

# 43-49 The Esplanade, Ettalong Beach Planning Proposal

## Traffic and Parking Impact Assessment

Ref: 19201  
Date: March 2020  
Issue: C

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# 1.0 Introduction

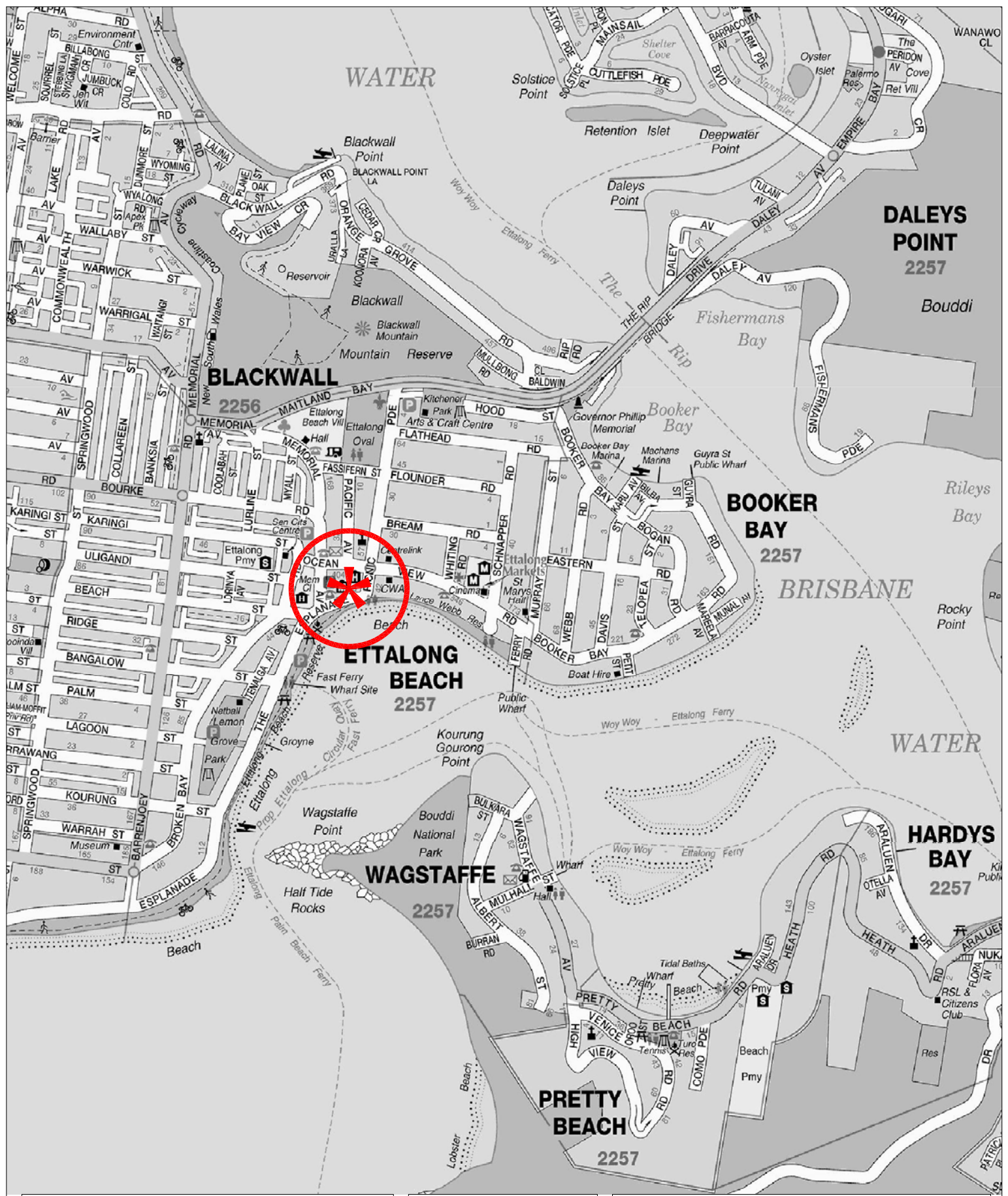
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This report has been prepared to accompany a Planning Proposal to Central Coast Council to increase building height and floor space ratio to permit an intensified mixed-use development on a site at 43-49 The Esplanade, Ettalong Beach (Figure 1).

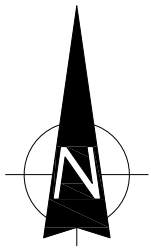
The purpose of this report is to:

- ❖ describe the site, its context and the planning proposal
- ❖ describe the road network serving the site and the prevailing traffic conditions
- ❖ assess the potential traffic implications arising from the intensified uses
- ❖ assess the suitability of the envisaged parking provision
- ❖ assess, on a high level, the suitability of the envisaged access roads and provision for servicing





LEGEND



LOCATION

FIG 1



## 2.0 Planning Proposal

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### 2.1 Site, Context and Existing Use

The subject site (Figure 2), being a consolidation of Lots 117-122 in DP 10650 and Lot 100 in DP1234105, is located at 43-49 The Esplanade, Ettalong Beach. It occupies a generally trapezoidal area of some 5,401.6m<sup>2</sup> and has frontages of some 126m to The Esplanade, some 40m to Picnic Parade and 50 metres to Memorial Avenue. The site also has frontage to an unnamed rear lane which connects between Memorial Avenue and Picnic Parade. Details of the site are indicated on the survey plan which is reproduced overleaf.

The eastern and western parts of the site are currently occupied by an older style two storey holiday rental home and a two storey motel/restaurant facility, while the central part of the site is vacant. Vehicle access for the holiday rental home is provided at Picnic Parade while the motel/restaurant is accessed via The Esplanade. The vacant lot is accessed via the rear laneway.

The site is situated within the small Ettalong Beach commercial and retail centre and fronts to the Ettalong Beach.

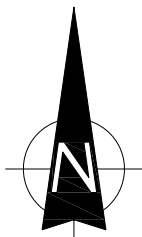
Surrounding land uses include:

- ❖ the Ettalong Diggers and Mantra Resort just to the west of Memorial Avenue
- ❖ the recently completed “Atlantis’ complex of 54 residential apartments plus ground level retail floor space of some 800 m<sup>2</sup> on the adjoining site
- ❖ the Ettalong Beach Hotel which adjoins to the north
- ❖ the various retail and commercial uses along Memorial Avenue, Picnic Parade and Ocean View Road





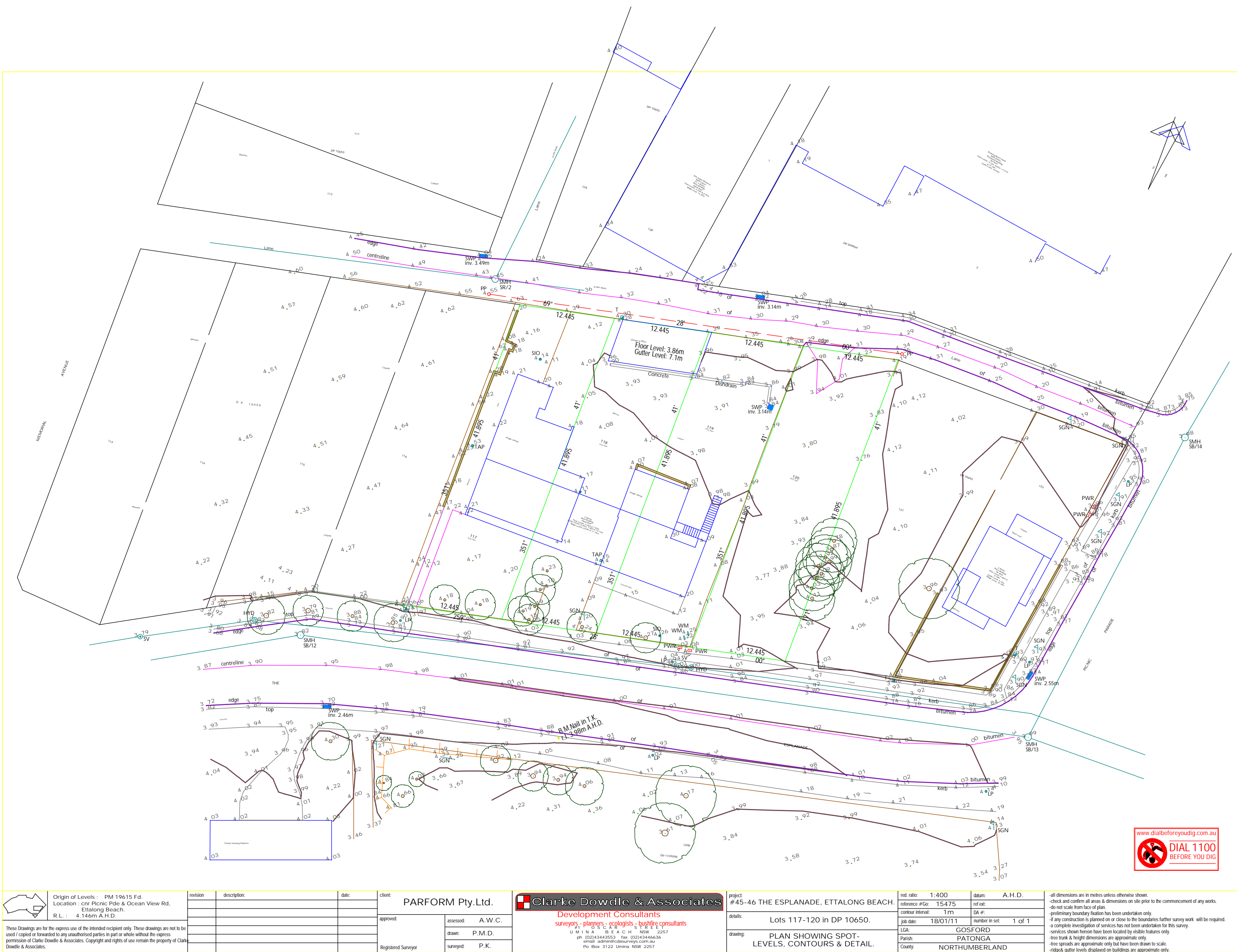
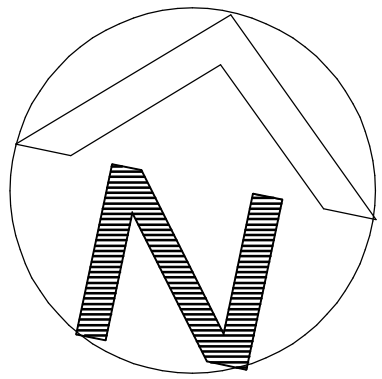
**LEGEND**



**SITE**

**FIG 2**





 Origin of Levels: P.M. 19615 F.I. Location: on Picnic Rd & Ocean View Rd, Etalong Beach R.L.: 4.146m A.H.D.	revision description date	client <b>PARFORM Pty Ltd.</b>	 <b>Clark Dowdle &amp; Associates</b> Development Consultants surveyors, planners, geologists, building consultants U.S. 10
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residential and commercial building design

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BUILDING DESIGNERS ASSOCIATION OF NEW SOUTH WALES INC.

Issue:	Date:	Revision:
	24.02.11	Preliminary issue to consultants
Drawing Title:		
Drawn:	Checked:	Date Drawn:
DR	DR	Feb 2011
File No:	Drawing No:	Rev:
11437		
Sheet 1 of 17		

Proposed Mixed Re-Development

No. 45-46 The Esplanade  
Etalong Beach NSW 2257

Lots 117-120, DP 10650

Parform Pty. Ltd.



## 2.2 Envisaged Development Scheme

A Planning Proposal is to be lodged with Central Coast Council to increase the permissible building height from 11.5m to 17m on the site and increase the maximum floor space ratio from 1:1 to 2:1 to enable improved lot consolidation and development outcome. Under these increased development parameters, it is envisaged that the development could achieve five storeys in height involving up to 38 two-bedroom residential units and retail floor space of some 1,100m<sup>2</sup> GFA.

Vehicle access would be provided at the rear access lane and involve a single level basement of 66 car spaces while a loading bay will be provided at-grade with a separate access at the rear lane.

Details of the envisaged development scheme, which are preliminary in nature and have been prepared for the purpose of the initial assessment to determine possible parking demands and traffic impacts, are reproduced in part in Appendix A.

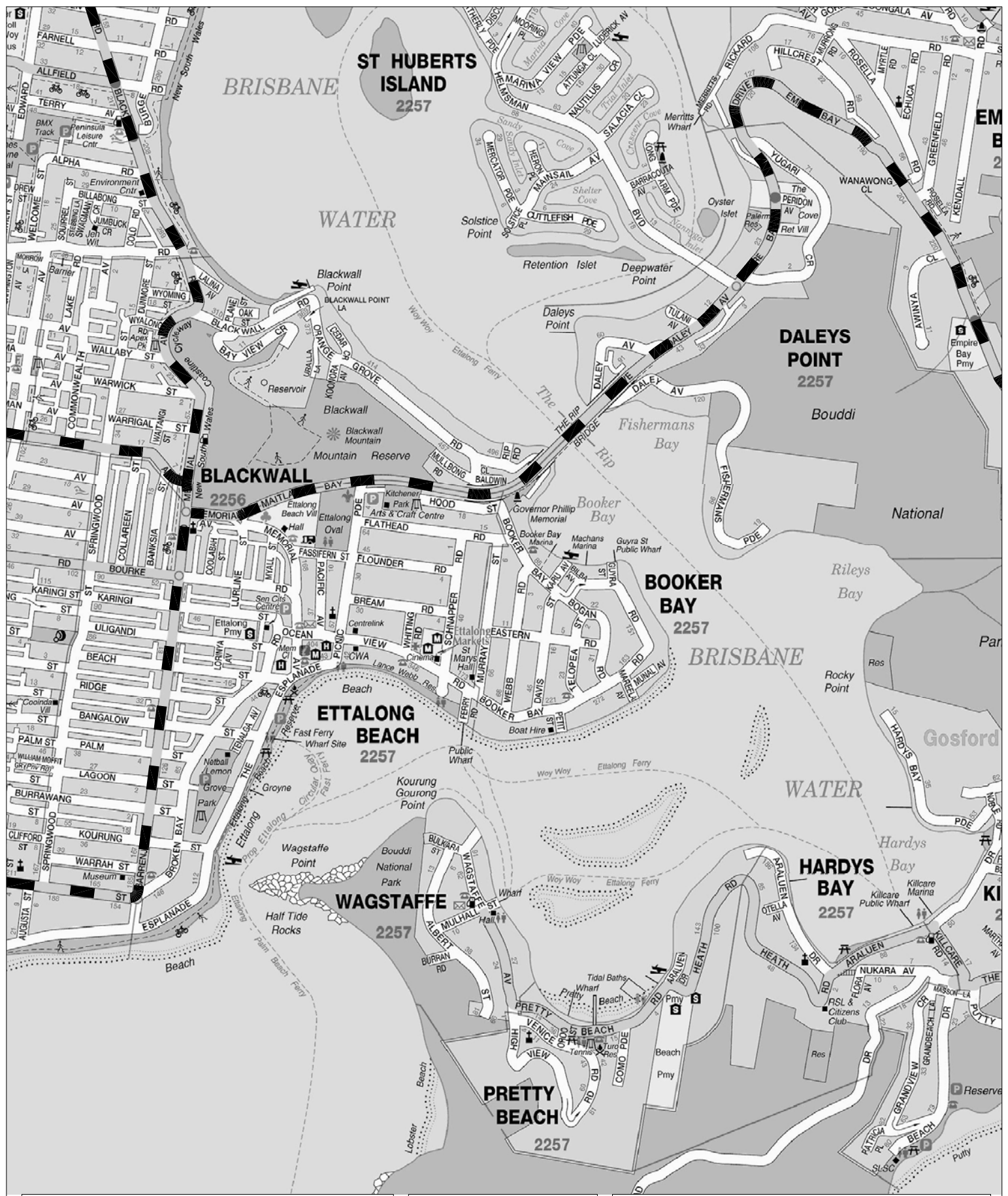
## 3.0 Road Network and Traffic Conditions

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### 3.1 Road Network

The existing road network serving the site (Figure 3) comprises:

- ❖ *F3 Freeway/M1 Pacific Motorway* – a State Road and arterial route providing the principal road link with Newcastle to the north and Sydney to the south
- ❖ *Central Coast Highway* – a State Road and arterial route connecting the central coast suburbs to the M1 Motorway
- ❖ *Brisbane Water Road, Woy Woy Road* – Regional Roads and major collector route providing interconnection between the M1 Motorway (via Central Coast Highway) and the inner townships
- ❖ *Blackwall Road* – a north-south collector route connecting between Woy Woy town centre and Blackwall and Memorial Avenue
- ❖ *Memorial Avenue/Barrenjoey Road* – a north-south collector route connecting between Blackwall Road and the local township
- ❖ *Ocean Beach Road* – a north-south collector road connecting Woy Woy to Umina Beach
- ❖ *Maitland Bay Drive* – an east-west collector road connecting between Ettalong Beach and Ettalong across the Brisbane Water river (Rip Bridge)
- ❖ *Ocean View Road, Booker Bay Road, Picnic Parade* – local collector road system serving Ettalong Beach





## 3.2 Traffic Controls

The existing traffic and parking controls in the vicinity of the site (Figure 4) comprise:

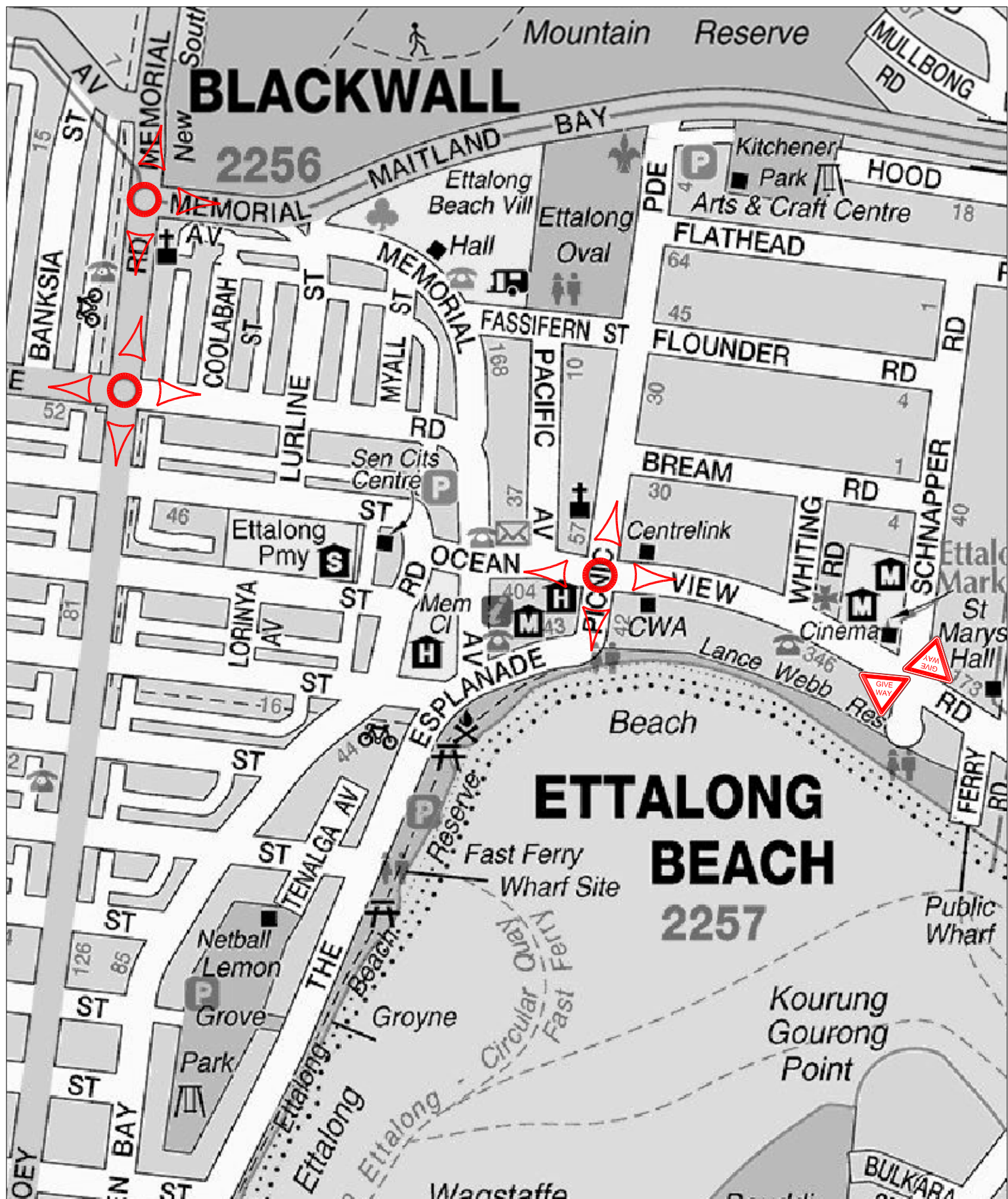
- ❖ the roundabout at the intersection of Ocean View Road and Picnic Parade
- ❖ the Seagull treatment at the intersection of Picnic Parade and Maitland Bay Drive which is currently the subject of RMS' investigation<sup>1</sup> for upgrade to a roundabout (details overleaf)
- ❖ the Give-Way priority control at the intersection of The Esplanade and Memorial Avenue
- ❖ the One-Way east restriction along the rear laneway frontage on the northern side of the site
- ❖ the numerous marked pedestrian crossings on Ocean View Road, Memorial Avenue and The Esplanade
- ❖ the 1P parking restriction along Picnic Parade and unrestricted angled parking on The Esplanade

## 3.3 Traffic Conditions

An indication of the of vehicle activity on the frontage roads in the area surrounding the site is provided by surveys undertaken at the nearby intersection of Picnic Parade and Ocean View Road. Additionally, the RMS study (by Cardno) also indicates AM and PM peak traffic flows at the intersection of Maitland Bay Drive and Picnic Parade.

Details of the relevant traffic surveys are reproduced in Appendix B and summarised in Figure 5 entitled Existing Peak Traffic Flows.

<sup>1</sup> Maitland Bay Drive/Picnic Parade, Ettalong Beach – Intersection Upgrade, Cardno, 24 October 2019



The peak periods operational performance of the Ocean View Road/Picnic Parade intersection has been assessed using traffic modelling program SIDRA. Furthermore, the operational circumstance of the existing seagull-treated Maitland Bay Drive/Picnic Parade intersection which has been assessed by Cardno. The results of the traffic modelling assessment for both the intersections are summarised as follows:

	AM Peak		PM Peak	
	LOS	AVD	LOS	AVD
Ocean View Rd/Picnic Pde (roundabout)	A	9.1s	A	9.9s
Maitland Bay Dr/Picnic Pde (seagull)	C	31.3s	B	21.7s

Details of the model output are reproduced in Appendix C while a guide to interpreting the SIDRA model results is reproduced overleaf.

Based on the above assessment outcome, it is apparent that there is moderate level of delays currently experienced by drivers at the Maitland Bay Drive/Picnic Parade intersection in the morning peak, although it is noteworthy that a level of service (LOS) C is not considered to be 'critical' in terms of intersection operation. The operational circumstance at the Ocean View Road and Picnic Parade intersection are excellent and there is no perceptible vehicle delay at present.

### 3.4 Transport Services

Transport services to and from the site are provided by the comprehensive bus services which are accessed via the bus stops located on Picnic Parade just to the east of the site and on Ocean View Road some 200m north east of the site. Local bus services offered via routes no. 50, 53, 55, 59, and 64 provide interconnections between the site and the nearby town centres of Kincumber, Woy Woy, Wagstaffe, and Gosford on a 4 services per hour basis. Additionally, the site benefits from convenient access to the local ferry network via Ettalong Ferry Wharf which is situated some 500m to the east. Details of the available transport services are provided on the route maps which are reproduced in Appendix D.



# Criteria for Interpreting Results of SIDRA Analysis

## 1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'B'	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
'C'	Satisfactory	Satisfactory but accident study required
'D'	Operating near capacity	Near capacity and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

## 2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode

## 3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**<sup>1</sup> both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

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<sup>1</sup> the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

## 4.0 Parking

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Council's DCP (Gosford) specifies the following relevant off-street parking criteria:

Shop Top Housing	1 space per dwelling
Commercial (Shops)	1 spaces per 40m <sup>2</sup>

Based on the concept plans appended to this report, the application of the above criteria would indicate the following requirements:

38 apartments	38 spaces
Commercial (1,100m <sup>2</sup> )	28 spaces
<b>Total</b>	<b>66 spaces</b>

It is envisaged that 61 spaces would be provided in the basement in the following composition:

Residents' carpark	38 spaces
Commercial carpark	21 spaces

It is also proposed to provide 2 loading spaces respectively on the ground level and in the carpark to accommodate refuse removals and smaller courier delivery vehicles.

The proposed arrangement represents a minor shortfall of 7 spaces. However, this is considered to be acceptable in the context of this site because:

- ❖ there are only 3 commercial units in the complex (with a parking requirement of 28 spaces)
- ❖ the site is located in the local town centre with convenient access to ready transport services

Quite apparently, opportunity exists within the commercial elements to encourage staff

## Transport and Traffic Planning Associates

members to rely on the ready public transport services to travel to/from their future places of employment. Other similar and commonly adopted initiative include the allocation of at least 1 commercial car space for staff members who actively carpool with their colleagues to/from the site/workplace. The detailed strategy and initiative pertaining to these travel demand measures, all of which aim to reduce private vehicle ownership/use in accessible town centres, generally take the form of a Workplace Travel Plan which can be the subject of a consent condition for this proposal.

These comments are made based on the concept plans and will be subject to a detailed assessment as part of future development application.



## 5.0 Traffic

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An indication of the traffic generation of the envisaged development outcome can be established with reference to the RMS document 'Guide to Traffic Generating Developments'.

For high density residential development i.e. a complex comprising 20 or more units in a 5 or more storey building not close to a railway, the Guideline specifies a peak traffic generation rate of 0.5 vtph per unit. For commercial developments, the Guideline specifies a peak traffic generation rate of 2 vtph per 100m<sup>2</sup> GFA.

Based on the above, the proposal of 38 residential units and commercial floor space of 1,100m<sup>2</sup> GFA would indicate the following peak traffic generation in/out distribution outcome:

	AM Peak		PM Peak	
	In	Out	In	Out
Residential	3	16	16	3
Commercial	20	2	2	20
<b>Total</b>	<b>41 vtph</b>		<b>41 vtph</b>	

It is understood that the site, when subject to existing LEP controls, could eventuate in a development outcome that involves:

Residential	30 units (two-bedrooms)
Commercial	850m <sup>2</sup> GFA

When the same RMS traffic generation rates are applied to that development outcome, the total peak period traffic generation would equate some 32 vtph.

On this basis, it is apparent that the initial development outcome would result in a net additional traffic only of some 9 vtph on the local road network.

Traffic generation outcome of this order of magnitude is largely minor particular as the existing traffic will be discounted from the new development. Notwithstanding, the traffic implications of the post-development outcome (i.e. full development of 41 vtp/h) has been assessed for the Ocean View Road/Picnic Parade roundabout using SIDRA. The modelling outcome, which indicates that the existing levels of service will be maintained, are provided in Appendix C and summarised as follows:

	AM Peak		PM Peak	
	LOS	AVD	LOS	AVD
Ocean View Rd/Picnic Pde	A	9.2s	A	9.9s

Based on the above assessment, it is apparent that the intensified uses resulting from the Planning Proposal will have no adverse traffic implications on the surrounding road network.

## 6.0 Access, Internal Circulation and Servicing

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### 6.1 Access

The envisaged vehicle access arrangement will involve:

- ❖ a 5.5m wide driveway on the laneway frontage
- ❖ a 4m wide service vehicle driveway on the laneway frontage

The accesses will be designed to accord with the geometric, sight line and grade requirements of the AS2890.1 and AS2890.2.

### 6.2 Internal Circulation

Provisions for vehicle internal circulation will have regard for the design requirements in the AS2890.1 design criteria particular in relation to headroom, grade, aisle and carpark geometries. Vehicle circulation and movements in the carparking module will be subject to detailed assessment during the subsequent planning stages.

### 6.3 Servicing

Refuse collection would occur at the designated at-grade loading bay on the laneway frontage. The loading bay will be designed to accommodate a 12.5m long Council refuse vehicle and appropriate working area will be incorporated in this bay to enable workers to undertake servicing with no undue difficulty. The service vehicle will undertake 1 reverse manoeuvre in order to access the loading bay however this is not unacceptable because:

- ❖ the laneway has a one-way east only traffic flow restriction therefore there will be no opposing traffic conflict
- ❖ the service vehicle frequency will be low and largely occur outside of normal peak traffic and commuting periods.

## 7.0 Conclusion

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A Traffic and Transport Assessment has been undertaken to accompany a Planning Proposal on a site with frontage to The Esplanade and Picnic Parade in Ettalong Beach.

The assessment has established that:

- ❖ the site is benefitted by good accessibility to local transport services and connectivity to local retail centre
- ❖ the existing intersections in the vicinity of the site have been shown to be operating with excellent levels of service and minimal delays
- ❖ the envisaged parking provision for the residential apartment component will be consistent with the DCP criteria however the provision of commercial parking spaces would be slightly less than the DCP requirement
- ❖ the commercial parking shortfall of 7 spaces is considered to be acceptable as the development will only have 3 commercial units and the site has convenient access (walking distances) to ready transport services
- ❖ the projected traffic generation outcome will only be some 8 vtpm more than a development outcome that is subject to existing LEP controls
- ❖ notwithstanding, the eventual development outcome will continue to maintain existing intersections' levels of service and there will be no adverse impact to the local traffic operations
- ❖ the proposed access, internal circulation and service arrangements will have regard for the relevant AS2890 design requirements.



## Appendix A

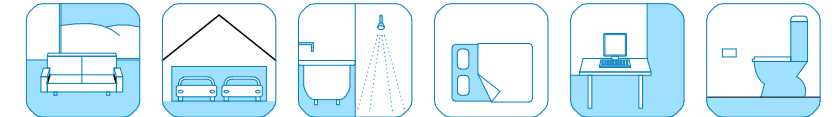
### Architectural Plans

# SITE PLAN

scale

10m

Max.GFA = 6316m2



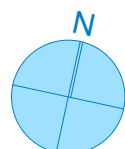
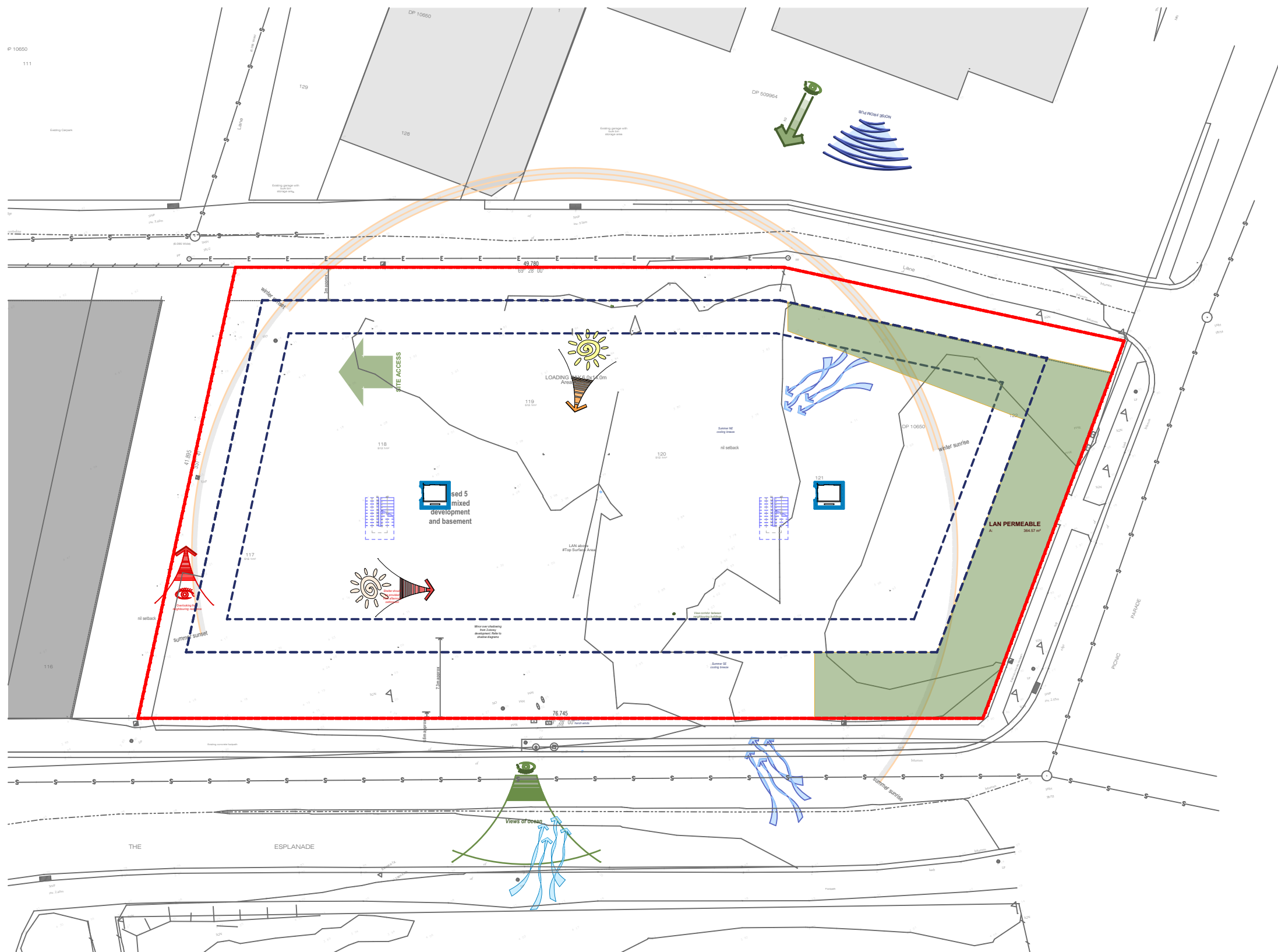
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GFA:

CIRCULATION	391.92
	391.92 m <sup>2</sup>
COM RETAIL	1,059.90
	1,059.90 m <sup>2</sup>
RESIDENTIAL	4,086.33
	4,086.33 m <sup>2</sup>
	5,538.15 m <sup>2</sup>

Area:

CIRCULATION	403.27
	403.27 m <sup>2</sup>
COM CARPARK	2,046.20
	2,046.20 m <sup>2</sup>
COM RETAIL	1,059.90
	1,059.90 m <sup>2</sup>
COM UTIL	122.92
	122.92 m <sup>2</sup>
FIRE ESC.	330.89
	330.89 m <sup>2</sup>
LAN IMPERMEABLE	169.96
	169.96 m <sup>2</sup>
LAN ROOF TOP	77.76
	77.76 m <sup>2</sup>
RES CARPARK	0.00
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RES STORAGE	166.58
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RET CIRCULATION	706.57
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SERV	119.78
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	9,446.44 m <sup>2</sup>



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residential and commercial building design

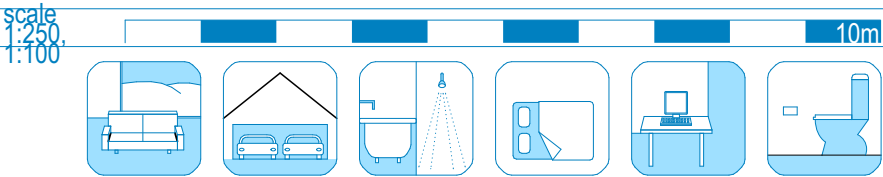
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e | david@hlabuildingdesign.com.au  
a | PO Box 3206, ERINA NSW 2250  
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ACCREDITED MEMBER

**PARFORM P/L**  
The Esplanade ETALONG NSW 2257

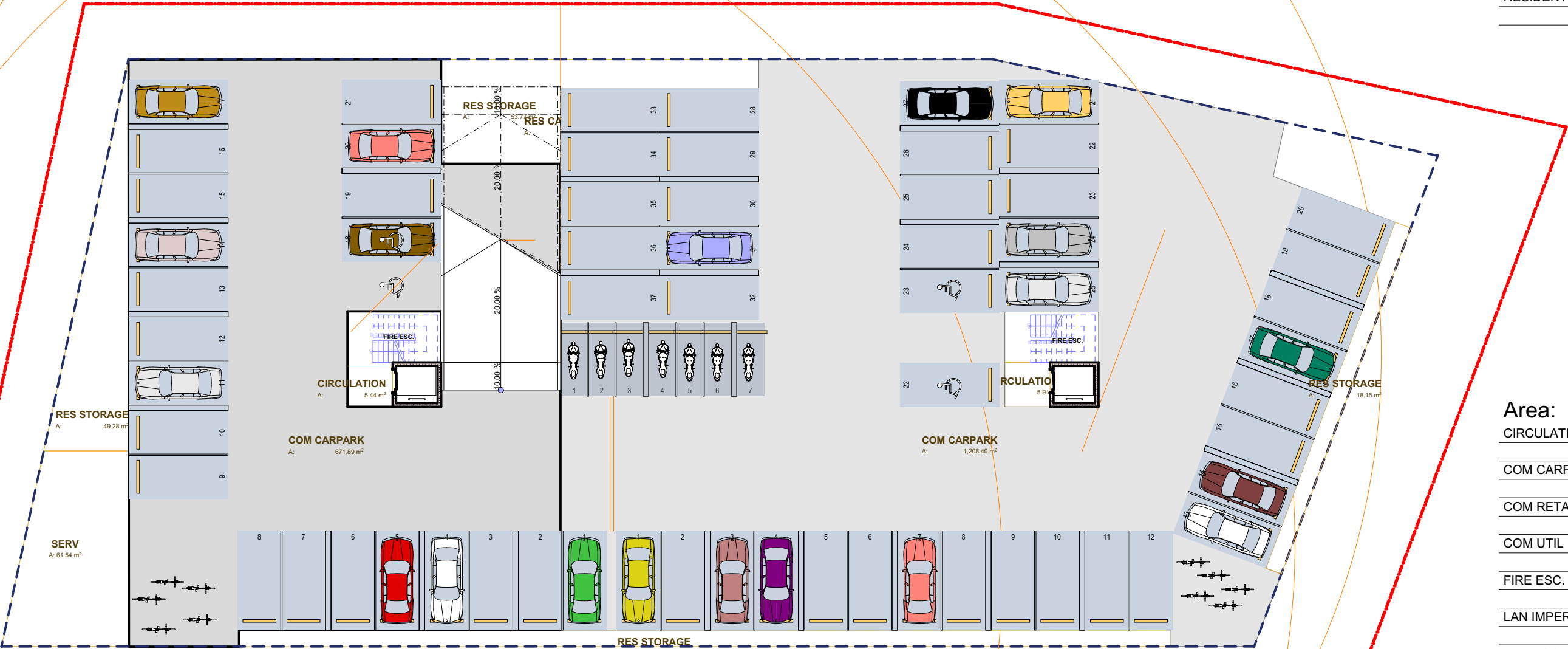
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PLANS-B1

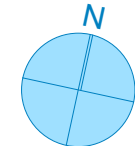


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residential and commercial building design

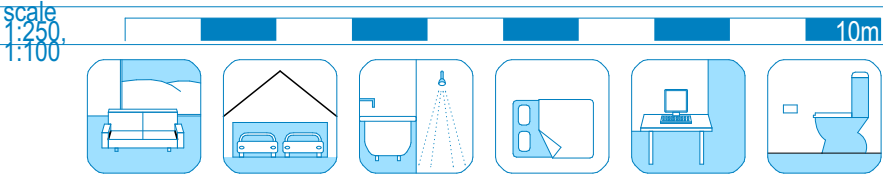
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Issue: sheet #:  
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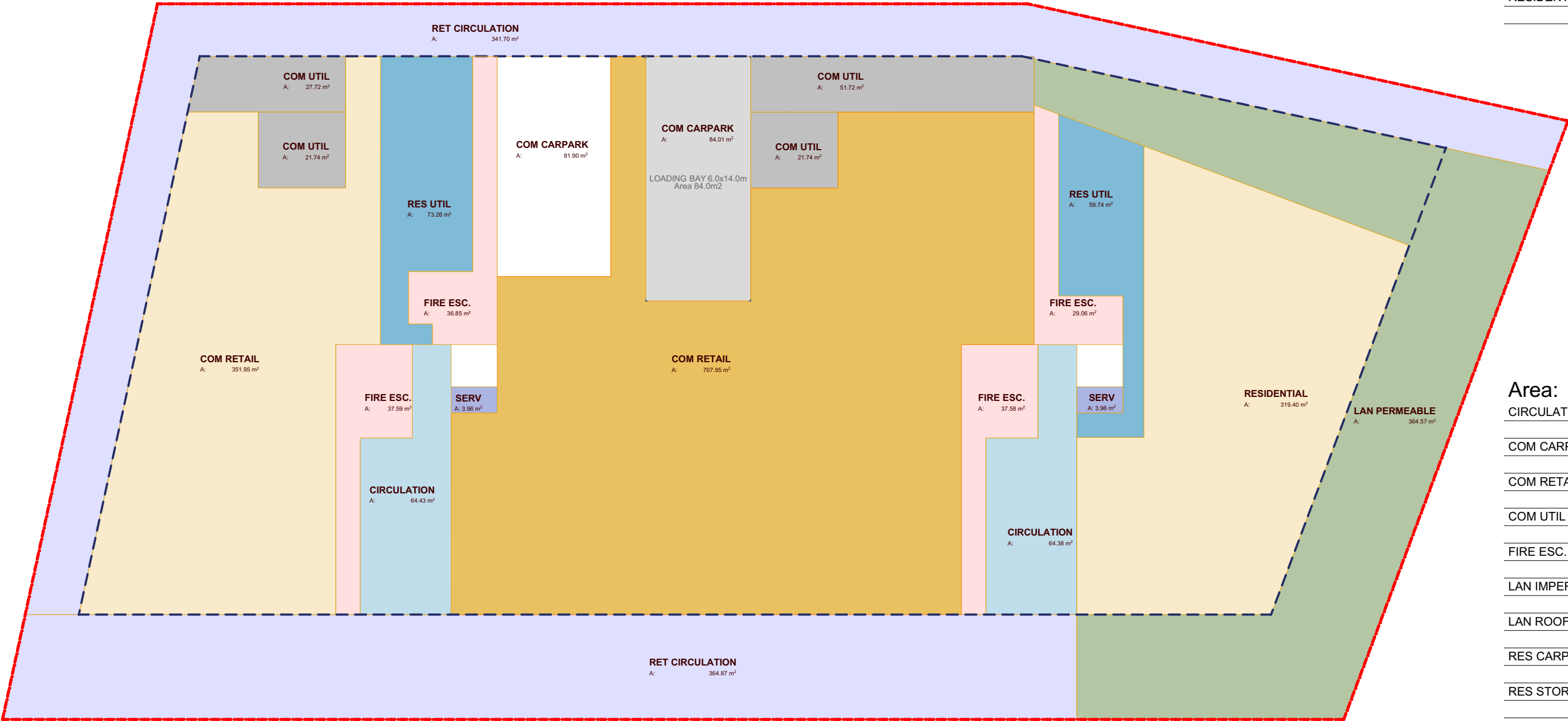
PLANS-GF



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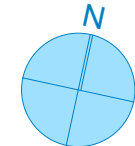
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SECTIONS

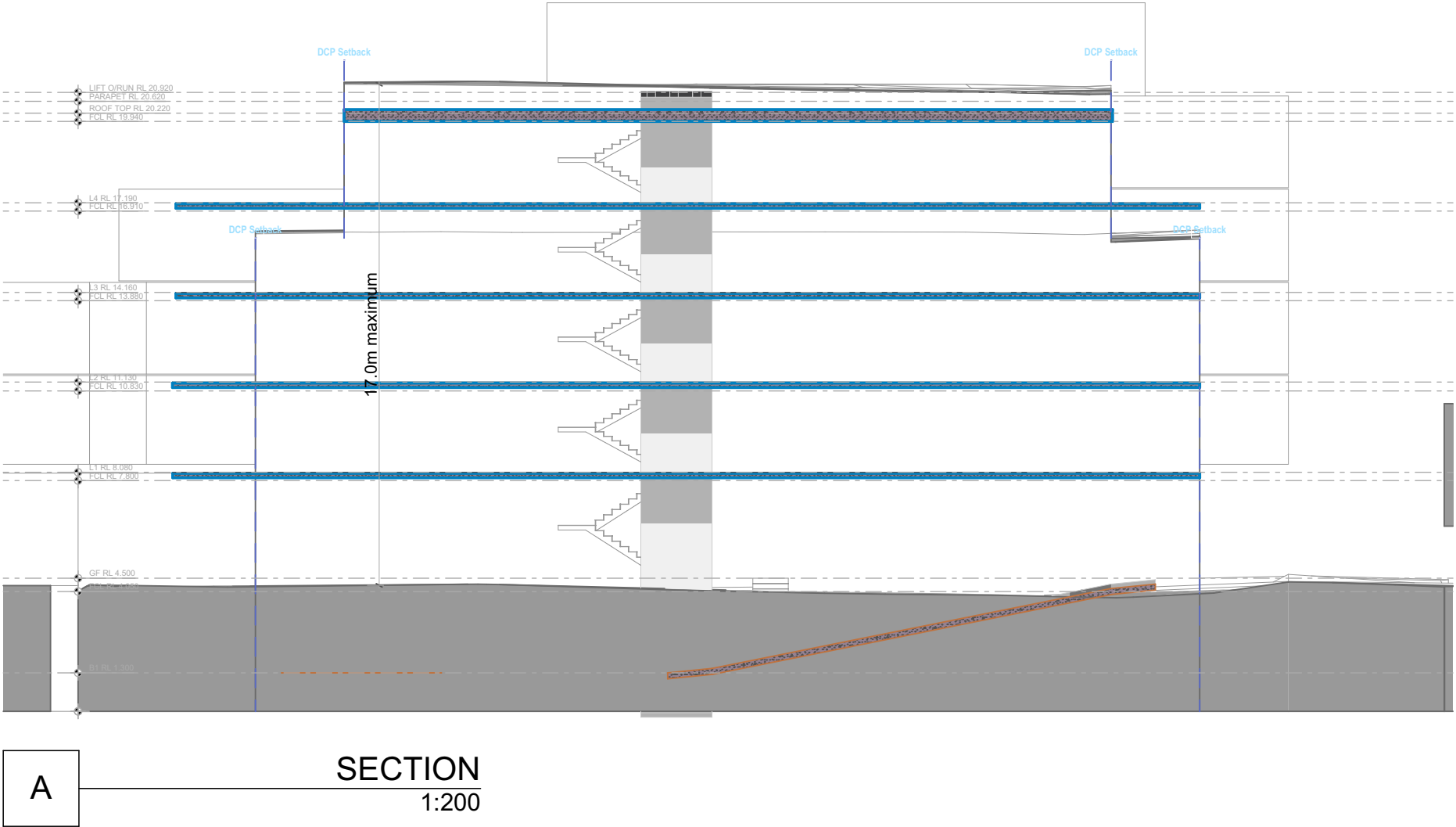
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GFA (max 6320)

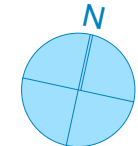
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	122.92 m²
FIRE ESC.	330.89
	330.89 m²
LAN IMPERMEABLE	169.96
	169.96 m²
LAN ROOF TOP	77.76
	77.76 m²
RES CARPARK	0.00
	0.00 m²
RES STORAGE	166.58
	166.58 m²
RES UTIL	156.28
	156.28 m²
RESIDENTIAL	4,086.33
	4,086.33 m²
RET CIRCULATION	706.57
	706.57 m²
SERV	119.78
	119.78 m²
	9,446.44 m²



## Appendix B

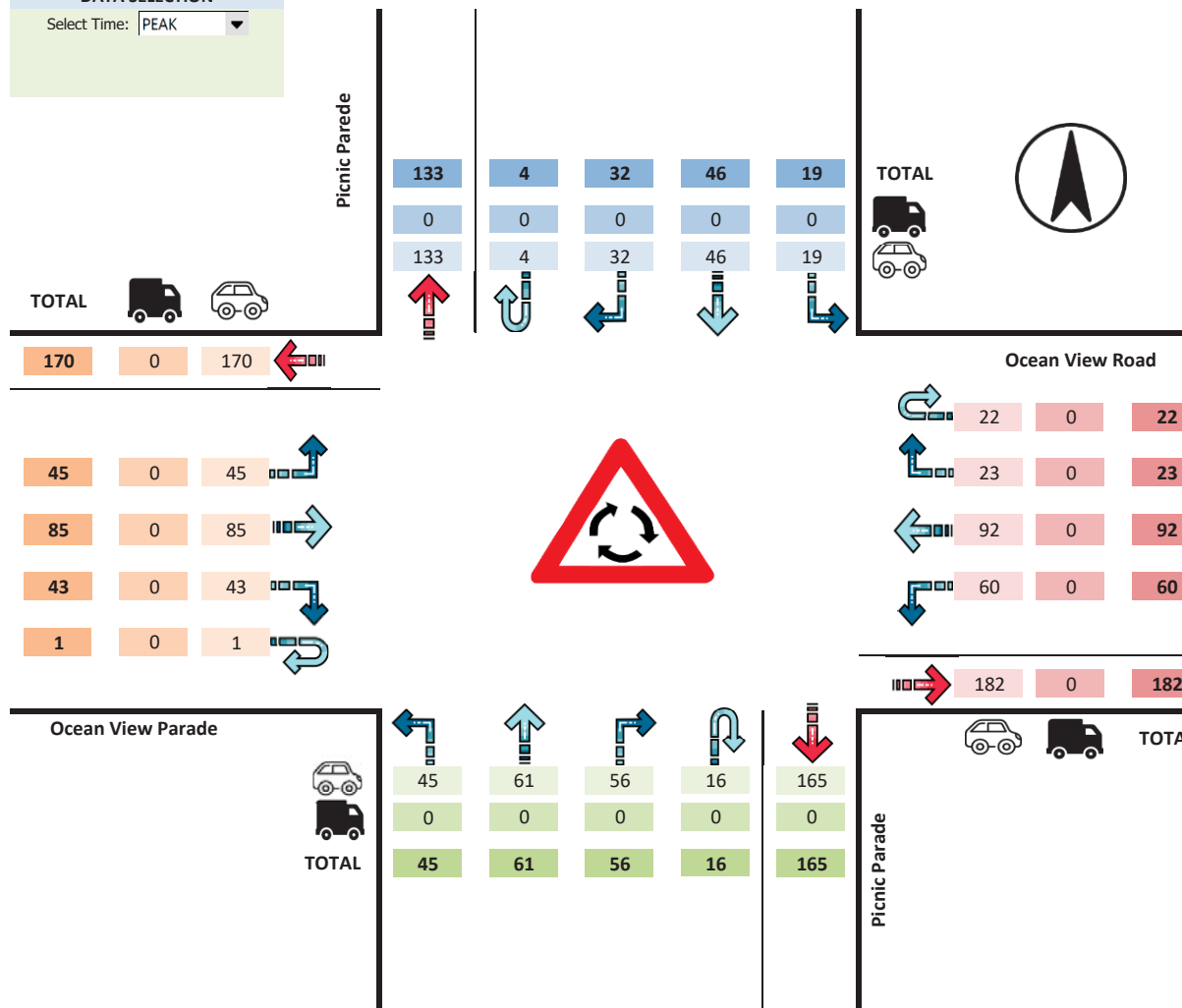
### Traffic Surveys

Location Picnic Parade  
Ocean View Road  
Picnic Parade  
Ocean View Parade  
 Suburb ETTALONG

Duration 0700 - 0900  
1600 - 1800  
-  
 Day/Date Thursday, December 6, 2018  
 Weather -

DATA SELECTION  
 Select Time: PEAK

TIME RANGE  
 PEAK - AM  
 PEAK  
 8:00 - 9:00



**Traffic Information Specialists**

ABN: 42 613 389 923

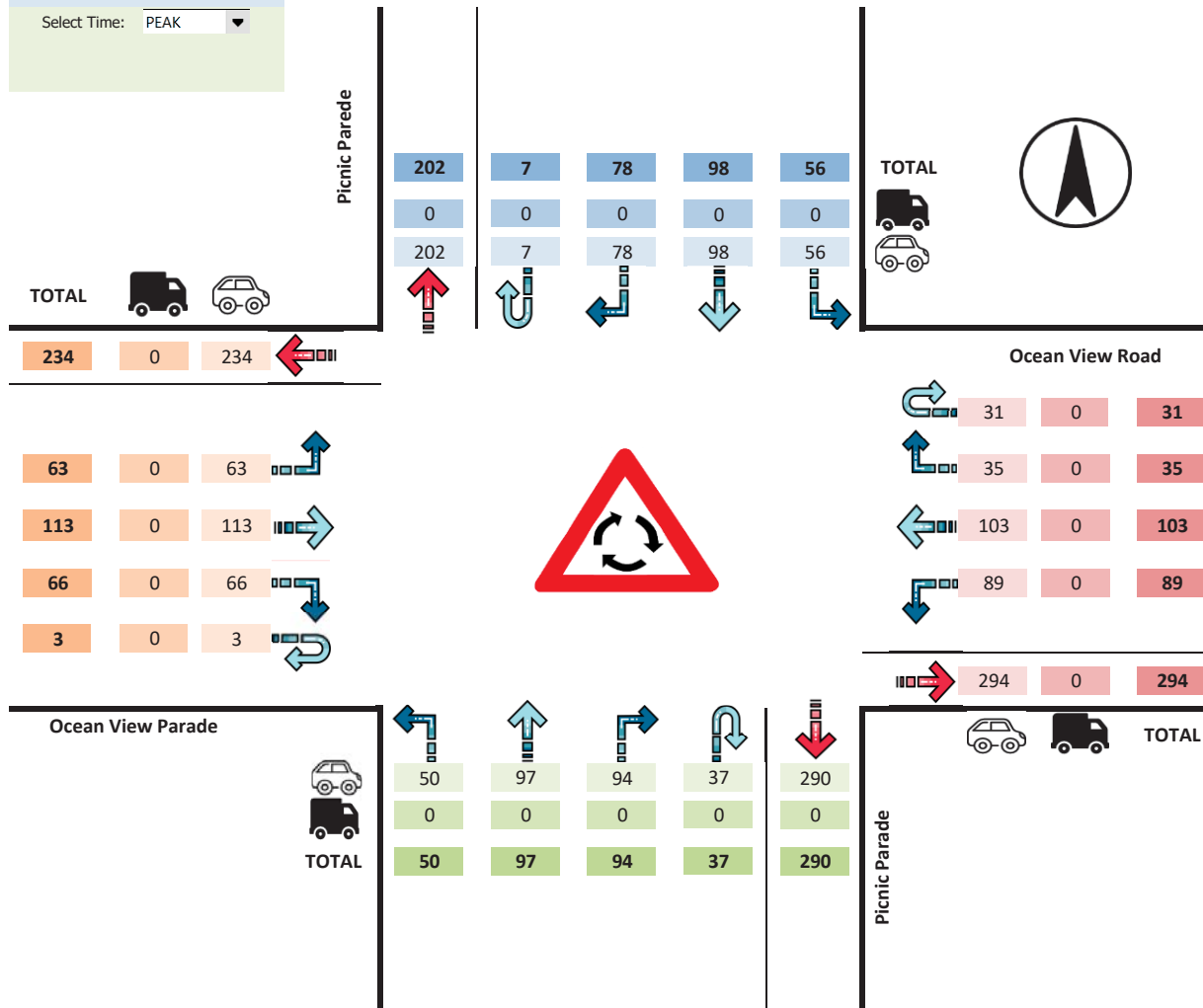
Email [info@trafficinfospecialist.com.au](mailto:info@trafficinfospecialist.com.au)

Location Picnic Parade  
Ocean View Road  
Picnic Parade  
Ocean View Parade  
 Suburb ETTALONG

Duration 0700 - 0900  
1600 - 1800  
-  
 Day/Date Thursday, December 6, 2018  
 Weather -

**DATA SELECTION**  
 Select Time: PEAK

TIME RANGE		
PEAK	-	PM
PEAK		
16:00	-	17:00



**Traffic Information Specialists**

ABN: 42 613 389 923

Email [info@trafficinfospecialist.com.au](mailto:info@trafficinfospecialist.com.au)

## Appendix C

### SIDRA Model Results



# MOVEMENT SUMMARY

## Site: 101 [Ocean View Road and Picnic Parade AM Existing]

Ocean View Road and Picnic Parade  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Picnic Parade												
1	L2	47	0.0	0.148	5.0	LOS A	0.8	5.5	0.34	0.57	0.34	50.4
2	T1	64	0.0	0.148	5.4	LOS A	0.8	5.5	0.34	0.57	0.34	53.4
3	R2	59	0.0	0.148	9.0	LOS A	0.8	5.5	0.34	0.57	0.34	53.2
Approach		171	0.0	0.148	6.5	LOS A	0.8	5.5	0.34	0.57	0.34	52.6
East: Ocean View Road												
4	L2	63	0.0	0.160	5.5	LOS A	0.9	6.0	0.32	0.54	0.32	52.7
5	T1	97	0.0	0.160	5.3	LOS A	0.9	6.0	0.32	0.54	0.32	52.0
6	R2	24	0.0	0.160	8.7	LOS A	0.9	6.0	0.32	0.54	0.32	53.4
Approach		184	0.0	0.160	5.8	LOS A	0.9	6.0	0.32	0.54	0.32	52.5
North: Picnic Parade												
7	L2	20	0.0	0.092	5.2	LOS A	0.5	3.3	0.37	0.57	0.37	52.6
8	T1	48	0.0	0.092	5.6	LOS A	0.5	3.3	0.37	0.57	0.37	53.3
9	R2	34	0.0	0.092	9.1	LOS A	0.5	3.3	0.37	0.57	0.37	51.0
Approach		102	0.0	0.092	6.7	LOS A	0.5	3.3	0.37	0.57	0.37	52.5
West: Ocean View Road												
10	L2	47	0.0	0.162	5.6	LOS A	0.9	6.2	0.35	0.56	0.35	50.1
11	T1	89	0.0	0.162	5.4	LOS A	0.9	6.2	0.35	0.56	0.35	51.5
12	R2	45	0.0	0.162	8.8	LOS A	0.9	6.2	0.35	0.56	0.35	51.0
Approach		182	0.0	0.162	6.3	LOS A	0.9	6.2	0.35	0.56	0.35	51.0
All Vehicles		639	0.0	0.162	6.3	LOS A	0.9	6.2	0.34	0.56	0.34	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

## Site: 101 [Ocean View Road and Picnic Parade PM Existing]

Ocean View Road and Picnic Parade  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Picnic Parade												
1	L2	54	0.0	0.237	5.6	LOS A	1.4	9.6	0.45	0.62	0.45	49.9
2	T1	102	0.0	0.237	5.9	LOS A	1.4	9.6	0.45	0.62	0.45	53.0
3	R2	99	0.0	0.237	9.5	LOS A	1.4	9.6	0.45	0.62	0.45	52.8
Approach		255	0.0	0.237	7.2	LOS A	1.4	9.6	0.45	0.62	0.45	52.3
East: Ocean View Road												
4	L2	94	0.0	0.236	6.4	LOS A	1.4	9.6	0.48	0.62	0.48	52.1
5	T1	108	0.0	0.236	6.2	LOS A	1.4	9.6	0.48	0.62	0.48	51.2
6	R2	37	0.0	0.236	9.6	LOS A	1.4	9.6	0.48	0.62	0.48	52.8
Approach		239	0.0	0.236	6.8	LOS A	1.4	9.6	0.48	0.62	0.48	51.9
North: Picnic Parade												
7	L2	59	0.0	0.238	5.9	LOS A	1.4	9.7	0.50	0.65	0.50	52.1
8	T1	103	0.0	0.238	6.3	LOS A	1.4	9.7	0.50	0.65	0.50	52.9
9	R2	82	0.0	0.238	9.9	LOS A	1.4	9.7	0.50	0.65	0.50	50.5
Approach		244	0.0	0.238	7.4	LOS A	1.4	9.7	0.50	0.65	0.50	52.0
West: Ocean View Road												
10	L2	66	0.0	0.248	6.3	LOS A	1.5	10.3	0.48	0.62	0.48	49.5
11	T1	119	0.0	0.248	6.1	LOS A	1.5	10.3	0.48	0.62	0.48	50.9
12	R2	69	0.0	0.248	9.5	LOS A	1.5	10.3	0.48	0.62	0.48	50.4
Approach		255	0.0	0.248	7.1	LOS A	1.5	10.3	0.48	0.62	0.48	50.4
All Vehicles		993	0.0	0.248	7.1	LOS A	1.5	10.3	0.48	0.63	0.48	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

## Site: 101 [Ocean View Road and Picnic Parade AM Future]

Ocean View Road and Picnic Parade  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Picnic Parade												
1	L2	49	0.0	0.167	5.0	LOS A	0.9	6.4	0.35	0.57	0.35	50.4
2	T1	82	0.0	0.167	5.4	LOS A	0.9	6.4	0.35	0.57	0.35	53.4
3	R2	61	0.0	0.167	9.0	LOS A	0.9	6.4	0.35	0.57	0.35	53.2
Approach		193	0.0	0.167	6.5	LOS A	0.9	6.4	0.35	0.57	0.35	52.7
East: Ocean View Road												
4	L2	66	0.0	0.168	5.7	LOS A	0.9	6.4	0.35	0.55	0.35	52.6
5	T1	97	0.0	0.168	5.5	LOS A	0.9	6.4	0.35	0.55	0.35	51.8
6	R2	24	0.0	0.168	8.9	LOS A	0.9	6.4	0.35	0.55	0.35	53.3
Approach		187	0.0	0.168	6.0	LOS A	0.9	6.4	0.35	0.55	0.35	52.4
North: Picnic Parade												
7	L2	20	0.0	0.114	5.2	LOS A	0.6	4.1	0.38	0.57	0.38	52.6
8	T1	73	0.0	0.114	5.6	LOS A	0.6	4.1	0.38	0.57	0.38	53.4
9	R2	34	0.0	0.114	9.2	LOS A	0.6	4.1	0.38	0.57	0.38	51.1
Approach		126	0.0	0.114	6.5	LOS A	0.6	4.1	0.38	0.57	0.38	52.8
West: Ocean View Road												
10	L2	47	0.0	0.169	5.7	LOS A	0.9	6.4	0.37	0.57	0.37	50.0
11	T1	89	0.0	0.169	5.6	LOS A	0.9	6.4	0.37	0.57	0.37	51.4
12	R2	48	0.0	0.169	9.0	LOS A	0.9	6.4	0.37	0.57	0.37	50.9
Approach		185	0.0	0.169	6.5	LOS A	0.9	6.4	0.37	0.57	0.37	50.9
All Vehicles		692	0.0	0.169	6.3	LOS A	0.9	6.4	0.36	0.57	0.36	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

## Site: 101 [Ocean View Road and Picnic Parade PM Future]

Ocean View Road and Picnic Parade  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Picnic Parade												
1	L2	57	0.0	0.264	5.6	LOS A	1.6	11.0	0.46	0.62	0.46	49.9
2	T1	126	0.0	0.264	6.0	LOS A	1.6	11.0	0.46	0.62	0.46	53.0
3	R2	102	0.0	0.264	9.5	LOS A	1.6	11.0	0.46	0.62	0.46	52.8
Approach		285	0.0	0.264	7.2	LOS A	1.6	11.0	0.46	0.62	0.46	52.4
East: Ocean View Road												
4	L2	96	0.0	0.243	6.5	LOS A	1.4	10.0	0.51	0.63	0.51	52.1
5	T1	108	0.0	0.243	6.3	LOS A	1.4	10.0	0.51	0.63	0.51	51.1
6	R2	37	0.0	0.243	9.7	LOS A	1.4	10.0	0.51	0.63	0.51	52.8
Approach		241	0.0	0.243	6.9	LOS A	1.4	10.0	0.51	0.63	0.51	51.8
North: Picnic Parade												
7	L2	59	0.0	0.257	6.0	LOS A	1.5	10.7	0.51	0.65	0.51	52.1
8	T1	121	0.0	0.257	6.4	LOS A	1.5	10.7	0.51	0.65	0.51	52.8
9	R2	82	0.0	0.257	9.9	LOS A	1.5	10.7	0.51	0.65	0.51	50.4
Approach		262	0.0	0.257	7.4	LOS A	1.5	10.7	0.51	0.65	0.51	52.0
West: Ocean View Road												
10	L2	66	0.0	0.257	6.5	LOS A	1.5	10.7	0.50	0.64	0.50	49.4
11	T1	119	0.0	0.257	6.3	LOS A	1.5	10.7	0.50	0.64	0.50	50.7
12	R2	72	0.0	0.257	9.7	LOS A	1.5	10.7	0.50	0.64	0.50	50.2
Approach		257	0.0	0.257	7.3	LOS A	1.5	10.7	0.50	0.64	0.50	50.2
All Vehicles		1045	0.0	0.264	7.2	LOS A	1.6	11.0	0.50	0.64	0.50	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## Appendix D

### Transport Services



