

Traffic Impact Assessment;

Long Reef Surf Club Renewal

For Adriano Pupilli Architects
30 October 2019

parking;
traffic;
civil design;
wayfinding;
ptc.

Document Control

Long Reef Surf Club Renewal, Traffic Impact Assessment

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	19/3/19	Draft Report	FL/EY	AM	Matthew Ryan
2	23/10/19	Final Report	FL/EY	AM	Matthew Ryan
3	30/10/19	Minor amendments	AM	AM	Matthew Ryan

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1. Introduction

1.1 Project Summary

ptc. has been engaged by Adriano Pupilli Architects to prepare a Traffic and Parking Impact Assessment in relation to the Development Application to Northern Beaches Council for the Long Reef Surf Club (LRSC) Renewal Project.

The location of the site is outlined in Figure 1 below.

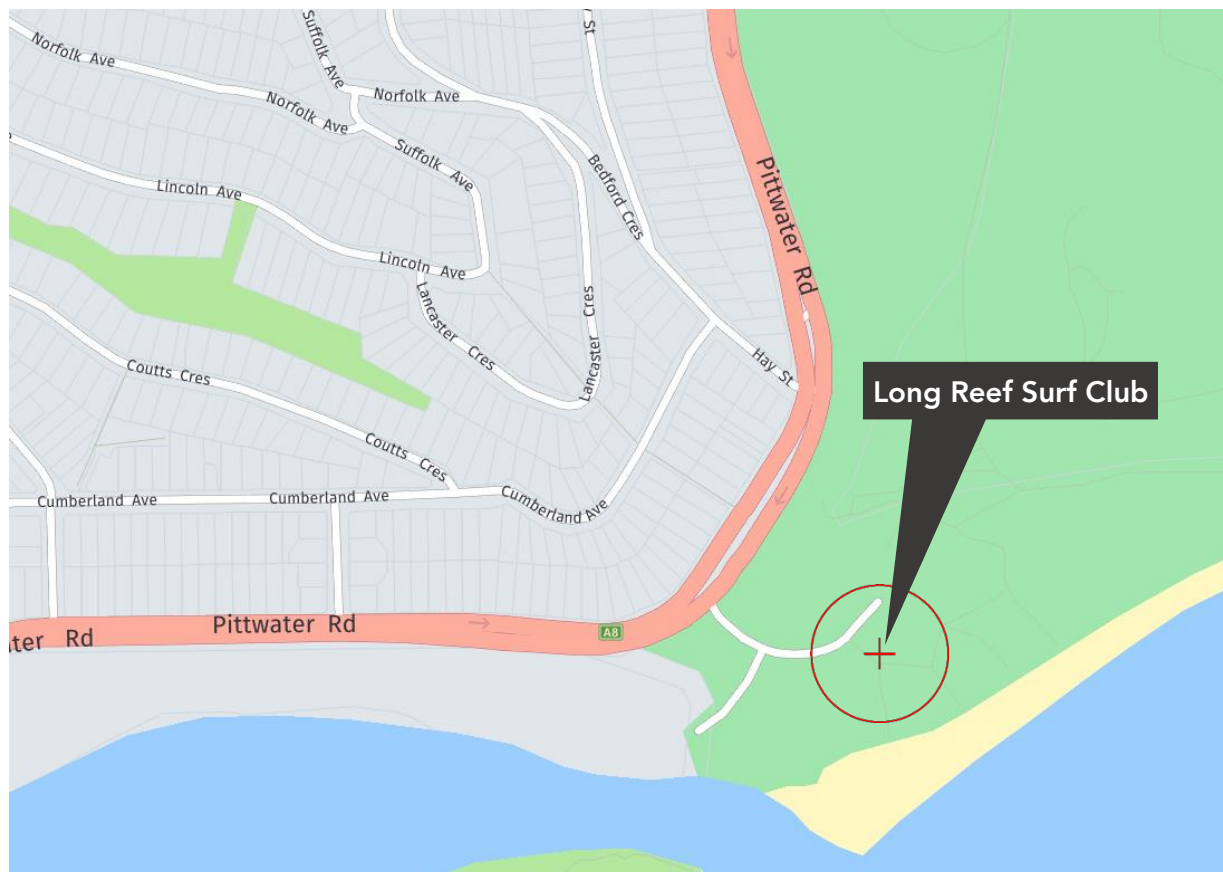


Figure 1 – Site Location

1.2 Scope of the Report

This report presents the following considerations in relation to the traffic and parking assessment of the proposal:

- Section 1: Introduction;
- Section 2: Background information on the proposal;
- Section 3: A description of the existing transport characteristics of the locality serving the development property;
- Section 4: Assessment of the proposed parking provision in the context of the relevant planning control requirements;

- Section 5: Determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network;
- Section 6: Assessment of the proposed vehicular access, car park and servicing arrangements; and
- Section 7: Conclusion.

2. Background

The proposed development involves the renovation of the existing Long Reef Surf Life Saving Club.

A Traffic and Parking Impact Assessment (TIA) report is required to assist the development application process. This TIA report includes an assessment of the associated traffic activity, parking provision, carpark and vehicular access arrangements.

The subject site is located off Pittwater Road, north-east of Dee Why Lagoon and south of the Long Reef Surf Live Saving Club. An at-grade marked carpark is presented off the driveway and provides approximately 147 car parking spaces. Informal on-grass parking is also available north of the car park for overflow parking during peak period.

The development site is shown in Figure 2.



Figure 2 – Development Site viewed from car park, facing east

The primary function of the LRSC is to house equipment including Inflatable Rescue Boats, All-Terrain Vehicles, large surf boats, rescue boards and surf skis.

Indoor events are held, including bronze medallion training in the gym and training space, and ad-hoc private functions, such as wedding or birthday parties are held in the function room.

Generally, the greatest traffic/parking generating event are Nippers sessions, which are based outside on Long Reef Beach on Saturday afternoons between 2pm – 4pm. There are approximately 20 Nippers sessions per year.

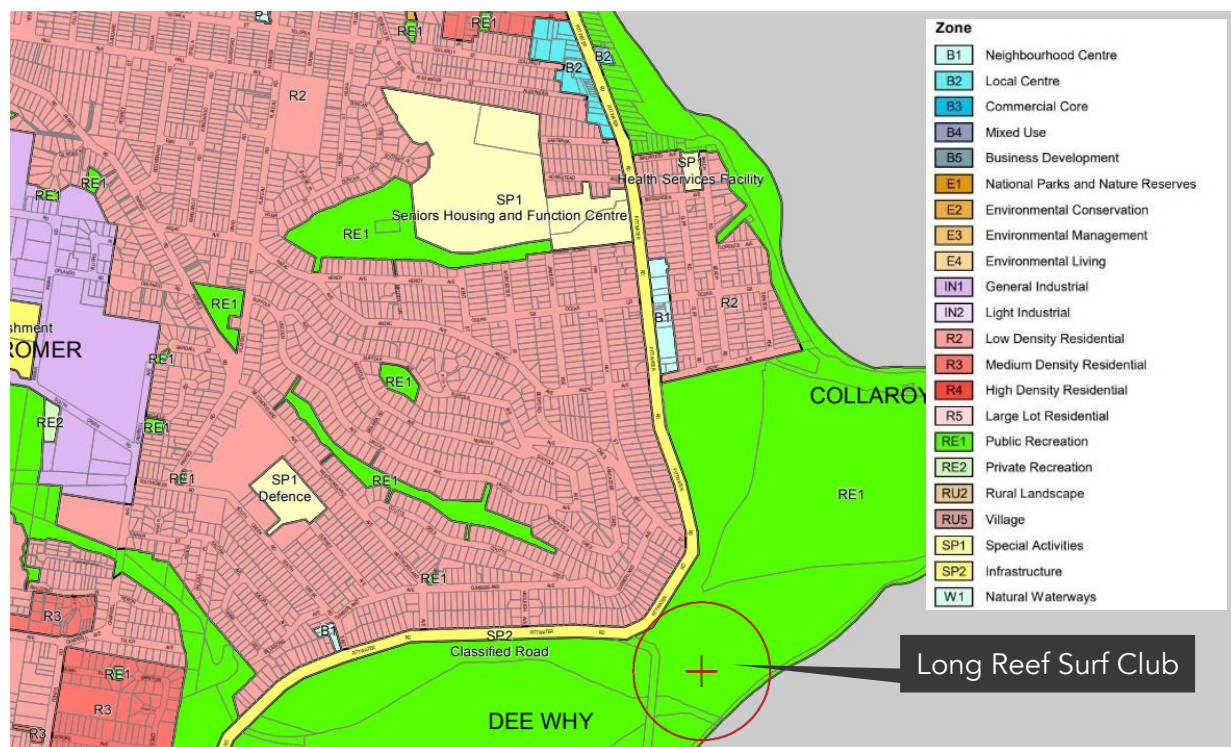
2.1 Site Context

The proposal relates to the following property:

- Long Reef Surf Life Saving Club, Collaroy (Lot No. 11, DP1193189)

The proposed site lies within a Public Recreation (RE1) zone, situated of Long Reef Beach. Key features surrounding the site include:

- Long Reef Golf Club (RE1) to the north, and
- The greater residential precinct of Collaroy comprising predominantly Low Density Residential (R2) zones to the north-west



2.2 Development Proposal

The proposed development involves renovation of the existing clubhouse. At a high level, the majority of the club will undergo changes including an expanded training and gym room, increased storage for boats, renovated office space, renovated bathroom facilities, and expanded function room and adjoining kitchen and bar.

The renovation of the LRSC will increase the storage capacity for the equipment, as well as the space for indoor events. The area of the new function room will be slightly increased.

The existing ground floor plan is presented in Figure 3. The proposed architectural drawings are also provided in Attachment 1.

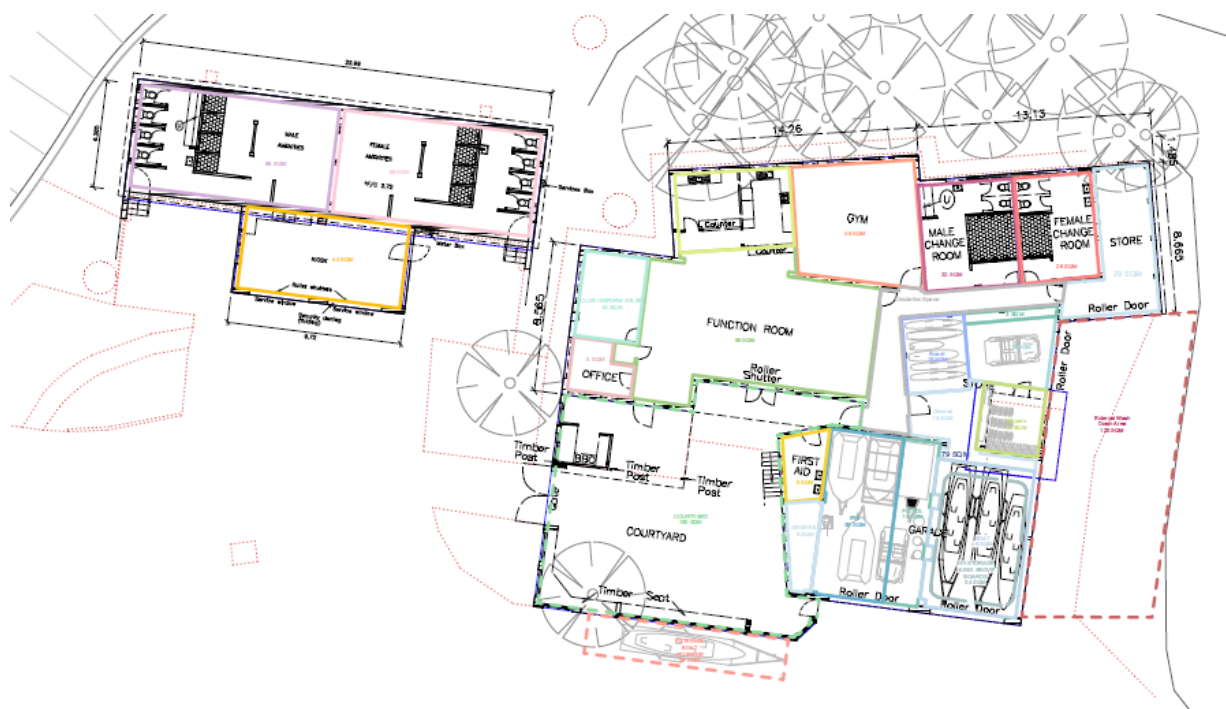


Figure 3 – Existing Ground Floor Plan

3. Existing Transportation Facilities

3.1 Road Hierarchy

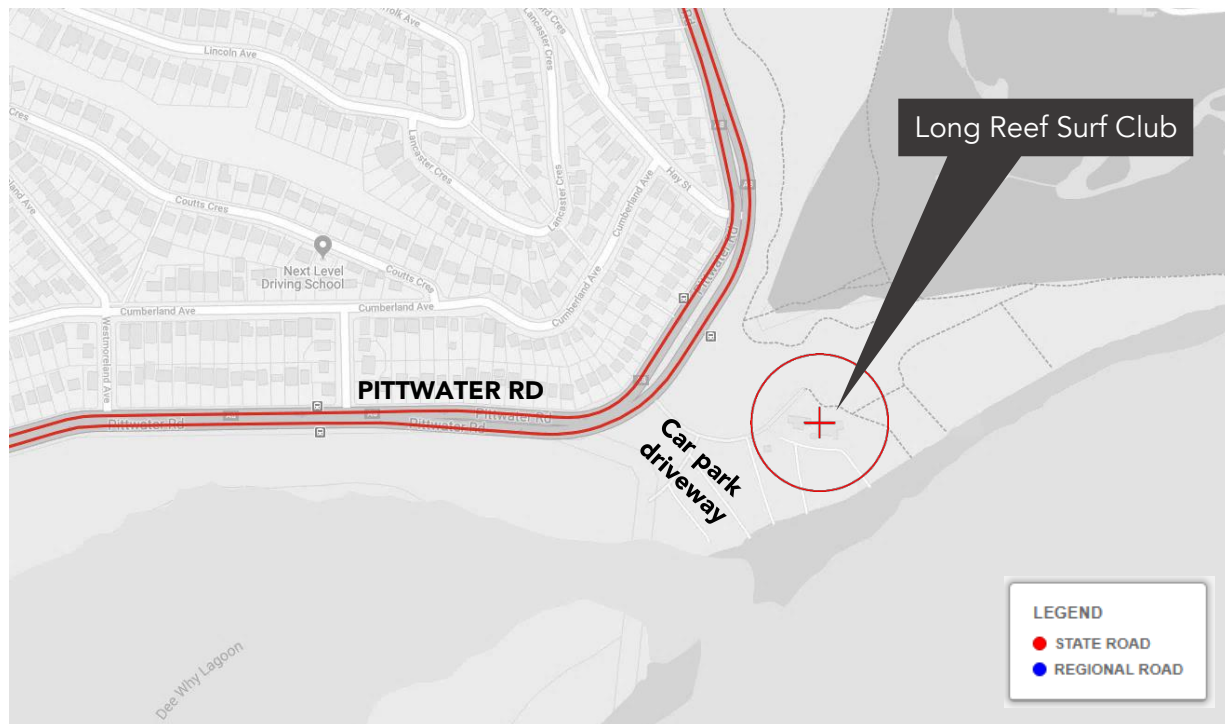


Figure 4 – Road Hierarchy (Source: RMS State and Regional Roads)

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

- State Roads - Freeways and Primary Arterials (RMS Managed);
- Regional Roads - Secondary or sub arterials (Council Managed, Part funded by the State); and
- Local Roads - Collector and local access roads (Council Managed).

3.1.1 Existing Road Network

Table 1 – Existing Road Network – Pittwater Road

Pittwater Road	
Road Classification	Regional Road
Alignment	North – South
Number of Lanes	3 lanes in each direction (including peak bus lane on each direction)
Carriageway Type	divided
Carriageway Width	23 metres
Speed Limit	60 kph
School Zone	No
Parking Controls	Directional off-peak parking
Forms Site Frontage	Yes



Figure 5 – Pittwater Road (facing south)

Table 2 – Existing Road Network – Access Driveway to Long Reef Surf Club

Access Driveway to LRSC	
Road Classification	Local Road
Alignment	Northwest – Southeast
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriage Width	6 metres
Speed Limit	50 kph (unposted)
School Zone	No
Parking Controls	Linked to at-grade car park
Forms Site Frontage	Yes



Figure 6 – Access Driveway to LRSC (facing south)

3.2 Public Transport

3.2.1 Buses

The subject site is served by several bus services on Pittwater Road, as shown in the network map in Figure 7.

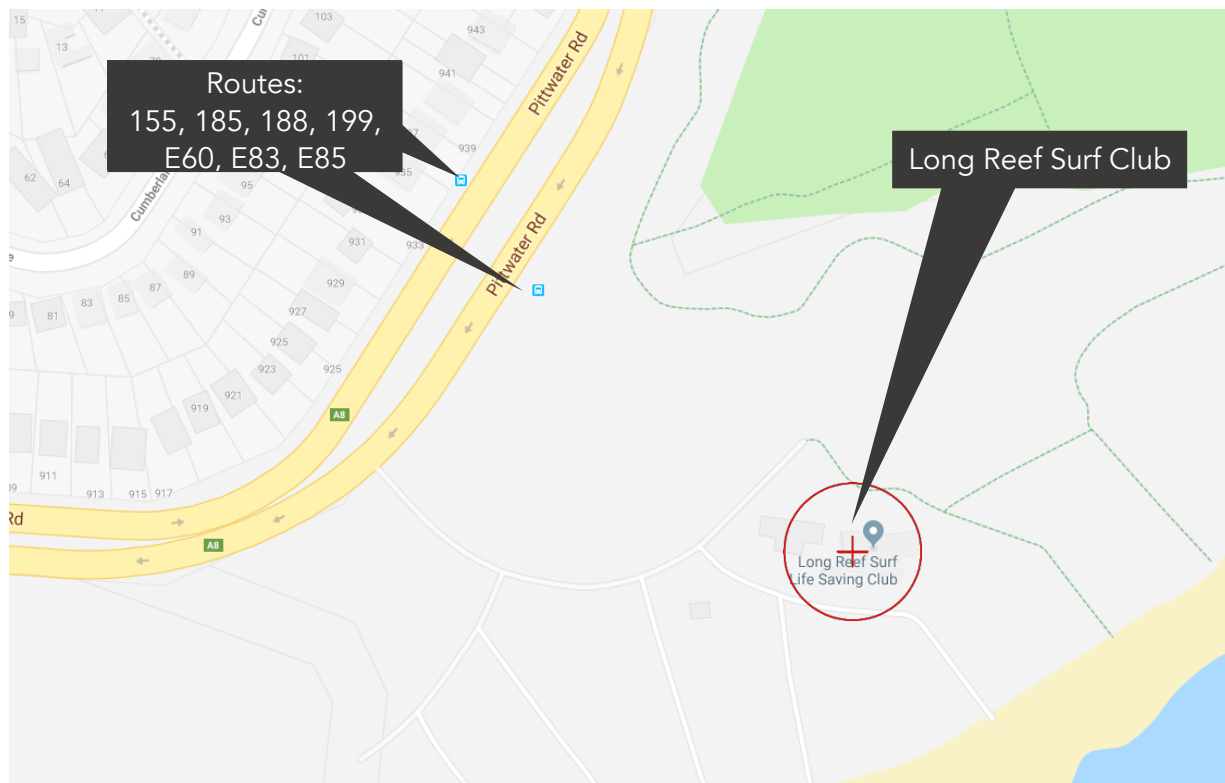


Figure 7 – Nearest Bus Stops on Pittwater Road

The closest bus stops servicing the subject site are on Pittwater Road, which is approx. 300 metres (4 minute walk) from the site. There are 7 bus routes servicing these bus stops. These stops are well serviced by bus services with approx. 5 minutes frequency during peak periods. The provision of dedicated bus lanes (southbound in the AM peak and northbound in the PM peak) provide a high level of amenity, minimising the effects of general traffic congestion on the operation of bus services. A summary of the bus routes is provided in Table 3.

Table 3 – Summary of nearby bus routes

Route number	Route	Frequency ¹
155	Bayview Garden Village to Narrabeen	Mon-Fri Every 30 min Sat, Sun Every 60 min
185	Mona Vale to Warringah Mall via Warriewood	Mon-Sun Every 30 min
188	Mona Vale to City Wynyard	Night-time service, 15-30min
199	Palm Beach to Manly	Mon-Sun Every 15 min
E60	Mona Vale to Chatswood (Express Service)	Limited Mon-Fri service, 30min
E83	North Narrabeen to City Wynyard (Express Service)	Limited Mon-Fri service, 30min
E85	Mona Vale to City Wynyard via Warriewood (Express Service)	Limited Mon-Fri service, 15min

¹ During off-peak hours, frequency may decrease

4. Traffic Impact Assessment

4.1 Existing Traffic Volumes and Distribution

To determine the current traffic volumes within the vicinity of the development site, intersection surveys were conducted on Thursday 31st January 2019, between 7am-9am and 4pm-6pm at the following intersection:

- Pittwater Road / Driveway to LRSC

The intersection survey location is shown in Figure 8. Note that there is a median separating the opposing movements along Pittwater Road, hence access to the driveway is left-in/left-out only.

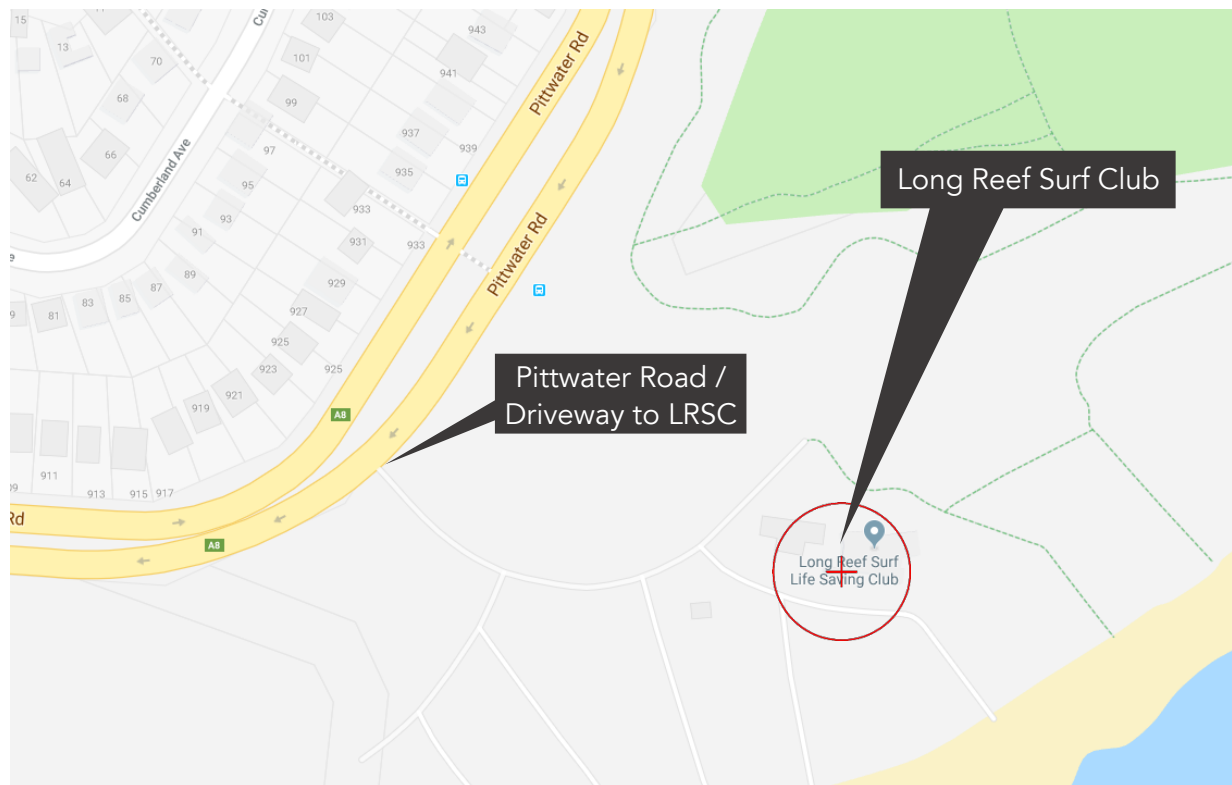


Figure 8 – Location of Intersection Survey

4.1.1 Existing Peak Hour Traffic Volumes

Based on the intersection survey results, the peak hours for this intersection have been determined as follows:

- AM Peak hour: 7:30am-8:30am
- PM Peak hour: 4:45pm-5:45pm

Tabulated representations of these results are shown in Figure 9 and Figure 10.

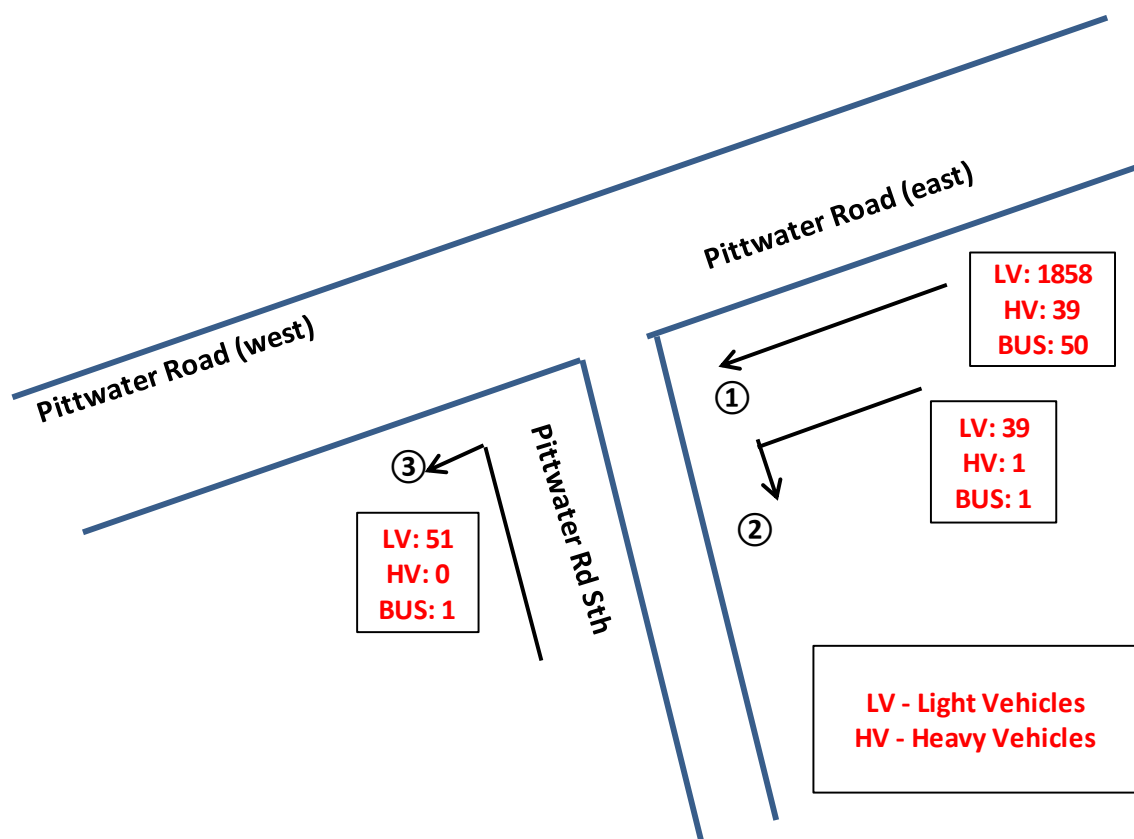


Figure 9 – AM Peak hour existing volumes

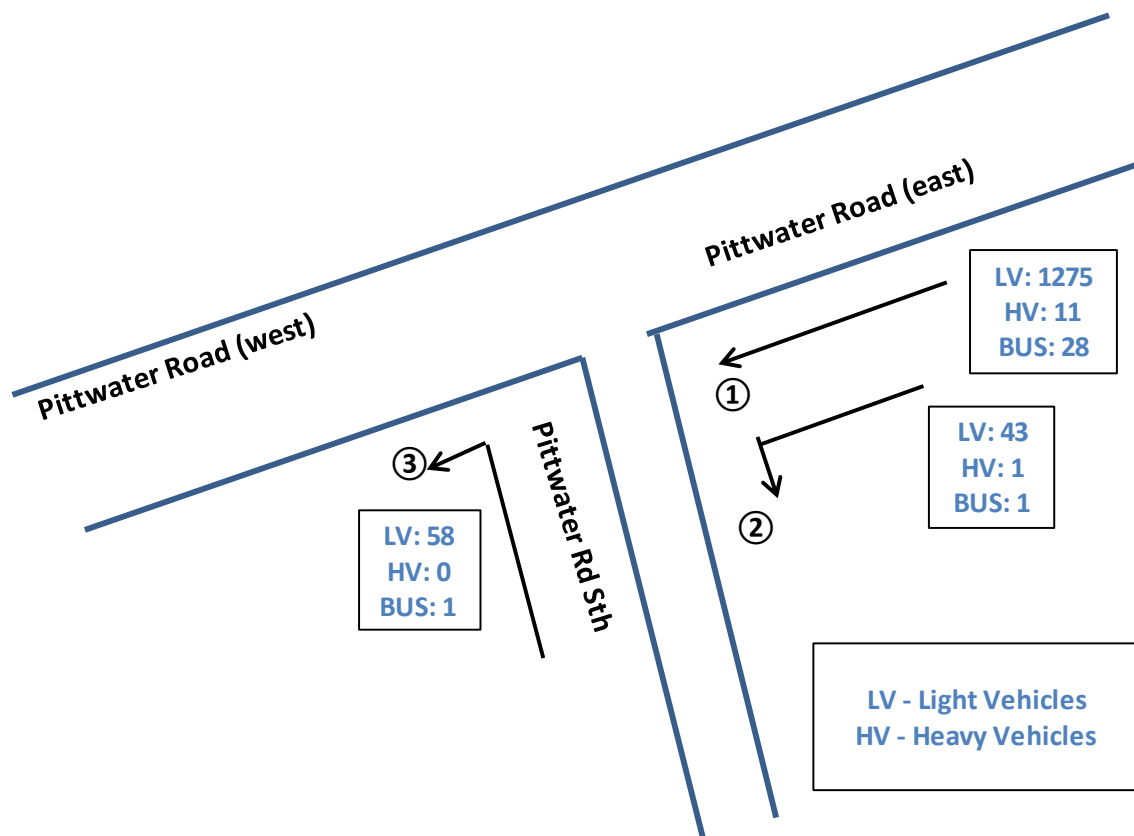


Figure 10 – PM peak hour existing volumes

4.1.2 Existing Network Operation

From the survey data, a volume analysis was performed using SIDRA Intersection software, a micro-analytical tool for individual intersections and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators, outlined below:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- 95% Queue Lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- Level of Service (LoS) – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

Table 4 – Intersection Performance - Levels of Service

LoS	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

The SIDRA results for the Pittwater Road/Driveway to LRSC intersection is summarised in Table 5.

Table 5 – Results Summary of Existing Intersection Performance

Intersection	Period	Level of Service	Average Delay (sec)	Degree of Saturation	95% Queue Length (m)
Pittwater Road / Driveway to LRSC	AM Peak	LOS A	0.3	0.519	1
	PM Peak	LOS A	0.5	0.375	0.3

As indicated in the SIDRA modelling, the intersection is performing well in both peak periods, with a LOS A for the overall intersection. Both Pittwater Road and the car park driveway present a LOS A with minimal delay and queuing during both AM and PM peaks.

4.2 Trip Generation

As the proposal primarily consists of the renovation of the existing facility at LRSC, there is anticipated to be minimal additional traffic generation as a result of these works. Moreover, major events typically occur outside of the commuter peak periods, with events in the function room usually commencing in the evening period, after the PM peak, and Nippers sessions on the occasional Saturday.

With reference to the RMS Guide to Traffic Generating Developments, the following indicative worst-case trip generation is presented as follows.

4.2.1 Function room

Area: 172m^2 function room + 70m^2 deck + 95m^2 terrace – 89m^2 existing function room = 248m^2

Trip generation rate: 5 peak hour trips/ 100m^2 GFA (restaurant)

Trips: $248 \times 5 / 100 = 12.4$ peak hour trips

4.2.2 Gym

Area: 60m^2 gym + 67m^2 training room – 48m^2 existing gym = 79m^2

Trip generation rate: 9 peak hour trips/ 100m^2 GFA (gymnasium)

Trips: $79 \times 9 / 100 = 7.11$ peak hour trips

4.2.3 Other

The other uses within the building such as bathrooms, office reception, kitchen, bar, SLSC storage are all ancillary to the main uses and are not envisaged to generate any additional trips.

It is also noted that the proposal is not anticipated to affect Nippers activities which will continue to present a similar level of traffic activity during the Saturdays on which activities operate (approximately 20 times a year).

As such, the indicative net trip generation is in the order of 12-13 vehicles. This is negligible in the context of overall traffic at the nearby Pittwater Road which experiences flows in the order of around 2,000 vehicles/hour in the AM peak period and 1,400vehicle/hour in the PM peak period. As such, the traffic generation from this development is negligible (less than 1%) in terms of the overall volume at the Pittwater Road/Driveway intersection and is not anticipated to generate any significant traffic impacts upon the local road network.

5. Parking Provision

5.1 Parking Occupancy Survey

To provide an understanding of the surrounding parking conditions, two parking occupancy surveys have been undertaken. The parking occupancy survey were undertaken on Saturday 2nd February 2019 from 2pm-5pm and on Thursday 31st January 2019 at 7am, 9am, 4pm, 6pm.

5.1.1 Survey area

The survey area covers the extent of the at-grade car park, providing 147 parking spaces, and the grassed area to the north which provides overflow parking for a maximum 207 spaces. The survey area is shown in Figure 11.



Figure 11 - Occupancy Survey Areas

The results of the weekday survey are summarised in Table 6 and Table 7.

Table 6 - Parking Occupancy Survey Results on a typical weekday

Parking Location	Parking Restriction	Parking Spaces	Occupancy at 7am	Occupancy at 9am	Occupancy at 4pm	Occupancy at 6pm
Car park	12P Ticket 7am-7pm (permit holders excepted)	146	46 (32%)	30 (21%)	35(24%)	22(15%)
Overflow	12P Ticket 7am-7pm (permit holders excepted)	-	10	9	6	9
TOTAL		146	56	39	41	31

Table 7 - Parking Occupancy Survey Results on a typical weekend

Parking Location	Parking Restriction	Parking Spaces	Occupancy at 2 pm	Occupancy at 3pm	Occupancy at 4pm	Occupancy at 5pm
Car park	12P Ticket 7am-7pm (permit holders excepted)	147	147 (100%)	147 (100%)	147(100%)	143(97%)
Overflown	12P Ticket 7am-7pm (permit holders excepted)	Max. 207	206	207	203	170

The parking survey indicated that the demand during a weekday is fairly light and significantly high on weekend, in particular during summer. Most vehicles parking in the car park were casual parking associated with the water activities on Long Reef Beach. Site observation during the parking survey also indicated that the unrestricted parking on Pittwater Road were also fully occupied on the weekend during the parking survey was undertaken.

5.2 Car Parking Provision

As part of the proposal, the existing on-site car park is not proposed to be altered. The proposal primarily involves upgrades and refurbishment of existing facilities and is not anticipated to generate significant additional parking demand. Moreover, typically the period which generates the greatest parking demand on a typical weekday at the LRSC is the evening, post-PM peak (for dinners, functions, etc.). During this period there will be few other users (e.g. beach activities), resulting in greater parking vacancy.

Nonetheless, an assessment of the estimated parking demand from the increased areas of the function room and gym space is undertaken and applied on top of the existing observed parking occupancy to demonstrate the suitability of the current provision.

Reference to the RMS Guide to Traffic Generating Developments calls for a parking provision of 15 spaces per 100m² GFA for a restaurant and 7.5 spaces per 100m² GFA for a gymnasium. With a net increase in restaurant area of 248m² and increase in gym area of 79m², this results in an estimated parking demand increase of:

Restaurant area = 248m² x 15 / 100 = 37 (37.2) spaces,

Gymnasium area = 79m² x 7.5 / 100 = 6 (5.9) spaces

As illustrated by the occupancy survey results, this additional parking demand is sufficiently accommodated in the evening period with occupancy levels in the car park around 15-24%, that is, 111-124 available spaces.

During a typical Saturday afternoon, the demand is greater and reflects parking demand generated in the local area due to other users such as visitors to the Long Reef Beach. On the surveyed Saturday, both the marked parking spaces and overflown parking spaces were fully occupied. It is noted that this proposal is not envisaged to have any effect on the parking demand on the weekends and as such this situation is likely to remain at a similar level, post-development.

6. Conclusion

ptc. has been engaged by Adriano Pupilli Architects to prepare a Traffic and Parking Impact Assessment in relation to the Development Application to Northern Beaches Council for the redevelopment of Long Reef Surf Club (LRSC) at Collaroy. The proposed development involves the refurbishment and renovation of a club venue to increase boat storage capacity, increase the size of gym and function room facilities, and update other ancillary uses in the club.

The site is located close to public transport with bus stops located on Pittwater Road near the entrance of the LRSC, approximately 300m (4 min walk) away. Bus services are frequent with approximately 5 minutes frequency between buses during peak periods. The provision of dedicated bus lanes (southbound in the AM peak and northbound in the PM peak) provide a high level of amenity, minimising the effects of general traffic congestion on the operation of bus services.

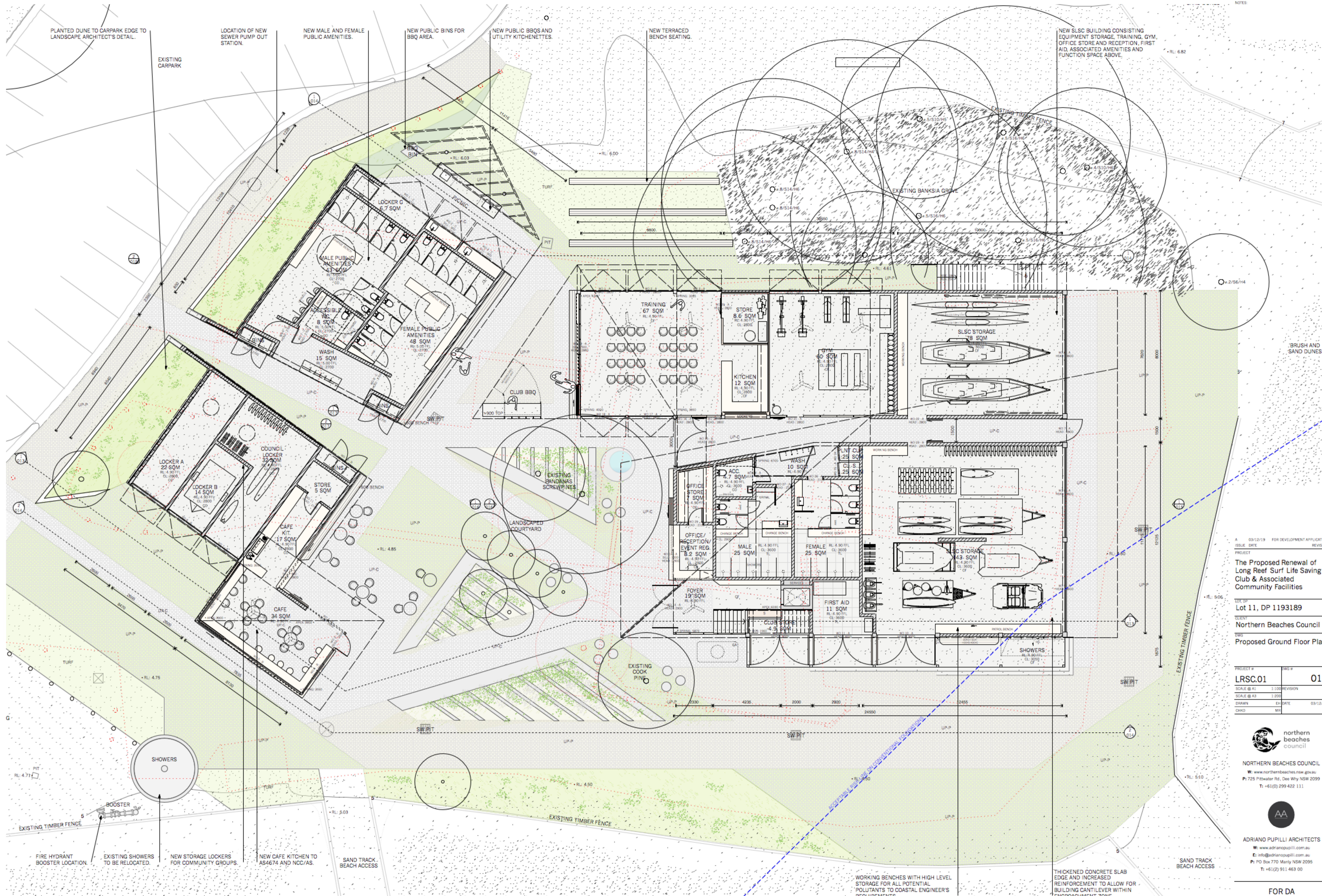
The proposal is not anticipated to generate notable volumes of traffic during the commuter peak periods. A conservative estimate results in a peak hour traffic generation of 20 vehicles which have negligible impacts upon the surrounding road network.

The intersection of Pittwater Road and the car park driveway will operate in LoS A with minimal delay and queuing on both approaches.

Likewise, the proposal is not anticipated to generate significant increases in parking demand. With the renovation, a conservative estimate places the increased parking demand at 43 spaces above the existing demand. Based on occupancy surveys of the site on a typical weekday and on a typical weekend, the existing car park has enough capacity to cater the increasing demand during a night event in LRSC.

In conclusion, the proposed refurbishment and redevelopment of the LRSC is supportable from a parking and traffic standpoint.

Attachment 1 Architectural Drawings



PLANTED DUNE TO CARPARK EDGE TO LANDSCAPE ARCHITECT'S DETAIL.

LOCATION OF NEW SEWER PUMP OUT STATION.

NEW MALE AND FEMALE PUBLIC AMENITIES.

NEW PUBLIC BINS FOR BBQ AREA.

NEW PUBLIC BBQS AND UTILITY KITCHENETTES.

NEW TERRACED BENCH SEATING.

NEW SLSC BUILDING CONSISTING OF EQUIPMENT STORAGE, TRAINING, GYM, OFFICE STORE AND RECEPTION, FIRST AID, ASSOCIATED AMENITIES AND FUNCTION SPACE ABOVE.

EXISTING CARPARK

LOCKER A
22 SQM
RL 4.50 FFL
CL 2800

LOCKER B
14 SQM
RL 4.50 FFL
CL 2800

LOCKER C
6.7 SQM
RL 4.50 FFL
CL 2800

MALE PUBLIC AMENITIES
13 SQM
RL 4.50 FFL
CL 2700

FEMALE PUBLIC AMENITIES
48 SQM
RL 4.50 FFL
CL 2700

WASH
15 SQM
RL 4.50 FFL
CL 2700

CAFE KIT.
17 SQM
RL 4.50 FFL
CL 2800

CAFE
34 SQM
RL 4.50 FFL
CL 2800

STORE
5 SQM
RL 4.50 FFL
CL 2800

TRAINING
67 SQM
RL 4.50 FFL
CL 2800

STORE
5.6 SQM
RL 4.50 FFL
CL 2800

KITCHEN
12 SQM
RL 4.50 FFL
CL 2800

GYM
60 SQM
RL 4.50 FFL
CL 2800

SLSC STORAGE
78 SQM
RL 4.50 FFL
CL 2800

ACC
4.7 SQM
RL 4.50 FFL
CL 2800

OFFICE/RECEPTION
8.2 SQM
RL 4.50 FFL
CL 2800

MALE
25 SQM
RL 4.50 FFL
CL 3000

FEMALE
25 SQM
RL 4.50 FFL
CL 3000

FOYER
19 SQM
RL 4.50 FFL
CL 3000

10 SQM
RL 4.50 FFL
CL 3000

SHOWERS
RL 4.71

BOOSTER

EXISTING SHOWERS TO BE RELOCATED.

NEW STORAGE LOCKERS FOR COMMUNITY GROUPS.

NEW CAFE KITCHEN TO AS4674 AND NCC/AS.

SAND TRACK BEACH ACCESS

EXISTING TIMBER FENCE

EXISTING COOK PIT

EXISTING BANDANAS SCREENS

LANDSCAPED COURTYARD

EXISTING BANKSIA GROVE

EXISTING TIMBER FENCE

EXISTING TIMBER FENCE

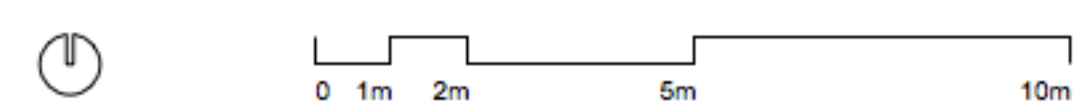
EXISTING TIMBER FENCE

EXISTING TIMBER FENCE

EXISTING TIMBER FENCE

EXISTING TIMBER FENCE

BRUSH AND SAND DUNES



WORKING BENCHES WITH HIGH LEVEL STORAGE FOR ALL POTENTIAL POLLUTANTS TO COASTAL ENGINEER'S REQUIREMENTS.

THICKENED CONCRETE SLAB EDGE AND INCREASED REINFORCEMENT TO ALLOW FOR BUILDING CANTILEVER WITHIN ENCROACHMENT ZONE.

PROJECT # LRSC.01 010
SCALE @ A1 1:100 REVISION A
SCALE @ A3 1:200
DRAWN EN DATE 03/12/19
CHKD MH

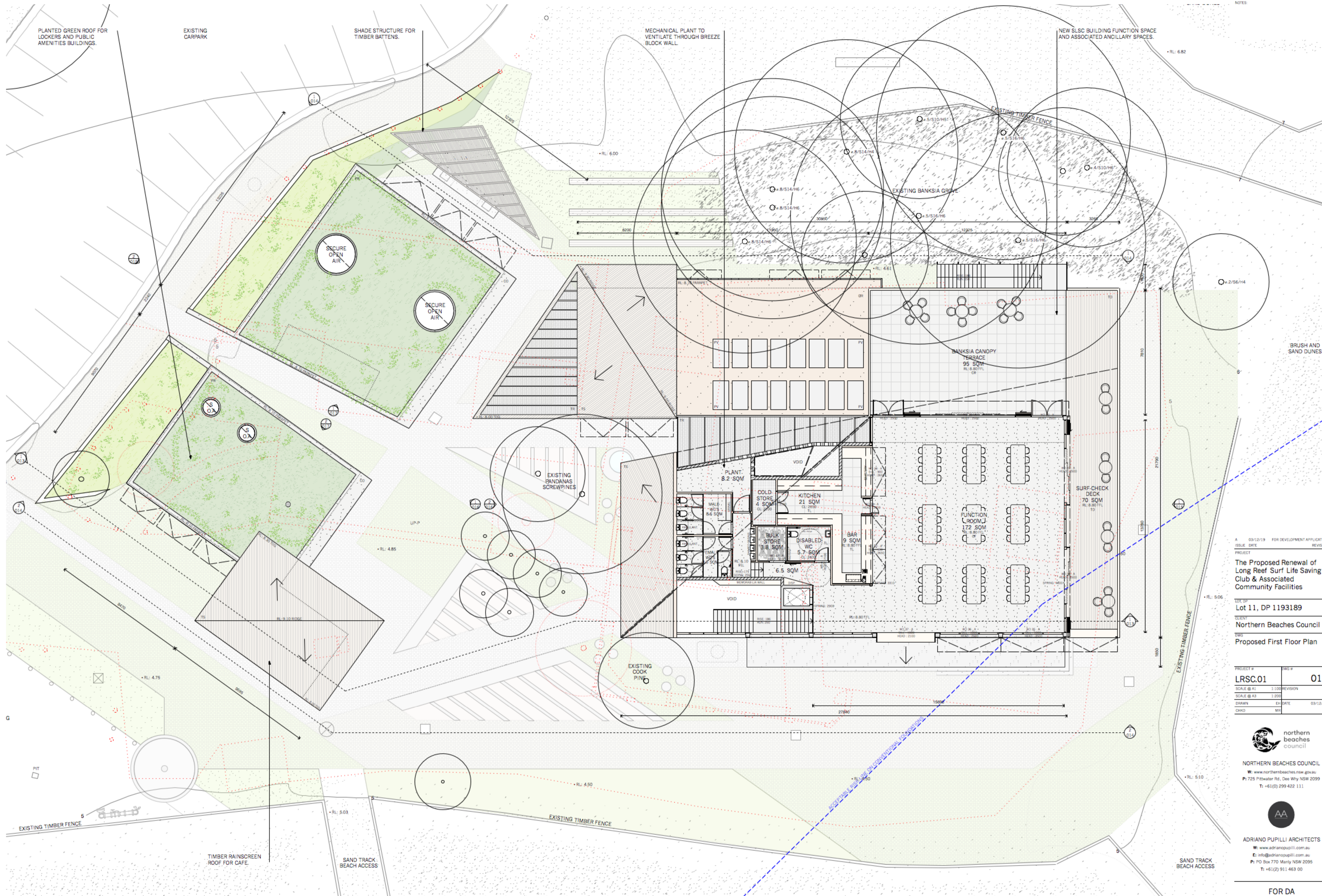
PROJECT # LRSC.01 010
SCALE @ A1 1:100 REVISION A
SCALE @ A3 1:200
DRAWN EN DATE 03/12/19
CHKD MH

PROJECT # LRSC.01 010
SCALE @ A1 1:100 REVISION A
SCALE @ A3 1:200
DRAWN EN DATE 03/12/19
CHKD MH

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FOR DA
NOTES:
DO NOT SCALE OFF DRAWINGS. USE DIMENSIONS.
A SURVEY IS REQUIRED TO ENSURE CORRECT RELATIONSHIP TO SITE BOUNDARIES.



PLANTED GREEN ROOF FOR LOCKERS AND PUBLIC AMENITIES BUILDINGS.

EXISTING CARPARK

SHADE STRUCTURE FOR TIMBER BATTENS.

MECHANICAL PLANT TO VENTILATE THROUGH BREEZE BLOCK WALL

NEW SLSC BUILDING FUNCTION SPACE AND ASSOCIATED ANCILLARY SPACES.

SECURE OPEN AIR

SECURE OPEN AIR

EXISTING BANKSIA GROVE

BANKSIA CANOPY TERRACE
95 SQM
RL: 8.807 TL
CR

FUNCTION ROOM
172 SQM
RL: 8.807 TL
CR

SURF-CHECK DECK
70 SQM
RL: 8.807 TL
CR

PLANT
8.2 SQM

COLD STORE
4 SQM
CL: 2.650 TL

KITCHEN
21 SQM
CL: 2.650 TL

BAR
9 SQM
RL: 8.807 TL

BULK STORE
3.8 SQM

DISABLED WC
5.7 SQM
CL: 2.450 TL

WALKER W/CS
8.6 SQM

EXISTING BANDANAS SCREW PINES

EXISTING COOK PIT

TIMBER RAINSCREEN ROOF FOR CAFE

SAND TRACK BEACH ACCESS

SAND TRACK BEACH ACCESS

BRUSH AND SAND DUNES

A 03/12/19 FOR DEVELOPMENT APPLICATION
ISSUE DATE REVISION

The Proposed Renewal of Long Reef Surf Life Saving Club & Associated Community Facilities

Lot 11, DP 1193189

CLIENT Northern Beaches Council

TITLE Proposed First Floor Plan

PROJECT # LRSC.01

FIG # 011

SCALE @ A1 1:100 REVISION

SCALE @ A3 1:200

DRAWN EN DATE 03/12/19

CHKD MH



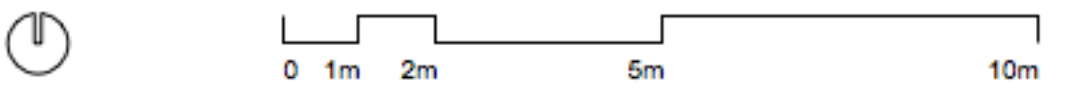
NORTHERN BEACHES COUNCIL
W: www.northernbeaches.nsw.gov.au
P: 725 Pittwater Rd, Dee Why NSW 2099
T: +61(0) 299 422 111

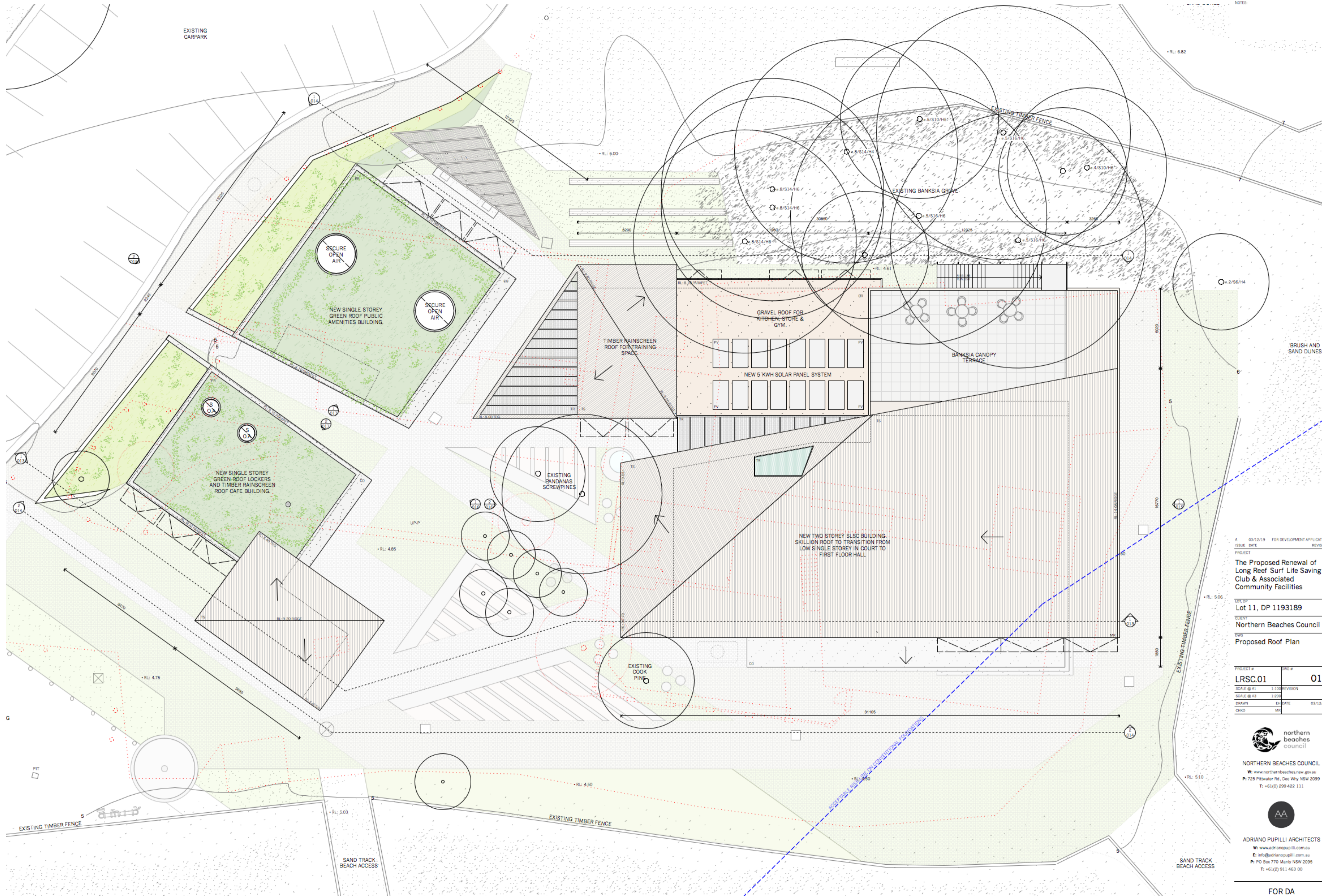


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NOTES:
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A SURVEY IS REQUIRED TO ENSURE CORRECT RELATIONSHIP TO SITE BOUNDARIES.





PROJECT # LRSC.01

SCALE @ A1 1:1000 REVISION

SCALE @ A3 1:200

DRAWN EN DATE 03/12/19

CHKD MH

PROJECT # 012

SCALE @ A1 1:1000 REVISION

SCALE @ A3 1:200

DRAWN EN DATE 03/12/19

CHKD MH

A 03/12/19 FOR DEVELOPMENT APPLICATION
 ISSUE DATE REVISION

**The Proposed Renewal of
 Long Reef Surf Life Saving
 Club & Associated
 Community Facilities**

LOT DP
 Lot 11, DP 1193189

CLIENT
 Northern Beaches Council

TITLE
 Proposed Roof Plan

northern
 beaches
 council

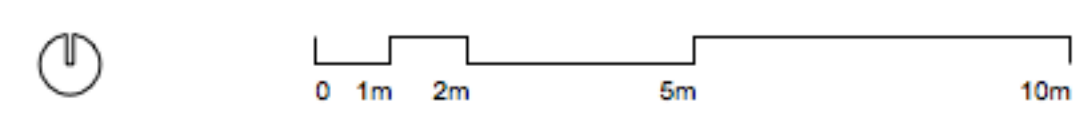
NORTHERN BEACHES COUNCIL
 W: www.northernbeaches.nsw.gov.au
 P: 725 Pittwater Rd, Dee Why NSW 2099
 T: +61(0) 299 422 111

ADRIANO PUPILLI ARCHITECTS

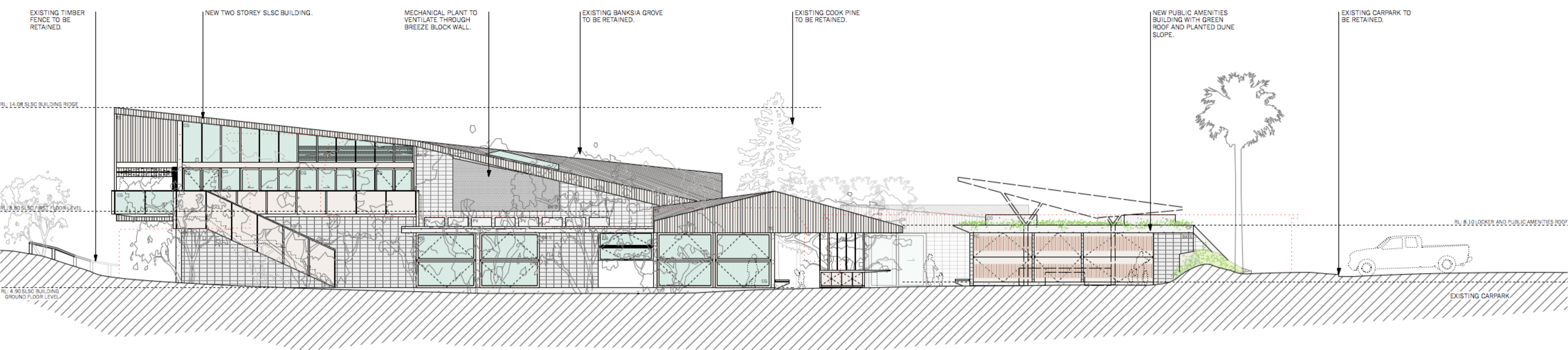
W: www.adrianopupilli.com.au
 E: info@adrianopupilli.com.au
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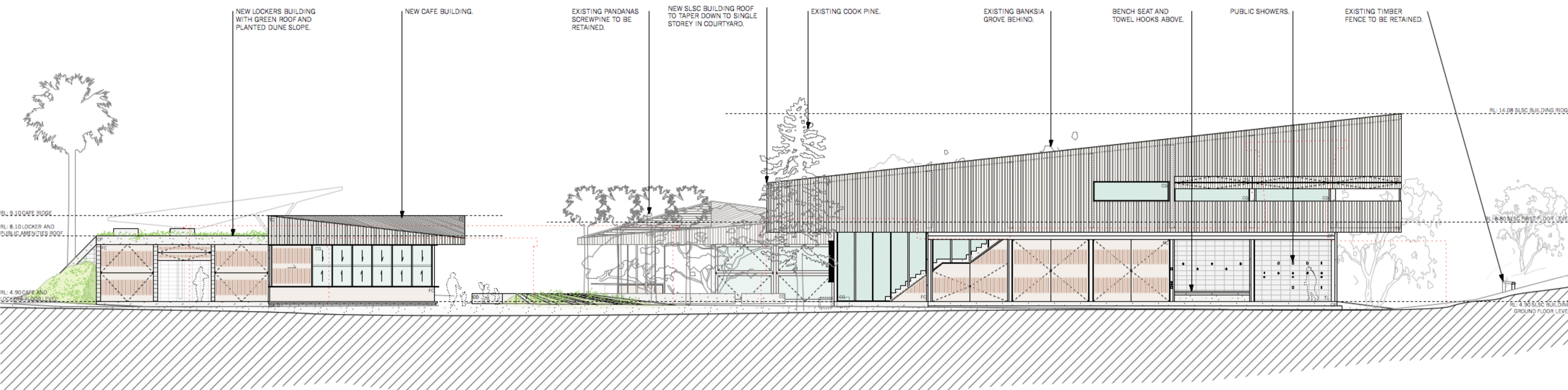
NOTES:
 DO NOT SCALE OFF DRAWINGS. USE
 DIMENSIONS.
 A SURVEY IS REQUIRED TO ENSURE
 CORRECT RELATIONSHIP TO SITE
 BOUNDARIES.



NOTES



1 PROPOSED NORTH ELEVATION
1:100 @ A1



2 PROPOSED SOUTH ELEVATION
1:100 @ A1

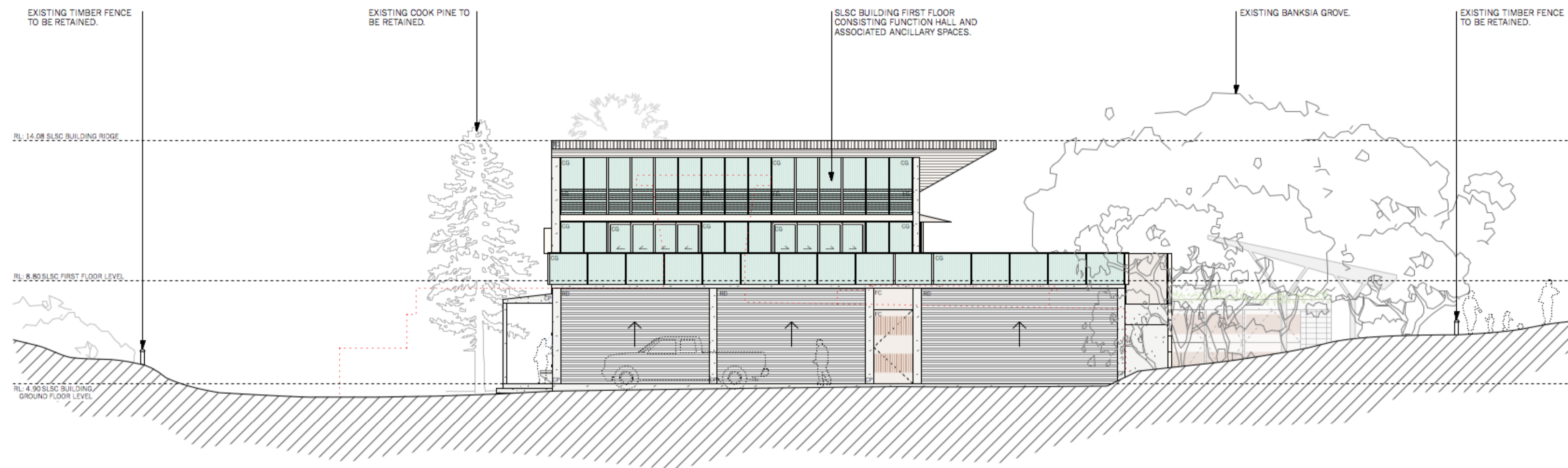
A	03/12/19	FOR DEVELOPMENT APPLICATION	REVISION
PROJECT			
The Proposed Renewal of Long Reef Surf Life Saving Club & Associated Community Facilities			
LOT DP			
Lot 11, DP 1193189			
CLIENT			
Northern Beaches Council			
DWS			
Proposed Elevations North & South			
PROJECT #	FIG #		
LRSC.01	014		
SCALE @ A1	1:100	REVISION	A
SCALE @ A3	1:200		
DRAWN	EN	DATE	03/12/19
CHD	MH		

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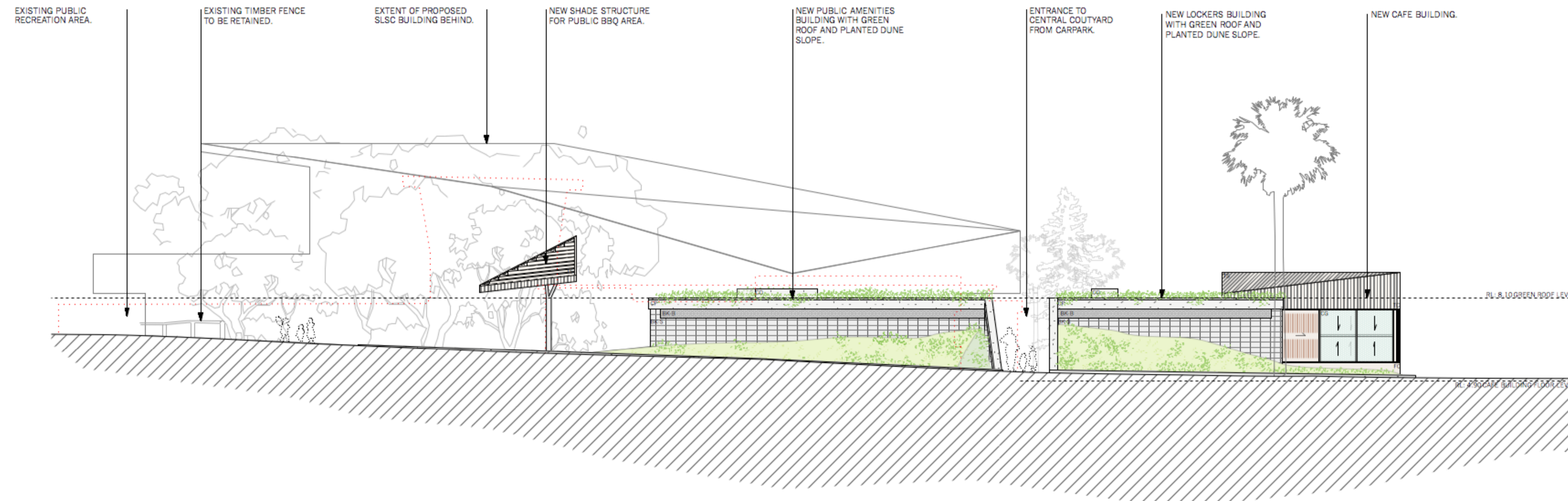
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1 PROPOSED EAST ELEVATION
1:100 @ A1



2 PROPOSED WEST ELEVATION
1:100 @ A1

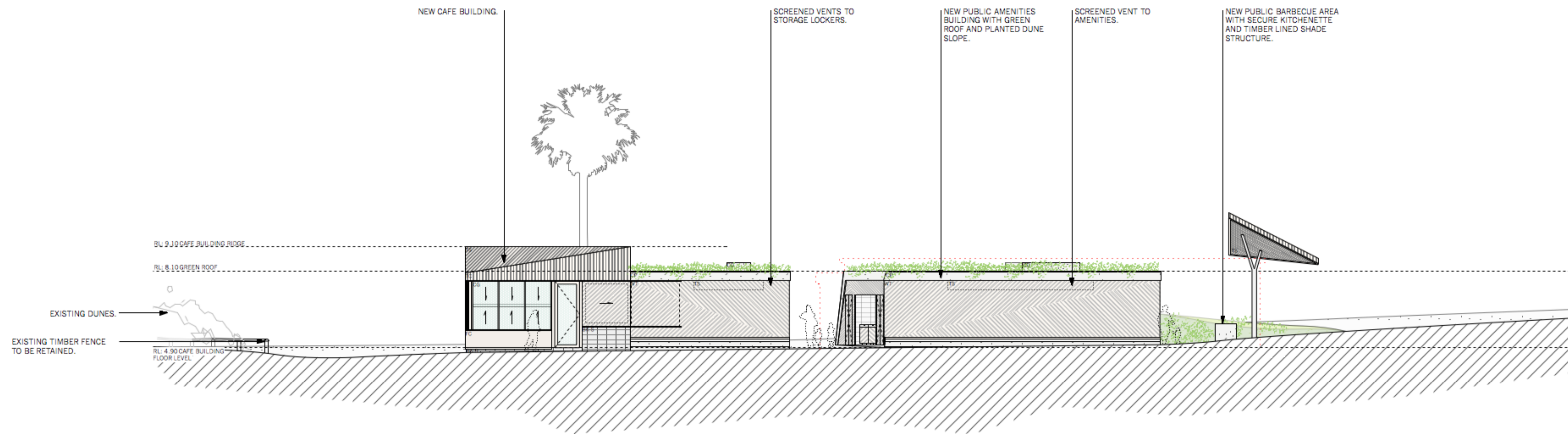
A	03/12/19	FOR DEVELOPMENT APPLICATION	REVISION
PROJECT			
The Proposed Renewal of Long Reef Surf Life Saving Club & Associated Community Facilities			
LOT DP			
Lot 11, DP 1193189			
CLIENT			
Northern Beaches Council			
DWS			
Proposed Elevations East & West			
PROJECT #	FIG #		
LRSC.01	015		
SCALE @ A1	1:100	REVISION	A
SCALE @ A3	1:200		
DRAWN	EN	DATE	03/12/19
CHKD	MS		

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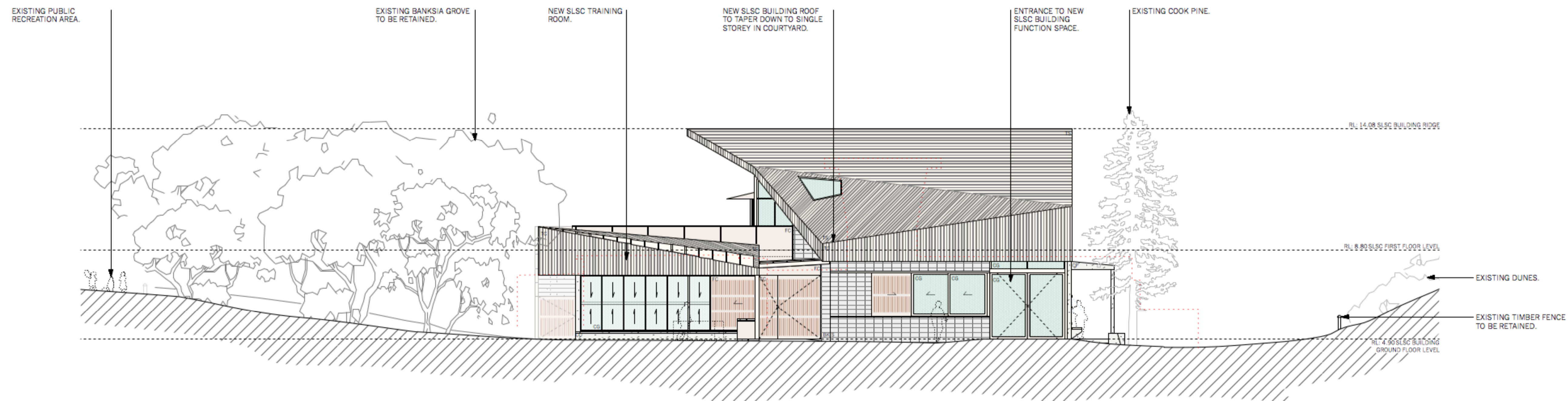
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1 PROPOSED EAST COURTYARD ELEVATION
1:100 @ A1



2 PROPOSED WEST COURTYARD ELEVATION
1:100 @ A1

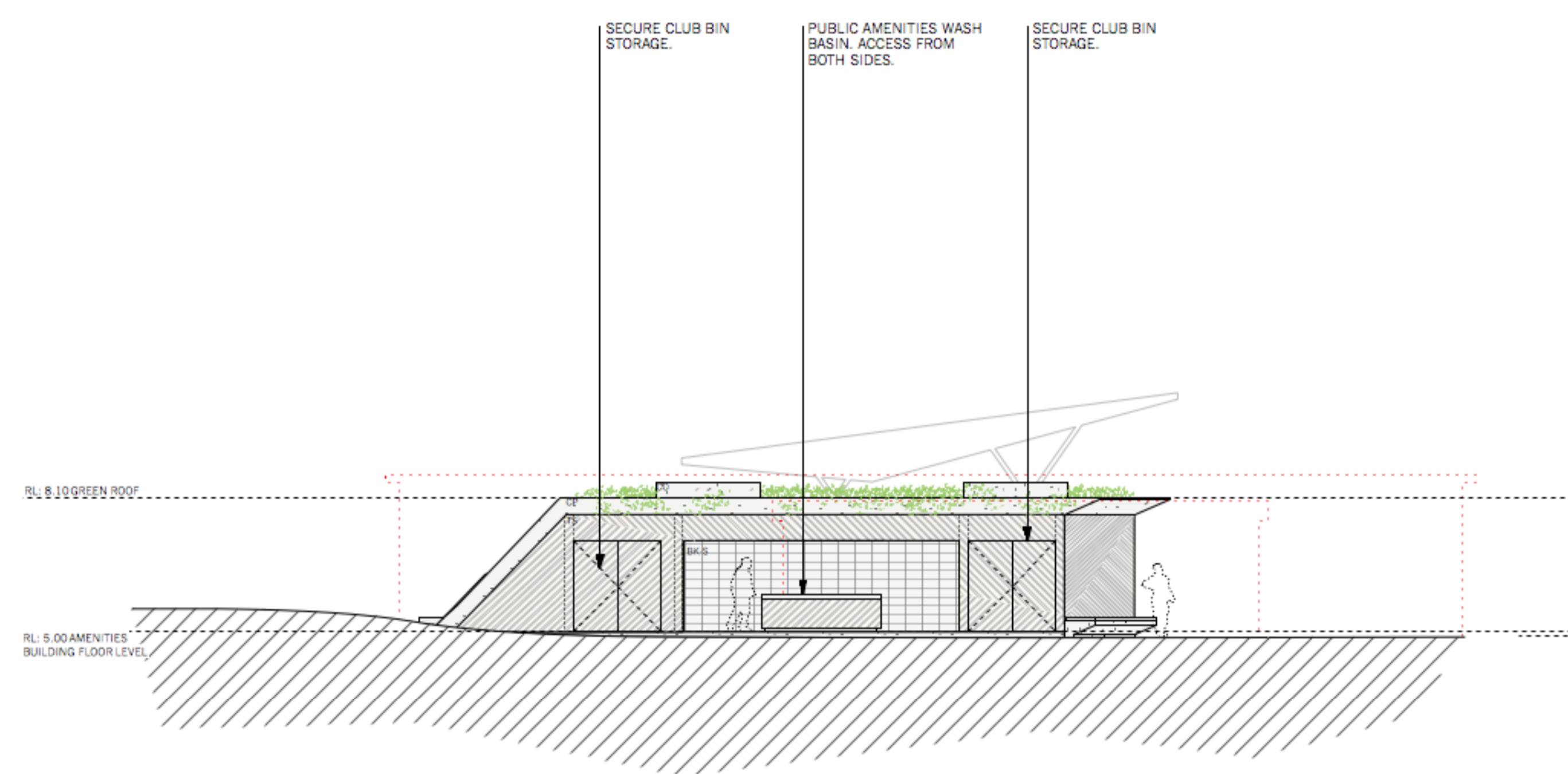
A 03/12/19 FOR DEVELOPMENT APPLICATION	
ISSUE DATE	REVISION
PROJECT	
The Proposed Renewal of Long Reef Surf Life Saving Club & Associated Community Facilities	
SITE DP	
Lot 11, DP 1193189	
CLIENT	
Northern Beaches Council	
DWS	
Proposed Elevations Courtyard East & West	
PROJECT #	FIG #
LRSC.01	016
SCALE @ A1	1:100 REVISION
SCALE @ A3	1:200
DRAWN	EN DATE
CHD	MH
	03/12/19

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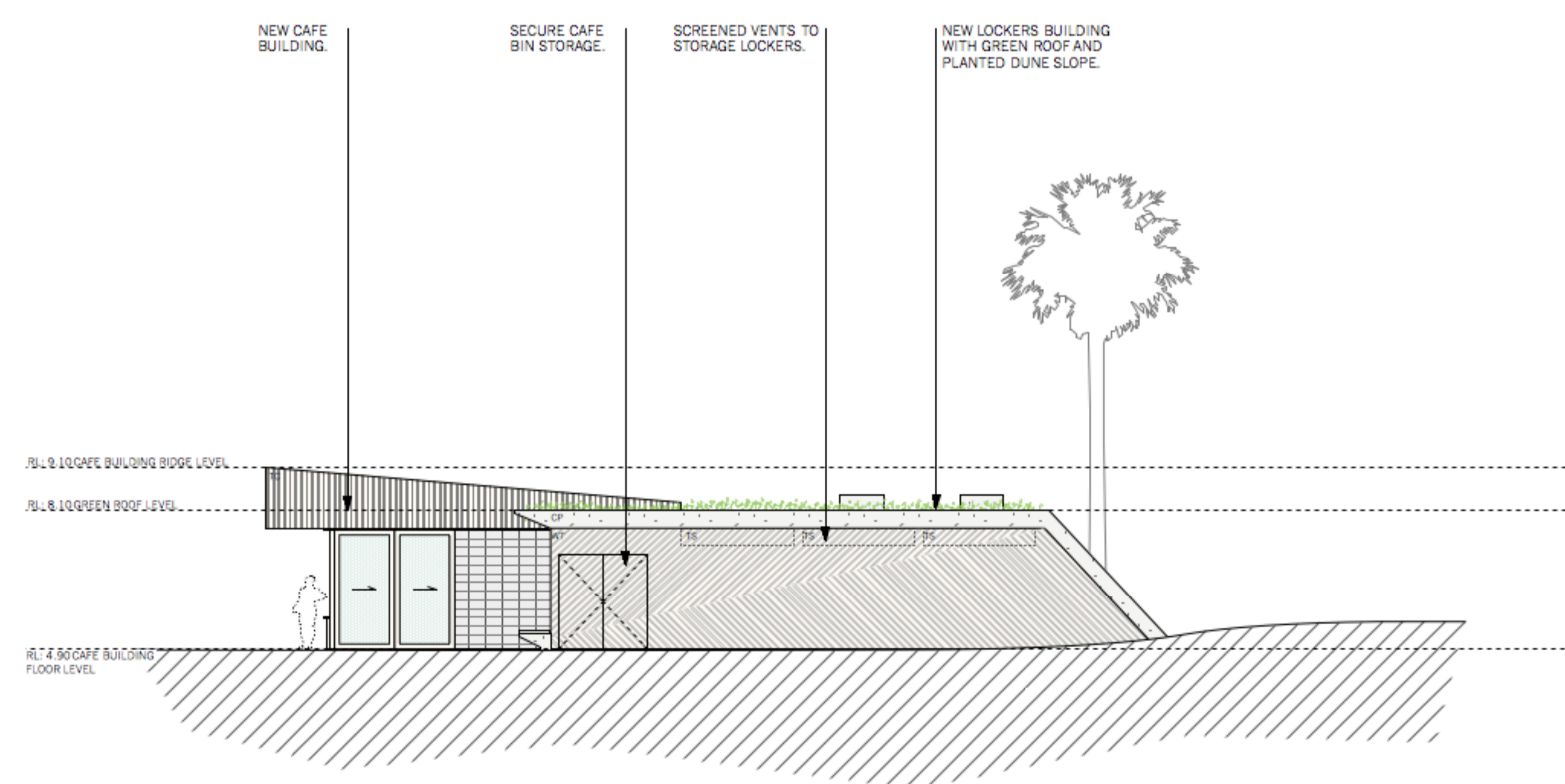
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1 PROPOSED SOUTH AMENITIES ELEVATION
1:100 @ A1



2 PROPOSED NORTH CAFE ELEVATION
1:100 @ A1

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PROJECT			
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LOT/DP			
Lot 11, DP 1193189			
CLIENT			
Northern Beaches Council			
DWS			
Proposed Elevations Amenities South & Cafe North			
PROJECT #		FIG #	
LRSC.01		017	
SCALE @ A1	1:100	REVISION	A
SCALE @ A3	1:200		
DRAWN	EN	DATE	03/12/19
CHKD	MS		

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Attachment 2 SIDRA Outputs

MOVEMENT SUMMARY

▽ Site: 101 [Pittwater Road / Driveway to LRSC AM]

Existing scenario
 AM peak
 PM peak
 Site Category: (None)
 Giveway / Yield (Two-Way)

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: Driveway to LRSC												
4	L2	54	0.0	0.035	4.5	LOS A	0.1	1.0	0.16	0.52	0.16	50.4
Approach		54	0.0	0.035	4.5	LOS A	0.1	1.0	0.16	0.52	0.16	50.4
East: Pittwater Road												
7	L2	43	4.9	0.069	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	52.4
8	T1	2049	4.6	0.519	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		2093	4.6	0.519	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		2146	4.5	0.519	0.3	NA	0.1	1.0	0.00	0.02	0.00	59.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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 [Pittwater Road / Driveway to LRSC PM]

Existing scenario
 AM peak
 PM peak
 Site Category: (None)
 Giveaway / Yield (Two-Way)

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: Driveway to LRSC												
4	L2	61	0.0	0.076	7.5	LOS A	0.3	2.0	0.56	0.75	0.56	47.4
Approach		61	0.0	0.076	7.5	LOS A	0.3	2.0	0.56	0.75	0.56	47.4
East: Pittwater Road												
7	L2	47	4.4	0.375	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	55.2
8	T1	1383	3.0	0.375	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach		1431	3.0	0.375	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		1492	2.9	0.375	0.5	NA	0.3	2.0	0.02	0.05	0.02	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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