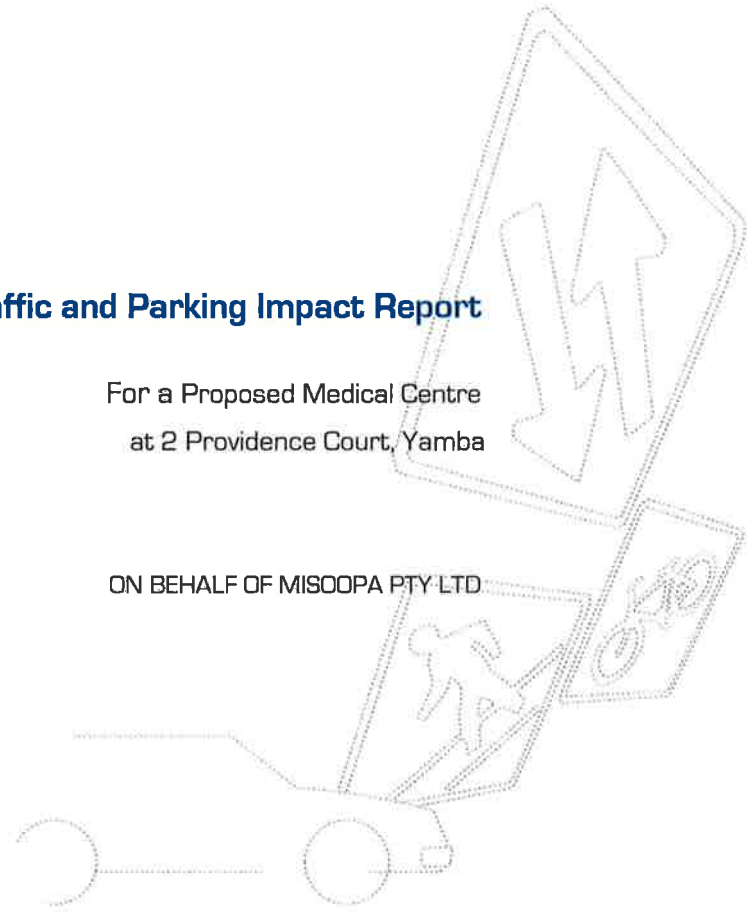
• JOHN NEWTON B Surv; M.I.S. Aust. • TONY DENNY B Surv; (Hons), M I S Aust. • DAMIAN CHAPELLE BTP CPP



Traffic and Parking Impact Report

For a Proposed Medical Centre
at 2 Providence Court, Yamba

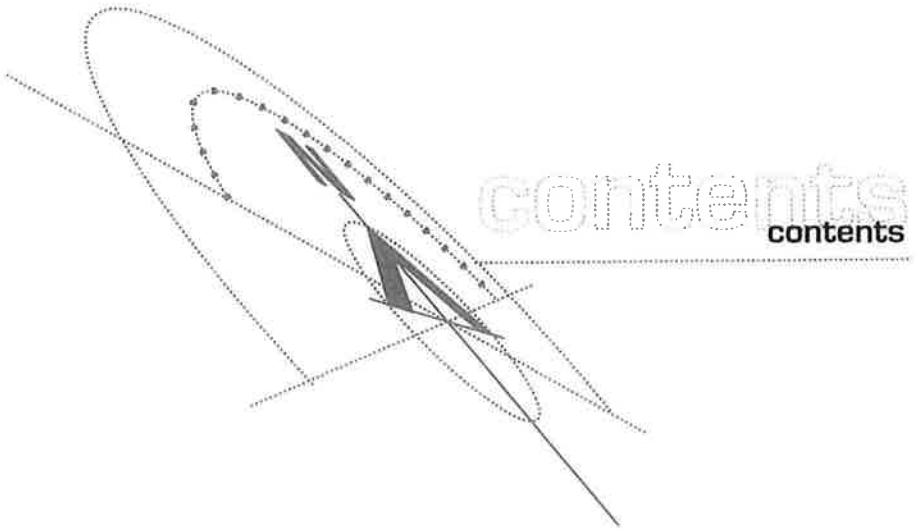
ON BEHALF OF MISOOPA PTY LTD

Site: Lot 4 DP 1104127

Date: October 2011
Our Ref: 10/518

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

• P O Box 1136, Lismore, N.S.W. 2480 • Phone (02) 6622 1011 • Fax (02) 6622 4088 DX7779 Lismore
• Email office@newtondennychapelle.com.au • Also at: Cassino Court, 100 Barker St., Casino N.S.W. 2470 • Phone/Fax (02) 6662 5000



contents

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

Executive Summary

The key aim of this report is to provide a detailed traffic and parking assessment for a proposed change of use of the existing building on the site of Lot 4 DP 1104127 from a 54 place childcare centre and 3 professional consulting rooms, to that of a 560m² medical centre. The site is accessed from Providence Court (cul-de-sac) via Yamba Road.

This report was prepared following pre-lodgement correspondence with Clarence Valley Council which recommended that the applicant have discussions with the Roads & Traffic Authority (RTA) concerning traffic and parking matters. Subsequent discussions with the RTA advised that detailed consideration of intersection performance should be lodged with any Planning Proposal to ensure functionality of the road network is not unduly impacted, or that extent of any proposed mitigation measures can be understood. Accordingly, following preliminary investigations as to traffic matters at the Yamba Road and Providence Court intersection, it is identified that traffic volumes are sufficient to require performance modelling using SIDRA software to determine level of service impacts. This modelling confirmed that the existing intersection configuration will not be detrimentally impacted by the proposal and operate at a performance of Level of Service A or B for all movements. Given that the traffic generation associated with the change in peak hour is only an extra 2vph, which results in peak demand from Providence Court of 62vph, limited impacts were expected. This modelling has had regard to the likely traffic flows on Yamba Road for the future Year 2022 (ie. using a 10yr horizon).

The site has sufficient space to meet the RTA parking demand of 4 spaces per 100m² GFA, being 23 spaces inclusive of two (2) disabled spaces and complies with *AS2890.1 – Parking Facilities Part 1 – Off Street Car Parking (2004).*

1.0 Introduction & Existing Layout

This report has been prepared to provide a traffic and parking assessment based upon the change of use of an existing 560m² building on the site of Lot 4 DP 1104127, from a current 54 place childcare centre and 3 professional consulting rooms, to that of a medical centre.

The development is located with 111m frontage to Yamba Road, however the vehicular access onto the property is from the eastern boundary, being off Providence Court which is a cul-de-sac. The frontage to Providence Court is 52m. Refer to *Figure 1 Site Locality Plan* below for location details.

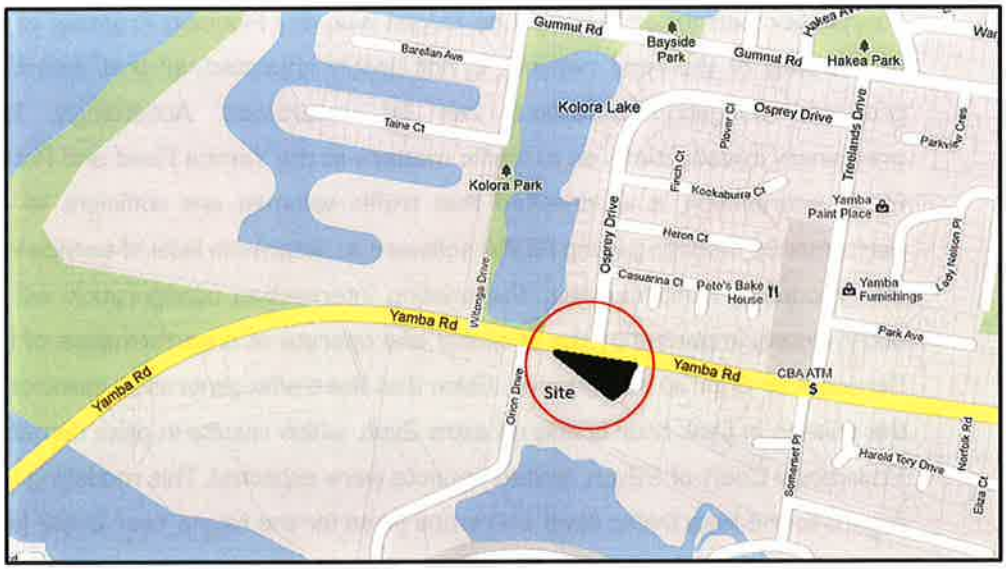


Figure 1 – Site Locality Plan (Site is Shaded Portion) *Source: Google Maps*

The intersection form of Providence Court/Yamba Road is that of an urban protected right turn lane (from Yamba Road) and was installed in 2011. On the north side of Yamba Road is an existing formalised bus setdown zone. No provision in Yamba Road exists for a de-acceleration or acceleration lane left turn lane. Refer to *Plate 1 – Existing Protected Right Turn Bay (view looking west on Yamba Drive).*

Plate 1 – Existing Protected Right Turn Bay (View Looking West on Yamba Drive)

Existing access to Providence Court for the site currently consists of two separated driveway points to which both have good sight lines. These two driveways service 23 car parking bays, of which two (2) are designated disabled bays. Details of the current site layout is shown in following *Figure 2 – Existing Site Layout.*

It is also noted that a Traffic Engineering Assessment has previously been undertaken in 2009 (by CRG Consultants – refer copy included in **Appendix 1 – Previous Traffic Investigations**) in association with planning approval of partial conversion of the then childcare facility to include conversion of 150m² of GFA to that of medical consulting rooms. This report identifies that the anticipated traffic movements post approval would be "*in the order of 57 peak hour vehicle trips*".

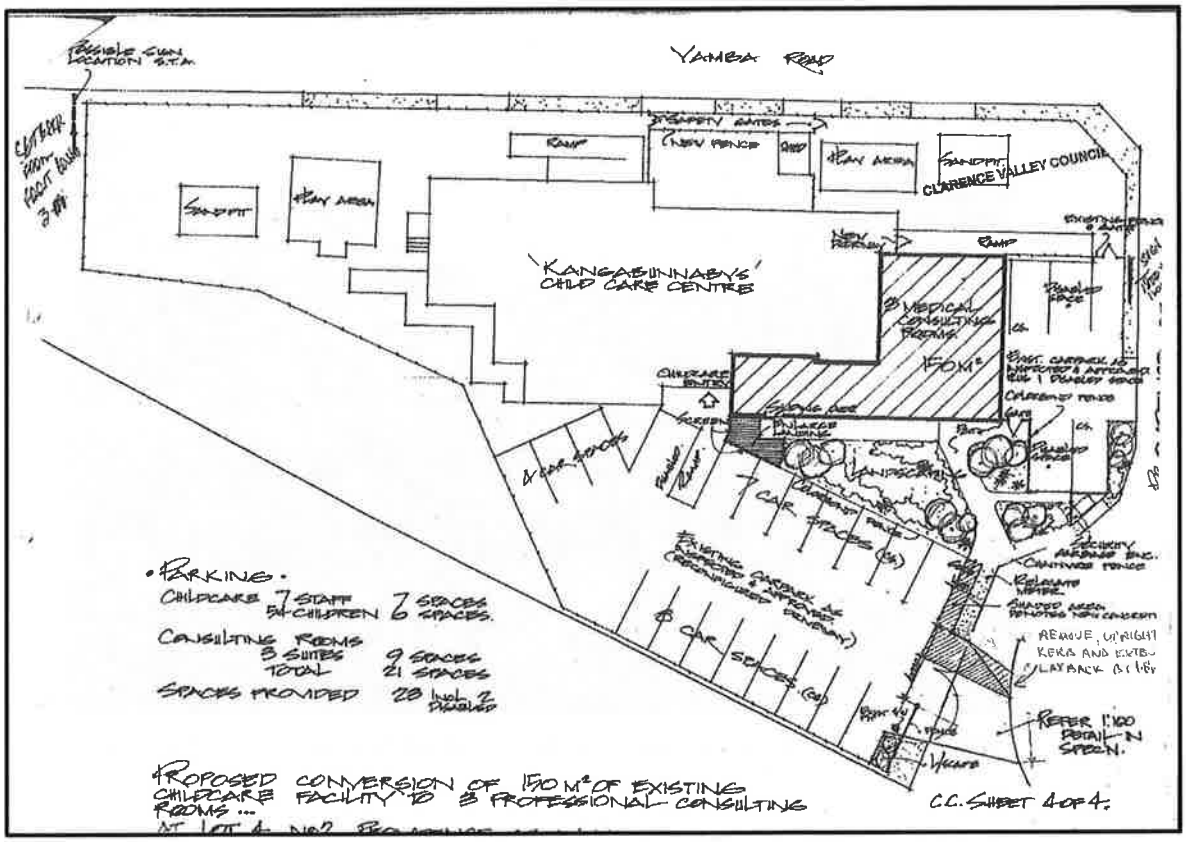


Figure 2 – Existing Site Layout (54 Childcare & 150m² Health Care)

2.0 Review of Roads and Traffic Authority Guidelines For Trip Generation

The Roads and Traffic Authority – *Guide To Traffic Generating Developments 2002* has identified in Section 3.11.2 for medical centres that:

> *".... evening peak period the mean peak vehicle trip generation rate was 8.8 veh/hr/100m² gross floor area, with a range of 3.1-19.4 veh/hr/100m². In the morning period of 9.00 am to 12.00 pm the mean peak vehicle trip generation rate was 10.4 veh/hr/100 m² gross floor area, with a range of 4.4-19.0 veh/hr/100 m²."*

The above rates are based upon metropolitan extended hours medical centres with sizes ranging from 110m² to 935m². With such variability, the previously adopted peak hour rate of 8.8 trips per hour per 100m² as nominated in the initial planning approval for conversion of 150m² to medical centre (by CRG Consultants) is reasonable for part conversion. However, it is proposed to use the higher mean rate of 10.4 trips per hour per 100m² for the NEW development given that the

entire site will now become a medical facility and is anticipated to have greater trip attraction than that of a part medical centre. This represents an 18% increase in peak hour demand compared to that previously approved. Further, it is confirmed the RTA rate for the Child Care Centre (Long Day Care) at peak generation of 0.8 trips per child is the maximum peak specified.

Trip assignment between origin/destination directions has been considered. On the basis that more dwellings/population within Yamba reside to the east of Providence Court, thereby a major directional split has been assigned at 60% demand from eastern area and 40% demand from west. Hence the existing peak hour trips for the current land use are:

Table A – Summary of Existing Development Peak Hour Generation

Description	Size/No.	Peak Hour Rate	Peak Trips
Exist Child Care	54 Children	0.8 trips/Child	44 trips/hr
Medical Centre	150m²	8.8 trips/100m²	13 trips/hr
		Existing Total	**57 trips/hr**

As previously stated, with the proposed conversion of the site to 100% medical centre use, the proposed peak trip generation characteristics applied are those of medical centre rate at the higher 10.4 trips per 100m². Hence the total peak hour trips for the NEW medical centre land use are:

Table B – Summary of NEW Development Peak Hour Generation + Existing Homes in Providence Court

Description	Size/No.	Peak Hour Rate	Peak Trips
Medical Centre	560m²	10.4 trips/100m²	59 trips/hr
Existing Providence Court Being 3 homes at 0.85/dwelling x 3 dwellings = 2.55 say 3 trips			3 trips / hr
		Total	**62 trips/hr**

Table C – Directional Trip Assignment for NEW Peak Hour Generation

Descriptions	Total In/Out	In From East	Out To East	Total East	In From West	Out To West	Total West
Morning Peak	62 trips	21	16	**37**	15	10	**25**
Afternoon Peak	62 trips	16	22	**38**	10	14	**24**

3.0 Yamba Road and Providence Court Intersection Performance

Discussion had with RTA's technical officer (Mr Baldwin) identified that given the site fronts to a busy local regional road, consideration of any increase in trip generation by developments should include intersection performance in accordance with the AUSTROADS *Part 4 – Intersection at Grade Requirements*. This document advises that whereby intersection flows exceed *Table 4.1 Intersection Capacity*, being 700 trips per hour, a detailed assessment of intersection performance via SIDRA or similar is recommended.

Traffic count data as derived from RTA Yamba Road (site no. 04.026) of 5,923vpd in 2007 shows peak hour flows in the order of 11% (refer **Appendix 2 – Traffic Count Data**). Adopting a 10yr traffic growth horizon and utilising a compounding growth rate of 1.005 as based upon past population census data, Yamba Road will have a total anticipated peak volume of 968vph for both AM or PM peaks. Modelling the assigned peak hour rate of 10.4 trips per 100m² GFA as per Table B and C, the intersection performance of Yamba Road/ Providence Court was found to function at LOS A or B of all movements. Refer **to Appendix 3 – SIDRA Results** for details of modelling outcomes.

4.0 Car Parking Demand and Configuration

The Roads and Traffic Authority – *Guide To Traffic Generating Developments 2002* has identified in Section 5.12.2 for medical centres that a rate of 4 spaces per 100m² of GFA is recommended. Based upon a total 560m² GFA, this equates to 22.4 spaces. The site currently has 23 spaces on site thereby there is a marginal technical surplus of 0.6 of a space.

Clarence Valley Council's Development Control Plan in Clause J7 *Access and Car Parking*, specifies that a rate of 3 car parking spaces per health care professional are required. Hence with an existing supply of 23 spaces, the development could cater for between 7 to 8 health care professionals on site at any given time in compliance with Council's controls. As the development site can predominately meet with its parking obligations under the broader Roads and Traffic Authority

Guidelines, it is considered that the proposed medical facility does not require any overriding conditions nominating the extent of health care professionals permitted on site.

The existing development spaces meet with the requirements of AS2890.1 *Off Street Car Parking (2004)* however it is noted that since this standard was released, there has been modification to the requirements of disabled spaces in such that additional dedicated 'clear' space is now sort. Should upgrading of the disabled spaces to current standards be mandated upon any change of use approvals, it is requested that should this result in a net loss in a parking space, that such a lost parking space be retained as a credit. Whilst every design effort would be undertaken to limit loss of a parking space to achieve upgrading parking accessibility, given that the development had met with supplying 23 compliant spaces during its operation and would continue to do so today (if the change of use was not acted upon), it is reasoned that a request for recognition of a parking space credit in lieu of upgrading disabled spaces is appropriate for existing facilities. Alternatively, Council's acceptance of a minor reduction in parking demand (ie. allow facility to operate with 1 space shortfall) would be necessary.

5.0 Summary and Conclusion

The proposed conversion of the existing childcare and 150m² professional consulting room centre to that of a 560m² GFA medical centre is able to comply with the requirements of Clarence Valley Council and the Roads and Traffic Authority such that:

(a) Traffic impacts from the facility result in only minor increase in traffic generation and that such increase does not unduly impact upon the function of Yamba Road and Providence Court intersection which operates at Level of Service A or B performance.

(b) Parking demands are able to meet the RTA's medical centre rate of 4 spaces per 100m² GFA with 23 spaces currently onsite inclusive of two (2) disabled spaces.

APPENDIX 1

Previous Traffic Investigations

CARTER RYTENSKILD GROUP
Traffic and Acoustical Consultants

GOLD COAST
2563 Gold Coast Highway
Mermaid Beach Queensland 4218

POSTAL:
PO Box 441
Mermaid Beach Queensland 4218

P: (07) 5527 7333
F: (07) 5527 7555

E: info@crg.net.au
CRG Traffic & Acoustics Pty Ltd

BRISBANE
Level 36, Riparian Plaza
71 Eagle Street
Brisbane Queensland 4000

POSTAL:
Level 36, Riparian Plaza
71 Eagle Street
Brisbane Queensland 4000

P: (07) 3121 3198
F: (07) 3121 3030

www.crg.net.au
ABN 47 653 772 655

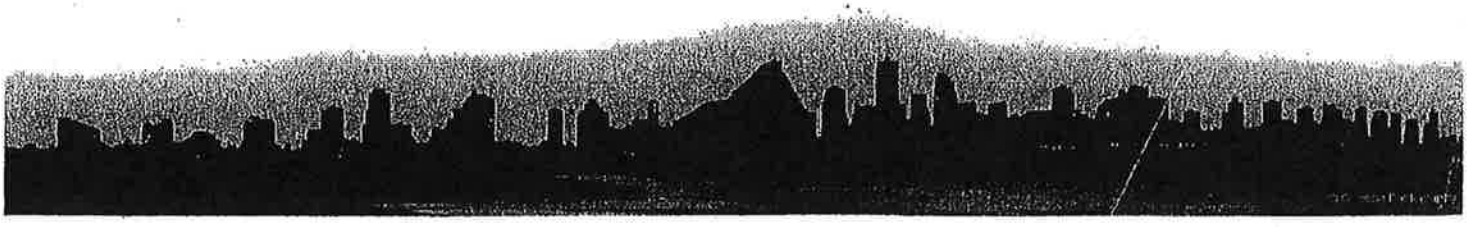
Proposal to Incorporate Consulting Rooms
Into a Child Care Centre
2 Providence Court, Yamba
Lot 4 on DP1104127

TRAFFIC ENGINEERING ASSESSMENT

Prepared For

Misoopa Pty Ltd

19 May 2009
crgref: 09192t



DOCUMENT REGISTER

NUMBER	ISSUE	AUTHOR	PROJECT DIRECTOR
1	19 May 2009	Chris Levers BE (Civil)	Luke Rytenskild BE (Civil), RPEQ

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1 INTRODUCTION

CRG Traffic & Acoustics Pty Ltd has been engaged by Misoopa Pty Ltd to undertake a traffic engineering assessment of a proposal to include a Medical Centre (3 Professional Consulting Rooms) within an existing Child Care Centre at No. 2 Providence Court, Yamba.

This report has been prepared in response to a request for additional information issued by the Clarence Valley Council dated 1 May 2009.

The following issues have been addressed as part of the assessment:

- Traffic impact;
- Car parking supply and design;
- Access design.

2 PROPOSED DEVELOPMENT

2.1 Subject Site

The subject site (Figure 2.1) is known as No. 2 Providence Court. The site has frontage to Yamba Road and Providence Court and is occupied by a Child Care Centre.

Figure 2.1 – Location of Subject Site

2.2 Plan of Development

The proposal is to reduce the floor area of the existing Child Care Centre on the site by 150m^2 to facilitate the inclusion of a small general practice medical centre with 3 consultation rooms.

The approved Child Care Centre is licensed to cater for 90 children, which will be reduced to 54 children as part of the proposal. The Child Care Centre will be operated by 7 staff.

The Medical Centre will operate during the following hours:

Monday to Friday	7am to 7pm
Saturday	7am to 6pm
Sunday	8am to 6pm

A total of 23 car parking spaces are proposed at ground level in 2 separate car parks. The main car parking area will comprise 19 spaces and the smaller car parking area will comprise 4 parking spaces including 2 disabled spaces. Separate driveways are proposed to each car park.

A copy of the proposed Site Plan has been reproduced in Figure 2.2 on the following page.

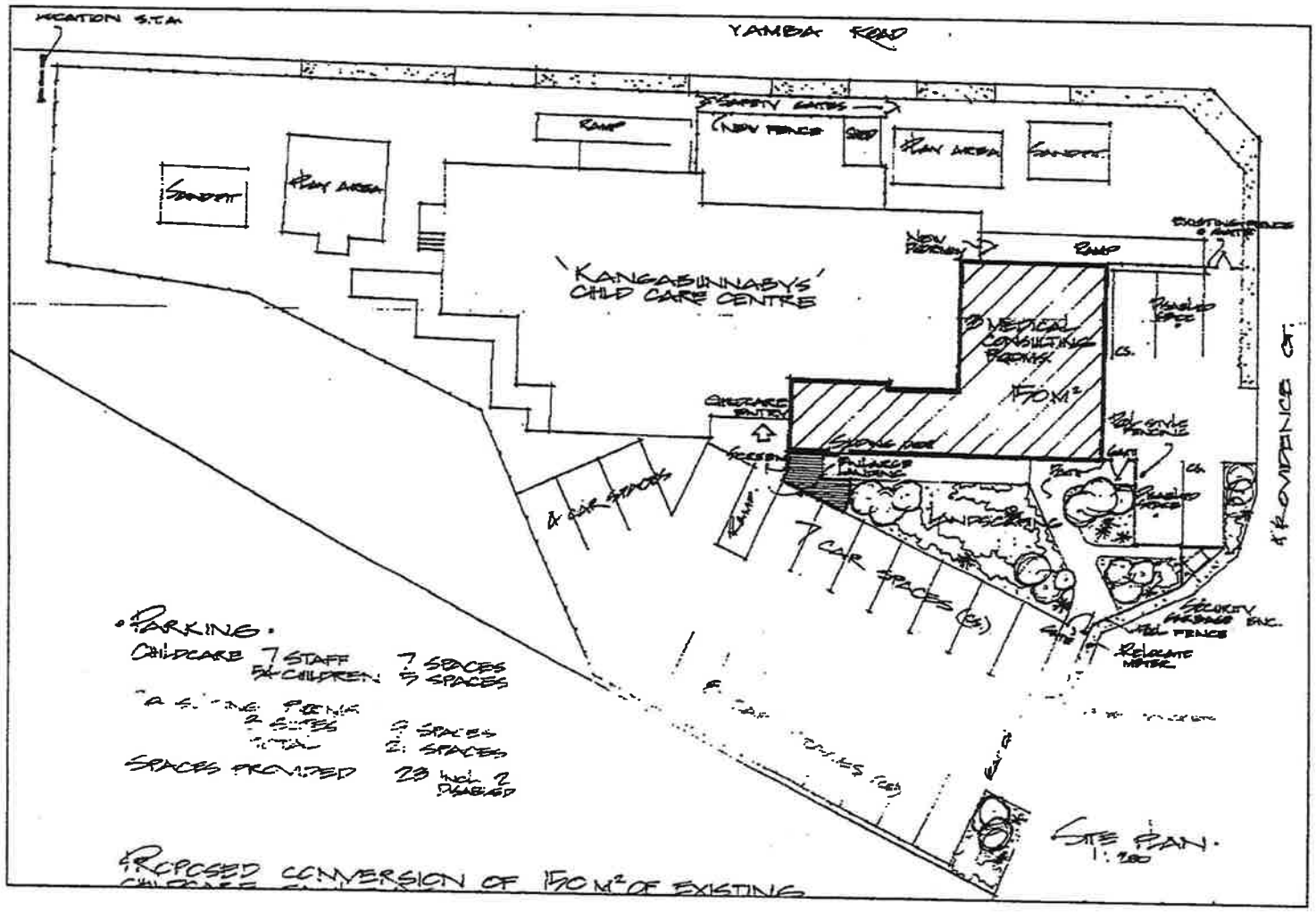
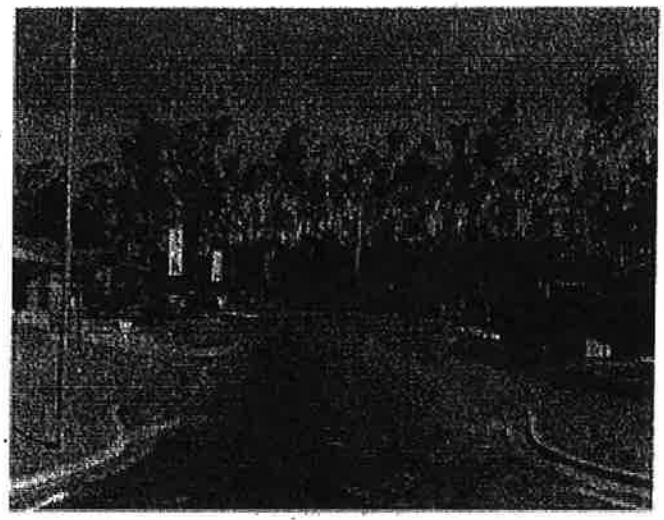


Figure 2.2 – Proposed Site Plan

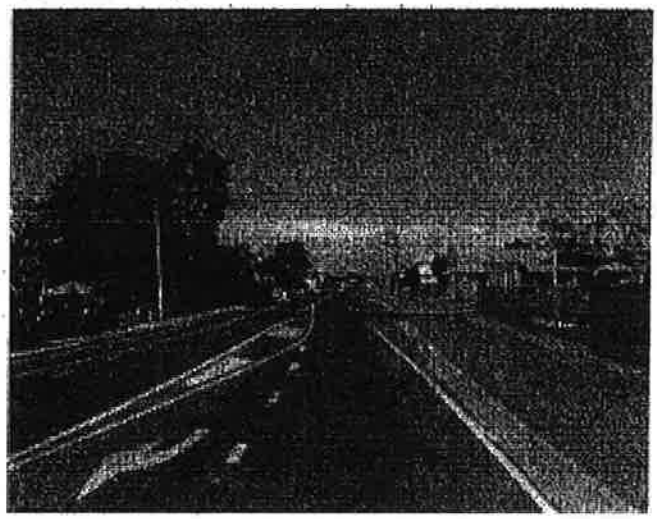
3 EXISTING ROAD & TRAFFIC CONDITIONS

3.1 Existing Roadway Conditions

Images of existing road conditions in the vicinity of the subject site are shown in Figure 3.1.



Providence Court



Looking East in Yamba Road Adjacent to the Subject Site Frontage

Figure 3.1 – Images of the Local Road Network in the vicinity of the Site

Providence Court is a local access street and provides access to three residential properties and the subject site. Yamba Road provides the principal road link into Yamba from the Pacific Highway. It comprises one traffic lane in each direction in the vicinity of the subject site. The intersection of Yamba Road and Providence Court is a simple t-junction with no turning lanes provided. However, as part of the Child Care Centre approval it was required that new line marking be provided in Yamba Road as shown in Figure 3.2 on the following page. A bond for this work was paid in July 2008, but as yet the new line marking scheme has not been implemented.

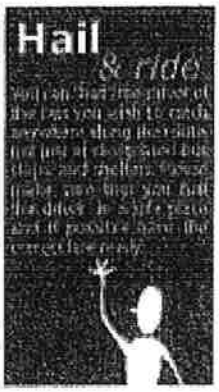
4 ACCESS TO PUBLIC TRANSPORT

Busways operate a bus service between Grafton and Yamba, which is known as Route 380. It is a 'hail and ride' service, meaning that passengers can hail the driver anywhere along the route, not just at designated bus shelters. However, there is a bus shelter located in Yamba Road opposite the subject site for passengers travelling eastbound to Yamba.

The Route 380 service operates along Yamba Road adjacent to the subject site, seven days a week. An extract of the Busways Route 380 service is shown below in Figure 4.1.

Route 380 Yamba - Maclean - Grafton Hail & Ride — busways

Monday to Friday							Weekends			
Route number	380	380	380	380	380	380	380	380	380	380
	am	am	am	pm	pm	pm	am	am	pm	pm
Angourie (The Point)	6.48	....	11.18	....	3.03	....	7.18	9.18	1.18	3.48
Woolowyah (Lakes Blvd)	6.53	....	11.23	....	3.08	....	7.23	9.23	1.23	3.53
Yamba (Coldstream St)	7.00	9.30	11.30	1.30	3.15	5.05	7.30	9.30	1.30	4.00
Yamba (Pipple Beach Convent)	7.05	9.35	11.35	1.35	3.20	5.10	7.35	9.35	1.35	4.05
West Yamba, Bligh St (Opp Bi-Lo)	7.15	9.45	11.45	1.46	3.30	5.15	7.45	9.45	1.45	4.15
Opp Palmers Island School	7.20	9.50	11.50	1.50	3.35	5.20	7.50	9.50	1.50	4.20
Harwood Bridge	7.25	9.55	11.55	1.55	3.40	5.25	7.55	9.55	1.55	4.25
Maclean Blvd & River St	7.30	10.00	12.00	2.00	3.45	5.30	8.00	10.00	2.00	4.30
Maclean TAFE	7.32	10.02	12.02	2.02	3.50	5.32	8.02	10.02	2.02	4.32
Tyndale bus shelter	7.42	10.12	12.12	2.12	4.03	5.45	8.12	10.12	2.12	4.42
Cowper School	7.53	10.23	12.23	2.23	4.15	5.55	8.18	10.18	2.18	4.48
Ulmarra (Coldstream St)	8.00	10.30	12.30	2.30	4.23	6.16	8.25	10.25	2.25	4.55
Sth Grafton (Opp Post Office)	8.07	10.37	12.37	2.37	4.25	6.15	8.37	10.37	2.37	5.05
Grafton (Shopping World & TAFE)	8.12	10.42	12.42	2.42	4.32	6.18	8.42	10.42	2.42	5.12
Grafton (Prince St, Saraton Theatre)	8.20	10.50	12.50	2.50	4.40	6.20	8.50	10.50	2.50	5.20



Route 380 Grafton - Maclean - Yamba Hail & Ride — busways

Monday to Friday							Weekends			
Route number	380	380	380	380	380	380	380	380	380	380
	am	am	am	pm	pm	pm	am	am	pm	pm
Grafton (Prince St, Saraton Theatre)	7.25	9.30	11.30	1.30	3.30	5.15	7.30	9.30	1.30	4.30
Grafton (Shopping World)	7.28	9.33	11.33	1.33	3.33	5.18	7.33	9.33	1.33	4.33
Grafton (TAFE)	7.30	9.35	11.35	1.35	3.35	5.20	7.35	9.35	1.35	4.35
Sth Grafton (Post Office)	7.36	9.41	11.41	1.41	3.41	5.26	7.41	9.41	1.41	4.41
Ulmarra (Coldstream St)	7.47	9.52	11.52	1.52	3.52	5.37	7.52	9.52	1.52	4.52
Cowper School	7.55	10.00	12.00	2.00	4.00	5.45	8.00	10.00	2.00	5.00
Tyndale bus shelter	8.01	10.06	12.06	2.06	4.06	5.51	8.06	10.06	2.06	5.06
Maclean (TAFE)	8.13	10.18	12.18	2.18	4.18	6.03	8.18	10.18	2.18	5.18
Maclean Blvd & River St	8.30	10.22	12.22	2.22	4.22	6.07	8.22	10.22	2.22	5.22
Harwood Bridge	8.34	10.26	12.26	2.26	4.26	6.11	8.26	10.26	2.26	5.26
Palmers Island School	8.38	10.30	12.30	2.30	4.30	6.16	8.30	10.30	2.30	5.30
West Yamba, Bligh St (Bi-Lo)	8.42	10.34	12.34	2.34	4.34	6.20	8.34	10.34	2.34	5.34
Yamba (Coldstream St)	8.52	10.45	12.45	2.45	4.45	6.30	8.45	10.45	2.45	5.45
Yamba (Pipple Beach Convent)	8.57	10.50	12.50	2.50	4.50	6.35	8.50	10.50	2.50	5.50
Woolowyah (Lakes Blvd)	....	10.58	....	2.58	....	6.43	8.58	10.58	2.58	5.58
Angourie (The Point)	....	11.03	....	3.03	....	6.48	9.03	11.03	3.03	6.03

Weekends

Buses operate Public Holidays to Weekend timetable, except Good Friday and Christmas Day where there is no service.

Figure 4.1: Timetable for the Busways Route 380 Service

5 DEVELOPMENT TRAFFIC

5.1 Trip Generation

An indication of the traffic generation potential of the development proposal is provided by reference to the Roads and Traffic Authority's publication *Guide to Traffic Generating Developments – October 2002.*

The RTA Guidelines specify rates that are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the development proposal:

Child Care Centre (Long Day Care)
0.8 peak hour trips per child

Medical Centre
8.8 peak hour trips per 100m^2 GFA

Application of the above rates to the existing child care centre and the proposed plan of development reveals that the proposal will result in a decrease in traffic generation potential as follows:

Existing Development	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Child Care Centre – 90 children	36	36	72	36	36	72

Proposed Development	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Existing Child Care Centre – 54 children	22	22	44	22	22	44
Medical Centre (150m^2 GFA)	10	3	13	5	8	13
TOTAL	32	25	57	27	30	57

As demonstrated above, the proposed development will result in a decrease in traffic activity when compared to the existing approved development on the site. It is therefore concluded that the proposal will not have any adverse effect on the performance of the surrounding road network.

6 CAR PARKING

6.1 Car Parking Supply

Clarence Valley Council's 'Development in Residential Zones' Development Control Plan (DCP) specifies the following car parking supply rates applicable to the proposed development:

Childcare Centre	1 space per employee, plus A safe set-down / pick-up area of 1 space per 10 children
Professional Consulting Rooms	3 spaces per health care professional

Application of the above rates to the proposed development yields the following car parking requirement:

Component	Planning Scheme Requirements
Childcare Centre (54 children, 7 staff)	7 + (54 / 10) = 13 spaces
Medical Centre (3 health care professionals)	3 × 3 = 9 spaces
Total	**22 spaces**

The proposed development includes a total of 23 car parking spaces, including 2 disabled spaces, and therefore exceeds Council's minimum requirement.

6.2 Car Parking Design

The geometric layout of the proposed parking facilities has been generally designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 – Off-Street Car Parking AS / NZ 2890.1:2004* in respect of parking bay dimensions and aisle widths.

Vehicular access to the development is proposed via two separate entry / exit driveways off Providence Court. The driveways have been adequately separated and also provide adequate separation from Yamba Road. The access design also allows clear sight lines at the property boundary to ensure visibility between vehicles leaving the car park and pedestrians on Providence Court.

7 SUMMARY OF CONCLUSIONS & RECOMMENDATIONS

- The subject site (Figure 2.1) is known as No. 2 Providence Court. The site has frontage to Yamba Road and Providence Court and is occupied by a Child Care Centre.

- The proposal is to reduce the floor area of the existing Child Care Centre on the site by 150m^2 to facilitate the inclusion of a small general practice medical centre with 3 consultation rooms. The approved Child Care Centre is licensed to cater for 90 children, which will be reduced to 54 children as part of the proposal. The Child Care Centre will be operated by 7 staff.

- The Clarence Valley Council's 'Development in Residential Zones' Development Control Plan (DCP) requires that the proposed development provide a minimum of 22 car parking spaces. A total of 23 car parking spaces are proposed which exceeds this minimum requirement.

- The proposed access and car parking arrangements have been generally designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 – Off-Street Car Parking AS / NZ 2890.1:2004*.

- The Busways Route 380 service (Grafton to Yamba) operates along Yamba Road adjacent to the subject site, seven days a week. It is a 'hail and ride' service, however there is a bus shelter located in Yamba Road opposite the subject site for passengers travelling eastbound to Yamba.

- As part of the original Child Care Centre approval it was required that new line marking be provided in Yamba Road as shown in Figure 3.2. A bond for this work was paid in July 2008, but as yet the new line marking scheme has not been implemented.

- It is estimated that the proposed development will generate in the order of 57 peak hour vehicle trips, which represents an overall decrease in peak period traffic activity when compared to the existing approved development on the site. It is therefore concluded that the proposal will not have any adverse effect on the performance of the surrounding road network.

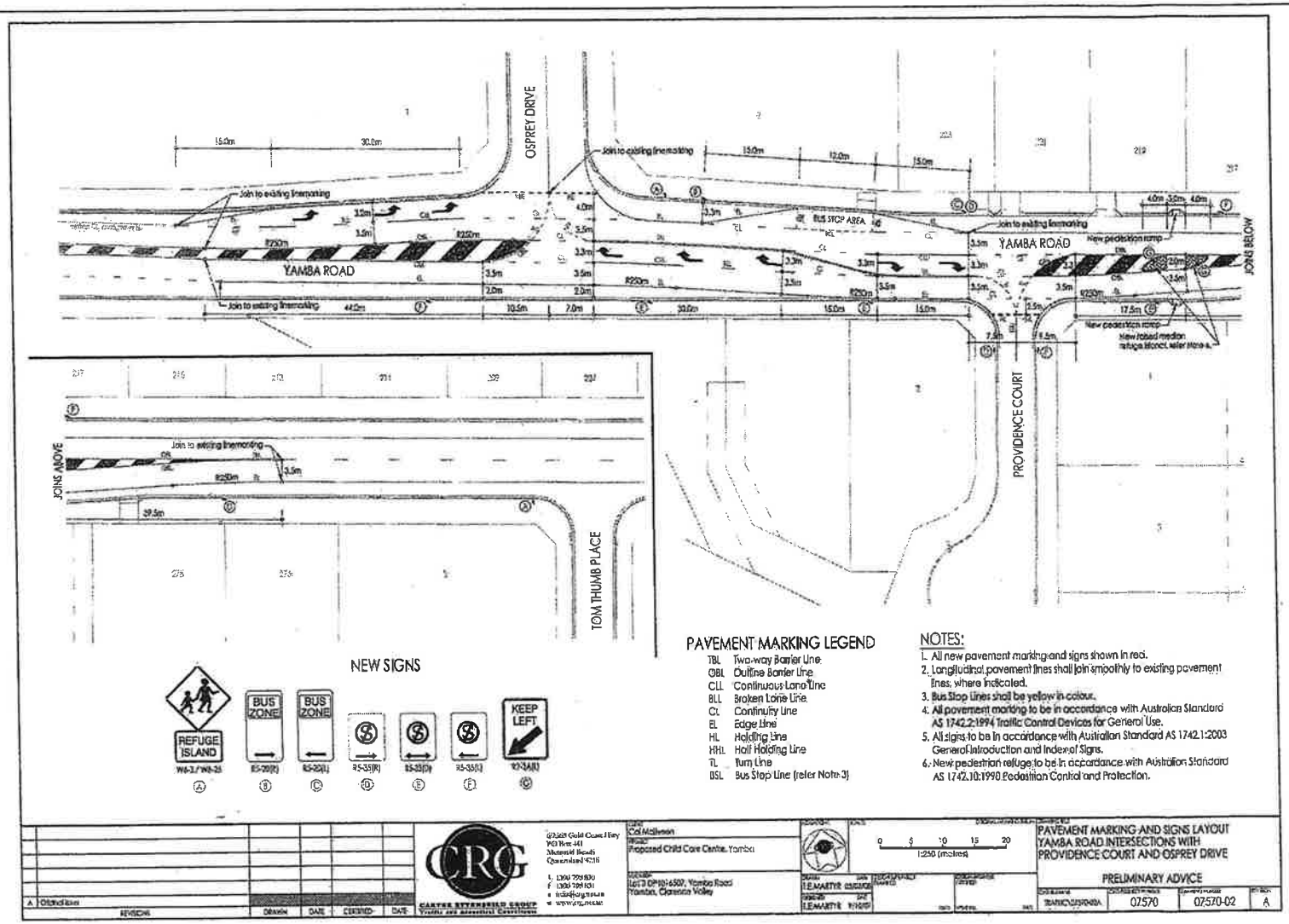


Figure 3.2: Approved Line Marking for Yamba Road

APPENDIX 2

Traffic Count and Intersection Modelling Data

RVSR741R Hourly Traffic Count by Day

Ver 2.1 For Period from 18-JUN-2007 to 24-JUN-2007

11-Aug-2011 12:12

Road Description - GRAFTON-MACLEAN-YAMBA
Installation Group - [3044218] SH10 (Pacific Hwy), Harwood - int with MR152 (Yamba Rd)
Installation - [2740025] MR152 (Yamba Rd), Harwood - E of SH10 (Pacific Hwy)
Old Station - 04.026
Direction - Eastbound Lane - All lanes
Traffic Count Type - Axle Pairs Year - 2007

	DAY							Weekdays			Weekend			Whole Week
Hour Comm.	MON 18/06	TUE 19/06	WED 20/06	THU 21/06	FRI 22/06	SAT 23/06	SUN 24/06	Total	Mean	%	Total	Mean	%	Total Mean %
00:00	6^	1^	8^	6^	6^	12^	11^	27^	5	0.18	23^	12	0.50	50^ 7 0.26
01:00	4^	4^	1^	1^	5^	3^	5^	15^	3	0.10	8^	4	0.18	23^ 3 0.12
02:00	5^	4^	3^	7^	8^	5^	5^	27^	5	0.18	10^	5	0.22	37^ 5 0.19
03:00	2^	5^	3^	3^	7^	8^	8^	20^	4	0.14	16^	8	0.35	36^ 5 0.19
04:00	11^	7^	6^	12^	14^	9^	11^	50^	10	0.34	20^	10	0.44	70^ 10 0.36
05:00	18^	16^	23^	21^	16^	13^	36^	94^	19	0.64	49^	25	1.08	143^ 20 0.74
06:00	79^	51^	71^	82^	82^	38^	24^	365^	73	2.48	62^	31	1.36	427^ 61 2.22
07:00	124^	105^	127^	131^	105^	74^	41^	592^	118	4.03	115^	58	2.52	707^ 101 3.67
08:00	209^	190^	221^	232^	212^	145^	116^	1064^	213	7.24	261^	131	5.73	1325^ 189 6.88
09:00	226^	213^	222^	204^	223^	171^	191^	1088^	218	7.41	362^	181	7.94	1450^ 207 7.53
10:00	208^	213^	214^	202^	228^	241^	202^	1065^	213	7.25	443^	222	9.72	1508^ 215 7.83
11:00	228^	222^	210^	209^	223^	254^	215^	1092^	218	7.43	469^	235	10.29	1561^ 223 8.11

```
|12:00|    199^   235^   205^   214^   212^   239^   184^|    1065^   213   7.25 |     423^   212   9.28 |
   1488^   213   7.73 |
|13:00|    220^   206^   244^   233^   234^   218^   175^|    1137^   227   7.74 |     393^   197   8.62 |
   1530^   219   7.95 |
|14:00|    228^   215^   246^   260^   250^   196^   158^|    1199^   240   8.16 |     354^   177   7.77 |
   1553^   222   8.07 |
|15:00|    332^   272^   269^   291^   309^   191^   184^|    1473^   295  10.03 |     375^   188   8.23 |
   1848^   264   9.60 |
|16:00|    295^   274^   318^   285^   290^   171^   156^|    1462^   292   9.95 |     327^   164   7.18 |
   1789^   256   9.29 |
|17:00|    219^   229^   287^   312^   298^   183^   136^|    1345^   269   9.16 |     319^   160   7.00 |
   1664^   238   8.65 |
|18:00|    100^   102^   176^   119^   186^   111^   101^|     683^   137   4.65 |     212^   106   4.65 |
    895^   128   4.65 |
|19:00|     49^    59^    57^    63^   112^    62^    61^|     340^    68   2.31 |     123^    62   2.70 |
    463^    66   2.41 |
|20:00|     29^    36^    38^    48^    40^    40^    25^|     191^    38   1.30 |      65^    33   1.43 |
    256^    37   1.33 |
|21:00|     17^    18^    51^    46^    33^    30^    13^|     165^    33   1.12 |      43^    22   0.94 |
    208^    30   1.08 |
|22:00|     16^    10^    24^    15^    21^    36^    20^|      86^    17   0.59 |      56^    28   1.23 |
    142^    20   0.74 |
|23:00|      3^     7^     9^    12^    14^    19^    10^|      45^     9   0.31 |      29^    15   0.64 |
     74^    11   0.38 |
|-----|-------------------------------------------------|----------------------|----------------------|
----------------------|
|06-09|    412^   346^   419^   445^   399^   257^   181^|    2021^   404  13.76 |     438^   219   9.61 |
   2459^   351  12.78 |
|09-15|   1309^  1304^  1341^  1322^  1370^  1319^  1125^|    6646^  1329  45.24 |    2444^  1222  53.63 |
   9090^  1299  47.23 |
|15-18|    846^   775^   874^   888^   897^   545^   476^|    4280^   856  29.14 |    1021^   511  22.41 |
   5301^   757  27.54 |
|18-06|    260^   269^   399^   353^   462^   348^   306^|    1743^   349  11.87 |     654^   327  14.35 |
   2397^   342  12.45 |
|-----|-------------------------------------------------|----------------------|----------------------|
----------------------|
|TOTAL|   2827^  2694^  3033^  3008^  3128^  2469^  2088^|   14690^  2938 100.00 |    4557^  2279 100.00 |
  19247^  2750 100.00 |
|-----|-------------------------------------------------|----------------------+----------------------+
----------------------|
| MAX |    332^   274^   318^   312^   309^   254^   215^|   AWT =   2938^          AWE =   2279^
  ADT =   2750^       |
x-----+-------------------------------------------------+-------------------------------------------------
----------------------x
```

Note : Traffic counts are measured by Vehicles (or unknown type) unless otherwise noted
Traffic Count Type Codes : V - Vehicle ^ - Axle Pairs
♀RVSR741R Hourly Traffic Count by Day
Page 2
Ver 2.1 For Period from 18-JUN-2007 to 24-JUN-2007
11-Aug-2011 12:12

Road Description	-	GRAFTON-MACLEAN-YAMBA			
Installation Group	-	[3044218] SH10 (Pacific Hwy), Harwood - int with MR152 (Yamba Rd)			
Installation	-	[2740025] MR152 (Yamba Rd), Harwood - E of SH10 (Pacific Hwy)			
Old Station	-	04.026			
Direction	-	Eastbound	Lane	-	All lanes
Traffic Count Type	-	Axle Pairs	Year	-	2007

E N D O F R E P O R T

Started on 11-Aug-2011 at 12:12:05
Completed on 11-Aug-2011 at 12:12:05

Run by MATAMAKI ROSIE as RVSADM

Input Parameters were:
Start Monday = < 18-JUN-2007 >
End Sunday = < 24-JUN-2007 >
Installations = < 2740025 >

Note : Traffic counts are measured by Vehicles (or unknown type) unless otherwise noted
Traffic Count Type Codes : V - Vehicle ^ - Axle Pairs
♀

RVSR741R Hourly Traffic Count by Day

Ver 2.1 For Period from 18-JUN-2007 to 24-JUN-2007 11-Aug-2011 12:12

Road Description - GRAFTON-MACLEAN-YAMBA
Installation Group - [3044218] SH10 (Pacific Hwy), Harwood - int with MR152 (Yamba Rd)
Installation - [2740026] MR152 (Yamba Rd), Harwood - E of SH10 (Pacific Hwy)
Old Station - 04.026
Direction - Westbound Lane - All lanes
Traffic Count Type - Axle Pairs Year - 2007

	DAY							Weekdays	
	Weekend			Whole Week					
Hour % Comm.	MON Total 18/06	TUE Mean 19/06	WED % 20/06	THU Total 21/06	FRI Mean 22/06	SAT % 23/06	SUN 24/06	Total	Mean
00:00	7^	3^	3^	6^	4^	13^	10^	23^	5
0.16	23^	12	0.49	46^	7	0.24			
01:00	5^	6^	3^	5^	6^	8^	7^	25^	5
0.17	15^	8	0.32	40^	6	0.21			
02:00	3^	5^	4^	5^	8^	3^	9^	25^	5
0.17	12^	6	0.26	37^	5	0.19			
03:00	6^	2^	2^	3^	5^	7^	8^	18^	4
0.12	15^	8	0.32	33^	5	0.17			
04:00	10^	7^	8^	17^	11^	8^	7^	53^	11
0.36	15^	8	0.32	68^	10	0.35			
05:00	46^	36^	33^	37^	43^	41^	21^	195^	39
1.31	62^	31	1.33	257^	37	1.32			
06:00	116^	85^	108^	120^	89^	51^	29^	518^	104
3.49	80^	40	1.72	598^	85	3.07			
07:00	258^	258^	239^	270^	246^	118^	65^	1271^	254
8.57	183^	92	3.93	1454^	208	7.46			
08:00	319^	283^	292^	322^	321^	215^	133^	1537^	307
10.36	348^	174	7.47	1885^	269	9.67			
09:00	291^	251^	290^	272^	286^	280^	177^	1390^	278
9.37	457^	229	9.81	1847^	264	9.47			
10:00	225^	298^	219^	266^	267^	287^	220^	1275^	255
8.59	507^	254	10.88	1782^	255	9.14			
11:00	231^	194^	217^	231^	222^	263^	223^	1095^	219
7.38	486^	243	10.43	1581^	226	8.11			
12:00	236^	179^	199^	245^	253^	224^	205^	1112^	222
7.49	429^	215	9.21	1541^	220	7.90			
13:00	208^	207^	216^	213^	228^	205^	232^	1072^	214
7.23	437^	219	9.38	1509^	216	7.74			
14:00	224^	205^	238^	256^	265^	156^	206^	1188^	238
8.01	362^	181	7.77	1550^	221	7.95			
15:00	208^	235^	261^	225^	209^	136^	189^	1138^	228
7.67	325^	163	6.98	1463^	209	7.50			
16:00	158^	177^	203^	213^	193^	123^	160^	944^	189
6.36	283^	142	6.08	1227^	175	6.29			
17:00	139^	144^	167^	180^	155^	79^	139^	785^	157
5.29	218^	109	4.68	1003^	143	5.14			
18:00	64^	65^	73^	79^	72^	63^	56^	353^	71
2.38	119^	60	2.55	472^	67	2.42			
19:00	42^	21^	74^	51^	54^	54^	38^	242^	48
1.63	92^	46	1.98	334^	48	1.71			
20:00	14^	26^	37^	25^	80^	34^	38^	182^	36
1.23	72^	36	1.55	254^	36	1.30			

```
                    04_026_WB_2007_23767.txt
|21:00|    15^   32^   34^   31^   83^   39^   25^|    195^   39
1.31 |     64^    32  1.37 |    259^    37   1.33 |
|22:00|    10^   22^   70^   17^   25^   30^    8^|    144^   29
0.97 |     38^    19  0.82 |    182^    26   0.93 |
|23:00|     9^    4^   11^   12^   21^    7^    9^|     57^   11
0.38 |     16^     8  0.34 |     73^    10   0.37 |
|-----|-------------------------------------------------|----------------
------|----------------------|-----------------------|
|06-09|   693^  626^  639^  712^  656^  384^  227^|   3326^  665
22.42 |   611^   306 13.12 |  3937^   562  20.19 |
|09-15|  1415^ 1334^ 1379^ 1483^ 1521^ 1415^ 1263^|   7132^ 1426
48.07 |  2678^  1339 57.49 |  9810^  1401  50.32 |
|15-18|   505^  556^  631^  618^  557^  338^  488^|   2867^  573
19.32 |   826^   413 17.73 |  3693^   528  18.94 |
|18-06|   231^  229^  352^  288^  412^  307^  236^|   1512^  302
10.19 |   543^   272 11.66 |  2055^   294  10.54 |
|-----|-------------------------------------------------|----------------
------|----------------------|-----------------------|
|TOTAL|  2844^ 2745^ 3001^ 3101^ 3146^ 2444^ 2214^|  14837^ 2967
100.00 |  4658^  2329 100.00 |  19495^  2785 100.00 |
|-----|-------------------------------------------------|----------------
------+----------------------+-----------------------|
| MAX |   319^  298^  292^  322^  321^  287^  232^|  AWT =   2967^
        AWE =   2329^           ADT =    2785^       |
x-----+-------------------------------------------------+----------------
-------------------------------------------------------x
```

```
Note                         :  Traffic counts are measured by Vehicles (or
unknown type) unless otherwise noted
Traffic Count Type Codes :  V - Vehicle   ^ - Axle Pairs
♀RVSR741R                                            Hourly Traffic Count by
Day                                              Page    2
Ver 2.1                                      For Period from 18-JUN-2007 to
24-JUN-2007                              11-Aug-2011 12:12

Road Description     -  GRAFTON-MACLEAN-YAMBA
Installation Group   -  [3044218] SH10 (Pacific Hwy), Harwood - int with
MR152 (Yamba Rd)
Installation         -  [2740026] MR152 (Yamba Rd), Harwood - E of SH10
(Pacific Hwy)
Old Station          -  04.026
Direction            -  Westbound                  Lane                - All
lanes
Traffic Count Type   -  Axle Pairs                 Year                -
2007
```

```
                    E N D   O F   R E P O R T

             Started on    11-Aug-2011  at  12:12:59
             Completed on  11-Aug-2011  at  12:12:59

             Run by  MATAMAKI ROSIE  as  RVSADM


             Input Parameters were:
             Start Monday   = < 18-JUN-2007 >
```

04_026_WB_2007_23767.txt
End Sunday = < 24-JUN-2007 >
Installations = < 2740026 >

Note : Traffic counts are measured by Vehicles (or unknown type) unless otherwise noted
Traffic Count Type Codes : V - Vehicle ^ - Axle Pairs
♀

Location: Yamba Road and Providence Court
Suburb: Yamba

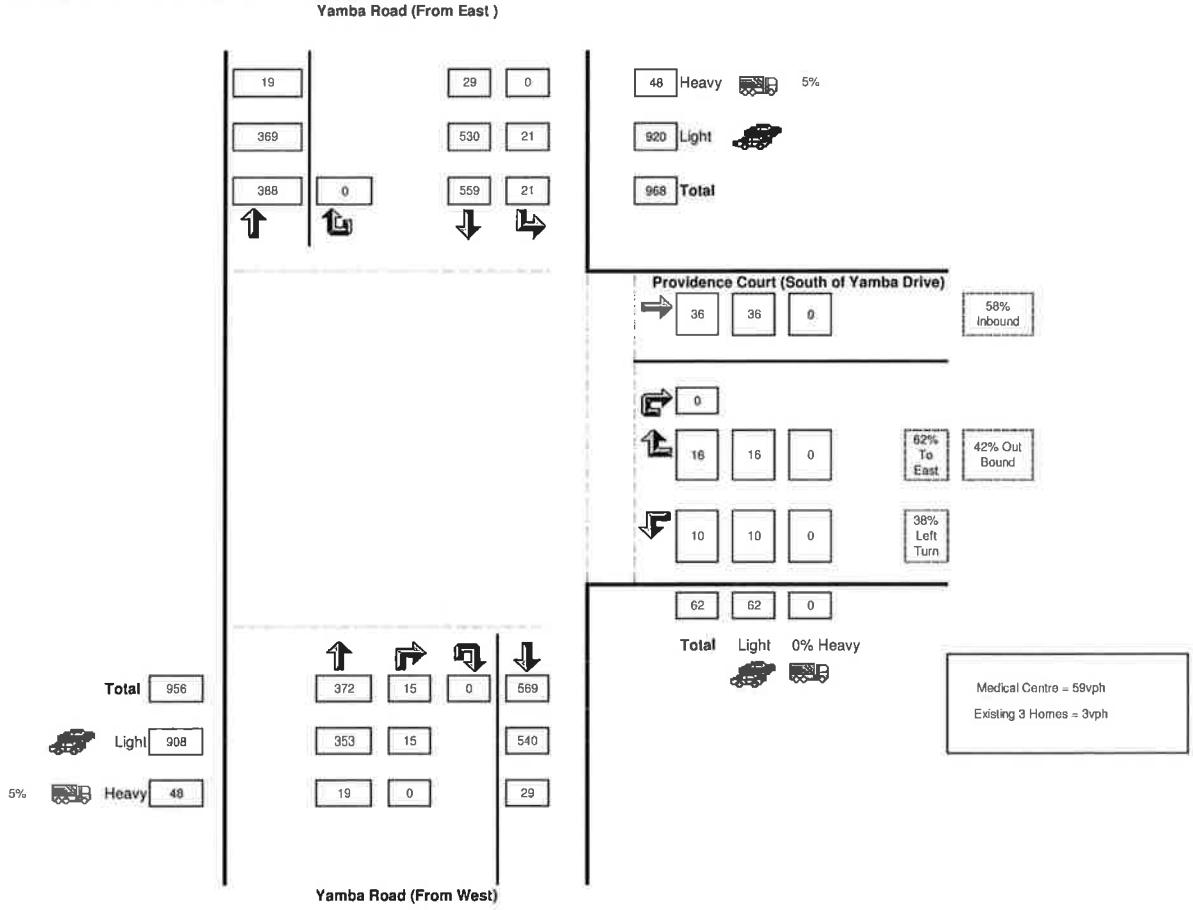
Morning AM Peak: Existing Case in 2022 - use annual 0.5%pa - See below

Growth Rate: Population 2001 to 2006 is 2% over 5yrs - Say 0.5% pa

RTA AADT Yamba Road near Harwood in 2007 = 5923 VPD in 2022 for 2012 + 10yrs use 1.005^15 = 1.08 Say 1.1 = 1.1 x 5923 = 6515.3 VPD
Maximum Peak Hour = 11%

Note: A Traffic Report by TTM (2003) for Treelands Dve Shopping Centre nominated peak flow Yamba Dve as 8,000vpd
therefore in 2022 use 1.005^19 = 1.099 Say 1.1 Hence 1.1 x 8,000vpd = 8,800 vpd and 40% East / 60% West Peak Hr splits (Morning)

ADOPT 8,800 VPD for Year 2022 on Yamba Dve
Use peak of 968 vph for Year 2022 on Yamba Dve



Future Case Year 2022 Morning AM Peak

(Yamba Road 40% East Bound and 60% West Bound)

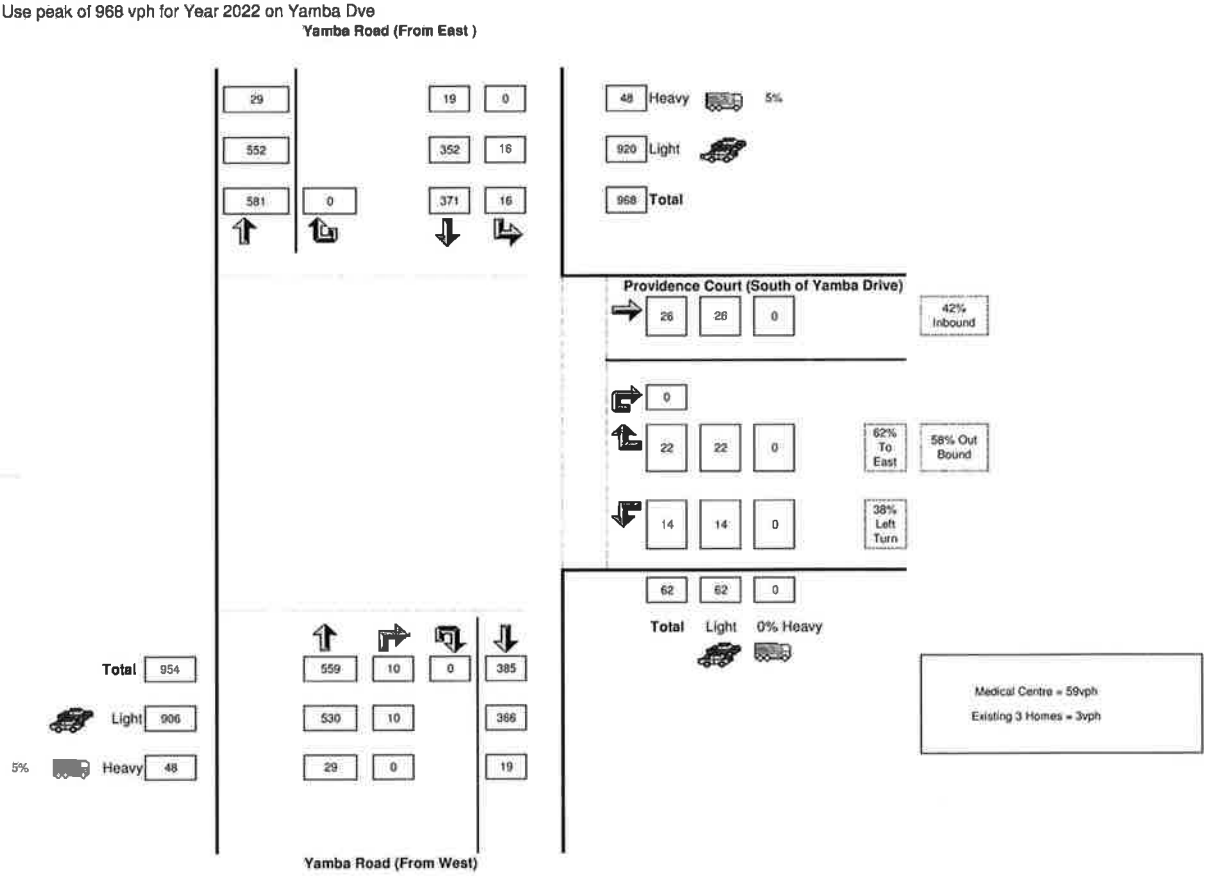
Note: Existing Childcare & 150m2 Medical = 57 trips in peak hour. NEW Facility of total of 560m2 of Medical (ie 560m2 at 10.4trips per 100m2 peak hour) results in 59 trips in peak hour

Location:	Yamba Road and Providence Court
Suburb:	Yamba
Afternoon PM Peak:	Use Existing Higher Demand in 2022 - use annual 0.5%pa - See below
Growth Rate:	Population 2001 to 2006 is 2% over 5yrs - Say 0.5% pa

RTA AADT Yamba Road near Harwood in 2007 = 5923 VPD in 2022 for 2012 + 10yrs use 1.005^15 = 1.08 Say 1.1 = 1.1 x 5923 = 6515.3 VPD
Maximum Peak Hour = 11%

Note: A Traffic Report by TTM (2003) for Treelands Dve Shopping Centre nominated peak flow Yamba Dve as 8,000vpd therefore in 2022 use 1.005^19 = 1.099 Say 1.1 Hence 1.1 x 8,000vpd = 8,800 vpd and 60% East / 40% West Peak Hr splits (Afternoon)

ADOPT 8,800 VPD for Year 2022 on Yamba Dve
Use peak of 968 vph for Year 2022 on Yamba Dve



Future Case Year 2022 Afternoon PM Peak

(Yamba Road 60% East Bound and 40% West Bound)

Note: Existing Childcare & 150m2 Medical = 57 trips in peak hour. NEW Facility of total of 560m2 of Medical (ie 560m2 at 10.4trips per 100m2 peak hour) results in 59 trips in peak hour

APPENDIX 3

SIDRA Results

ITEM 12.227/11 - 80

Intersection Summary

Yamba Road and Providence Court

Morning Peak At Year 2022

Performance Measure	Vehicles	Persons
Demand Flows - Total	994 veh/h	1491 pers/h
Percent Heavy Vehicles	4.7 %	
Degree of Saturation	0.309	
Effective Intersection Capacity	3219 veh/h	
95% Back of Queue (m)	1 m	
95% Back of Queue (veh)	0.2 veh	
Control Delay (Total)	0.20 veh-h/h	0.31 pers-h/h
Control Delay (Average)	0.7 s/veh	0.7 s/pers
Level of Service	Not Applicable	
Level of Service (Worst Movement)	LOS B	
Total Effective Stops	49 veh/h	73 pers/h
Effective Stop Rate	0.05 per veh	0.05 per pers
Proportion Queued	0.02	0.02
Travel Distance (Total)	251.5 veh-km/h	377.3 pers-km/h
Travel Distance (Average)	253 m	253 m
Travel Time (Total)	4.4 veh-h/h	6.6 pers-h/h
Travel Time (Average)	15.9 secs	15.9 secs
Travel Speed	57.4 km/h	57.4 km/h
Operating Cost (Total)	142 $/h	142 $/h
Fuel Consumption (Total)	25.3 L/h	
Carbon Dioxide (Total)	63.5 kg/h	
Hydrocarbons (Total)	0.068 kg/h	
Carbon Monoxide (Total)	2.39 kg/h	
NOX (Total)	0.137 kg/h	

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ITEM 12.227/11 - 81

Movement Summary

Yamba Road and Providence Court

Morning Peak At Year 2022

Give-way

Vehicle Movements

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Providence Court (South)										
1	L	10	0.0	0.052	10.3	LOS A	1	0.56	0.77	29.7
2	R	17	0.0	0.052	10.6	LOS A	1	0.56	0.83	29.3
Approach		**27**	**0.0**	**0.051**	**10.5**	**LOS A**	**1**	**0.56**	**0.81**	**29.4**
Yamba Drive (From East)										
4	L	21	0.0	0.309	10.7	LOS A	0	0.00	0.73	38.4
5	T	559	5.0	0.307	0.0	LOS A	0	0.00	0.00	60.0
Approach		**580**	**4.8**	**0.307**	**0.4**	**LOS A**		**0.00**	**0.03**	**59.2**
Yamba Drive (From West)										
11	T	372	5.1	0.197	0.0	LOS A	0	0.00	0.00	60.0
12	R	15	0.0	0.023	15.2	LOS B	1	0.58	0.78	29.9
Approach		**387**	**4.9**	**0.197**	**0.6**	**LOS A**	**1**	**0.02**	**0.03**	**58.5**
All Vehicles		**994**	**4.7**	**0.309**	**0.7**	**Not Applicable**	**1**	**0.02**	**0.05**	**57.4**

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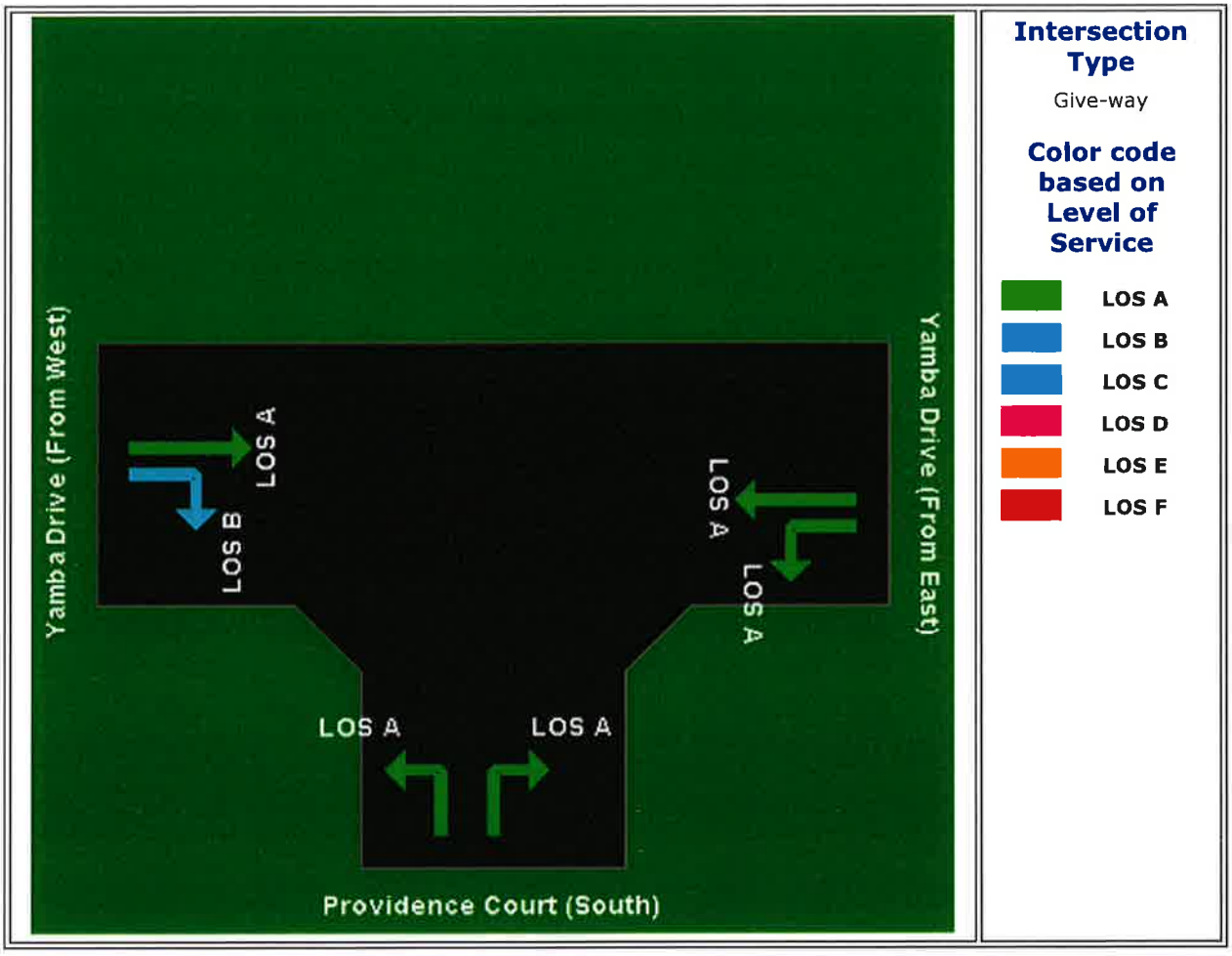
Level of Service

Based on Delay (RTA NSW)

Yamba Road and Providence Court

Morning Peak At Year 2022



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ITEM 12.227/11 - 83

Intersection Summary

Yamba Road and Providence Court

Afternoon Peak At Year 2022

Performance Measure	Vehicles	Persons
Demand Flows - Total	993 veh/h	1490 pers/h
Percent Heavy Vehicles	4.7 %	
Degree of Saturation	0.296	
Effective Intersection Capacity	3356 veh/h	
95% Back of Queue (m)	2 m	
95% Back of Queue (veh)	0.3 veh	
Control Delay (Total)	0.19 veh-h/h	0.28 pers-h/h
Control Delay (Average)	0.7 s/veh	0.7 s/pers
Level of Service	Not Applicable	
Level of Service (Worst Movement)	LOS A	
Total Effective Stops	47 veh/h	70 pers/h
Effective Stop Rate	0.05 per veh	0.05 per pers
Proportion Queued	0.02	0.02
Travel Distance (Total)	252.1 veh-km/h	378.2 pers-km/h
Travel Distance (Average)	254 m	254 m
Travel Time (Total)	4.4 veh-h/h	6.6 pers-h/h
Travel Time (Average)	16.0 secs	16.0 secs
Travel Speed	57.2 km/h	57.2 km/h
Operating Cost (Total)	143 $/h	143 $/h
Fuel Consumption (Total)	25.6 L/h	
Carbon Dioxide (Total)	64.1 kg/h	
Hydrocarbons (Total)	0.070 kg/h	
Carbon Monoxide (Total)	2.49 kg/h	
NOX (Total)	0.139 kg/h	

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ITEM 12.227/11 - 84

Movement Summary

Yamba Road and Providence Court

Afternoon Peak At Year 2022

Give-way

Vehicle Movements

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
Providence Court (South)										
1	L	14	0.0	0.066	9.9	LOS A	2	0.50	0.69	30.1
2	R	23	0.0	0.066	10.2	LOS A	2	0.50	0.81	29.7
Approach		**37**	**0.0**	**0.066**	**10.0**	**LOS A**	**2**	**0.50**	**0.76**	**29.8**
Yamba Drive (From East)										
4	L	16	0.0	0.205	10.7	LOS A	0	0.00	0.73	38.4
5	T	371	5.1	0.205	0.0	LOS A	0	0.00	0.00	60.0
Approach		**387**	**4.9**	**0.205**	**0.4**	**LOS A**		**0.00**	**0.03**	**59.1**
Yamba Drive (From West)										
11	T	559	5.0	0.296	0.0	LOS A	0	0.00	0.00	60.0
12	R	10	0.0	0.013	13.3	LOS A	0	0.48	0.69	33.1
Approach		**569**	**4.9**	**0.296**	**0.2**	**LOS A**	**0**	**0.01**	**0.01**	**59.5**
All Vehicles		**993**	**4.7**	**0.296**	**0.7**	**Not Applicable**	**2**	**0.02**	**0.05**	**57.2**

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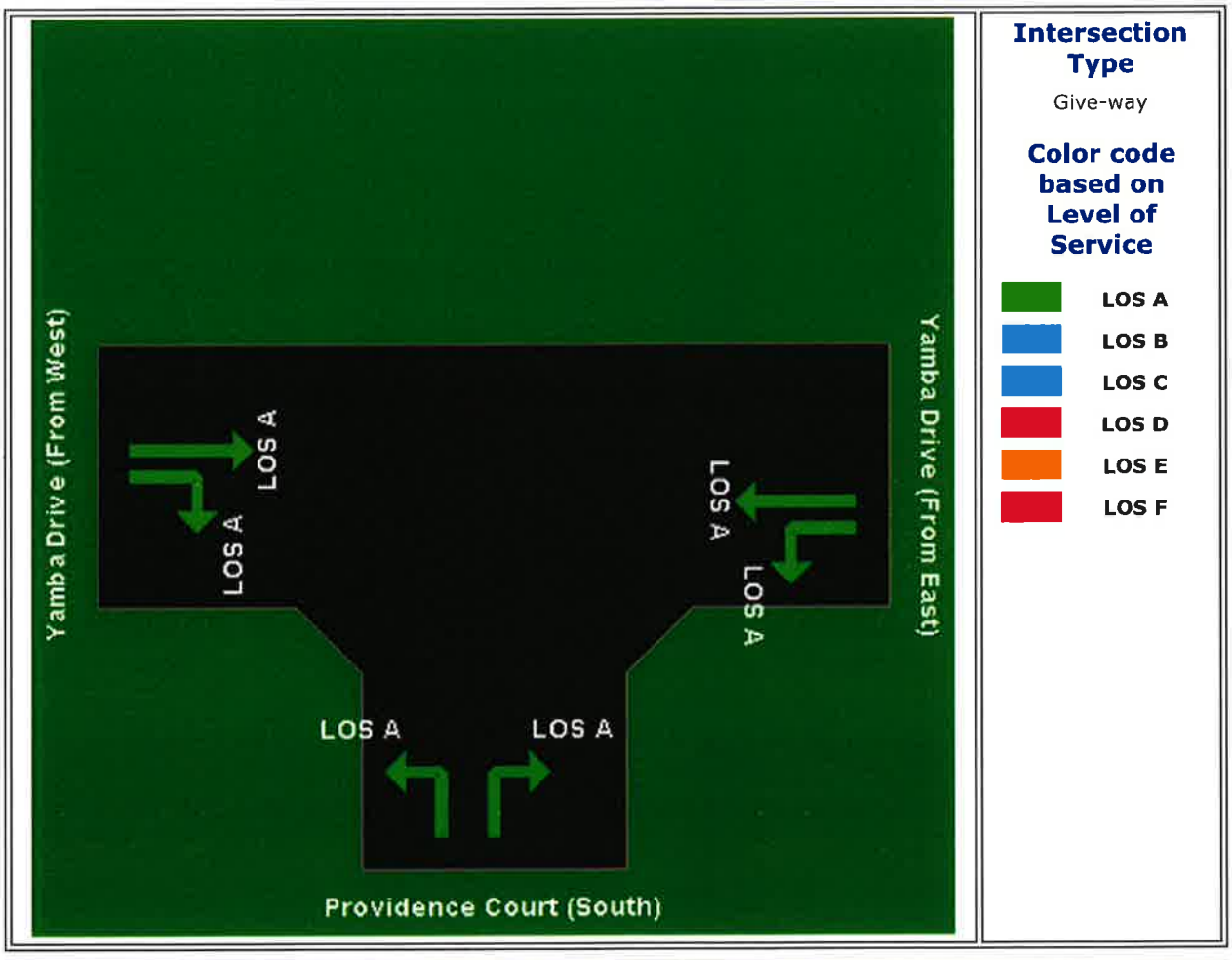
Level of Service

Based on Delay (RTA NSW)

Yamba Road and Providence Court

Afternoon Peak At Year 2022



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