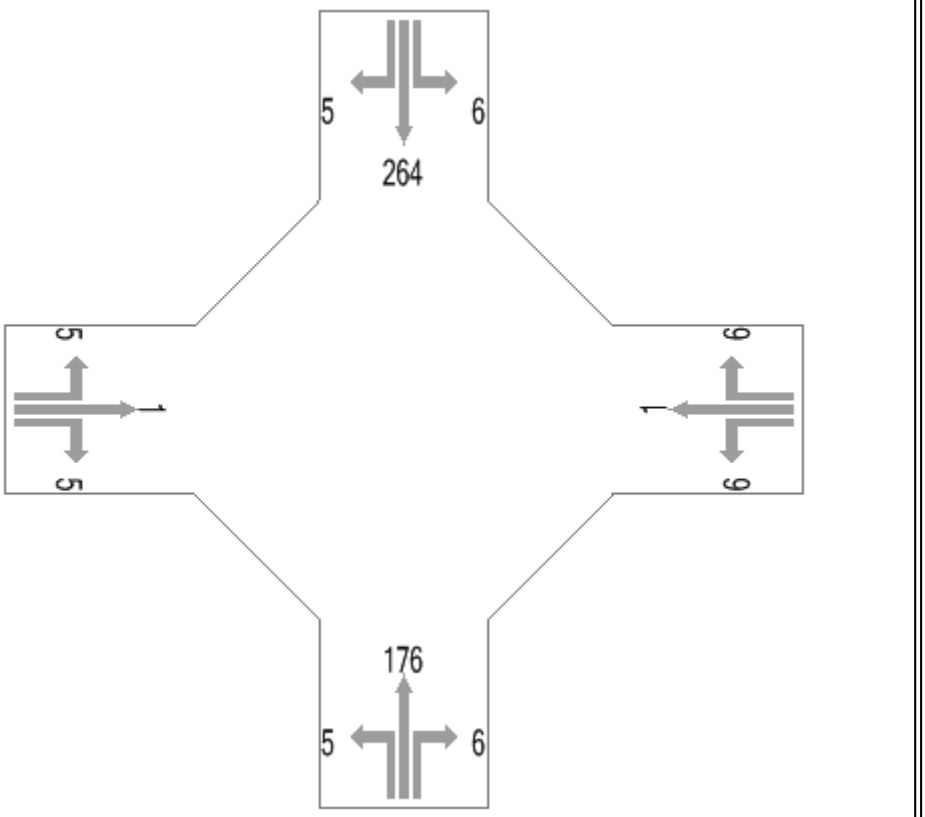
Proposed Rosarii Development

Base Case Year 2016 AM Cumulative Scenario



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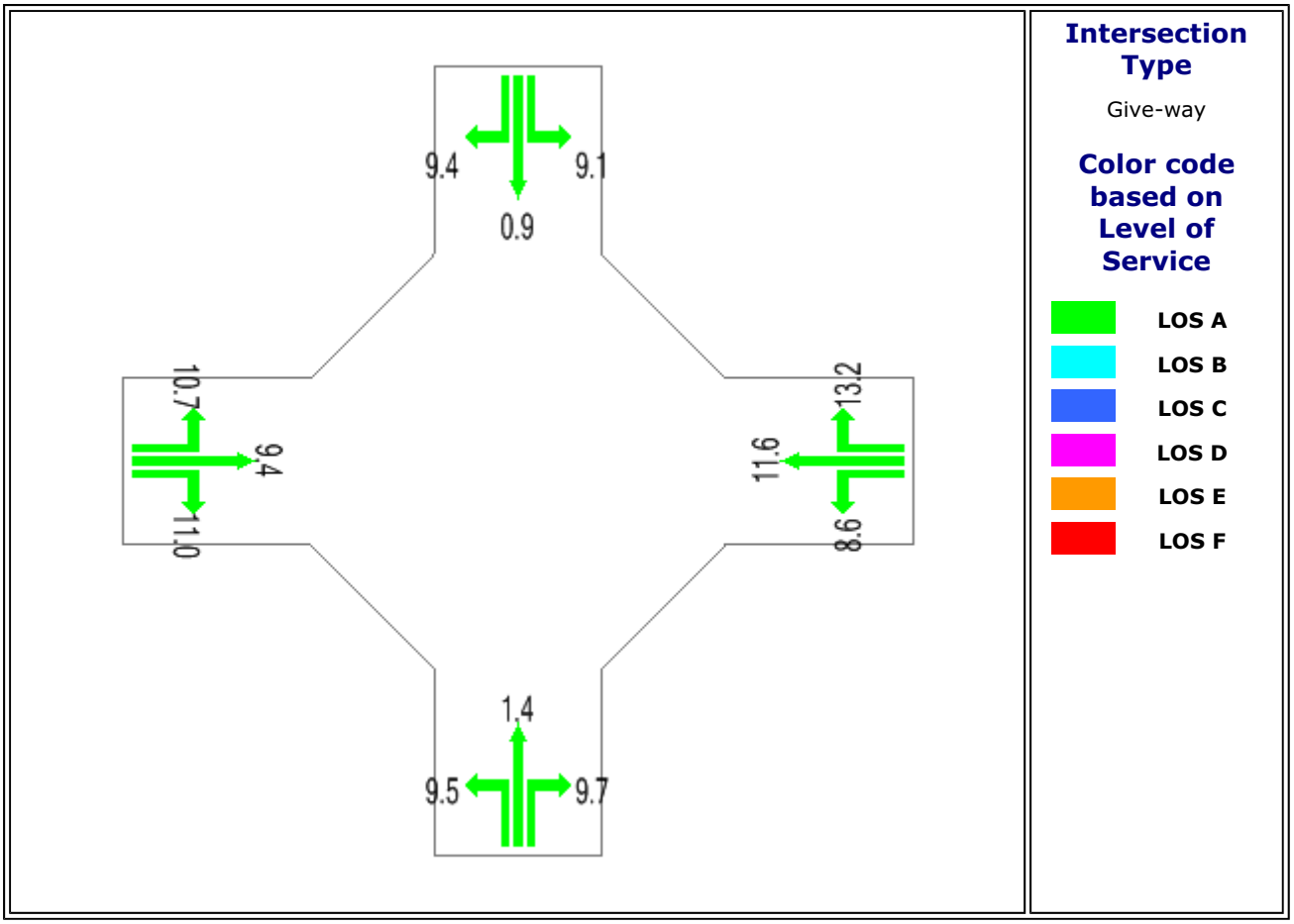

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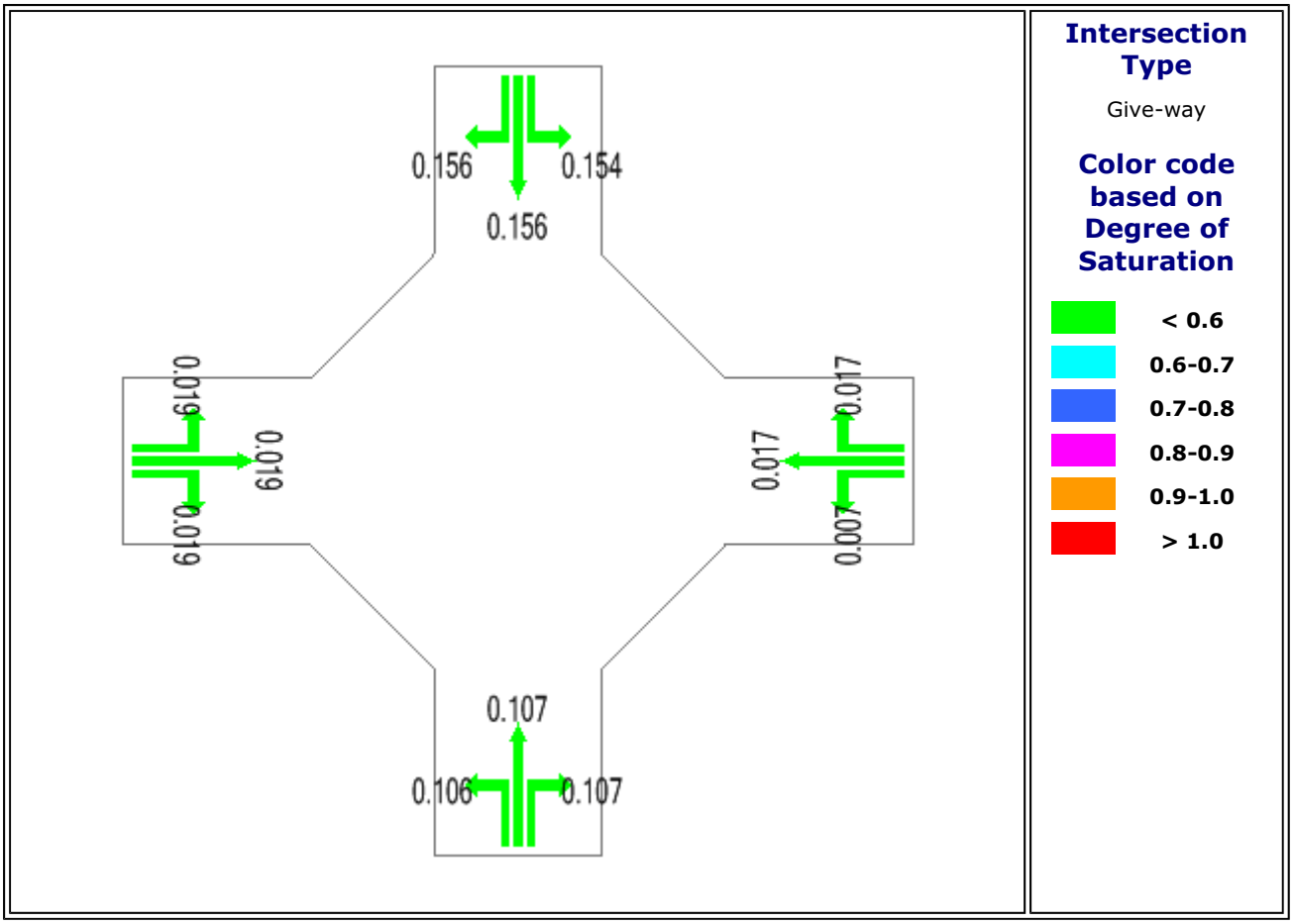

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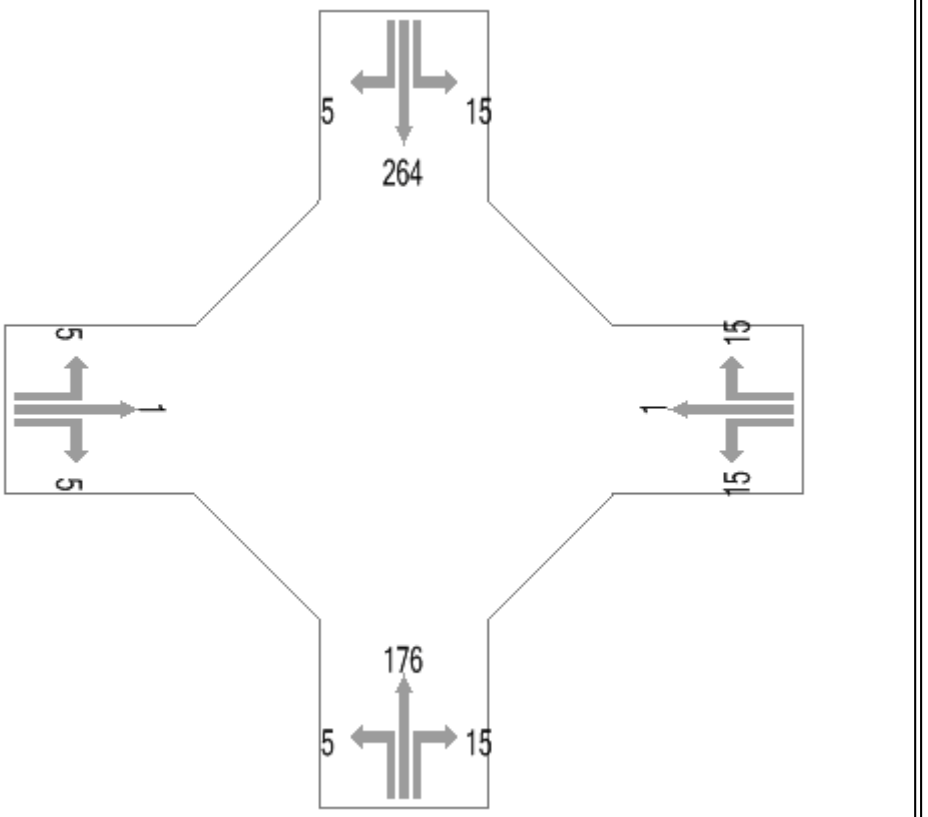

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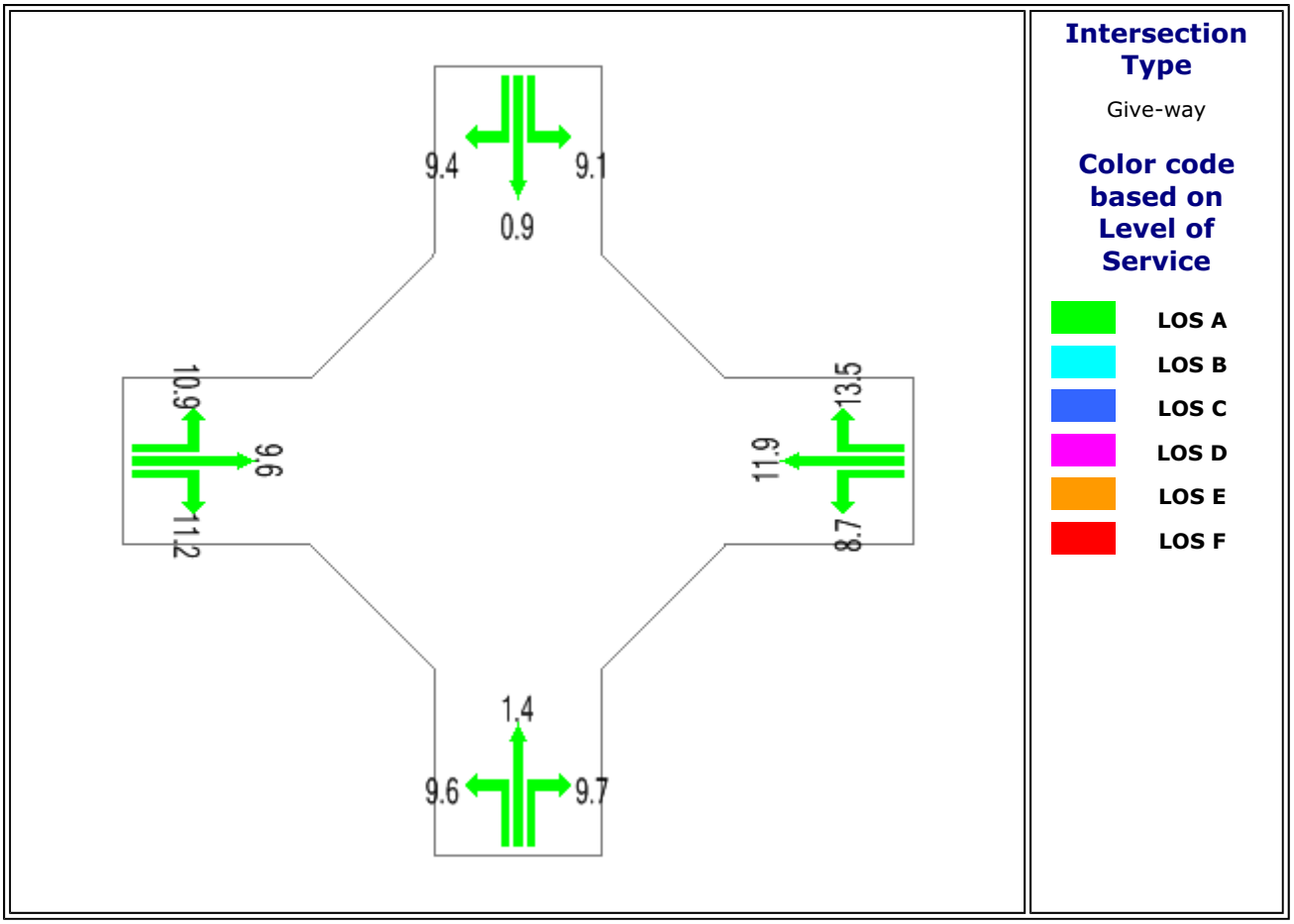

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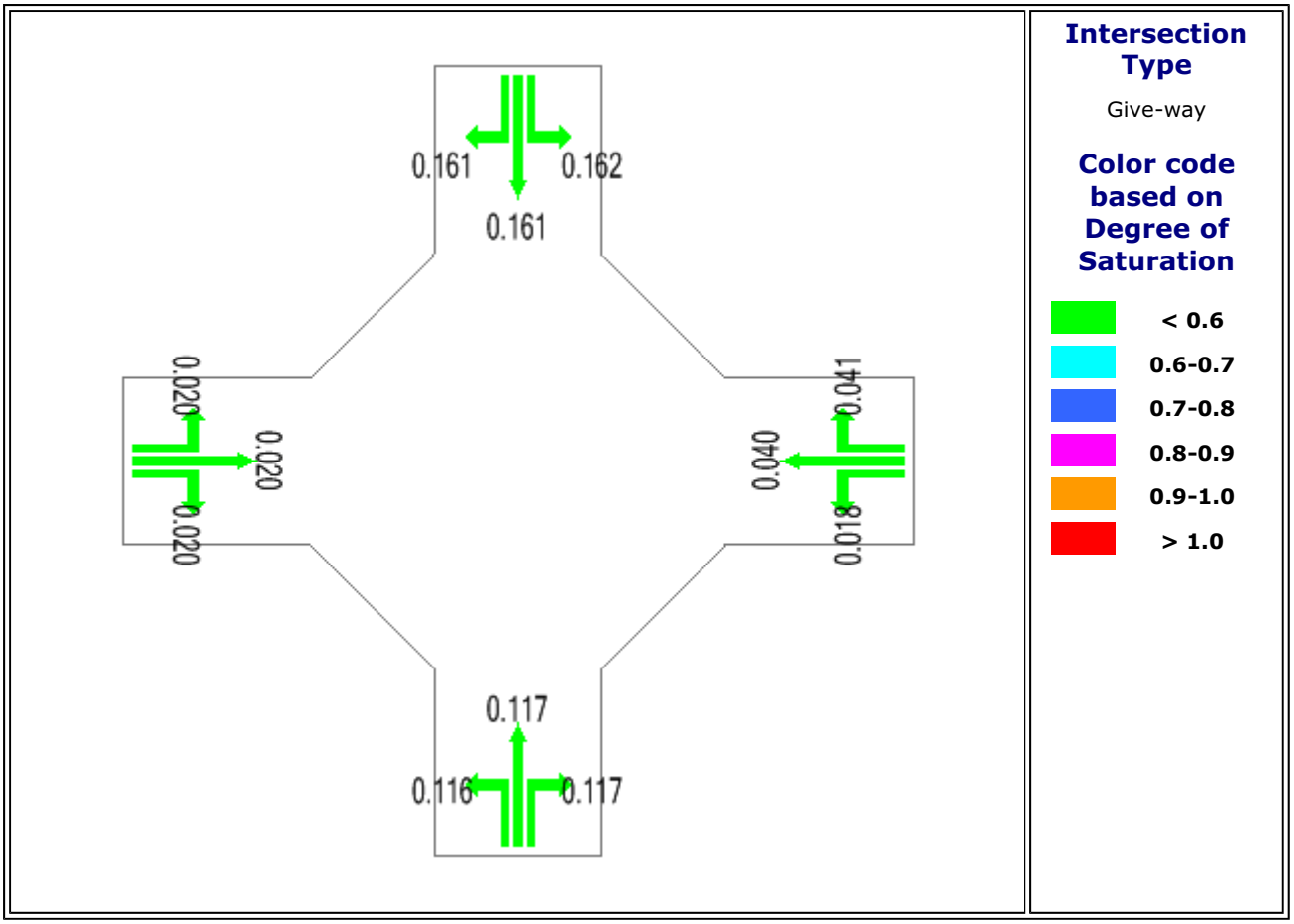

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