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Proposed Residential Development
Stage 2 *"Casuarina Town Centre"* Estate
Casuarina Way, Casuarina
(Lot 15 on DP1198266)

ROAD TRAFFIC NOISE IMPACT ASSESSMENT

Prepared For

Clarence Property Group

20 June 2016
crgref: 16106 Report

1.0 INTRODUCTION

This report is in response to a request by Clarence Property Group for a road traffic noise impact assessment of proposed residential development along Casuarina Way at Casuarina.

This report responds to Item 3 of the NSW Planning and Environment's Request for Response to Submissions as presented below:

> **3. Amenity**
>
> - Please provide evidence to clarify whether the road proposed adjacent to the northern boundary of the site will generate any adverse noise or light spill impact at surrounding residential premises.

In undertaking the assessment, modelling of the proposed residential subdivision was produced to predict road traffic noise generated by vehicles using the future northern onsite road.

2.0 SITE & DEVELOPMENT DESCRIPTION

The site is described as Lot 15 on DP1198266 and forms Stage 2 of the "*Casuarina Town Centre"* development. For site location refer to Appendix A of this report.

The site is bounded by Casuarina Way to the west, Casuarina surf beach to the east, Blue Horizon Drive to the south and the Santai Retreat and residential dwellings to the north. The topography of the site and surrounding land generally rises from the south to the north.

Stage 2 of the "*Casuarina Town Centre"* development will comprise a residential subdivision yielding 82 residential lots and 248 medium density units totalling 330 dwellings. For the proposed development layout refer to Appendix B of this report.

Road traffic noise generated by the proposed onsite northern local access street (defined as Road A on the attached *"Road Hierarchy and Pavement Width Plan"* – refer to Appendix B of this report), has been assessed in accordance with "*NSW Road Noise Policy*" to ensure acceptable levels of road noise are achieved at the nearest surrounding noise sensitive receivers.

The nearest surrounding noise sensitive receivers to the northern local access street are the Santai Retreat and detached two storey dwellings to the immediate north. For receiver locations refer to Appendix A of this report.

3.0 NOISE CRITERION

The New South Wales Environment, Climate Change and Water's document *"NSW Road Noise Policy"* states the following in respect to road traffic noise from the proposed new local roads impacting existing noise sensitive receivers:

Road category	Type of project/land use	Assessment criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from **new** freeway/arterial/sub-arterial road corridors	$L_{Aeq, (15\ hour)}$ 55 (external)	$L_{Aeq, (9\ hour)}$ 50 (external)
	2. Existing residences affected by noise from **redevelopment** of existing freeway/arterial/sub-arterial roads 3. Existing residences affected by **additional traffic** on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq, (15\ hour)}$ 60 (external)	$L_{Aeq, (9\ hour)}$ 55 (external)
Local roads	4. Existing residences affected by noise from **new** local road corridors	$L_{Aeq, (1\ hour)}$ 55 (external)	$L_{Aeq, (1\ hour)}$ 50 (external)
	5. Existing residences affected by noise from **redevelopment** of existing local roads 6. Existing residences affected by **additional traffic** on existing local roads generated by land use developments		

It is noted that the proposed northern onsite road is considered a local road based upon the road descriptions provided below:

Road category	Functional role	Examples	Management responsibility
Freeways or motorways/ arterial roads	Support major regional and inter-regional traffic movement. Freeways and motorways usually feature strict access controls via grade separated interchanges.	• Pacific Highway, Taree • M4 Motorway, Eastern Creek • Princes Highway, Arncliffe	State government
Sub-arterial roads[1]	Provide connection between arterial roads and local roads. May support arterial roads during peak periods. May have been designed as local streets but can serve major traffic-generating developments or support non-local traffic.	• Bourke Street, Surry Hills • Cook Street, Baulkham Hills • Forest Road, Lugarno	Local councils
Local roads	Provide vehicular access to abutting property and surrounding streets. Provide a network for the movement of pedestrians and cyclists, and enable social interaction in a neighbourhood. Should connect, where practicable, only to sub-arterial roads.	• Prince Street, Randwick • Pell Street, Howlong • Killarney Drive, Killarney Heights	Local councils

1. Previously designated as 'collector' roads in *Environmental criteria for road traffic noise* (Environment Protection Authority 1999)

4.0 PREDICTED TRAFFIC NOISE IMPACTS

Traffic volumes have been sourced from the Newton Denny Chapelle *"Traffic Gravity Model"* produced for the development. We have been advised by the Project Consulting Traffic Engineer that the northern local access road within the development will have a daily traffic volume of 111 vehicles and 17 vehicles per peak hour (Traffic Catchment C below).

	Standard Allotments		
	No.	Daily Trip Rate	Total Daily Trips
Traffic Catchment A	16	6.5	104
Traffic Catchment B	10	6.5	65
Traffic Catchment C	17	6.5	111
Traffic Catchment D	8	6.5	52
Traffic Catchment E	4	6.5	26
Traffic Catchment F	0	6.5	0
Traffic Catchment G	10	6.5	65
Grand Pde - Coast Road	4	6.5	26
BH Drive - Coast Road	13	6.5	85
	82		533

Table 1: Relevant extract from the *"Traffic Gravity Model"* for the development.

Based upon the proposed new northern road layout (defined as Road A on the attached *"Road Hierarchy and Pavement Width Plan"* – refer to Appendix B of this report), the PEN3D model predicts the following façade corrected traffic noise levels as detailed in Figure 1 (Ground Floor Level) and Figure 2 (First Floor Level) over the page.

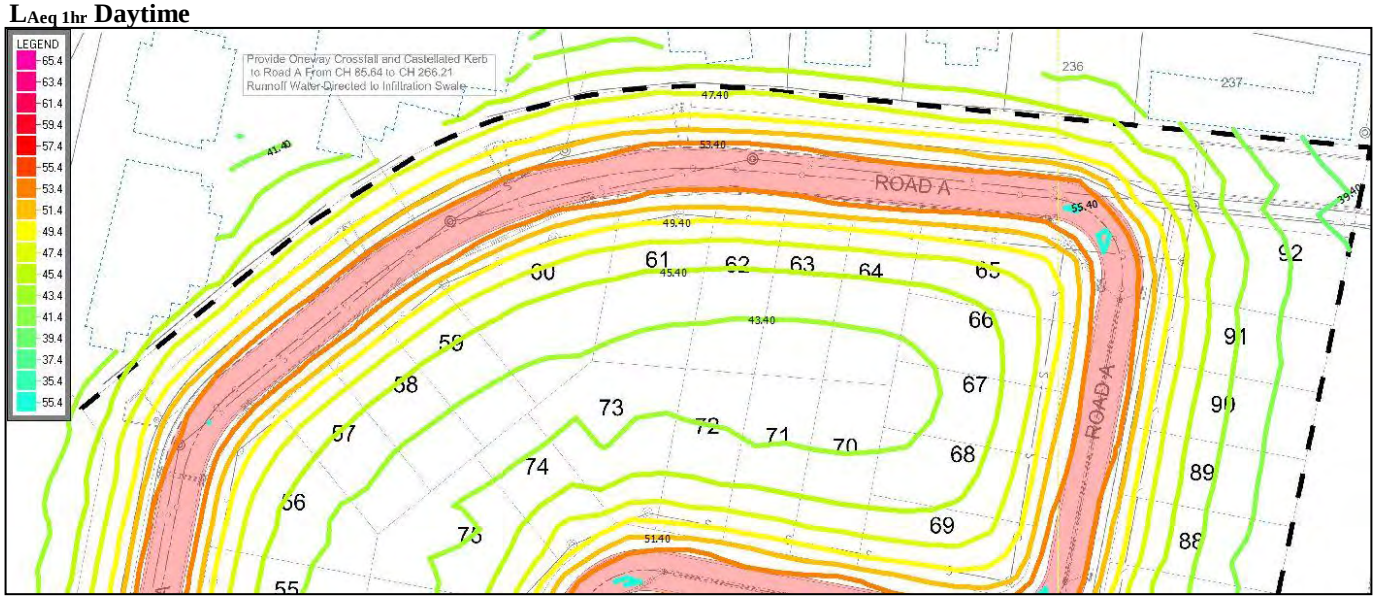
The following parameters were used in developing the PEN3D model for proposed northern road:

- 2.5 dB(A) façade correction.
- 50 km/hr posted speed limit.
- Dense Graded Asphalt road surface (no surface correction required).
- Subdivision and road layout plan as presented in Appendix B of this report.
- Ground floor level building façade receiver heights taken at 1.8m above ground.
- Aboveground floor level building façade receiver heights taken at 4.6m above ground.
- Daytime $L_{Aeq\ 1hr}$ levels assumed to equal the predicted $L_{A10\ 18hr}$ minus 1 dB; and the night-time $L_{Aeq\ 1hr}$ levels assumed to equal the predicted $L_{A10\ 18hr}$ minus 6 dB. The assumed differences in noise descriptors are based upon measured results taken from other projects undertaken in the Casuarina Area.

Based upon the road traffic noise modelling presented in Figures 1 and 2 the highest impacts are at 47 dB(A) $L_{eq\ 1hr}$ daytime and 42 dB(A) $L_{eq\ 1hr}$ night-time at the nearest offsite receivers.

Figure 1: Ground floor level road traffic noise contours from the proposed onsite northern road.

$L_{Aeq\ 1hr}$ Daytime



$L_{Aeq\ 1hr}$ Night-time

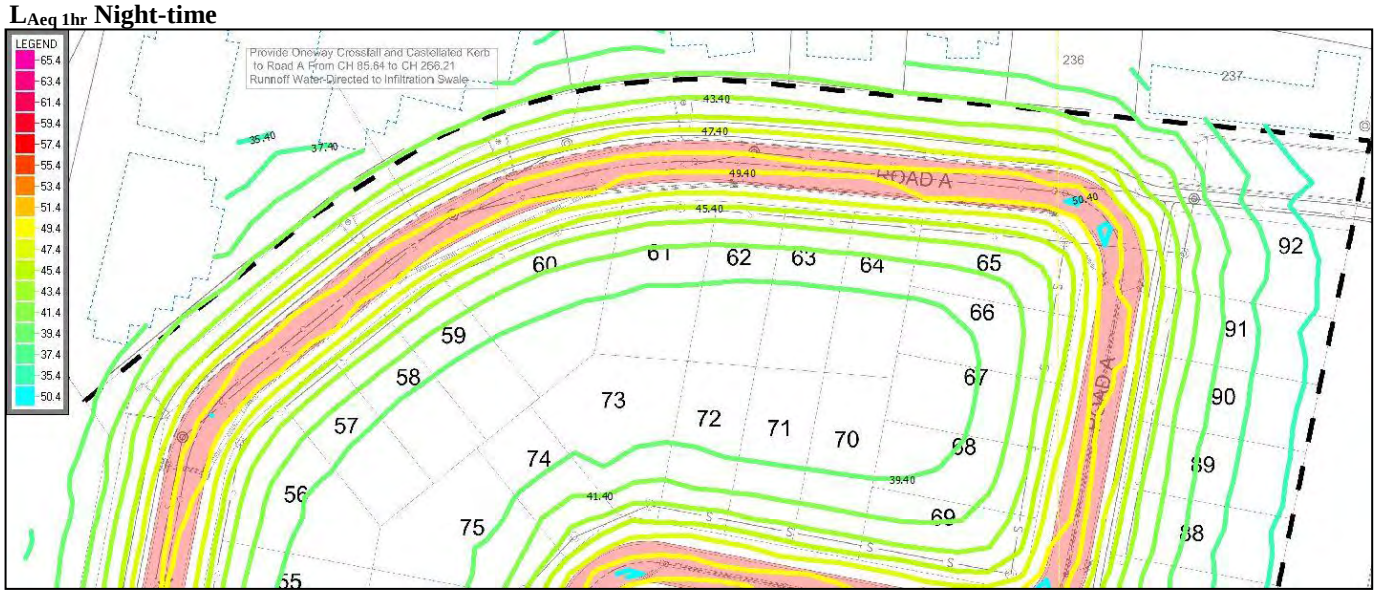
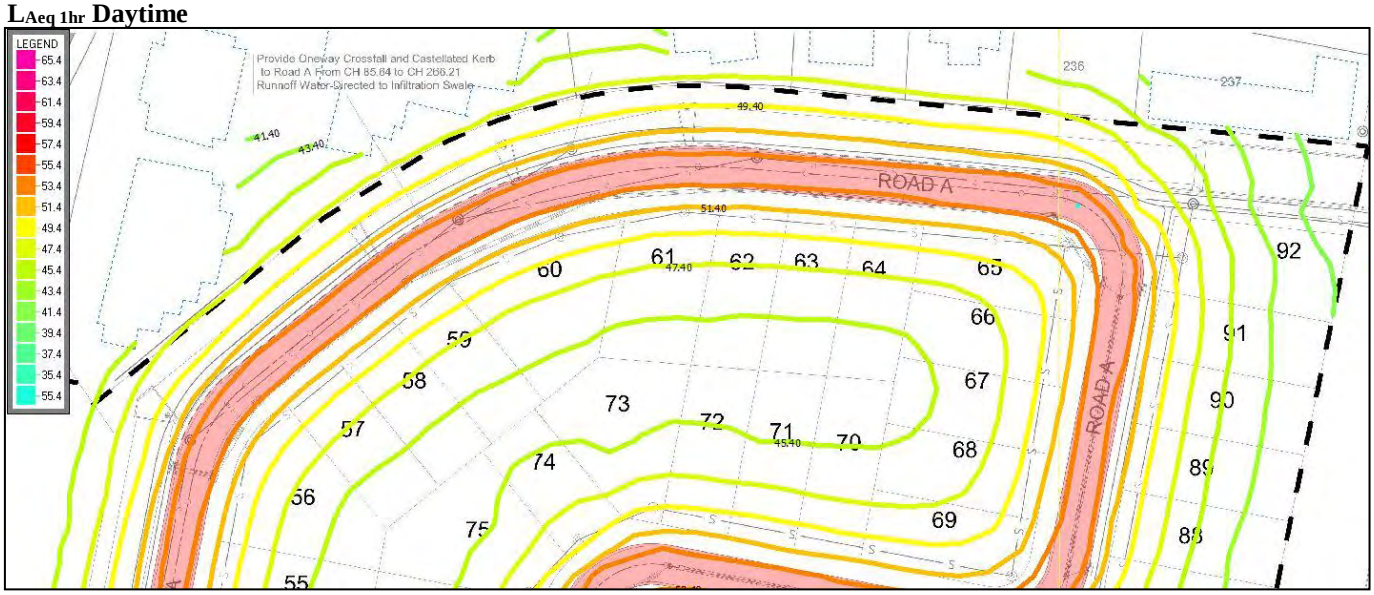
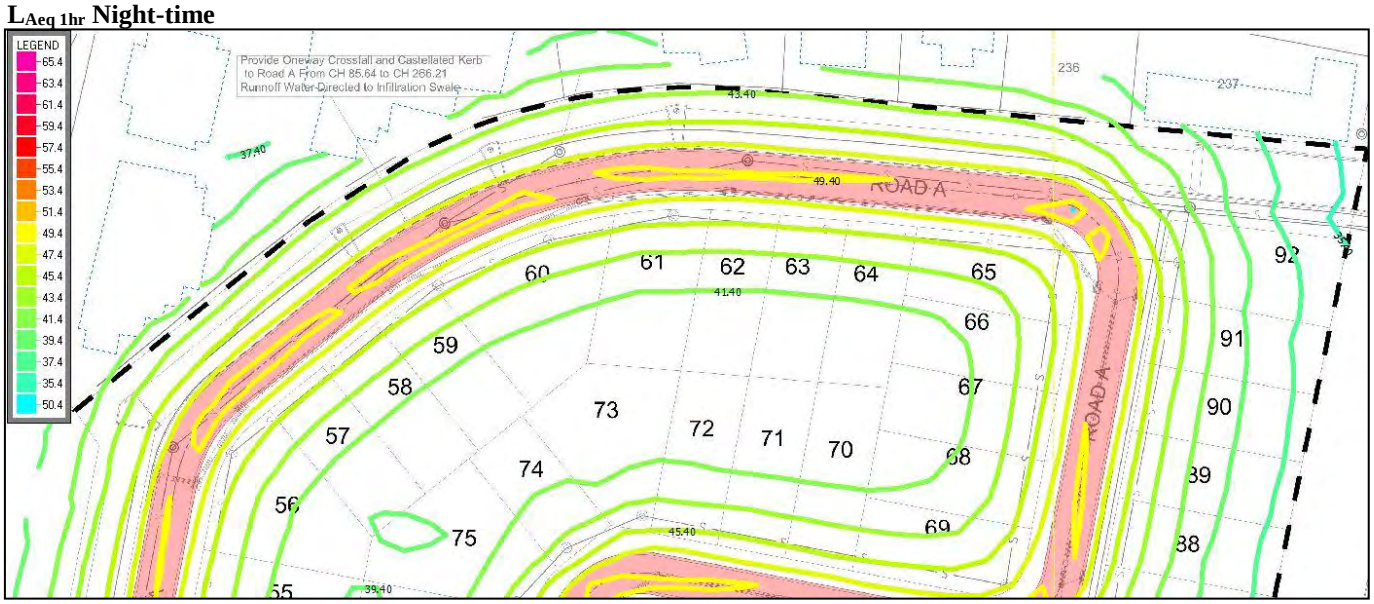


Figure 2: Aboveground floor road traffic noise contours from the proposed onsite northern road.

$L_{Aeq\ 1hr}$ Daytime



$L_{Aeq\ 1hr}$ Night-time



5.0 DISCUSSION and CONCLUSIONS

This report is in response to a request by Clarence Property Group for a road traffic noise impact assessment of proposed residential development along Casuarina Way at Casuarina (Lot 15 on DP1198266) and forms Stage 2 of the "*Casuarina Town Centre"* development.

This report responds to Item 3 of the NSW Planning and Environment's Request for Response to Submissions as presented below:

> **3. Amenity**
>
> - Please provide evidence to clarify whether the road proposed adjacent to the northern boundary of the site will generate any adverse noise or light spill impact at surrounding residential premises.

Stage 2 of the "*Casuarina Town Centre"* development will comprise a residential subdivision yielding 82 residential lots and 248 medium density units totalling 330 dwellings. For the proposed development layout refer to Appendix B of this report.

Road traffic noise generated by the proposed onsite northern local access street (defined as Road A on the attached *"Road Hierarchy and Pavement Width Plan"* – refer to Appendix B of this report), has been assessed in accordance with "*NSW Road Noise Policy*" to ensure acceptable levels of road noise are achieved at the nearest surrounding noise sensitive receivers; which include the Santai Retreat and detached two storey dwellings to the immediate north.

Based upon the road traffic noise modelling presented in Figures 1 and 2 the highest impacts are at 47 dB(A) $L_{eq\ 1hr}$ daytime and 42 dB(A) $L_{eq\ 1hr}$ night-time at the nearest offsite receivers; which is well within the adopted external noise criterion of 55 dB(A) $L_{eq\ 1hr}$ daytime and 50 dB(A) $L_{eq\ 1hr}$ night-time

Therefore, the northern local access road is predicted not to have any significant adverse noise impact (i.e. no exceedance of the external noise criterion) on the surrounding existing residential dwellings and Santai Retreat hotel rooms.

Report Reviewed By:

JAY CARTER BSc
Director

Report Compiled by:

Matthew Lopez BEng
Consultant

APPENDIX A

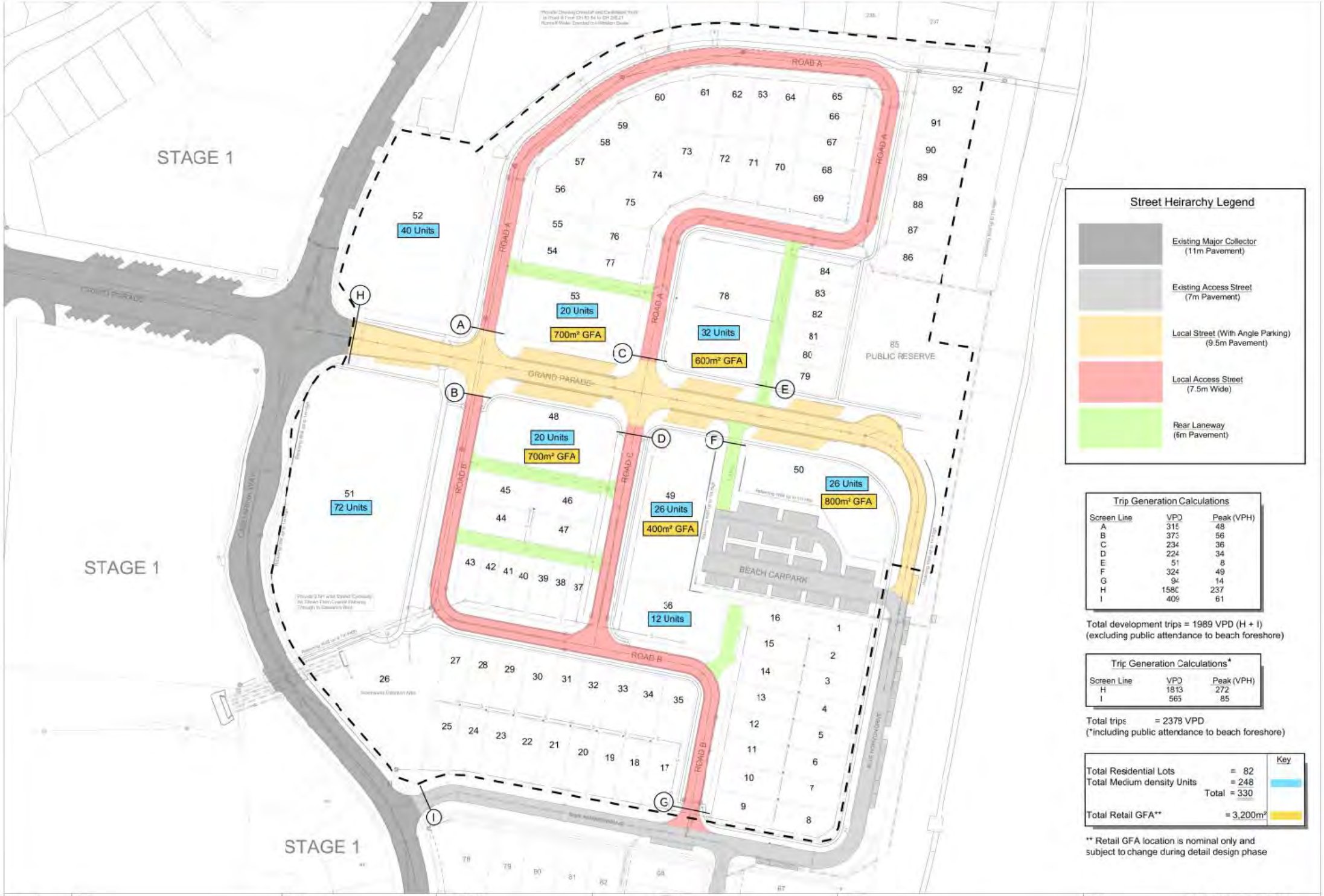
Subject Site Location

Figure No. 3: Subject Site Location (NSW Six Maps).

Figure No. 4: Subject Site and Surrounding Environs (Google Earth with NSW GLOBE Overlay).

APPENDIX B

Development Plans



Street Heirarchy Legend

- Existing Major Collector (11m Pavement)
- Existing Access Street (7m Pavement)
- Local Street (With Angle Parking) (9.5m Pavement)
- Local Access Street (7.5m Wide)
- Rear Laneway (6m Pavement)

Trip Generation Calculations

Screen Line	VPD	Peak (VPH)
A	318	48
B	373	56
C	234	36
D	224	34
E	51	8
F	324	49
G	94	14
H	1580	237
I	409	61

Total development trips = 1989 VPD (H + I)
(excluding public attendance to beach foreshore)

Trip Generation Calculations*

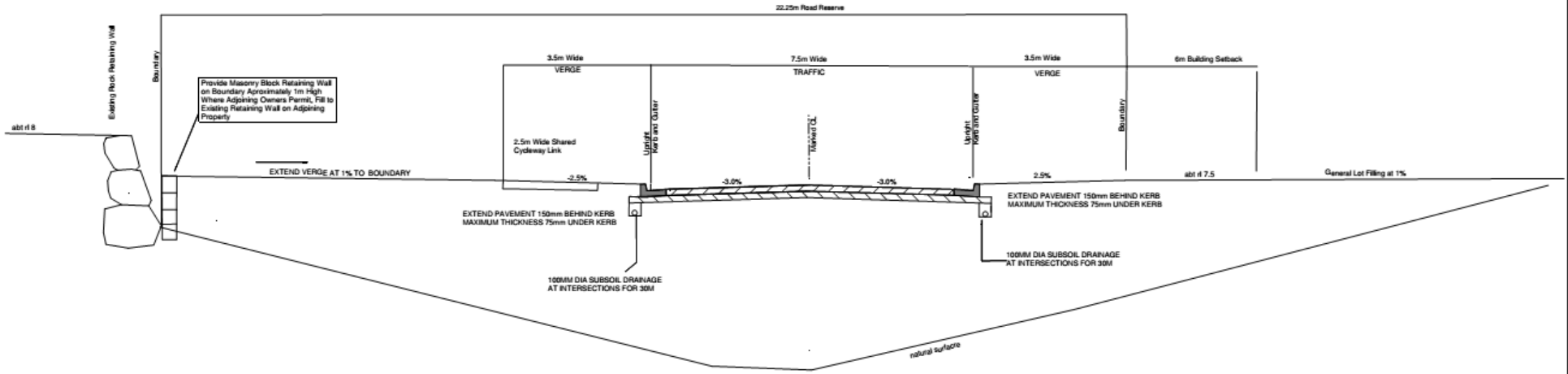
Screen Line	VPD	Peak (VPH)
H	1813	272
I	565	85

Total trips = 2378 VPD
(*including public attendance to beach foreshore)

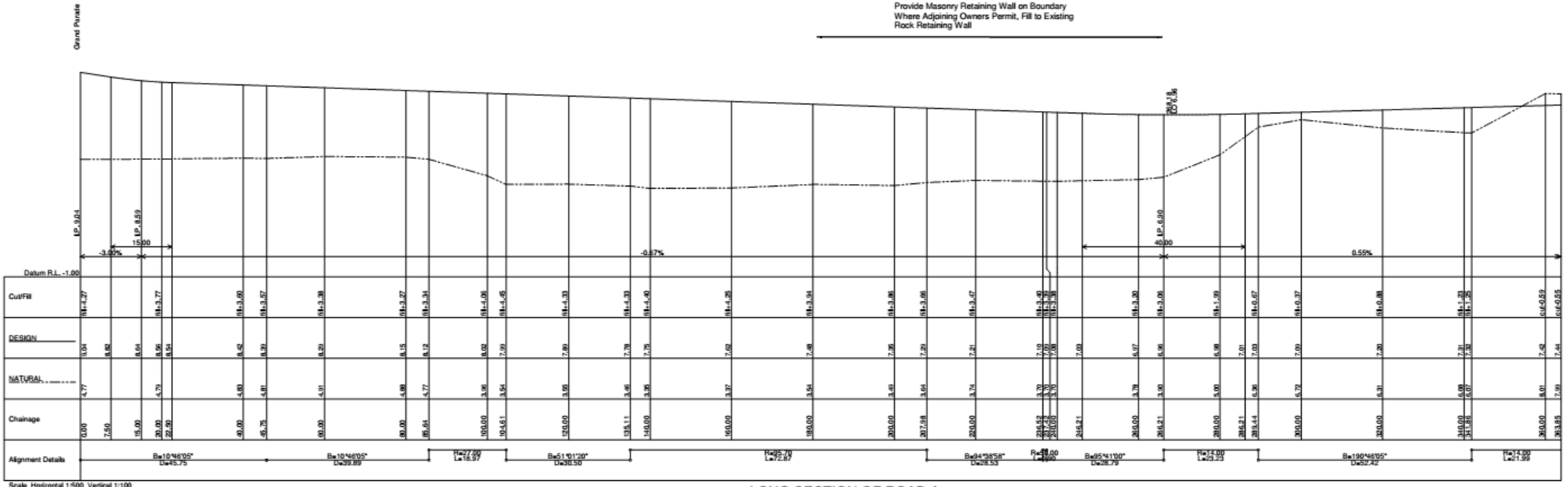
		Key
Total Residential Lots	= 82	
Total Medium density Units	= 248	
Total	= 330	
Total Retail GFA**	= 3,200m²	

** Retail GFA location is nominal only and subject to change during detail design phase

Amendments	Notes :	Design :	Date: Dec 2015	Newton Denny Chapelle Surveyors Planners Engineers Email: office@newtonennychapelle.com.au	Lismore Suite 1 31 Carrington St. Lismore 2480 T: 66 221011 F: 66 224088 Casino 100 Barker St. Casino 2470 T & F : 66 625000	Client: Stage 2 Casuarina Beach Clarence Property	Project :	Ref No. 13054 Design Rev4 - C1 Roads
		Survey :					Road Heirarchy and Pavement Width Plan	C002 Rev A
		Drawn :						
		Approved :						
		Datum :	Scale 1:750			K:\Jobs\2013\13054 - Clarence Property\Engineering\Prelim Engineering Plans\C1 Public Carparking Count.dwg		



TYPICAL SECTION OF ROAD A



LONG SECTION OF ROAD A

Amendments	Notes :	Design :	Date	Client:	Project :	Ref No. 13054 Design Rev5 - C9 Long Section of Road A
		Survey :		CASUARINA BEACH TOWN CENTRE PROJECT No. 06 0258	LONG SECTION OF ROAD A C9	
		Drawn :				
		Approved				
		Datum :	Scale $SCALE			Sheet of Sheets

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