Traffic Solutions Pty Ltd

PROPOSED RESIDENTIAL SUBDIVISION, LOT 6 DP 244030 & LOT 9 DP 250425 DIAMOND BEACH ROAD, DIAMOND BEACH.

TRAFFIC IMPACT ASSESSMENT

March 2010

Ref: 09.10.050

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CONTENTS

1. INTRODUCTION

This report has been prepared to accompany a Development Application to Greater Taree City Council for a proposed residential subdivision at Lot 6 DP 244030 & Lot 9 DP 250425 Diamond Beach Road, Diamond Beach. (Figure 1)

The subdivision proposes 89 residential lots with vehicle access for all of these lots via a new road which will link Edgewater Drive and Anniversary Drive, Diamond Beach.

This report examines the traffic implications of the proposed development and will assess the:

- Proposed access arrangements.
- Suitability of the internal road layout.
- Estimated traffic generation of the proposal.
- Impacts of the estimated traffic generation on the existing road network.

LOCATION

Fig 1

2. PROPOSED DEVELOPMENT

SITE

The subject site is known as Lot 6 DP 244030 and Lot 9 DP 250425 Diamond Beach Road and is located between Edgewater Drive and Anniversary Drive, Diamond Beach. Currently this land is mostly vacant with a single house fronting Diamond Beach Road.

DEVELOPMENT PROPOSAL

The subdivision proposes 89 residential lots with all lots gaining vehicle access via a new road system that will link Edgewater Drive and Anniversary Drive, Diamond Beach. The new link road between Edgewater and Anniversary Drives will create a minor collector road route for this area.

Edgewater Road joins Diamond Beach Road at a 'T' intersection which has been provided with an AUSTROADS type AUR auxiliary right turn treatment. Sight distance in each direction along Diamond Beach Road is very good. Photographs of the available sight lines are attached in appendix A.

Anniversary Drive links with Diamond Drive which provides access to Diamond Beach Road via a single lane 4 way roundabout at the junction with Panorama Drive.

A reduced copy of the proposed subdivision layout prepared by Lidbury, Summers & Whiteman, Consulting Surveyors, Planners and Engineers is reproduced on the following page.


NOTE: DIMENSIONS AND EASEMENTS ARE SUBJECT TO FINAL SURVEY
PROPOSED EASEMENT FOR DRAINAGE OF SEWAGE 3 WIDE
SCALE 1:1000
PLAYING FIELDS
DUNE SPRINGS CLOSE
DRIVE
EDGEWATER
ROAD
OLD SOLDIERS ROAD
BEACH
DIAMOND
EXISTING CARAVAN PARK
HALLIDAYS POINT PRIMARY SCHOOL
D.P.1048635
D.P.851676
D.P.1041002
D.P.813878
PROPOSED
PUBLIC
RESERVE
LIDBURY, SUMMERS & WHITEMAN
CONSULTING SURVEYORS, PLANNERS & ENGINEERS
PLAN OF PROPOSED SUBDIVISION
OF LOT 6 DP244030 & LOT 9 DP250425
DIAMOND BEACH ROAD
DIAMOND BEACH

3. EXISTING CONDITIONS

Diamond Beach Road serves a collector road function in this area, while Edgewater and Anniversary Drive serve as local roads by providing access for vehicles from the existing and proposed lots to Diamond Beach Road.

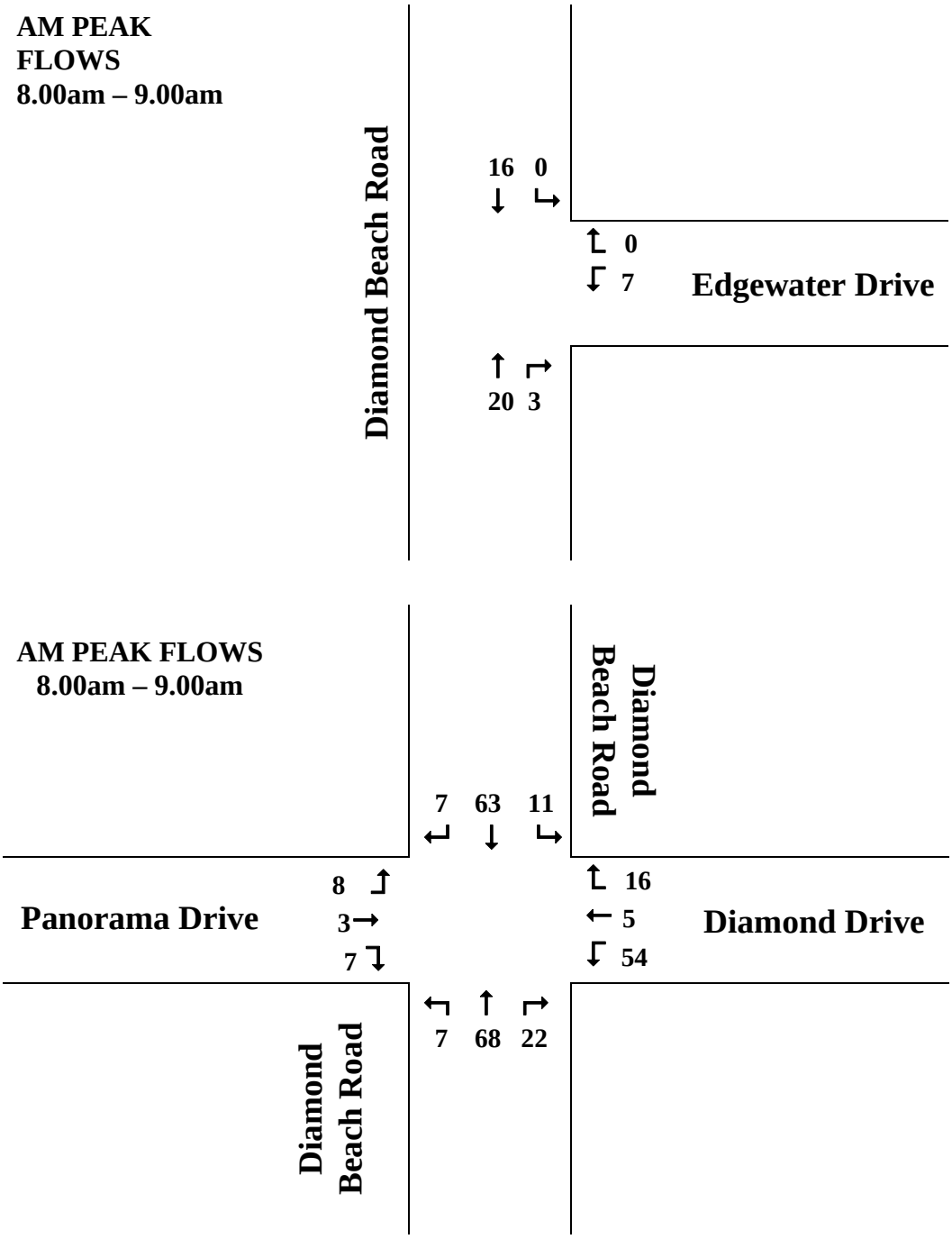
The main features of the existing traffic controls in the vicinity of the site are:

- A 50 Km/h speed limit on Diamond Beach Road.
- A 40 Km/h School Zone speed limit on Diamond Beach Road.
- A 60 Km/h speed limit on Diamond Beach Road at the intersection of Edgewater Drive.
- A 50 Km/h speed limit on Edgewater Drive.
- A 50 Km/h speed limit on Anniversary Drive.
- Give way restrictions in Edgewater Drive at Diamond Beach Road.
- Diamond Beach Road has a variable width pavement widening at intersections.
- Edgewater Drive has a variable pavement approximately 6.5m wide with no kerb.
- Anniversary Drive is 8m wide and provides kerb and gutter.

No restriction to on street car parking has been implemented in the vicinity of the subject site.

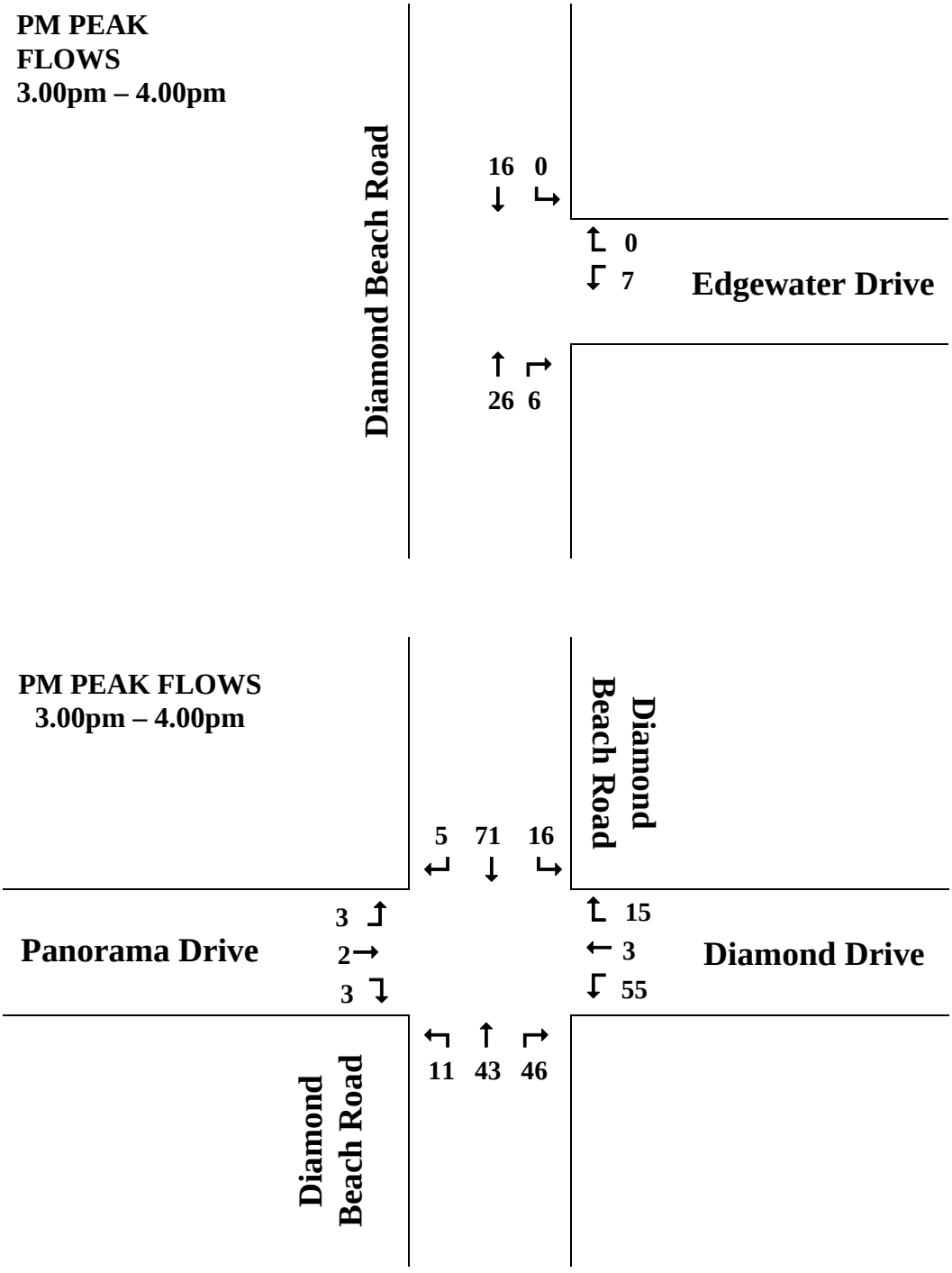
Data on the traffic movements in the vicinity of the subject site have been collected by surveys undertaken as part of this assessment by R.O.A.R Data on behalf of this firm from 7.00am - 9.00am and 3.00pm - 6.00pm on Wednesday 3rd March 2010 at the intersections of Diamond Beach Road and Edgewater Drive and the Roundabout at the intersection of Diamond Beach Road, Diamond Drive and Panorama Drive.

The detailed results of the surveys are attached as appendix B. The morning and evening peak hour flows at the intersection of Diamond Beach Road and Edgewater Drive were recorded as 8.00am – 9.00am and 3.00pm – 4.00pm. The morning and evening peak hour flows at the intersection of Diamond Beach Road, Diamond Drive and Panorama Drive were recorded at the same times, namely, as 8.00am – 9.00am and 3.00pm – 4.00pm. The peak hour flows at the intersections are depicted as Figure 2 and 3 on the following page.



EXISTING AM PEAK HOUR FLOWS

Fig 2



EXISTING PM PEAK HOUR FLOWS

Fig 3

4. KEY ISSUES

VEHICLE ACCESS

Vehicular access to the development will be available via Edgewater Drive or Anniversary Drive. The link road between these roads is proposed to have a carriageway width of 16m, i.e. an 8m pavement with 4.0m footpaths on both sides.

A site inspection reveals that intersections of Diamond Beach Road and Edgewater Drive and Diamond Drive, Anniversary Drive/Panorama Drive provide very good sight lines. The sight lines easily exceed the Safe Intersection Site Distance requirement of 90m for 50 km/h and 115m for 60km/h for rural areas suggested by the AUSTROADS Guide to Traffic Engineering Practice, Part 5 – intersections at grade. Attached as appendix A are photographs indicating the available sight lines.

INTERNAL ROAD LAYOUT

The internal roads proposed to serve the subdivision are generally 8m wide with the exception of the cul-de-sacs which are 6m wide and the east/west road to the south of the site which is 5.5m. All roads are sufficient to cater for two way vehicle flows.

To determine if a garbage truck can access and circulate through the site, the internal roads have been assessed using the AS 2890.2 – 2002, 8.8m long medium rigid vehicle turning template. This vehicle is typical of standard large garbage trucks used by garbage contractors and Council's alike. This assessment is carried out by overlaying the turning template upon the plans provided at scale revealing that there is sufficient roadway width to enable this vehicle to travel around the roadway and access all roads as required.

Consequently, the subject development proposal is sufficient to enable access and circulation by the Australian Standard medium rigid vehicle and provide for two way flows.

TRAFFIC

An estimation of the traffic generation of the proposed development can be calculated by reference to the Roads and Traffic Authority's *'Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation'* of October 2002. The guide specifies the following peak hour traffic generation rates for dwelling houses:

> Daily vehicle trips = 9.0 per dwelling
> Weekday peak hour vehicle trips = 0.85 per dwelling

Assuming only 1 dwelling per lot, the estimated traffic generation of this development calculates as:

89 lots/dwellings @ 0.85 trips/dwelling = 75.65 peak hour trips

Accordingly, the potential traffic generation of the proposed development is in the order of **76** vehicle trips in the peak hours.

This assessment will assume that 80% (61 trips) and 20% (15 trips) of the potential traffic generation will depart and approach the site in the morning peak hour respectively and that this situation will reverse in the evening peak hour.

Further, to assess the impact of the development on the intersections of Diamond Beach Road with Edgewater Drive and Diamond Drive the estimated morning and evening peak hour approach and departure vehicle trips have been assigned proportionally to these intersections on the basis of existing movements and logical vehicle routes. Figure 4 and 5 depicts the potential additional morning and afternoon peak hour flows at each intersection.

Using INTANAL a software programme developed by Sims Varley Pty Ltd for the purpose of analysing signalised, roundabout and sign controlled intersections, the effect of the estimated traffic generation of this development on the key intersections has been assessed.

Tabled below are the results of the intersection modeling. Attached as appendix C are the INTANAL output files for the proposed scenarios and a brief guide on evaluating the results of INTANAL analysis is reproduced in the following pages:

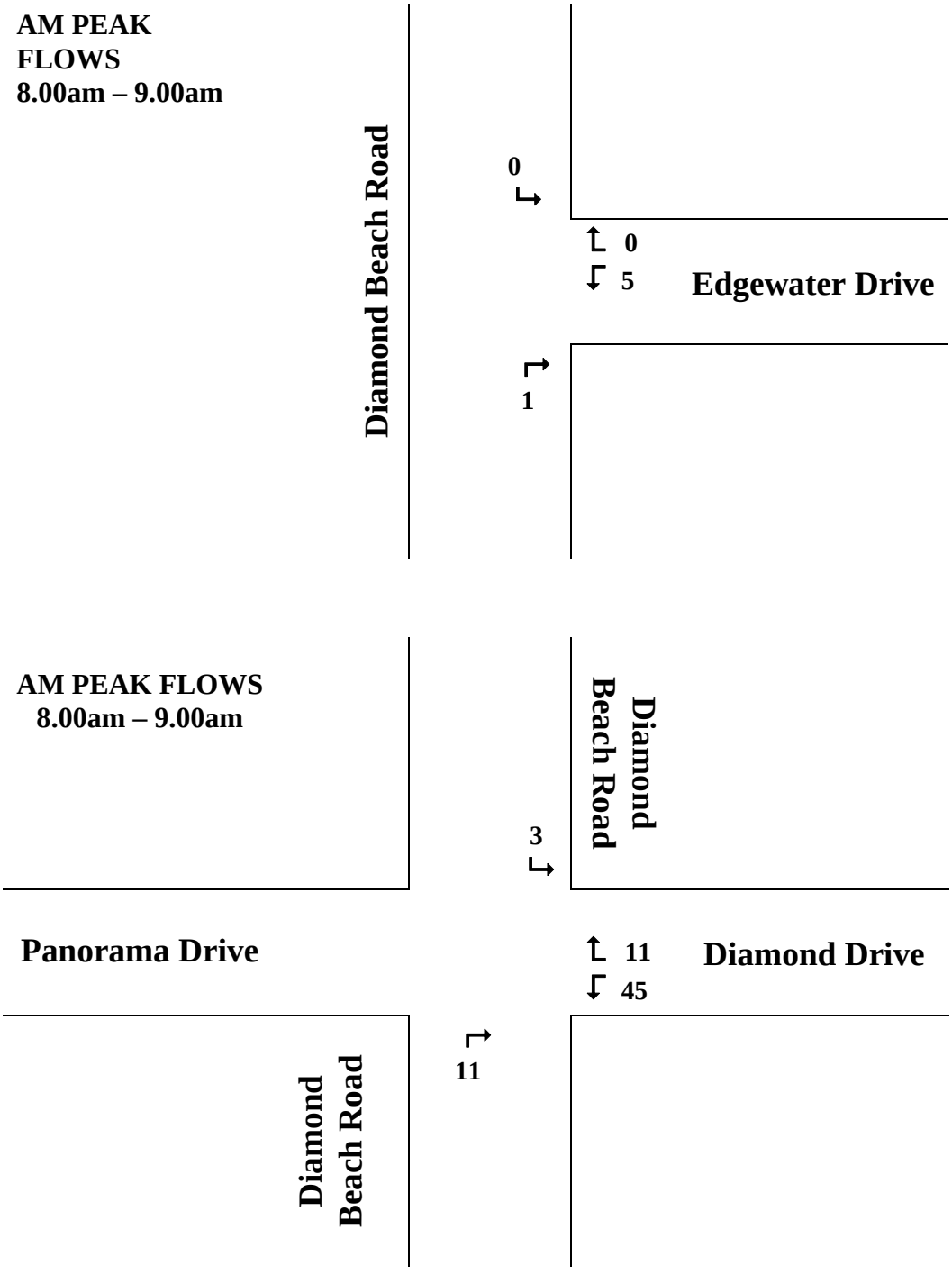
	Intersection of Edgewater Drive and Diamond Beach Road, Diamond Beach (Give way/T Intersection)			
	Existing		**Proposed**	
	AM	**PM**	**AM**	**PM**
Level of Service	A	A	A	A
Degree of Saturation	0.01	0.01	0.01	0.01
Total Average Delay (sec/veh)	4.7	4.8	4.9	4.8

	Intersection of Diamond Beach Road, Diamond Drive and Panorama Drive, Diamond Beach (Roundabout)			
	Existing		**Proposed**	
	AM	**PM**	**AM**	**PM**
Level of Service	A	A	A	A
Degree of Saturation	0.06	0.06	0.08	0.08
Total Average Delay (sec/veh)	4.1	4.2	4.4	4.3

The results of the INTANAL analysis reveals:

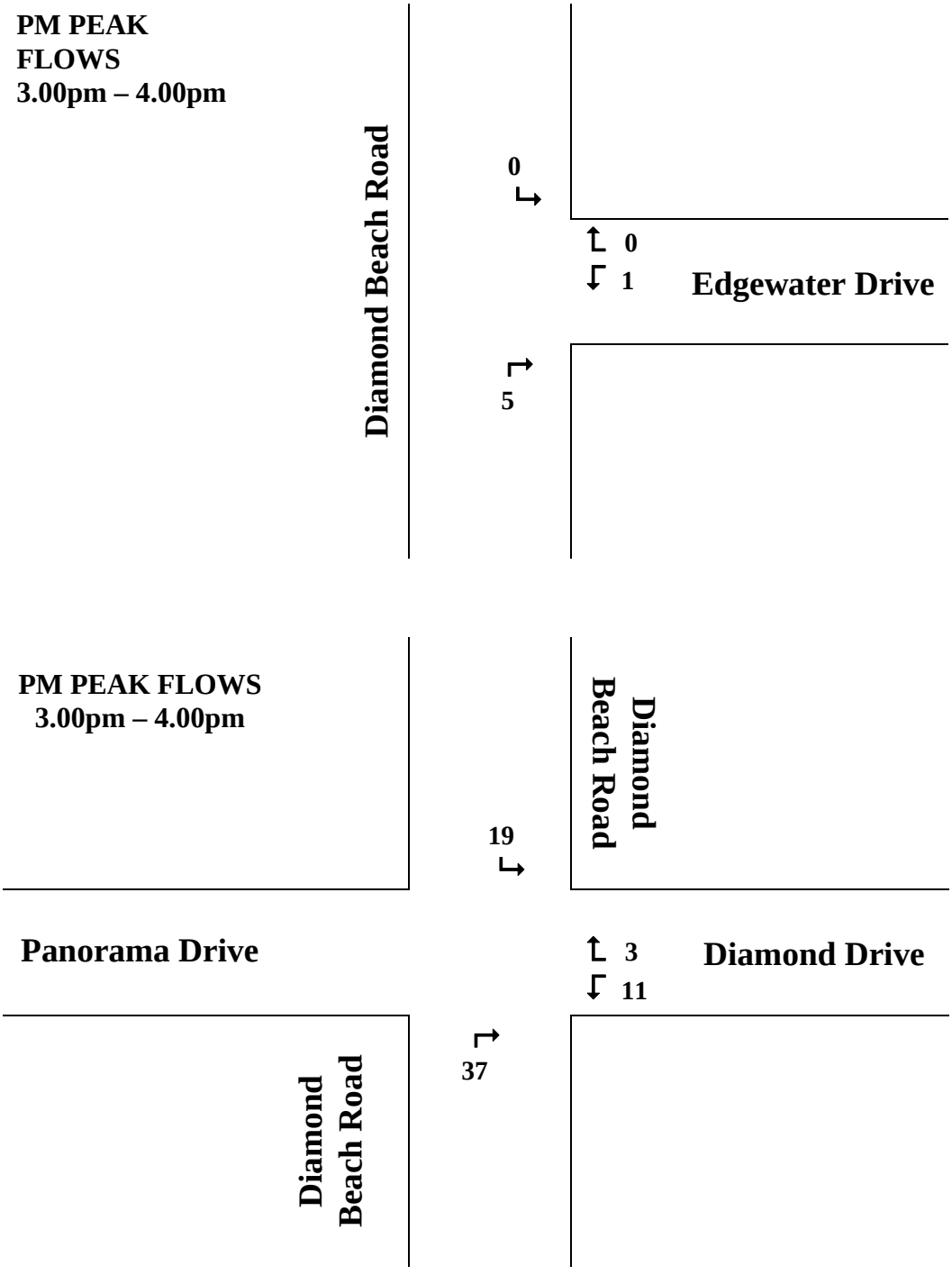
- The existing intersections modeled will continue to provide a very good level of service, with minimal delays and spare capacity with the estimated additional traffic generation of the proposed development.

- The additional traffic demand on the intersections as a consequence of the proposed development will only alter the Degree of Saturation and Total Average Delays minutely.



POTENTIAL ADDITIONAL AM FLOWS

Fig 4



POTENTIAL ADDITIONAL PM FLOWS

Fig 5

EVALUATION OF THE RESULTS OF INTANAL

LEVEL OF SERVICE

THE LEVEL OF SERVICE FOR TRAFFIC SIGNALS, ROUNDABOUTS AND SIGN CONTROL INTERSECTIONS IS SHOWN BELOW, THIS IS BASED ON THE AVERAGE DELAY IN SECONDS PER VEHICLE:

AVERAGE DELAY PER VEHICLE	LEVEL OF SERVICE	TRAFFIC SIGNALS & ROUNDABOUTS	SIGN CONTROL
< 14	A	GOOD	GOOD
15 - 28	B	GOOD WITH MINIMAL DELAYS AND SPARE CAPACITY	ACCEPTABLE DELAYS AND SPARE CAPACITY
29 - 42	C	SATISFACTORY WITH SPARE CAPACITY	SATISFACTORY BUT ACCIDENT STUDY REQUIRED
43 - 56	D	SATISFACTORY BUT OPERATING NEAR CAPACITY	NEAR CAPACITYAND ACCIDENT STUDY REQUIRED
57 - 70	E	**AT CAPACITY**: AT SIGNALS INCIDENTS WILL CAUSE EXCESIVE DELAYS, ROUNDABOUTS REQUIRE ANOTHER CONTROL MODE	AT CAPACITY AND REQUIRES ANOTHER CONTROL MODE
> 70	F	UNSATISFACTORY	UNSATISFACTORY

DEGREE OF SATURATION

THE DEGREE OF SATURATION IS ANOTHER MEASURE OF THE OPERATIONAL PERFORMANCE OF INDIVIDUAL INTERSECTIONS.

FOR TRAFFIC SIGNAL CONTROLLED INTERSECTIONS BOTH QUEUE LENGTH AND DELAY INCREASE RAPIDLY AS THE DEGREE OF SATURATION APPROACHES 1.0, AND IT IS USUALLY ATTEMPTED TO KEEP IT BELOW 0.9.

FOR ROUNDABOUTS OR SIGN CONTROLLED INTERSECTIONS, OVERSATURATION IS INDICATED BY A VALUE IN EXCESS OF 0.8.

AVERAGE VEHICLE DELAY

THE AVERAGE VEHICLE DELAY PROVIDES A MEASURE OF THE OPERATIONAL PERFORMANCE OF AN INTERSECTION AS INDICATED IN THE ABOVE TABLE . THE AVERAGE VEHICLE DELAYS IN THE TABLE SHOULD BE USED AS A GUIDE ONLY AS LONGER DELAYS COULD BE TOLERATED IN SOME LOCATIONS.

ENVIRONMENTAL CAPACITY

Utilising the traffic flow data recorded at the intersections of Diamond Beach Road with Edgewater Drive and Diamond Drive/Panorama Drive the traffic related environmental effect of the proposed residential subdivision on Edgewater Drive has been assessed. Edgewater Road and Diamond Drive currently serve a local road function in this area and the Roads and Traffic Authority provides a guide to the Environmental Capacity of residential streets in the *'Guide to Traffic Generating Developments, Section 4 – Interpretation of Traffic Impacts'* of October 2002. This guide suggests a desirable environmental goal of 200 and maximum of 300 vehicles/hour for local roads.

As stated previously the current peak hour traffic volumes on Edgeworth Drive and Diamond Drive have been recorded by surveys undertaken as part of this assessment. The following table provides a comparison of the existing peak hour volumes, potential additional flows and the RTA Environmental Capacity value:

Location	Classification	Peak Hour Volumes				RTA Suggested Environmental Capacity
		Existing		Potential		
		AM	PM	AM	PM	
Edgewater Drive	Local Road	10	13	15	19	200 300 (max)
Diamond Drive	Local Road	111	137	181	207	200 300(max)

The survey results reveal that the existing traffic flows along Edgewater and Diamond Drives are well below the maximum RTA suggested Environmental Capacity and that the potential additional peak hour traffic flows of 76 vehicles estimated for the proposed development will not cause this value to be exceeded.

It should be noted that Environmental Capacity is not an indication of the number of vehicles that can travel along a roadway before congestion occurs but is the RTA's interpretation of when residents may raise concern over vehicle volumes.

6. CONCLUSIONS

The preceding analysis has revealed that:

- The available sight lines at the intersections of Diamond Beach Road with Edgewater Drive and Diamond Drive are considered to be satisfactory as they exceed the Safe Intersection Sight Distance requirements of AUSTROADS.

- All internal roads are sufficient in width to cater for two way traffic flows.

- The development proposal is sufficient to enable access and circulation by the Australian Standard medium rigid vehicle.

- The existing intersections of Diamond Beach Road with Edgewater Drive and Diamond/Panorama Drive will continue to provide a very good level of service, with minimal delays and spare capacity with the estimated additional traffic generation of the proposed development.

- The additional traffic demand on the intersection of Edgewater Drive and Diamond Beach Road, as a consequence of the proposed development will only alter the Degree of Saturation and Total Average Delays minutely.

- The potential 76 additional vehicle trips generated by this proposal will not cause the RTA suggested maximum Environmental Capacity volume for local roads to be exceeded in Edgewater Drive or Diamond Drive, Diamond Beach.

APPENDIX A – SITE PHOTOGRAPHS

Photo 1 – View from Edgewater Drive to Diamond Beach Road

Photo 2 – Sight lines to the south from Edgewater Drive along Diamond Beach Road

Photo 3 – Sight Lines to the north from Edgewater Drive along Diamond Beach Road

Photo 4 - View looking east along north along Diamond Beach Road to Edgewater Road

Photo 5 - View looking south along Diamond Beach Road to Edgewater Road

APPENDIX B – INTERSECTION COUNTS

R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

PEDS	NORTH	EAST	SOUTH	
Time Per	Diamond	Edgewater Rd	Diamond	TOT
0700 - 0715	1	1	0	2
0715 - 0730	0	2	1	3
0730 - 0745	0	0	0	0
0745 - 0800	0	0	0	0
0800 - 0815	0	0	0	0
0815 - 0830	0	1	0	1
0830 - 0845	0	0	0	0
0845 - 0900	0	0	0	0
Per End	1	4	1	6

PEDS	NORTH	EAST	SOUTH	
Peak Per	Diamond	Edgewater Rd	Diamond	TOT
0700 - 0800	1	3	1	5
0715 - 0815	0	2	1	3
0730 - 0830	0	1	0	1
0745 - 0845	0	1	0	1
0800 - 0900	0	1	0	1

PEAK HR	0	1	0	1

Lights	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Time Per	T	L	R	L	R	T	TOT
0700 - 0715	1	0	0	0	4	0	5
0715 - 0730	2	0	0	0	2	2	6
0730 - 0745	1	0	0	0	0	6	7
0745 - 0800	0	0	0	2	0	5	7
0800 - 0815	2	0	0	2	1	6	11
0815 - 0830	4	0	0	2	1	2	9
0830 - 0845	2	0	0	3	0	8	13
0845 - 0900	8	0	0	0	1	4	13
Per End	20	0	0	9	9	33	71

Heavies	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Time Per	T	L	R	L	R	T	TOT
0700 - 0715	0	0	0	0	0	0	0
0715 - 0730	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0	0
0830 - 0845	0	0	0	0	0	0	0
0845 - 0900	0	0	0	0	0	0	0
Per End	0	0	0	0	0	0	0

Combined	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Time Per	T	L	R	L	R	T	TOT
0700 - 0715	1	0	0	0	4	0	5
0715 - 0730	2	0	0	0	2	2	6
0730 - 0745	1	0	0	0	0	6	7
0745 - 0800	0	0	0	2	0	5	7
0800 - 0815	2	0	0	2	1	6	11
0815 - 0830	4	0	0	2	1	2	9
0830 - 0845	2	0	0	3	0	8	13
0845 - 0900	8	0	0	0	1	4	13
Per End	20	0	0	9	9	33	71

Lights	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Peak Per	T	L	R	L	R	T	TOT
0700 - 0800	4	0	0	2	6	13	25
0715 - 0815	5	0	0	4	3	19	31
0730 - 0830	7	0	0	6	2	19	34
0745 - 0845	8	0	0	9	2	21	40
0800 - 0900	16	0	0	7	3	20	46

PEAK HR	16	0	0	7	3	20	46

Heavies	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Peak Per	T	L	R	L	R	T	TOT
0700 - 0800	0	0	0	0	0	0	0
0715 - 0815	0	0	0	0	0	0	0
0730 - 0830	0	0	0	0	0	0	0
0745 - 0845	0	0	0	0	0	0	0
0800 - 0900	0	0	0	0	0	0	0

PEAK HR	0	0	0	0	0	0	0

Combined	NORTH		EAST		SOUTH		
	Diamond		Edgewater Rd		Diamond		
Peak Per	T	L	R	L	R	T	TOT
0700 - 0800	4	0	0	2	6	13	25
0715 - 0815	5	0	0	4	3	19	31
0730 - 0830	7	0	0	6	2	19	34
0745 - 0845	8	0	0	9	2	21	40
0800 - 0900	16	0	0	7	3	20	46

PEAK HR	16	0	0	7	3	20	46

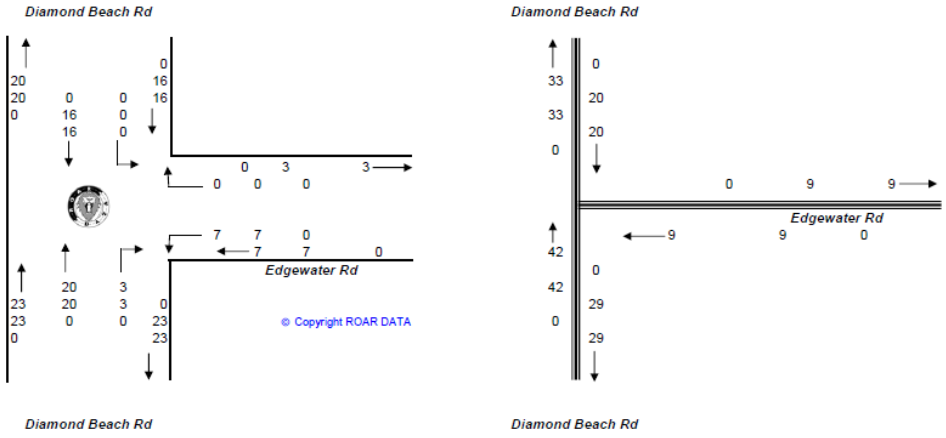
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

AM PEAK
0800 - 0900

TOTAL VOLUMES FOR COUNT PERIOD

N



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Ph.88196847, Fax 88196849.
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Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

PEDS	NORTH	EAST	SOUTH	
Time Per	Diamond Beach Rd	Edgewater Rd	Diamond Beach Rd	TOT
1500 - 1515	0	0	0	0
1515 - 1530	0	0	0	0
1530 - 1545	0	0	0	0
1545 - 1600	0	1	0	1
1600 - 1615	0	0	0	0
1615 - 1630	0	0	0	0
1630 - 1645	0	0	0	0
1645 - 1700	0	0	0	0
1700 - 1715	0	0	0	0
1715 - 1730	0	0	0	0
1730 - 1745	0	0	0	0
1745 - 1800	0	0	0	0
Per End	0	1	0	1

PEDS	NORTH	EAST	SOUTH	
Peak Per	Diamond Beach Rd	Edgewater Rd	Diamond Beach Rd	TOT
1500 - 1600	0	1	0	1
1515 - 1615	0	1	0	1
1530 - 1630	0	1	0	1
1545 - 1645	0	1	0	1
1600 - 1700	0	0	0	0
1615 - 1715	0	0	0	0
1630 - 1730	0	0	0	0
1645 - 1745	0	0	0	0
1700 - 1800	0	0	0	0
PEAK HR	0	1	0	1

Lights	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	6	0	0	5	0	4	15
1515 - 1530	4	0	0	0	0	7	11
1530 - 1545	1	0	0	0	3	5	9
1545 - 1600	5	0	0	2	3	10	20
1600 - 1615	1	0	0	3	0	1	5
1615 - 1630	2	0	0	1	3	3	9
1630 - 1645	6	0	0	1	2	1	10
1645 - 1700	3	0	0	0	4	5	12
1700 - 1715	5	0	0	6	4	6	21
1715 - 1730	2	0	0	1	2	5	10
1730 - 1745	2	0	0	1	0	2	5
1745 - 1800	4	0	0	0	0	13	17
Per End	41	0	0	20	21	62	144

Heavies	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0
1600 - 1615	0	0	0	0	0	0	0
1615 - 1630	0	0	0	0	0	0	0
1630 - 1645	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0
1730 - 1745	0	0	0	0	0	0	0
1745 - 1800	0	0	0	0	0	0	0
Per End	0	0	0	0	0	0	0

Combined	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Time Per	T	L	R	L	R	T	TOT
1500 - 1515	6	0	0	5	0	4	15
1515 - 1530	4	0	0	0	0	7	11
1530 - 1545	1	0	0	0	3	5	9
1545 - 1600	5	0	0	2	3	10	20
1600 - 1615	1	0	0	3	0	1	5
1615 - 1630	2	0	0	1	3	3	9
1630 - 1645	6	0	0	1	2	1	10
1645 - 1700	3	0	0	0	4	5	12
1700 - 1715	5	0	0	6	4	6	21
1715 - 1730	2	0	0	1	2	5	10
1730 - 1745	2	0	0	1	0	2	5
1745 - 1800	4	0	0	0	0	13	17
Per End	41	0	0	20	21	62	144

Lights	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	16	0	0	7	6	26	55
1515 - 1615	11	0	0	5	6	23	45
1530 - 1630	9	0	0	6	9	19	43
1545 - 1645	14	0	0	7	8	15	44
1600 - 1700	12	0	0	5	9	10	36
1615 - 1715	16	0	0	8	13	15	52
1630 - 1730	16	0	0	8	12	17	53
1645 - 1745	12	0	0	8	10	18	48
1700 - 1800	13	0	0	8	6	26	53
PEAK HR	16	0	0	7	6	26	55

Heavies	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	0	0	0	0	0	0	0
1515 - 1615	0	0	0	0	0	0	0
1530 - 1630	0	0	0	0	0	0	0
1545 - 1645	0	0	0	0	0	0	0
1600 - 1700	0	0	0	0	0	0	0
1615 - 1715	0	0	0	0	0	0	0
1630 - 1730	0	0	0	0	0	0	0
1645 - 1745	0	0	0	0	0	0	0
1700 - 1800	0	0	0	0	0	0	0
PEAK HR	0	0	0	0	0	0	0

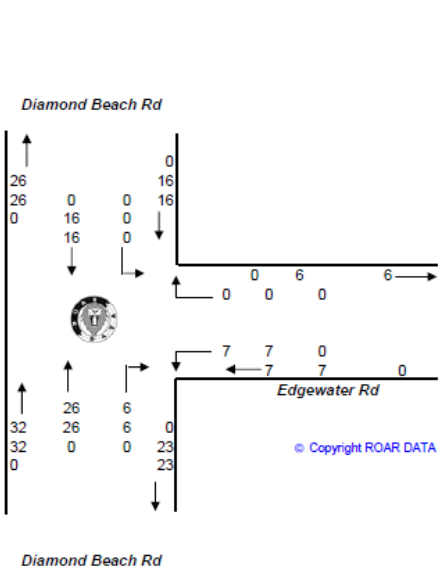
Combined	NORTH		EAST		SOUTH		
	Diamond		Edgewater		Diamond		
Peak Per	T	L	R	L	R	T	TOT
1500 - 1600	16	0	0	7	6	26	55
1515 - 1615	11	0	0	5	6	23	45
1530 - 1630	9	0	0	6	9	19	43
1545 - 1645	14	0	0	7	8	15	44
1600 - 1700	12	0	0	5	9	10	36
1615 - 1715	16	0	0	8	13	15	52
1630 - 1730	16	0	0	8	12	17	53
1645 - 1745	12	0	0	8	10	18	48
1700 - 1800	13	0	0	8	6	26	53
PEAK HR	16	0	0	7	6	26	55

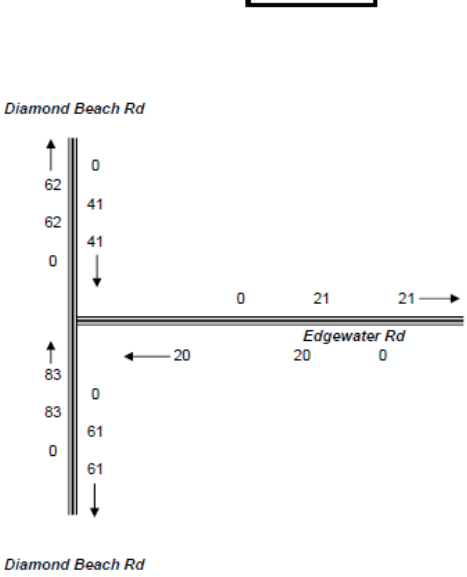
R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

PM PEAK
1500 - 1600

TOTAL VOLUMES FOR COUNT PERIOD





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

Lights

Time Per	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0715	0	4	0	0	0	2	0	6	6	11	2	0	31
0715 - 0730	1	5	0	0	0	1	0	5	5	10	0	1	28
0730 - 0745	3	3	0	0	0	0	2	7	5	14	0	4	38
0745 - 0800	1	3	0	0	0	0	0	6	7	17	1	1	36
0800 - 0815	0	13	0	1	1	1	2	8	9	16	2	2	55
0815 - 0830	3	17	1	1	1	0	2	11	4	20	0	3	63
0830 - 0845	0	12	2	2	0	2	2	22	2	7	2	2	55
0845 - 0900	8	19	4	4	0	4	1	26	7	9	1	8	91
Period End	16	76	7	8	2	10	9	91	45	104	8	21	397

Lights

Peak Time	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0800	5	15	0	0	0	3	2	24	23	52	3	6	133
0715 - 0815	5	24	0	1	1	2	4	26	26	57	3	8	157
0730 - 0830	7	36	1	2	2	1	6	32	25	67	3	10	192
0745 - 0845	4	45	3	4	2	3	6	47	22	60	5	8	209
0800 - 0900	11	61	7	8	2	7	7	67	22	52	5	15	264
PEAK HOUR	11	61	7	8	2	7	7	67	22	52	5	15	264

Heavies

Time Per	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	0	0
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	1	0	0	0	0	0	0	1	0	0	0	2
0800 - 0815	0	0	0	0	1	0	0	0	0	0	0	1	2
0815 - 0830	0	1	0	0	0	0	0	1	0	1	0	0	3
0830 - 0845	0	0	0	0	0	0	0	0	0	1	0	0	1
0845 - 0900	0	1	0	0	0	0	0	0	0	0	0	0	1
Period End	0	3	0	0	1	0	0	1	1	2	0	1	9

Heavies

Peak Per	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0800	0	1	0	0	0	0	0	0	1	0	0	0	2
0715 - 0815	0	1	0	0	1	0	0	0	1	0	0	1	4
0730 - 0830	0	2	0	0	1	0	0	1	1	1	0	1	7
0745 - 0845	0	2	0	0	1	0	0	1	1	2	0	1	8
0800 - 0900	0	2	0	0	1	0	0	1	0	2	0	1	7
PEAK HOUR	0	2	0	0	1	0	0	1	0	2	0	1	7

Combined

Time Per	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0715	0	4	0	0	0	2	0	6	6	11	2	0	31
0715 - 0730	1	5	0	0	0	1	0	5	5	10	0	1	28
0730 - 0745	3	3	0	0	0	0	2	7	5	14	0	4	38
0745 - 0800	1	4	0	0	0	0	0	6	8	17	1	1	38
0800 - 0815	0	13	0	1	2	1	2	8	9	16	2	3	57
0815 - 0830	3	18	1	1	1	0	2	12	4	21	0	3	66
0830 - 0845	0	12	2	2	0	2	2	22	2	8	2	2	56
0845 - 0900	8	20	4	4	0	4	1	26	7	9	1	8	92
Period End	16	79	7	8	3	10	9	92	46	106	8	22	406

Combined

Peak Per	NORTH Diamond Beach Rd L	T	R	WEST Panorama Dr L	T	R	SOUTH Diamond Beach Rd L	T	R	EAST Diamond Dr L	T	R	TOT
0700 - 0800	5	16	0	0	0	3	2	24	24	52	3	6	135
0715 - 0815	5	25	0	1	2	2	4	26	27	57	3	9	161
0730 - 0830	7	38	1	2	3	1	6	33	26	68	3	11	199
0745 - 0845	4	47	3	4	3	3	6	48	23	62	5	9	217
0800 - 0900	11	63	7	8	3	7	7	68	22	54	5	16	271
PEAK HOUR	11	63	7	8	3	7	7	68	22	54	5	16	271

R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

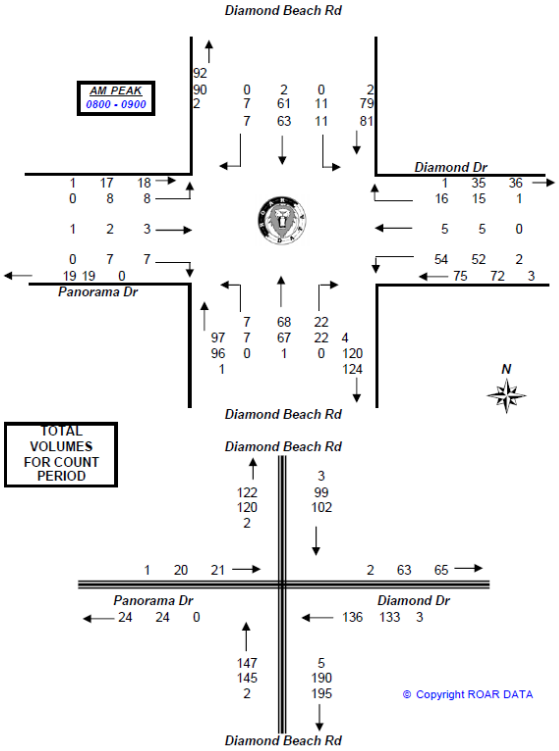
Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

Peds

Time Per	NORTH Diamond Beach Rd UNCLASSIFIED	WEST Panorama Dr UNCLASSIFIED	SOUTH Diamond Beach Rd UNCLASSIFIED	EAST Diamond Dr UNCLASSIFIED	TOT
0700 - 0715	1	0	1	3	5
0715 - 0730	0	0	0	1	1
0730 - 0745	1	0	1	2	4
0745 - 0800	2	0	0	0	2
0800 - 0815	1	0	0	0	1
0815 - 0830	0	0	0	1	1
0830 - 0845	2	0	0	0	2
0845 - 0900	0	0	0	0	0
Period End	7	0	2	7	16

Peds

Peak Per	NORTH Diamond Beach Rd UNCLASSIFIED	WEST Panorama Dr UNCLASSIFIED	SOUTH Diamond Beach Rd UNCLASSIFIED	EAST Diamond Dr UNCLASSIFIED	TOT
0700 - 0800	4	0	2	6	12
0715 - 0815	4	0	1	3	8
0730 - 0830	4	0	1	3	8
0745 - 0845	5	0	0	1	6
0800 - 0900	3	0	0	1	4
PEAK HR	3	0	0	1	4



TOTAL VOLUMES FOR COUNT PERIOD

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Traffic Solutions
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

Lights

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach Rd			Panorama Dr			Diamond Beach Rd			Diamond Dr			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	9	41	4	0	0	1	1	13	7	14	0	3	93
1515 - 1530	3	12	1	3	1	1	2	9	15	13	0	3	63
1530 - 1545	2	7	0	0	0	0	4	11	12	8	1	4	49
1545 - 1600	2	9	0	0	0	1	4	10	12	20	2	4	64
1600 - 1615	5	8	2	0	1	1	0	4	14	12	2	0	49
1615 - 1630	1	4	0	0	1	0	2	6	13	9	0	3	39
1630 - 1645	3	11	2	0	1	0	3	5	24	14	1	3	67
1645 - 1700	4	6	0	0	3	0	1	5	17	9	2	5	52
1700 - 1715	5	8	0	1	2	0	3	9	20	11	1	3	63
1715 - 1730	5	5	1	1	2	1	2	8	14	4	3	3	49
1730 - 1745	1	5	2	0	0	0	1	5	17	14	0	4	49
1745 - 1800	2	5	1	1	0	0	0	14	12	7	0	3	45
Period End	42	121	13	6	11	5	23	99	177	135	12	38	682

Lights

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach			Panorama Dr			Diamond Beach			Diamond Dr			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	16	69	5	3	1	3	11	43	46	55	3	14	269
1515 - 1615	12	36	3	3	2	3	10	34	53	53	5	11	225
1530 - 1630	10	28	2	0	2	2	10	31	51	49	5	11	201
1545 - 1645	11	32	4	0	3	2	9	25	63	55	5	10	219
1600 - 1700	13	29	4	0	6	1	6	20	68	44	5	11	207
1615 - 1715	13	29	2	1	7	0	9	25	74	43	4	14	221
1630 - 1730	17	30	3	2	8	1	9	27	75	38	7	14	231
1645 - 1745	15	24	3	2	7	1	7	27	68	38	6	15	213
1700 - 1800	13	23	4	3	4	1	6	36	63	36	4	13	206
PEAK HOUR	16	69	5	3	1	3	11	43	46	55	3	14	269

Heavies

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach Rd			Panorama Dr			Diamond Beach Rd			Diamond Dr			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	0	1	0	0	0	0	0	0	0	0	0	0	1
1515 - 1530	0	1	0	0	0	0	0	0	0	0	0	0	1
1530 - 1545	0	0	0	0	1	0	0	0	0	0	0	0	1
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	1	1
1600 - 1615	0	0	0	0	0	0	0	0	0	0	0	0	0
1615 - 1630	0	1	0	0	0	0	0	0	0	0	0	0	1
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0
1730 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	0
1745 - 1800	0	0	0	0	0	0	0	0	0	0	0	0	0
Period End	0	3	0	0	1	0	0	0	0	0	0	1	5

Heavies

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach			Panorama Dr			Diamond Beach			Diamond Dr			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	0	2	0	0	1	0	0	0	0	0	0	1	4
1515 - 1615	0	1	0	0	1	0	0	0	0	0	0	1	3
1530 - 1630	0	1	0	0	1	0	0	0	0	0	0	1	3
1545 - 1645	0	1	0	0	0	0	0	0	0	0	0	1	2
1600 - 1700	0	1	0	0	0	0	0	0	0	0	0	0	1
1615 - 1715	0	1	0	0	0	0	0	0	0	0	0	0	1
1630 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0
1645 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1800	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR	0	2	0	0	1	0	0	0	0	0	0	1	4

Combined

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach Rd			Panorama Dr			Diamond Beach Rd			Diamond Dr			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1515	9	42	4	0	0	1	1	13	7	14	0	3	94
1515 - 1530	3	13	1	3	1	1	2	9	15	13	0	3	64
1530 - 1545	2	7	0	0	1	0	4	11	12	8	1	4	50
1545 - 1600	2	9	0	0	0	1	4	10	12	20	2	5	65
1600 - 1615	5	8	2	0	1	1	0	4	14	12	2	0	49
1615 - 1630	1	5	0	0	1	0	2	6	13	9	0	3	40
1630 - 1645	3	11	2	0	1	0	3	5	24	14	1	3	67
1645 - 1700	4	6	0	0	3	0	1	5	17	9	2	5	52
1700 - 1715	5	8	0	1	2	0	3	9	20	11	1	3	63
1715 - 1730	5	5	1	1	2	1	2	8	14	4	3	3	49
1730 - 1745	1	5	2	0	0	0	1	5	17	14	0	4	49
1745 - 1800	2	5	1	1	0	0	0	14	12	7	0	3	45
Period End	42	124	13	6	12	5	23	99	177	135	12	39	687

Combined

	NORTH			WEST			SOUTH			EAST			
	Diamond Beach			Panorama Dr			Diamond Beach			Diamond Dr			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1500 - 1600	16	71	5	3	2	3	11	43	46	55	3	15	273
1515 - 1615	12	37	3	3	3	3	10	34	53	53	5	12	228
1530 - 1630	10	29	2	0	3	2	10	31	51	49	5	12	204
1545 - 1645	11	33	4	0	3	2	9	25	63	55	5	11	221
1600 - 1700	13	30	4	0	6	1	6	20	68	44	5	11	208
1615 - 1715	13	30	2	1	7	0	9	25	74	43	4	14	222
1630 - 1730	17	30	3	2	8	1	9	27	75	38	7	14	231
1645 - 1745	15	24	3	2	7	1	7	27	68	38	6	15	213
1700 - 1800	13	23	4	3	4	1	6	36	63	36	4	13	206
PEAK HOUR	16	71	5	3	2	3	11	43	46	55	3	15	273

R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

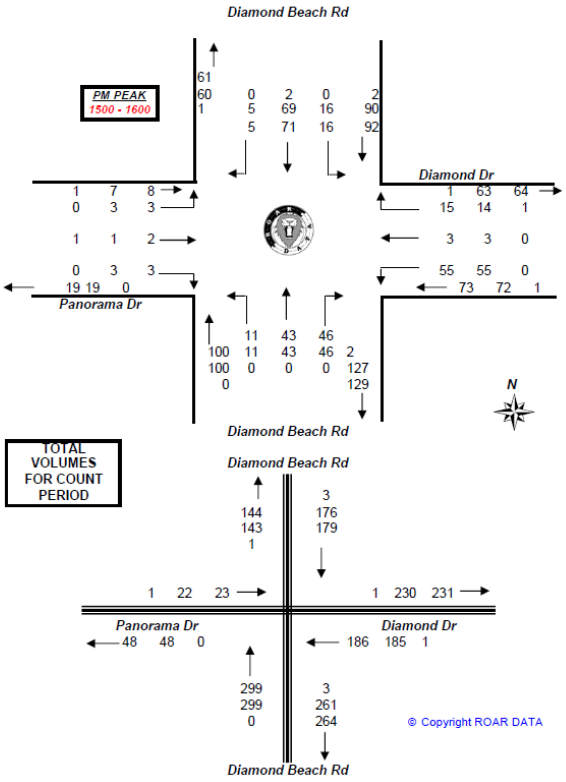
Client : Traffic Solution
Job No/Name : 2996 Diamond Beach Counts
Day/Date : Wednesday 3rd March 2010

Peds

	NORTH	WEST	SOUTH	EAST	
	Diamond Beach	Panorama Dr	Diamond Beach	Diamond Dr	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1515	0	0	0	6	6
1515 - 1530	0	0	0	0	0
1530 - 1545	0	0	0	2	2
1545 - 1600	2	1	2	0	5
1600 - 1615	1	1	0	1	3
1615 - 1630	0	0	0	0	0
1630 - 1645	0	2	0	0	2
1645 - 1700	0	0	0	0	0
1700 - 1715	3	0	0	0	3
1715 - 1730	0	0	1	1	2
1730 - 1745	0	0	0	1	1
1745 - 1800	0	0	0	0	0
Period End	6	4	3	11	24

Peds

	NORTH	WEST	SOUTH	EAST	
	Diamond Beach	Panorama Dr	Diamond Beach	Diamond Dr	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1500 - 1600	0	0	0	0	0
1515 - 1615	0	0	0	6	6
1530 - 1630	0	0	0	6	6
1545 - 1645	0	0	0	8	8
1600 - 1700	2	1	2	8	13
1615 - 1715	3	2	2	3	10
1630 - 1730	3	2	2	3	10
1645 - 1745	3	2	2	3	10
1700 - 1800	3	2	2	3	10
PEAK HR	0	0	0	0	0



TOTAL VOLUMES FOR COUNT PERIOD

APPENDIX C – INTANAL RESULTS

VOLUME DATA SCREEN

	AM PEAK					PM PEAK					BUSINESS				
AM	Vol	Sat	Phse	Yval	Utrn	Vol	Sat	Phse	Yval	Utrn	Vol	Sat	Phse	Yval	Utrn
1L															
1T	20	2000	A	0.01		26	2000	A	0.01		10	2000	A	0.00	
1R	8	808	S	0.01		7	781	S	0.01		10	1309	S	0.01	
2L	8	1750	B	0.00		12	1750	B	0.01		10	1750	B	0.01	
2T															
2R	0		B			0		B			0		B		
3L	0		A			0		A			0		A		
3T	16	2000	A	0.01		16	2000	A	0.01		10	2000	A	0.00	
3R															
4L															
4T															
4R															

A	Min	ELT	H%AM	H%PM	H%B	L/S	PD-L	PD-R	Sign	Hold	LKph
1	5	4.0	0	0	0	0'		0			
2	5	4.0	0	0	0		0	0	G	N	25
3	5	4.0	0	0	0	0'	0				25
4											

File = DIAEDGPR
Type = T2

PLATOON DATA			PEDESTRIAN VOLUME			WALK-CLEARANCE	
App	P%AM	P%PM	P%B	P#AM	P#PM	P#B	Walk	Clear
1	R0	R0	R0	0	0	0	0	0
2	R0	R0	R0	0	0	0	0	0
3	R0	R0	R0	0	0	0	0	0
4	R0	R0	R0	0	0	0	0	0

LANES DATA SCREEN

	Approach 1			Approach 2			Approach 3			Approach 4		
	Down	Lanes	Grade	Down	Lanes	Grade	Down	Lanes	Grade	Down	Lanes	Grade
Type	0	2	0		1	0	0	1	0			
T2												

Lane	Type	Lngth	Sat	Type	Lngth	Sat	Type	Lngth	Sat	Type	Lngth	Sat
1	T	9999	2000	L	9999	1750	T	9999	2000			
2	R	20	1850									
3												
4												
5												
6												
7												
8												

	No Parking			No Parking			No Parking			No Parking		
	AM	PM	BUS	AM	PM	BUS	AM	PM	BUS	AM	PM	BUS
Apprch	0	0	0	0	0	0	0	0	0			
Depart	0	0	0	0	0	0	0	0	0			

	Roundabout			Roundabout			Roundabout			Roundabout		
TCS#	Ent	Cir	Wdth	Ent	Cir	Wdth	Ent	Cir	Wdth	Ent	Cir	Wdth
0	1	1	4	1	1	4	1	1	4			

File = DIAEDGPR

DELAY - STOPS - CYCLE LENGTH - PHASE SPLITS DATA SCREEN

	AM PEAK					PM PEAK					BUSINESS				
Phse	PT%o	CLo	Yo			PT%o	CLo	Yo			PT%o	CLo	Yo		
A	68.0	50	0.02			63.0	50	0.02			60.0	40	0.02		
B	32.0					37.0					40.0				
C															
D	Peds	@ CLm=	140			Peds	@ CLm=	140			Peds	@ CLm=	140		
E	Delo	DSm=	0.02			Delo	DSm=	0.02			Delo	DSm=	0.02		
F	0	Ym=	0.02			0	Ym=	0.02			0	Ym=	0.02		
G		Delaym=	0.27				Delaym=	0.35				Delaym=	0.27		
Seq	AB					AB					AB				
	Signals		Signs		Round	Signals		Signs		Round	Signals		Signs		Round
Delo	0.1		0.0		0.0	0.2		0.0		0.0	0.1		0.0		0.0
Stpo	23		0		0	29		0		0	21		0		0

```
D/So    0.02     0.01    0.02    0.02     0.01    0.02    0.02     0.01    0.01
L/So     A        A       A       A        A       A       A        A       A
File = DIAEDGPR                    Required Bays
                                 A RHT Lanes LHT Lanes
                                   Length No.Length No.
                                 1     10  1
                                 2               10  1
                                 3
                                 4
```

VOLUME DATA SCREEN

	AM PEAK				PM PEAK				BUSINESS			
AM	Vol	Sat	Phse	Yval Utrn	Vol	Sat	Phse	Yval Utrn	Vol	Sat	Phse	Yval Utrn
1L	163				356				186			
1T	68	1587	A	0.04	43	1394	A	0.03	1667	1565	A	1.07
1R	59	826	S	0.07	57	803	S	0.07	51	47	S	1.09
2L	65	1602	B	0.04	100	1651	B	0.06	146	296	B	0.49
2T		1750		0.00		1750		0.00		1351		0.49
2R	19	978	S	0.02	26	1515	S	0.02	51	96	S	0.53
3L	22	453	A	0.05	19	369	A	0.05	146	186	A	0.78
3T	63	1297	A	0.05	71	1381	A	0.05	1667	1565	A	1.07
3R		149				148				47		
4L		1000		0.01		583		0.01		296		0.49
4T		1750		0.00		1750		0.00		1351		0.49
4R		157		0.04		48		0.06		96		0.53

A	Min	ELT	H%AM	H%PM	H%B	L/S	PD-L	PD-R	Sign	Hold	LKph
1	5	4.0	0	0	0	0'		0			
2	5	4.0	0	0	0		0	0	G	N	25
3	5	4.0	0	0	0	0'	0				25
4											

File = DIADIAPR
Type = T2

PLATOON DATA			PEDESTRIAN VOLUME			WALK-CLEARANCE	
App	P%AM	P%PM	P%B	P#AM	P#PM	P#B	Walk	Clear
1	R0	R0	R0	0	0	0	0	0
2	R0	R0	R0	0	0	0	0	0
3	R0	R0	R0	0	0	0	0	0
4	R0	R0	R0	0	0	0	0	0

LANES DATA SCREEN

	Approach 1				Approach 2				Approach 3				Approach 4			
	Down	Lanes	Grade		Down	Lanes	Grade		Down	Lanes	Grade		Down	Lanes	Grade	
Type		0	1	0		1	0	0		1	0					
T2																

Lane	Type	Lngth	Sat	Type	Lngth	Sat	Type	Lngth	Sat	Type	Lngth	Sat
1	LT	9999	1750	LT	9999	1750	LT	9999	1750			
2												
3												
4												
5												
6												
7												
8												

	No Parking			No Parking			No Parking			No Parking		
	AM	PM	BUS	AM	PM	BUS	AM	PM	BUS	AM	PM	BUS
Apprch	0	0	0	0	0	0	0	0	0			
Depart	0	0	0	0	0	0	0	0	0			

	Roundabout			Roundabout			Roundabout			Roundabout		
TCS#	Ent	Cir	Wdth	Ent	Cir	Wdth	Ent	Cir	Wdth	Ent	Cir	Wdth
0	1	1	7	1	1	7	1	1	7			

File = DIADIAPR
