

MEGARA

MULTI-USE DEVELOPMENT WEST COAST DRIVE SORRENTO

SPP 5.4 NOISE MANAGEMENT PLAN

DECEMBER 2021

Updated Plans from May 2022

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**SPP 5.4 NOISE MANAGEMENT PLAN
WEST COAST DRIVE
SORRENTO**

Job No: 21485

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FOR

MEGARA

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1. INTRODUCTION

Herring Storer Acoustics were commissioned through Megara to carry out an acoustic study with regards to traffic related noise for the proposed multi-use development at Lots 2 and 149 West Coast Drive, Lot 148 The Plaza, Lots 146 and 147 Padbury Circle, and Lot 145 Drakes Walk, Sorrento.

The purpose of the study was to:

- Assess the noise that would be received within the development area from vehicles travelling on West Coast Drive for future traffic volumes.
- Compare the results with accepted criteria and if exceedances exist, develop the framework for the management of noise.

A plan is attached in Appendix A.

2. ACOUSTIC CRITERIA

2.1 NOISE

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 “Road and Rail Noise”. The requirements of State Planning Policy 5.4 are outlined below.

POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

- a) noise-sensitive land-use within the policy’s trigger distance of a transport corridor as specified in **Table 1**;*
- b) New or major upgrades of roads as specified in **Table 1** and maps (**Schedule 1, 2 and 3**); or*
- c) New railways or major upgrades of railways as specified in maps (**Schedule 1, 2 and 3**); or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

Table 1 identifies the State’s transport corridors and the trigger distances to which the policy applies.

*The designation of land within the trigger distances outlined in **Table 1** should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are un-affected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/mitigation required. An initial screening assessment (**guidelines: Table 2: noise exposure forecast**) will determine if the lot is affected and to what extent.”*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	Trigger distance	Distance measured from
Roads		
Strategic freight and major traffic routes Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume	300 metres	Road carriageway edge
Other significant freight/traffic routes These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)	200 metres	Road carriageway edge
Passenger railways		
	100 metres	Centreline of the closest track
Freight railways		
	200 metres	Centreline of the closest track

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

Table 2 sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

In the application of the noise targets the objective is to achieve:

- indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and
- a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	New/Upgrade	Noise Targets		
		Outdoor		Indoor
		Day ($L_{Aeq}(\text{Day})$ dB) (6 am-10 pm)	Night ($L_{Aeq}(\text{Night})$ dB) (10 pm-6 am)	(L_{Aeq} dB)
Noise-sensitive land-use and/or development	New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor	55	50	L_{Aeq} (Day) 40(Living and work areas) L_{Aeq} (Night) 35 (bedrooms)
Roads	New	55	50	N/A
	Upgrade	60	55	N/A
Railways	New	55	50	N/A
	Upgrade	60	55	N/A

Notes:

- The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.
- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.
- The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.

Noise Exposure Forecast (Section 6.2)

When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2**: noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:

- no further measures are required.
- noise-sensitive land-use and/or development is acceptable subject to deemed-to-comply mitigation measures; or
- noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/or development is subject to mitigation measures outlined in a noise management plan.”

3. ACOUSTIC ENVIRONMENT

The noise measurements were conducted on 8:30AM, 6 December 2021 for a short term period to determine the L_{A10} noise level traffic for approximately 15 minutes. This time period has been identified as peak traffic period for the road to ensure of a conservative measurement. Traffic volume details for this road section are included in Appendix C.

Utilising this measurement, reference to the DEFRA publication has been sought and the difference between the $L_{A10,18hr}$ and the $L_{Aeq,8hr}$ and the $L_{Aeq,16hr}$ has been calculated. The location of the measurements is shown in Appendix A.

Noise measurements were conducted with a Larson Davis 831 Sound Level Meter. The Sound Level Meter was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently NATA laboratory calibrated. Calibration certificates are available on request.

TABLE 3.1: SUMMARY OF MEASURED NOISE LEVELS

Measurement Location	Measured/Calculated Noise Level, dB(A)		
	L_{A10}	$L_{Aeq, day (6am to 10pm)}$	$L_{Aeq, night (10pm to 6am)}$
149 West Coast Drive	69.1	65.9	58.4

4. MODELLING

To determine the noise levels from traffic on West Coast Drive, acoustic modelling was carried out using Sound Plan, using the Calculation of Road Traffic Noise (CoRTN)¹ algorithms.

The input data for the model included:

- Topographical and cadastral data supplied by client (Shown in Appendix A).
- Traffic data as per Table 4.1 (Obtained from MRWA Traffic Map, Attached in Appendix C).
- Adjustments as listed in Table 4.2.

TABLE 4.1 - NOISE MODELLING INPUT DATA

Parameter	West Coast Drive (Current) 2020	West Coast Drive (Future) 2041
Traffic Volumes	15,880 vpd	23,600 vpd
Percentage traffic 0600 – 2400 hours (Assumed)	94%	94%
Heavy Vehicles (%) (Assumed)	6.0%	6.0%
Speed (km/hr)	50 km/hr	50 km/hr
Road Surface	Chip Seal	Dense Graded Asphalt

TABLE 4.2 – ADJUSTMENTS FOR NOISE MODELLING

Description	Value
Façade Reflection Adjustment	+2.5 dB
Conversion from L_{A10} (18 hour) to L_{Aeq} (16 hour) (Day)	-3.2 dB*

¹ Calculation of Road Traffic Noise UK Department of Transport 1987

5. TRAFFIC NOISE ASSESSMENT

Using the data contained in Tables 3.1, 4.1 and 4.2, modelling was carried out under existing conditions for calibration. The Sound Plan model for the site has been set up for the 2041 scenario as defined in Table 4.1. The following assumptions have been made:

- 18 hour traffic count will be 94% of daily figures.
- Noise model calibrated to measured noise level as per Table 3.1
- The same diurnal relationship will exist in the future between the $L_{A10(18\text{ hour})}$ and the L_{Aeq} parameters; and
- 2.5 dB(A) has been added to the results for façade reflection.

The noise requirements based on the above have been listed in Appendix B.

It is noted that these requirements pertain to acoustic requirements only, with regard to *State Planning Policy 5.4*, and may be superseded by other requirements (BAL, Thermal, etc).

6. CONCLUSION

In accordance with the WAPC Planning Policy 5.4, an assessment of the noise that would be received within the development, from vehicles travelling on West Coast Drive has been undertaken.

In accordance with the Policy, the following would be the acoustic criteria applicable to this project:

External	
Day	55 dB(A) L_{Aeq}
Night	50 dB(A) L_{Aeq}
Internal	
Sleeping Areas	35 dB(A) $L_{Aeq(night)}$
Living Areas	40 dB(A) $L_{Aeq(day)}$

It is noted that walls of the development would be required to be constructed of either masonry or tilt up concrete panel. If a lightweight construction or similar is desirable, investigation into constructions that would meet the requirement of State Planning Policy 5.4 would have to be undertaken.

The results of the acoustic assessment indicate that noise received at the development from future traffic, exceed external noise level criteria. Therefore, noise amelioration in the form of quiet house design listed in Appendix B, as well as notifications on the title is required.

APPENDIX A

PLANS

REV.	DATE	AMENDMENT	INIT.
-	17.12.21	DEVELOPMENT APPLICATION	TD
-	15.03.22	FOR INFORMATION / SDRP 2	TD
-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
LANDSCAPE: ASPECT STUDIO
WASTE: TALIS
TRAFFIC: CARDNO
ENERGY: CUNDALL

- 1x1 BED/BATH APARTMENT
- 2x1 / 2x2 BED/BATH APARTMENT
- 3x2 BED/BATH APARTMENT
- 4x2+ BED/BATH APARTMENT

CLIENT
MEGARA

PROJECT
SORRENTO ACTIVITY CENTRE
PROJECT ADDRESS

WEST COAST DRIVE
SORRENTO, WA

MJA PROJECT NUMBER
20057

SCALE

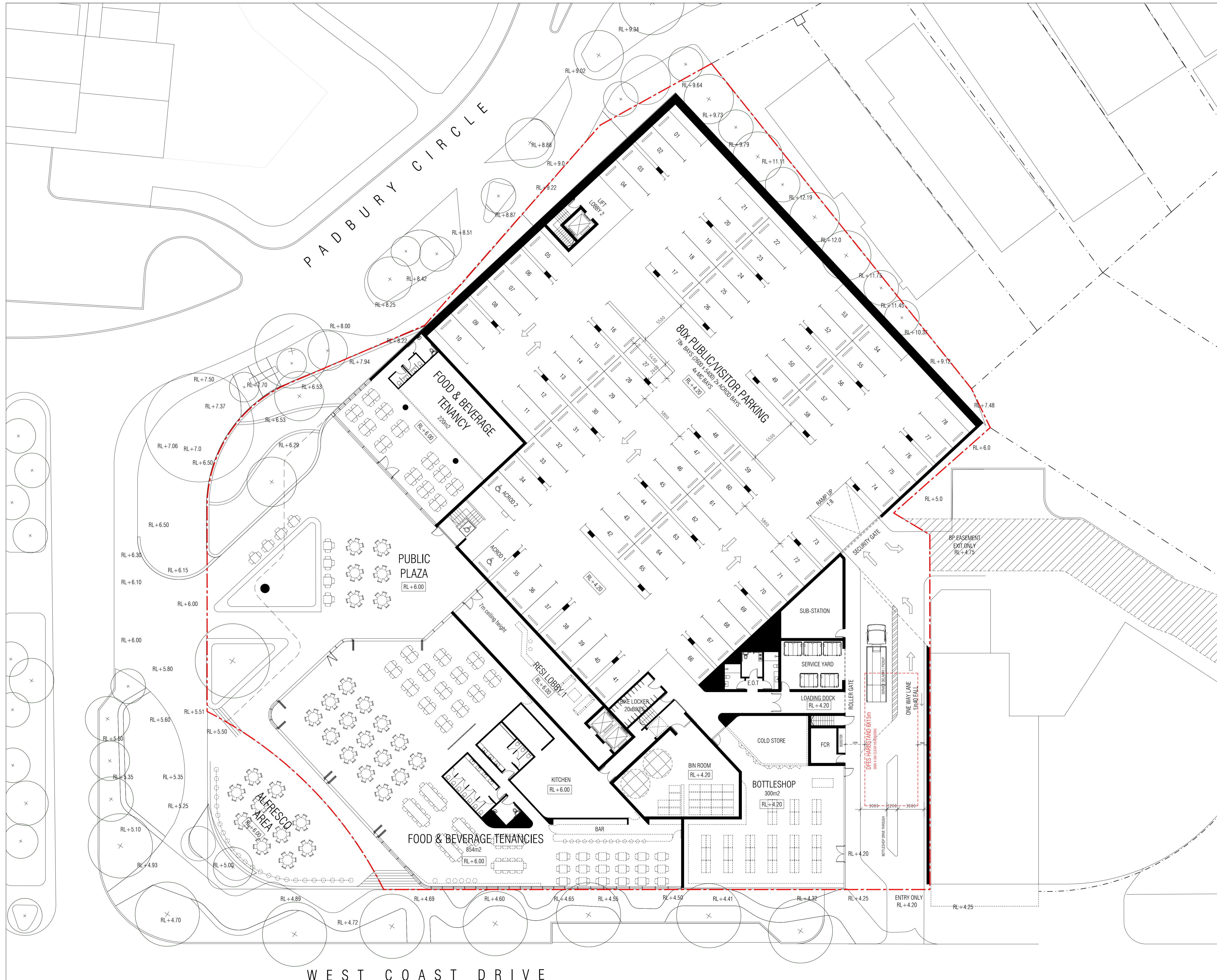
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DEVELOPMENT APPLICATION

DRAWING

GENERAL ARRANGEMENT
GROUND FLOOR

DRAWING NO.	DRAFTER	CHECKED	REV.
1.02	--	TD	



REV.	DATE	AMENDMENT	INIT.
-	17.12.21	DEVELOPMENT APPLICATION	TD
-	15.03.22	FOR INFORMATION / SDRP 2	TD
-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
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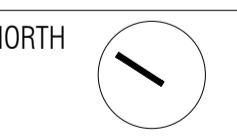
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**WEST COAST DRIVE
SORRENTO, WA**

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20057



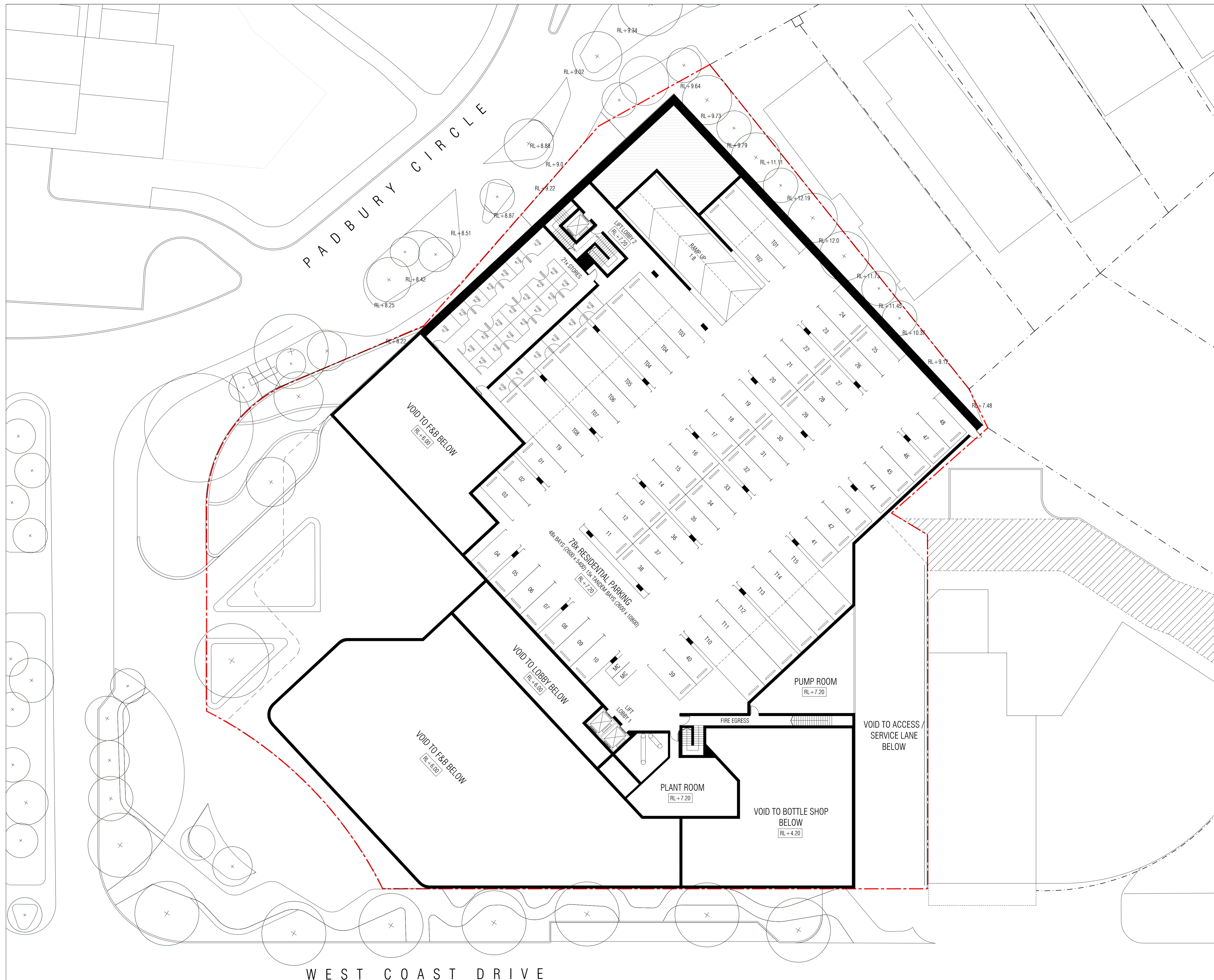
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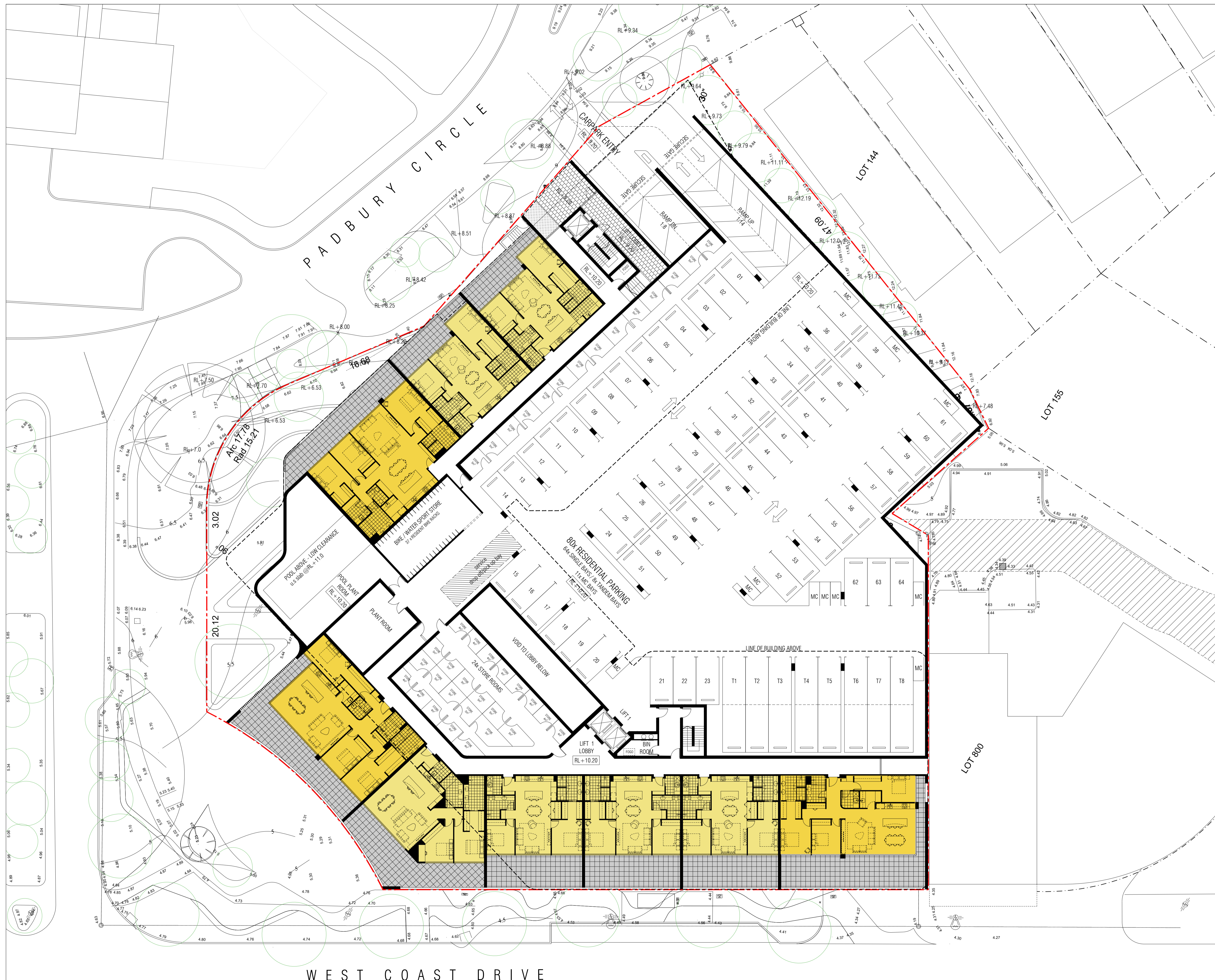
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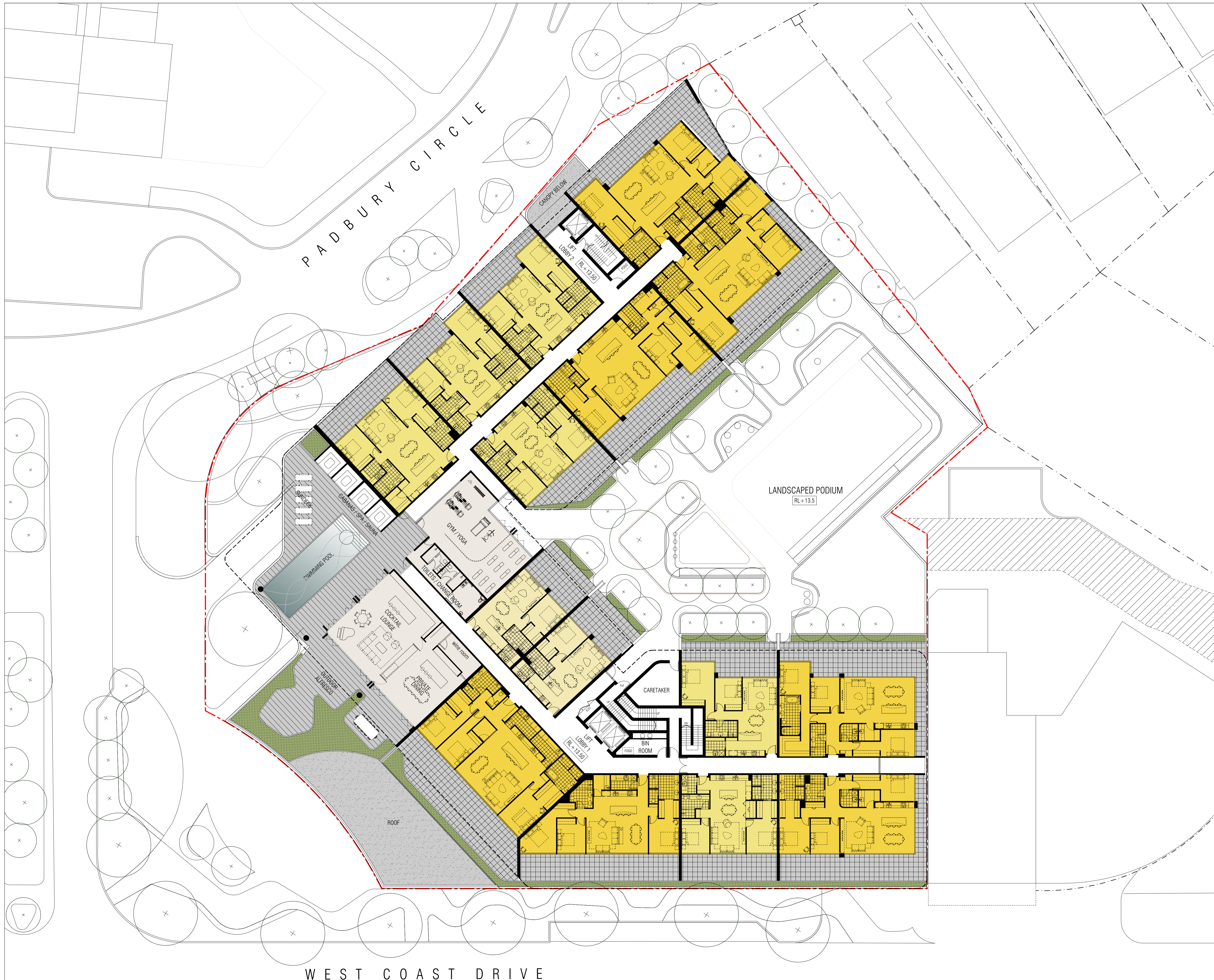
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GENERAL ARRANGEMENT
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WEST COAST DRIVE



REV.	DATE	AMENDMENT	INIT.
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-	15.03.22	FOR INFORMATION / SDRP 2	TD
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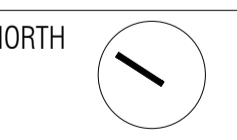
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PROJECT ADDRESS
WEST COAST DRIVE
SORRENTO, WA

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20057



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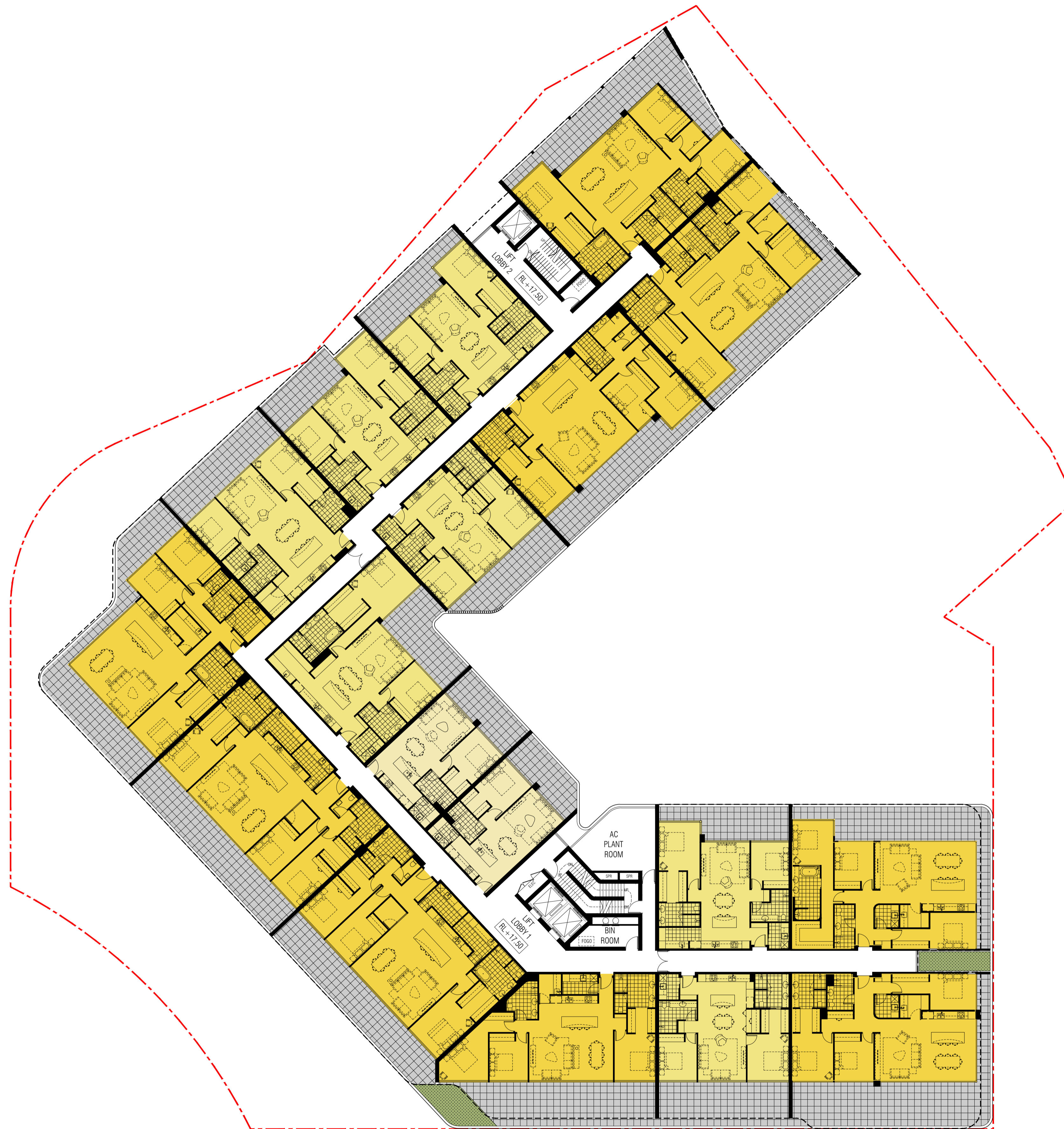
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-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
LANDSCAPE: ASPECT STUDIO
WASTE: TALIS
TRAFFIC: CARDNO
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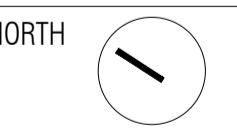


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STATUS
DEVELOPMENT APPLICATION

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GENERAL ARRANGEMENT

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PLANNING: PLANNING SOLUTION
LANDSCAPE: ASPECT STUDIO
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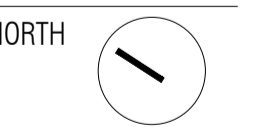


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STATUS
DEVELOPMENT APPLICATION

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GENERAL ARRANGEMENT

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-	03.05.22	FOR INFORMATION / SDRP 3	TD

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LANDSCAPE: ASPECT STUDIO
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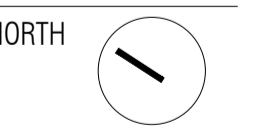


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STATUS
DEVELOPMENT APPLICATION

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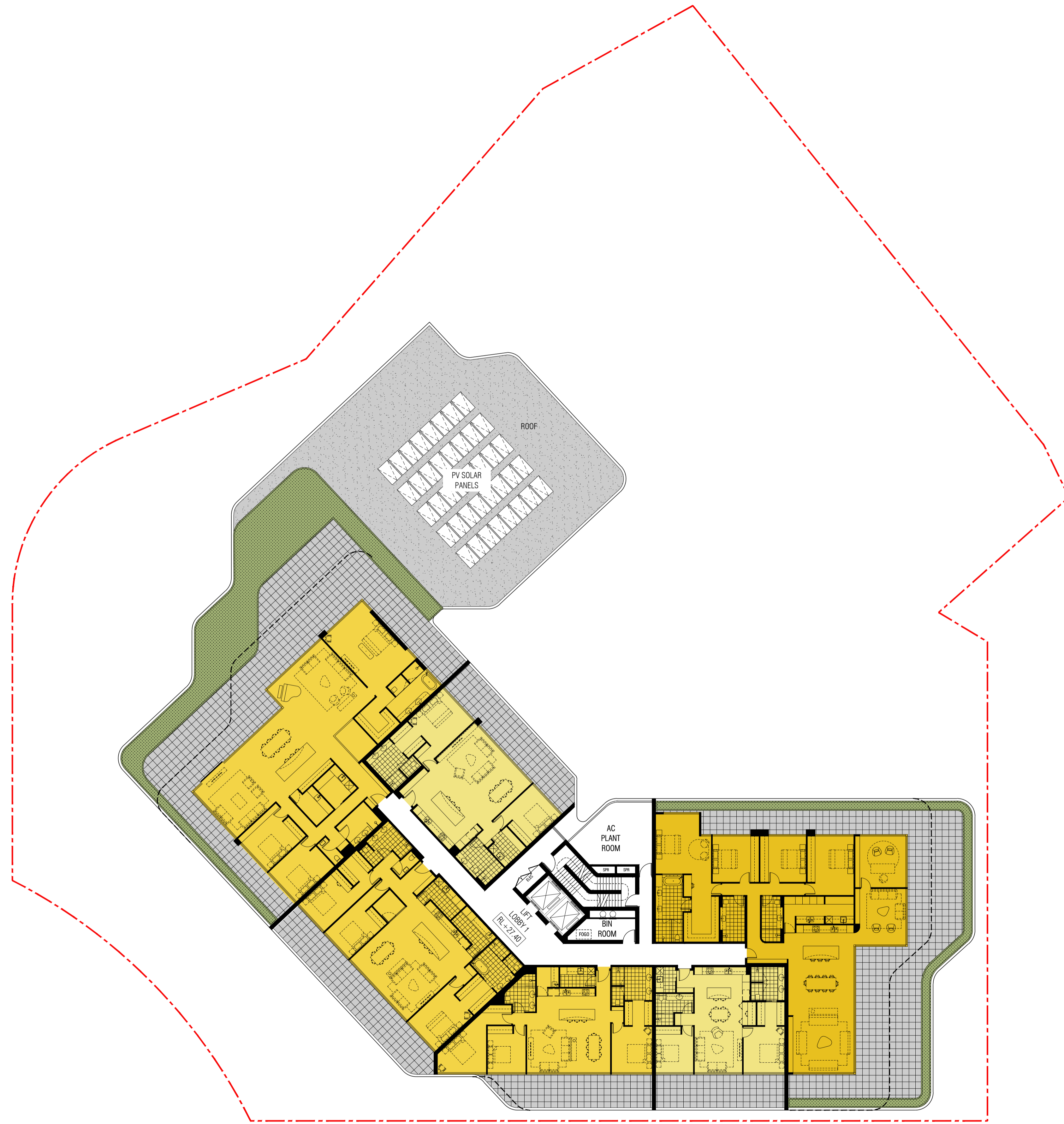
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 LANDSCAPE: ASPECT STUDIO
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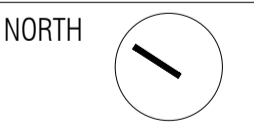


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STATUS
DEVELOPMENT APPLICATION

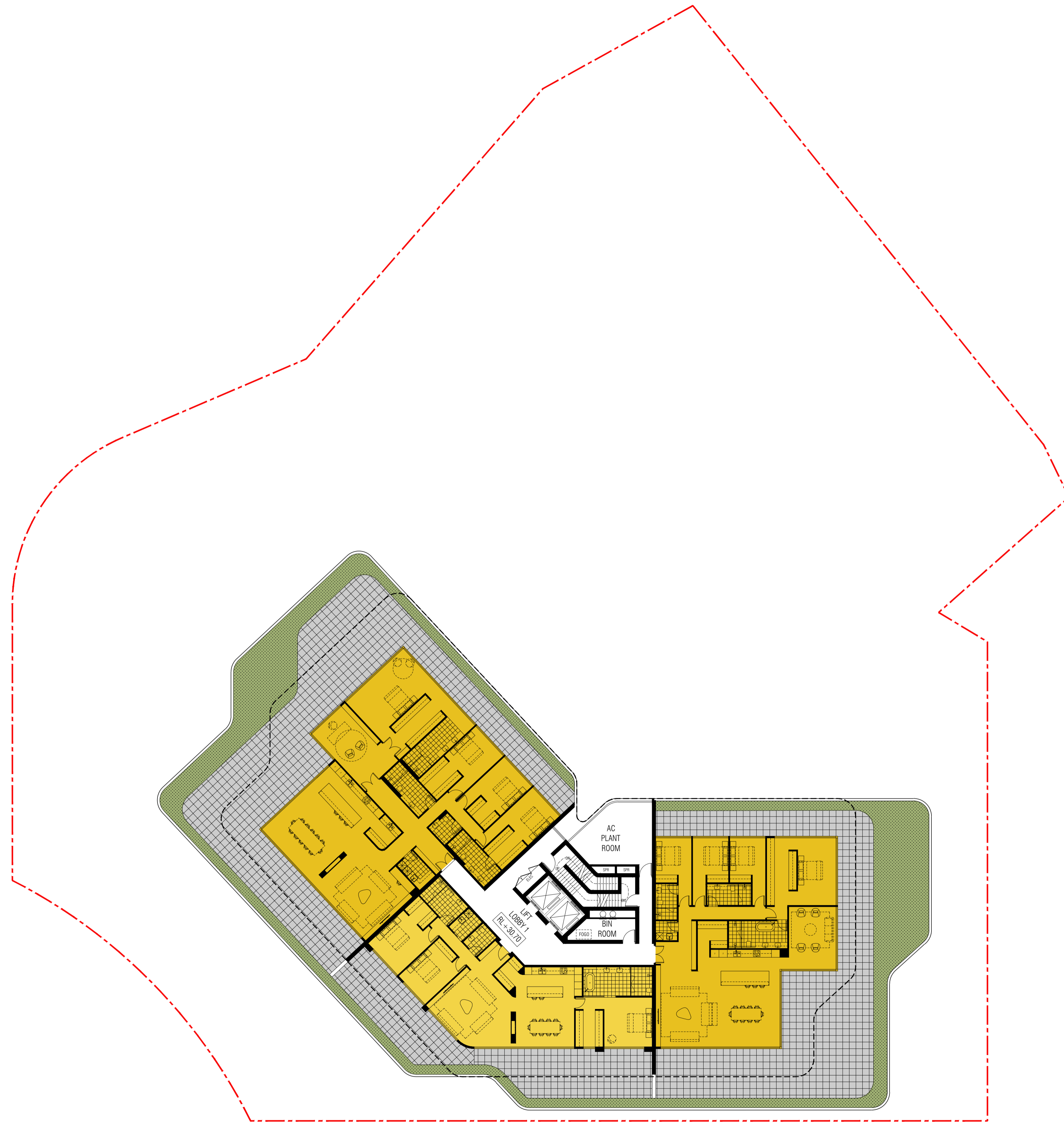
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STATUS
DEVELOPMENT APPLICATION

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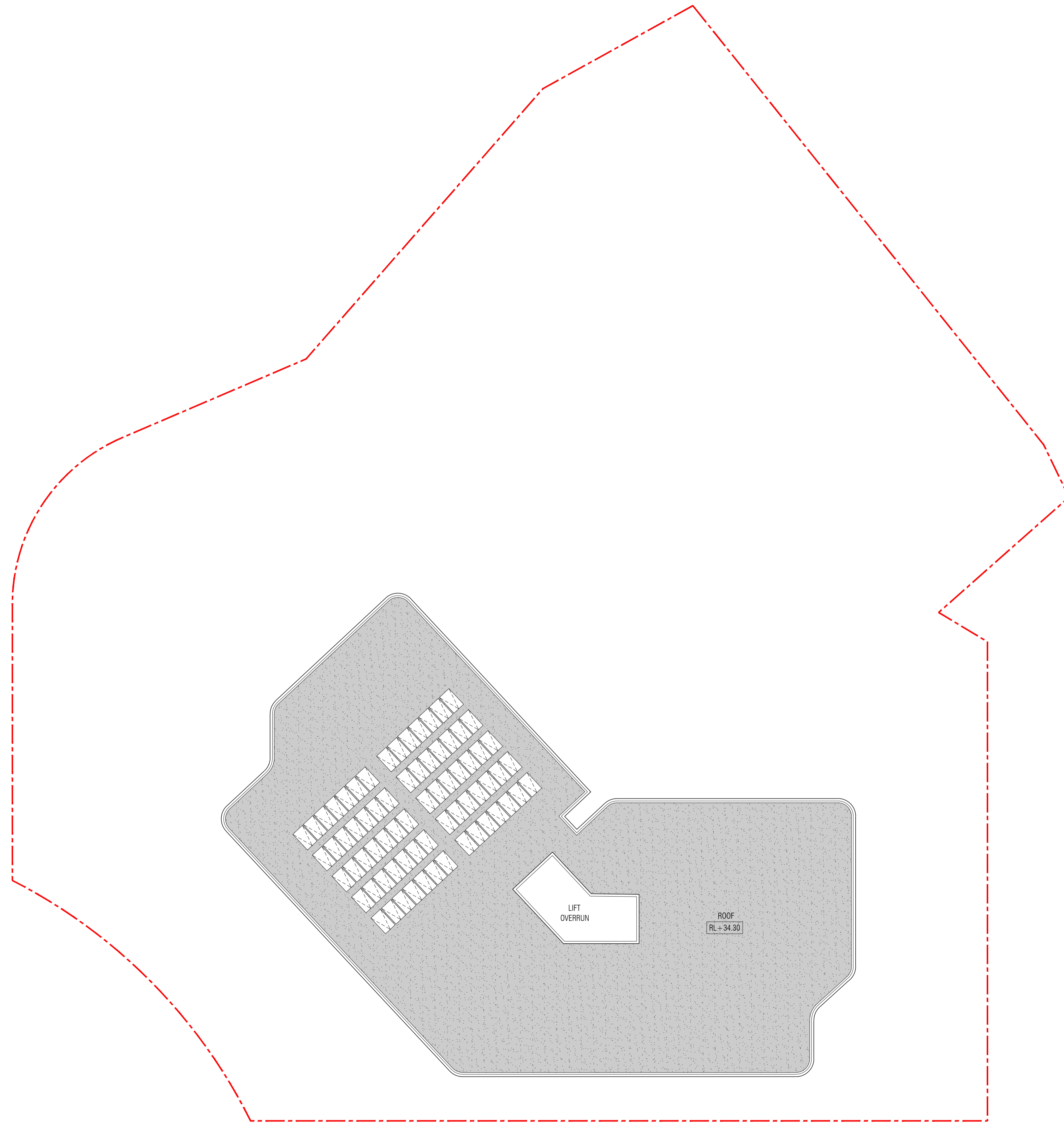
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PLANNING: PLANNING SOLUTION
 LANDSCAPE : ASPECT STUDIO
 WASTE: TALIS
 TRAFFIC: CARDNO
 ENERGY: CUNDALL

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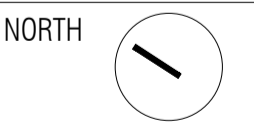


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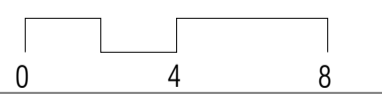
PROJECT
SORRENTO ACTIVITY CENTRE

PROJECT ADDRESS
**WEST COAST DRIVE
 SORRENTO, WA**

MJA PROJECT NUMBER
20057



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STATUS
DEVELOPMENT APPLICATION

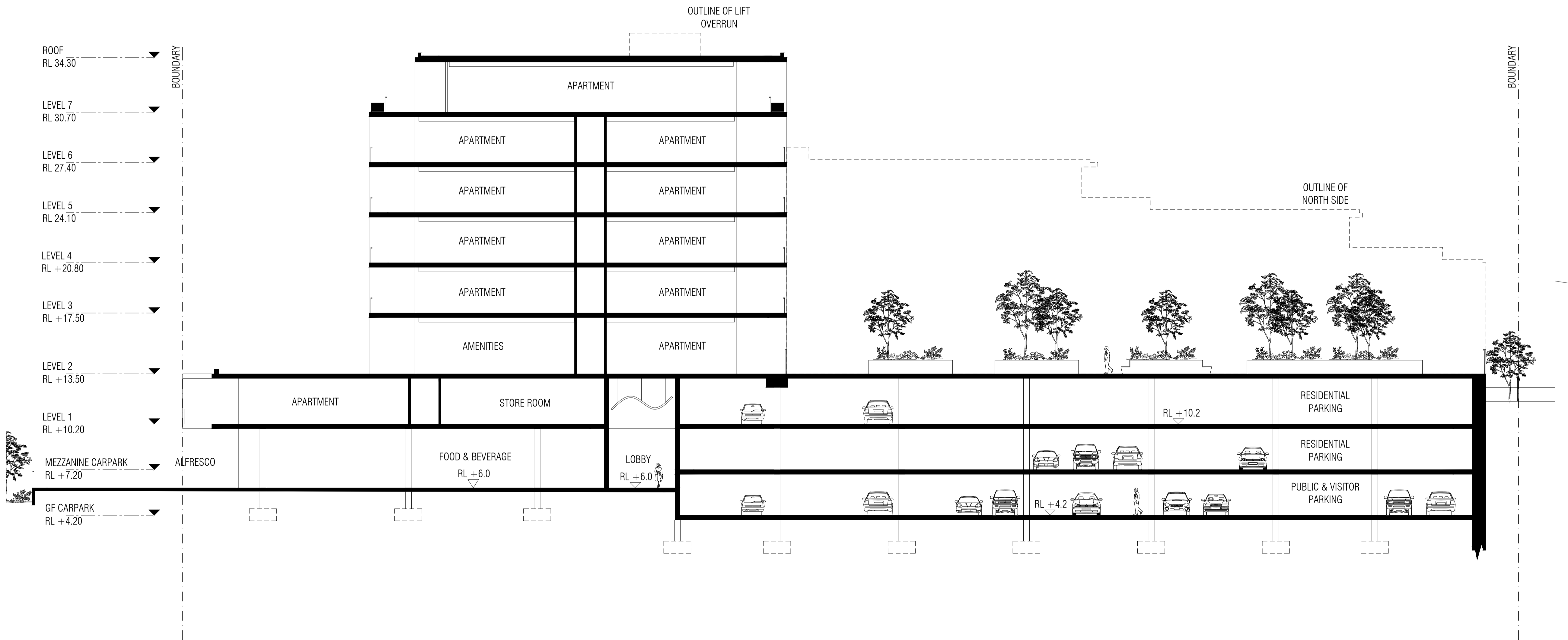
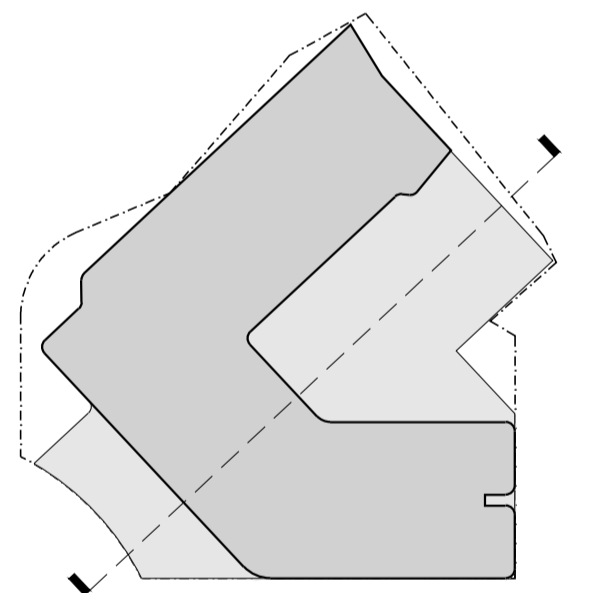
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PROJECT
SORRENTO ACTIVITY CENTRE

PROJECT ADDRESS
WEST COAST DRIVE
SORRENTO, WA

MJA PROJECT NUMBER 20057
NORTH

SCALE

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STATUS
DEVELOPMENT APPLICATION

DRAWING

GENERAL ARRANGEMENT
CROSS SECTION

DRAWING NO.	DRAFTER	CHECKED	REV.
2.02	--	TD	

APPENDIX B

GLAZING REQUIREMENTS

Calculated Noise Levels and Required R _w and C _{tr} Ratings				
Location	Floor	Level	Bedroom R _w + C _{tr}	Living Room R _w + C _{tr}
South Facing	All Levels	65	36	32
North West Facing	Level 2	66	37	33
	Levels 3 to 9	62	33	29
West Facing	Level 2	72	43	39
	Levels 3 to 4	67	38	34
	Levels 5 to 9	57	28	24
North East Facing	All Levels	<55	23	23
All Other Residential Windows	All Levels	<55	23	23
Commercial	Ground Floor	72	30	

Notes: The required R_w rating can be reduced by reducing the area of glazing.
Locations shown on plan below
Requirements pertain to only acoustic advice in regard to *State Planning Policy 5.4* and may be superseded by other requirements (BAL, Thermal, etc).

APPENDIX C

MRWA TRAFFIC FLOW DATA



Hourly Volume

West Coast Dr (1312648)

2020/21
Monday to Friday

South of Hepburn Av (SLK 2.56)

	All Vehicles				Heavy Vehicles					
	NB	SB	Both		NB	SB	Both		%	
00:00	16	12	28		2	0	2		7.1	
01:00	8	7	15		0	0	0		0.0	
02:00	4	2	6		0	0	0		0.0	
03:00	3	3	6		0	1	1		16.7	
04:00	6	12	18		1	2	3		16.7	
05:00	53	185	238		10	7	17		7.1	
06:00	176	463	639		22	34	56		8.8	
07:00	284	826	1110		30	32	62		5.6	
08:00	456	869	1325		35	28	63		4.8	
09:00	428	532	960		41	23	64		6.7	
10:00	484	512	996		42	22	64		6.4	
11:00	531	528	1059		38	24	62		5.9	
12:00	502	498	1000		43	20	63		6.3	
13:00	466	442	908		42	24	66		7.3	
14:00	534	499	1033		56	22	78		7.6	
15:00	709	585	1294		70	17	87		6.7	
16:00	730	489	1228		67	14	81		6.6	
17:00	714	530	1244		50	14	64		5.1	
18:00	525	443	968		34	15	49		5.1	
19:00	294	282	576		12	8	20		3.5	
20:00	188	201	389		7	4	11		2.8	
21:00	143	150	293		5	3	8		2.7	
22:00	83	79	162		2	1	3		1.9	
23:00	42	35	77		3	1	4		5.2	
TOTAL	7388	8184	15572		612	316	928		6.0	



Peak Statistics

AM TIME	11:00	07:30	07:45	09:30	06:15	09:30
VOL	531	947	1355	48	38	70
PM TIME	15:30	15:15	15:15	15:15	12:30	15:15
VOL	762	586	1330	73	26	91

