DEVELOPMENT INFORMATION	
LOT 2 ON RP 60497 28 VICTORIA PARADE ROCKHAMPTON CITY	
SITE AREA	901 m²
SITE COVER	740 m²
DEVELOPMENT AREA	
PROPOSED GFA	6, 115m²
CAR PARKING	
REQUIRED FOR 22 UNITS (@ 2 PER UNIT)	44
PROPOSED (+ VISITOR)	45 + (1 VISITOR)

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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DRAWING LIST

A-DA-0000	COVER PAGE	2	13.12.23
A-DA-0001	SITE ANALYSIS	2	13.12.23
A-DA-0002	SITE PLAN	2	13.12.23
A-DA-0005	AREA PLANS	2	13.12.23
A-DA-1000	BASEMENT 1 PLAN	2	13.12.23
A-DA-1001	BASEMENT 2 PLAN	2	13.12.23
A-DA-1002	LEVEL 1 PLAN	2	13.12.23
A-DA-1003	LEVEL 2 - 10 PLAN	2	13.12.23
A-DA-1004	LEVEL 11 PLAN	2	13.12.23
A-DA-1005	LEVEL 12 PLAN	2	13.12.23
A-DA-1006	LEVEL 13 PLAN	2	13.12.23
A-DA-2000	SECTIONS	2	13.12.23
A-DA-2001	SECTIONS	2	13.12.23
A-DA-3000	NORTH EAST ELEVATION	2	13.12.23
A-DA-3001	SOUTH WEST ELEVATION	2	13.12.23
A-DA-3002	SOUTH EAST ELEVATION	2	13.12.23
A-DA-3003	NORTH WEST ELEVATION	2	13.12.23
A-DA-6000	3D PERSPECTIVES	2	13.12.23
A-DA-6001	3D PERSPECTIVES	2	13.12.23

1 LOCATION PLAN
1 : 1000

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1	18.07.23	DRAFT DA	JR	PW
2	13.12.23	FOR INFORMATION	JR	PW

File

Project
28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:32:44 PM

Date Issued 13.12.23

Scale As indicated @A3

Drawing Title
COVER PAGE

Drawing Number
A-DA-0000

Revision
2

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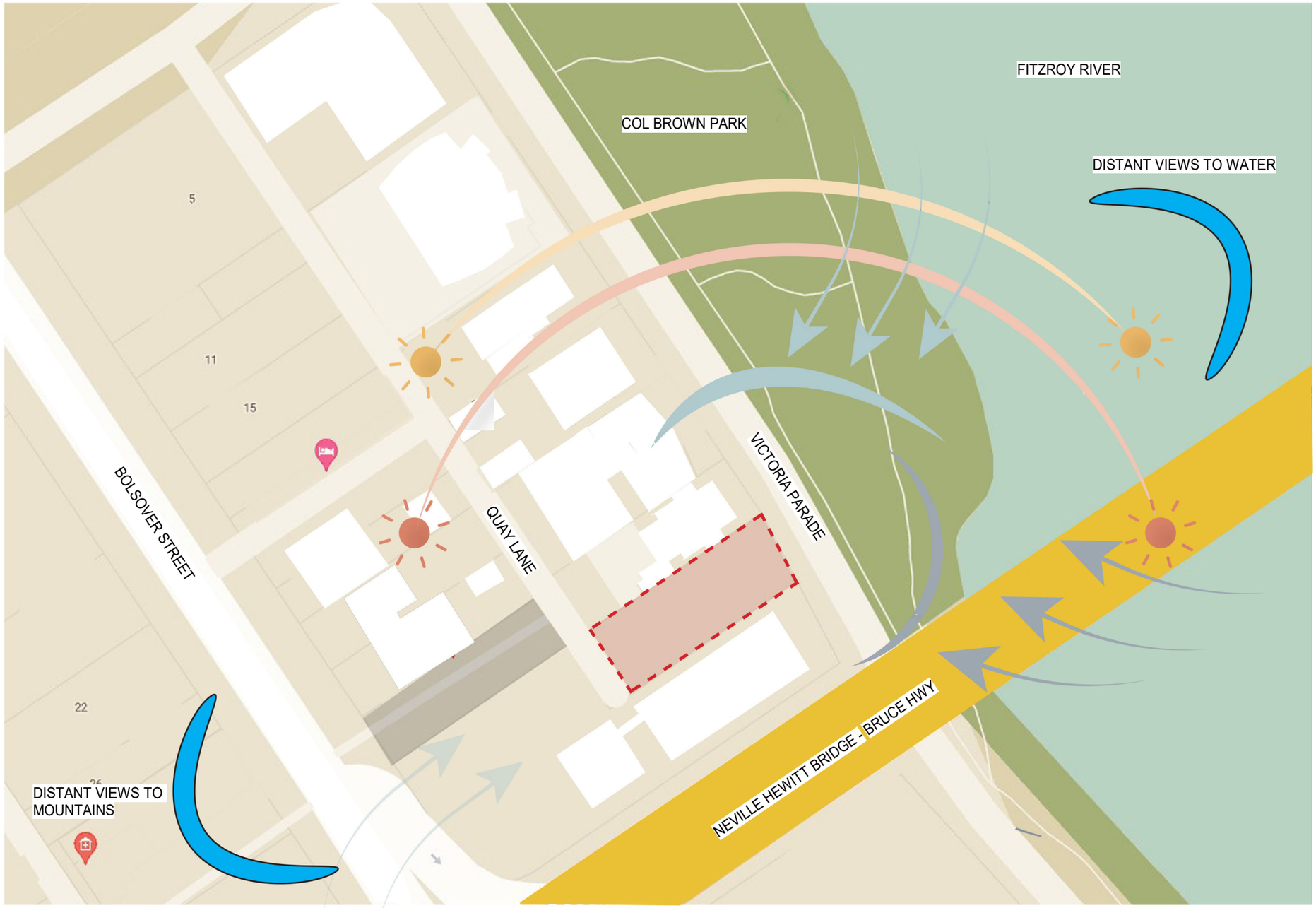

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LEGEND

- SUBJECT SITE
- WINTER SOLSTICE SUN
- SUMMER SOLSTICE SUN
- PREVAILING BREEZES
- SUMMERTIME BREEZES
- WESTERLY WINDS

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1	18.07.23	DRAFT DA	JR	PW
2	13.12.23	FOR INFORMATION	JR	PW

File

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28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:33:01 PM

Date Issued 13.12.23

Scale

Drawing Title
SITE ANALYSIS

Drawing Number
A-DA-0001

Revision
2

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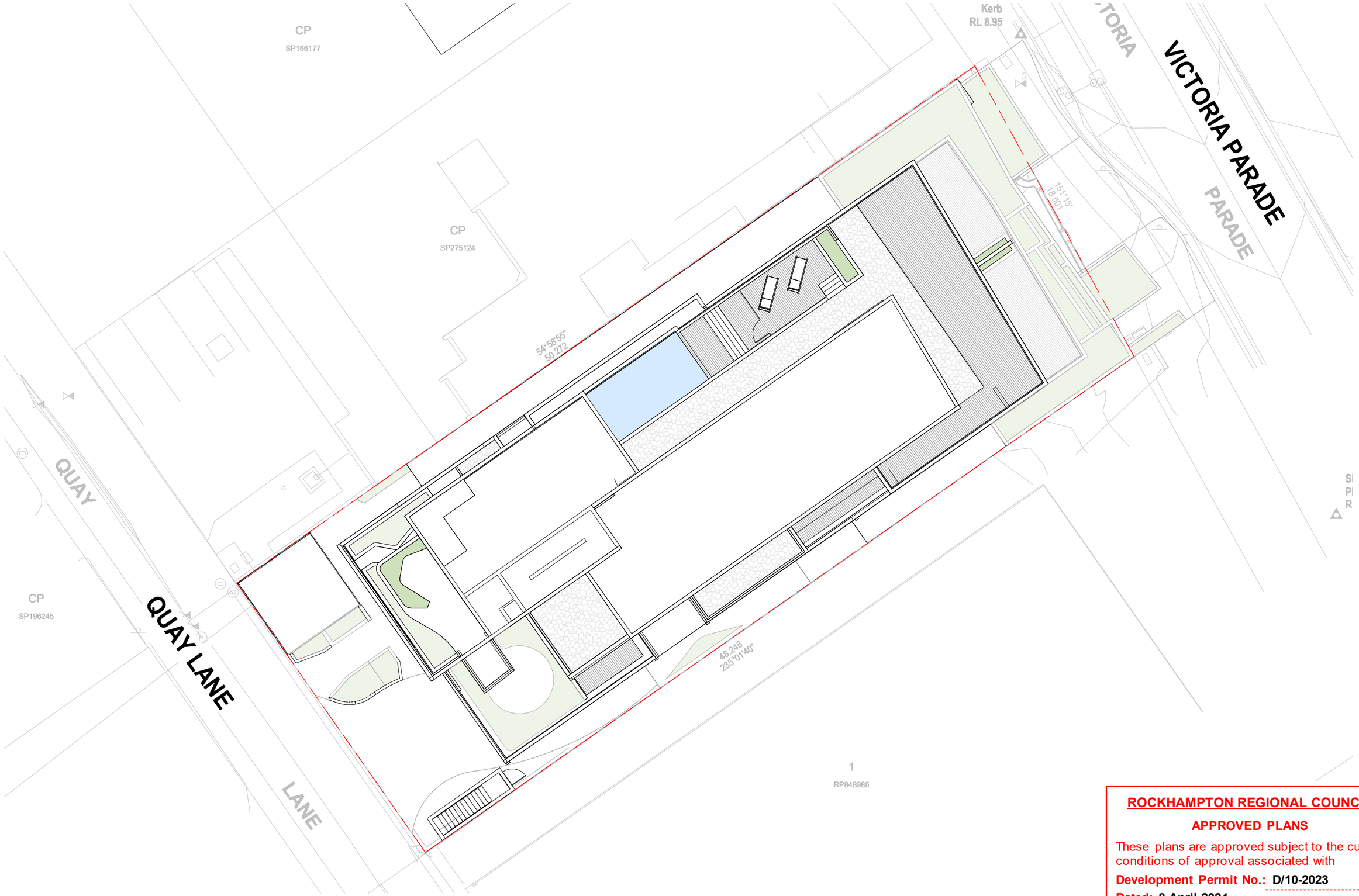

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2	13.12.23	FOR INFORMATION	JR	PW

File

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28 VICTORIA PARADE, ROCKHAMPTON

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220682

Status

Date Plotted 12/13/2023 2:33:20 PM

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Scale 1 : 200 @A3

Drawing Title
SITE PLAN

Drawing Number
A-DA-0002

Revision
2

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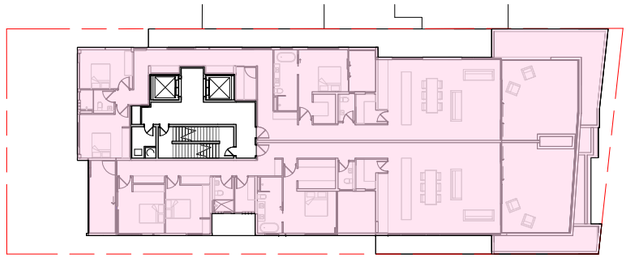
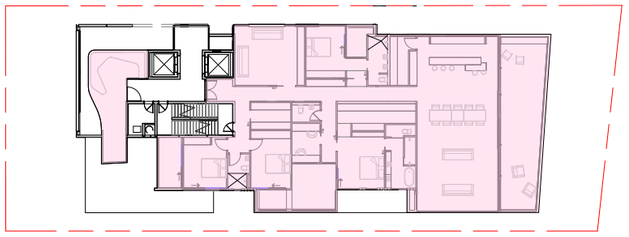
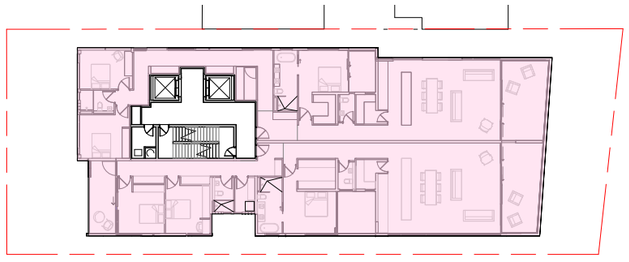


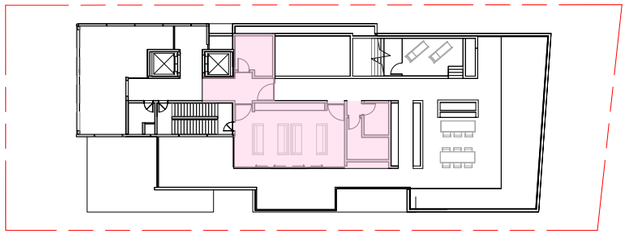
1 LEVEL 01 AREA PLAN
A-DA-2000 1 : 500



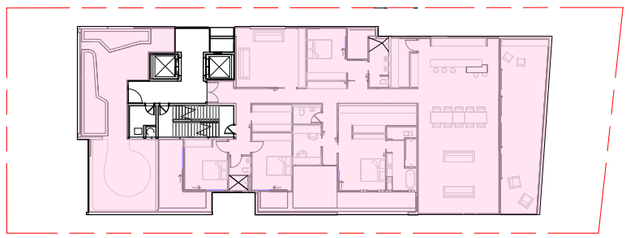
4 LEVEL 12 AREA PLAN
A-DA-2000 1 : 500



2 LEVEL 02 - 10 AREA PLAN
A-DA-2000 1 : 500



5 LEVEL 13 AREA PLAN
A-DA-2000 1 : 500



3 LEVEL 11 AREA PLAN
A-DA-2000 1 : 500

PROPOSED AREA SCHEDULE	
	GFA
GROUND FLOOR	-
LEVEL 1	595 m^2
LEVEL 2 - 10 (Per)	4,500 m^2 (500 m^2)
LEVEL 11	500 m^2
LEVEL 12	425 m^2
LEVEL 13	95 m^2
TOTAL	6,115m^2

GFA PROPOSED

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220682

Status

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Scale

Drawing Title
AREA PLANS

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A-DA-0005

Revision
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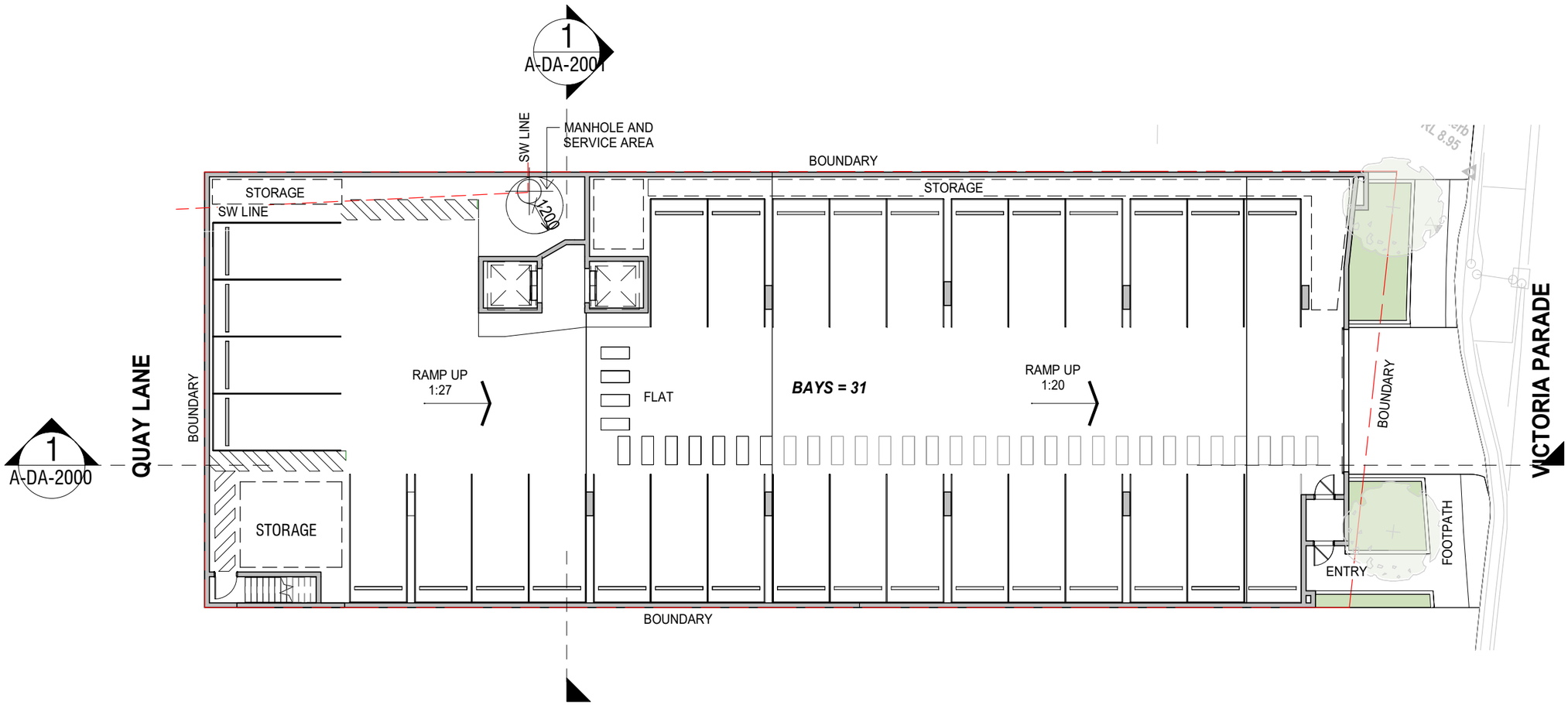

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Status

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Scale 1 : 200 @A3

Drawing Title
BASEMENT 1 PLAN

Drawing Number
A-DA-1000

Revision
2

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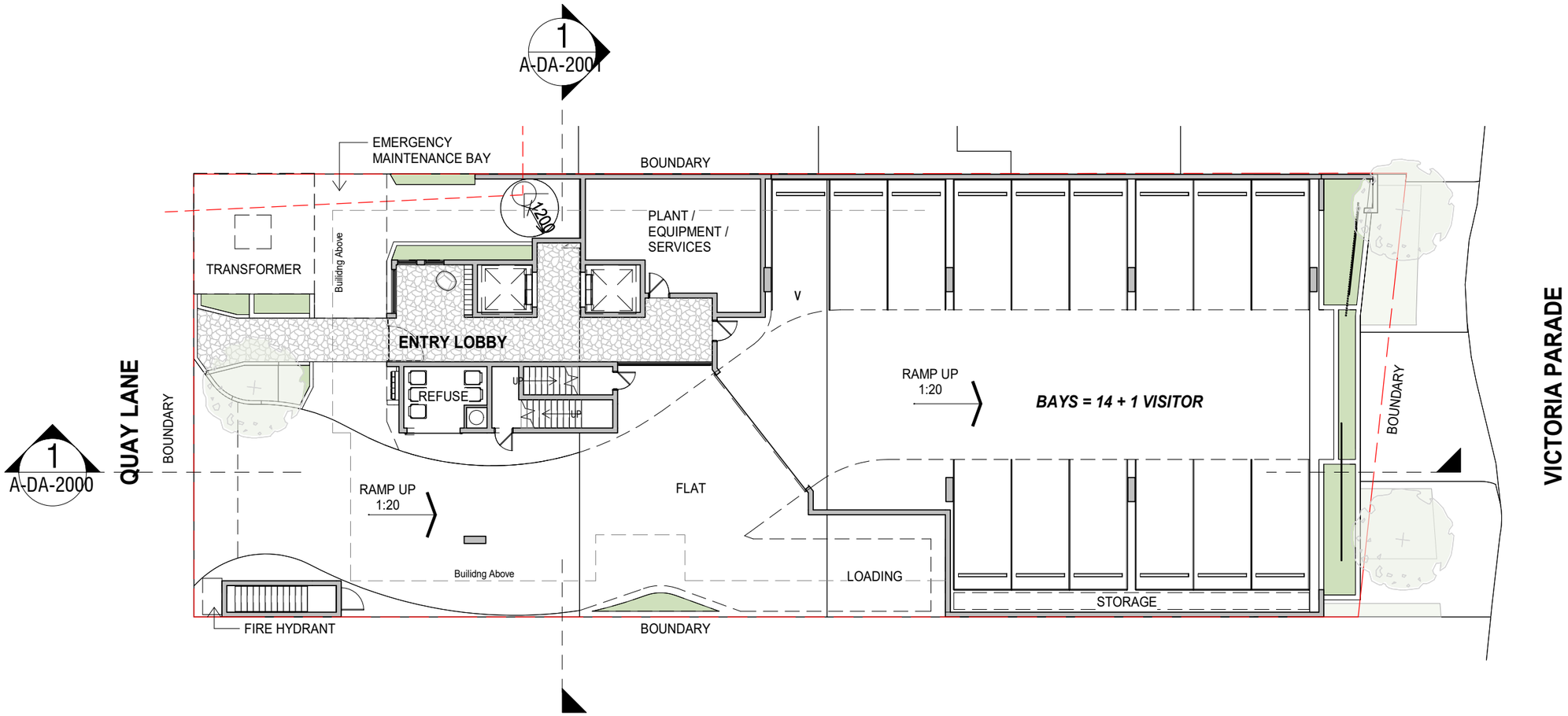

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28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:33:44 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
BASEMENT 2 PLAN

Drawing Number
A-DA-1001

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2

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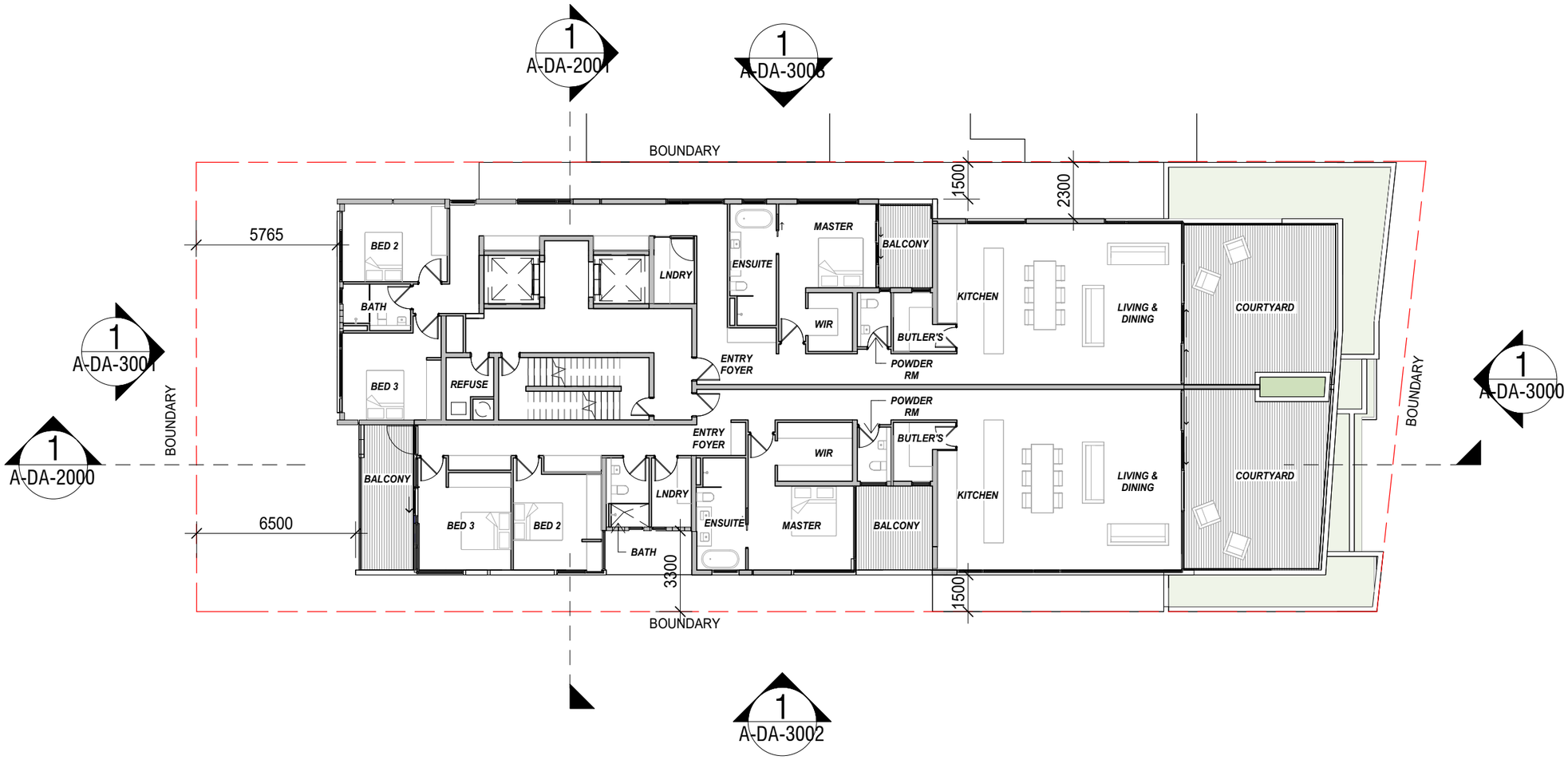

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220682

Status

Date Plotted 12/13/2023 2:33:47 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
LEVEL 1 PLAN

Drawing Number
A-DA-1002

Revision
2

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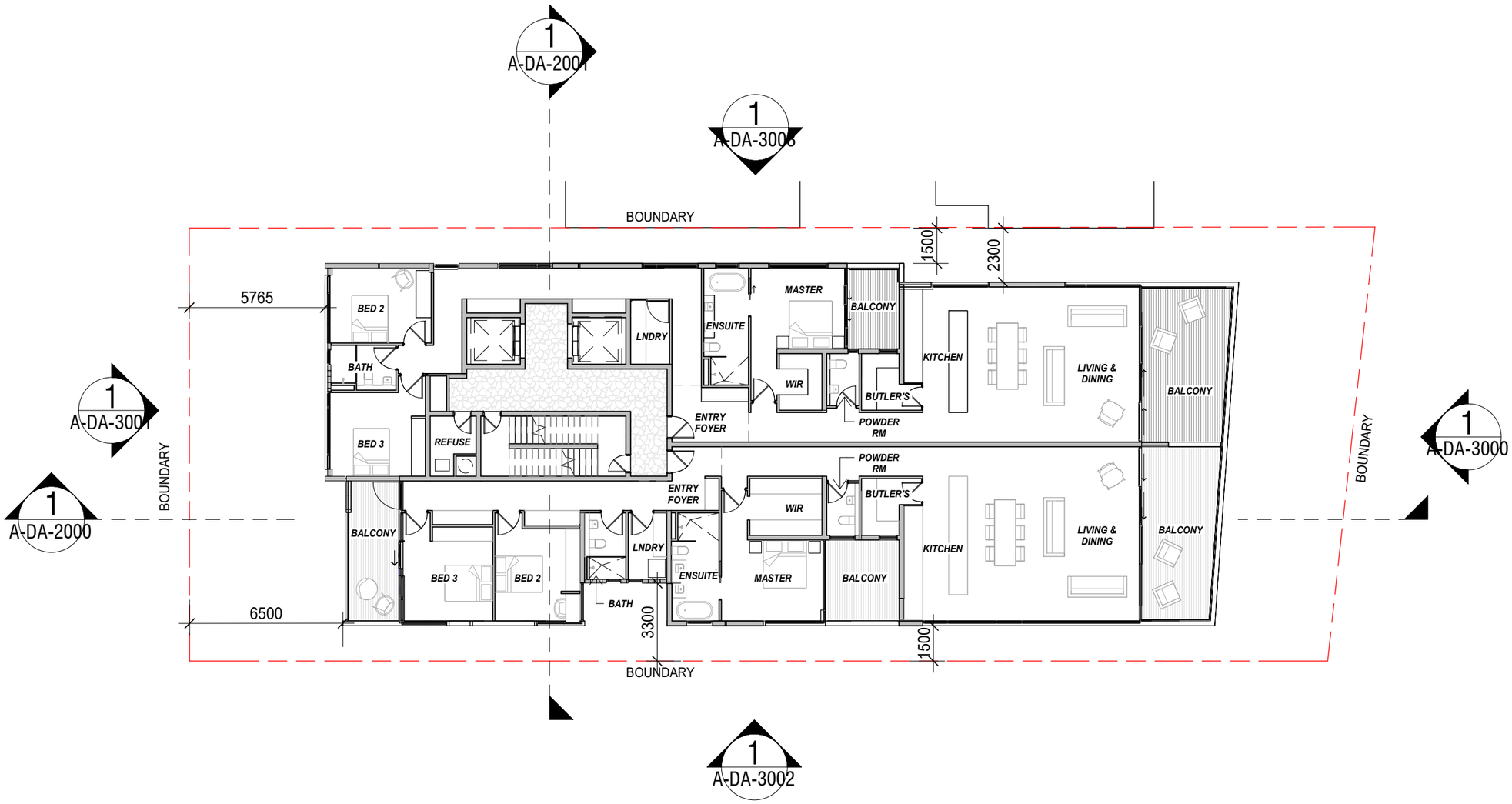

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Project Number
220682

Status

Date Plotted 12/13/2023 2:34:05 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
LEVEL 2 - 10 PLAN

Drawing Number
A-DA-1003

Revision
2

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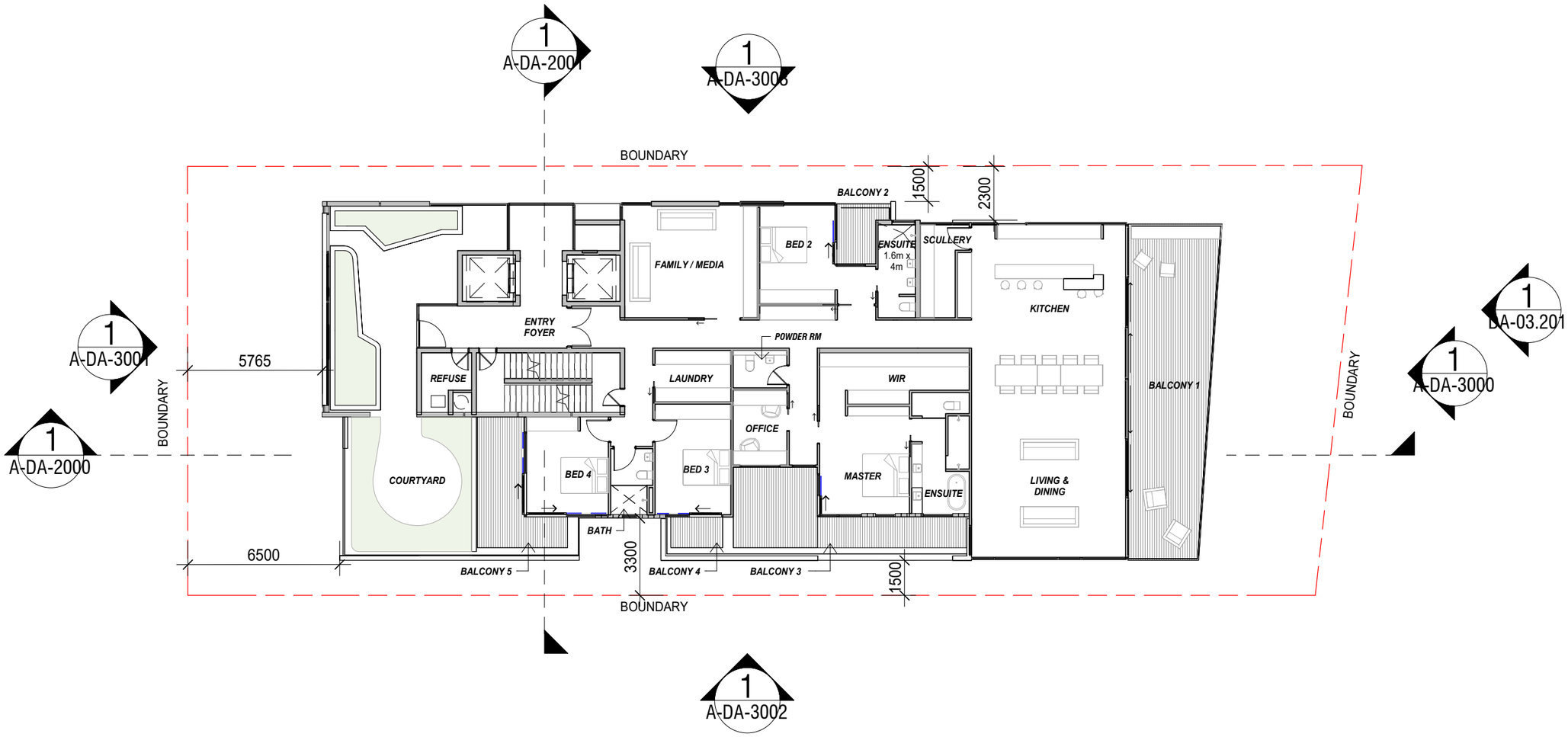

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2	13.12.23	FOR INFORMATION	JR	PW

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28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:34:21 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
LEVEL 11 PLAN

Drawing Number
A-DA-1004

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2

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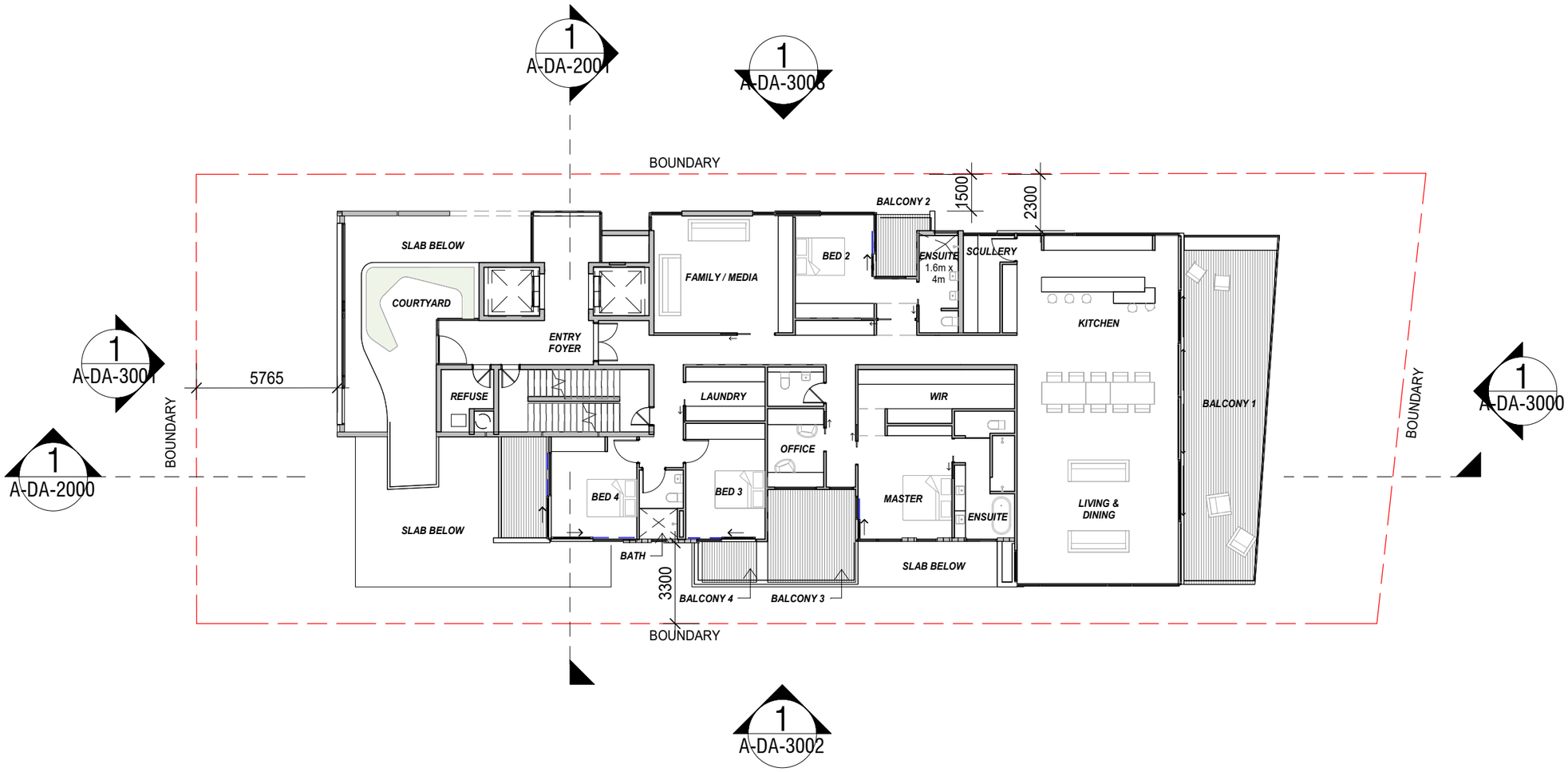

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220682

Status

Date Plotted 12/13/2023 2:34:24 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
LEVEL 12 PLAN

Drawing Number
A-DA-1005

Revision
2

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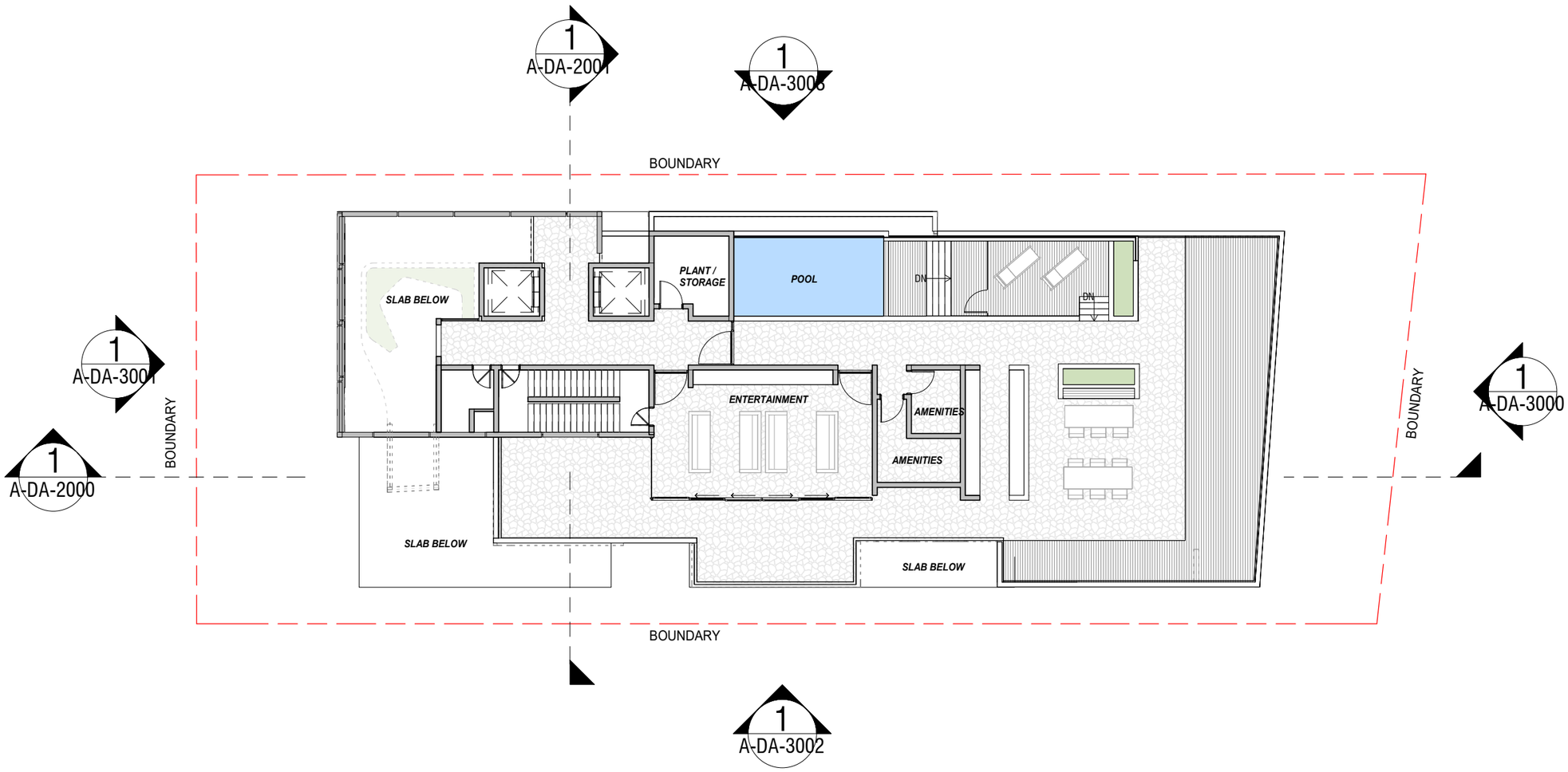

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2	13.12.23	FOR INFORMATION	JR	PW

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Project
28 VICTORIA PARADE, ROCKHAMPTON

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220682

Status

Date Plotted 12/13/2023 2:34:29 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
LEVEL 13 PLAN

Drawing Number
A-DA-1006

Revision
2

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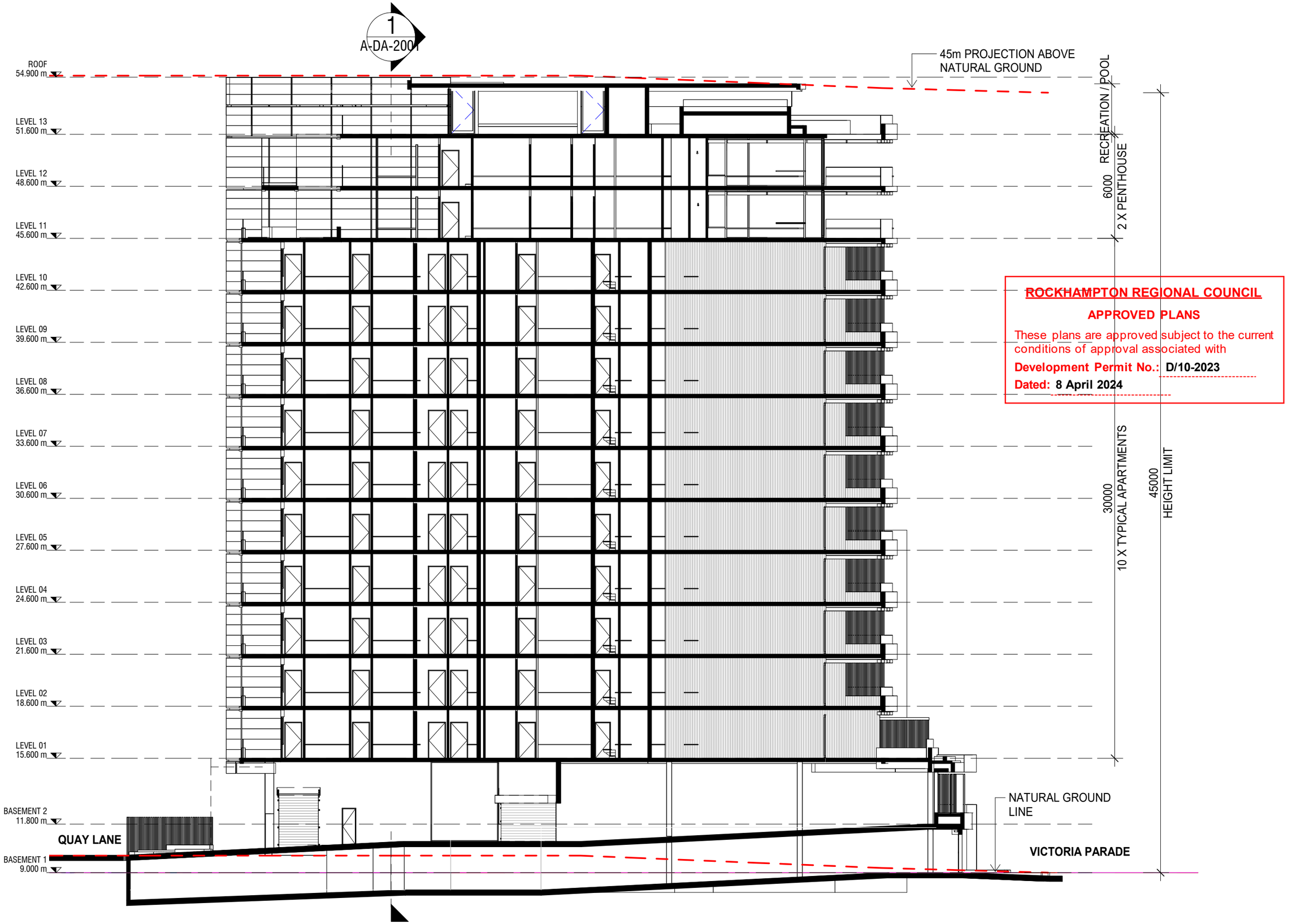

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Project Number
220682

Status

Date Plotted 12/13/2023 2:34:41 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
SECTIONS

Drawing Number
A-DA-2000

Revision
2

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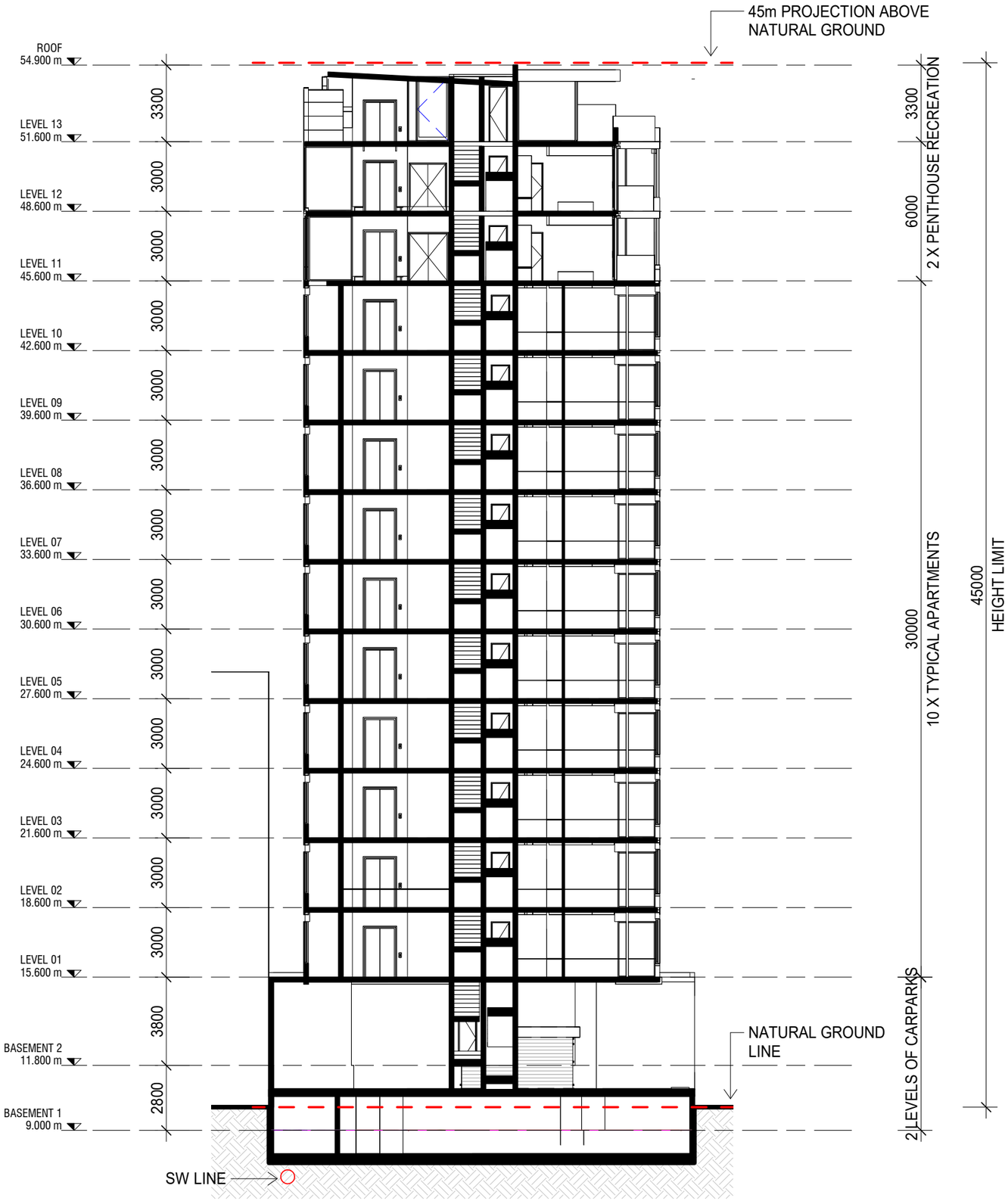

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Project Number
220682

Status

Date Plotted 12/13/2023 2:34:45 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
SECTIONS

Drawing Number
A-DA-2001

Revision
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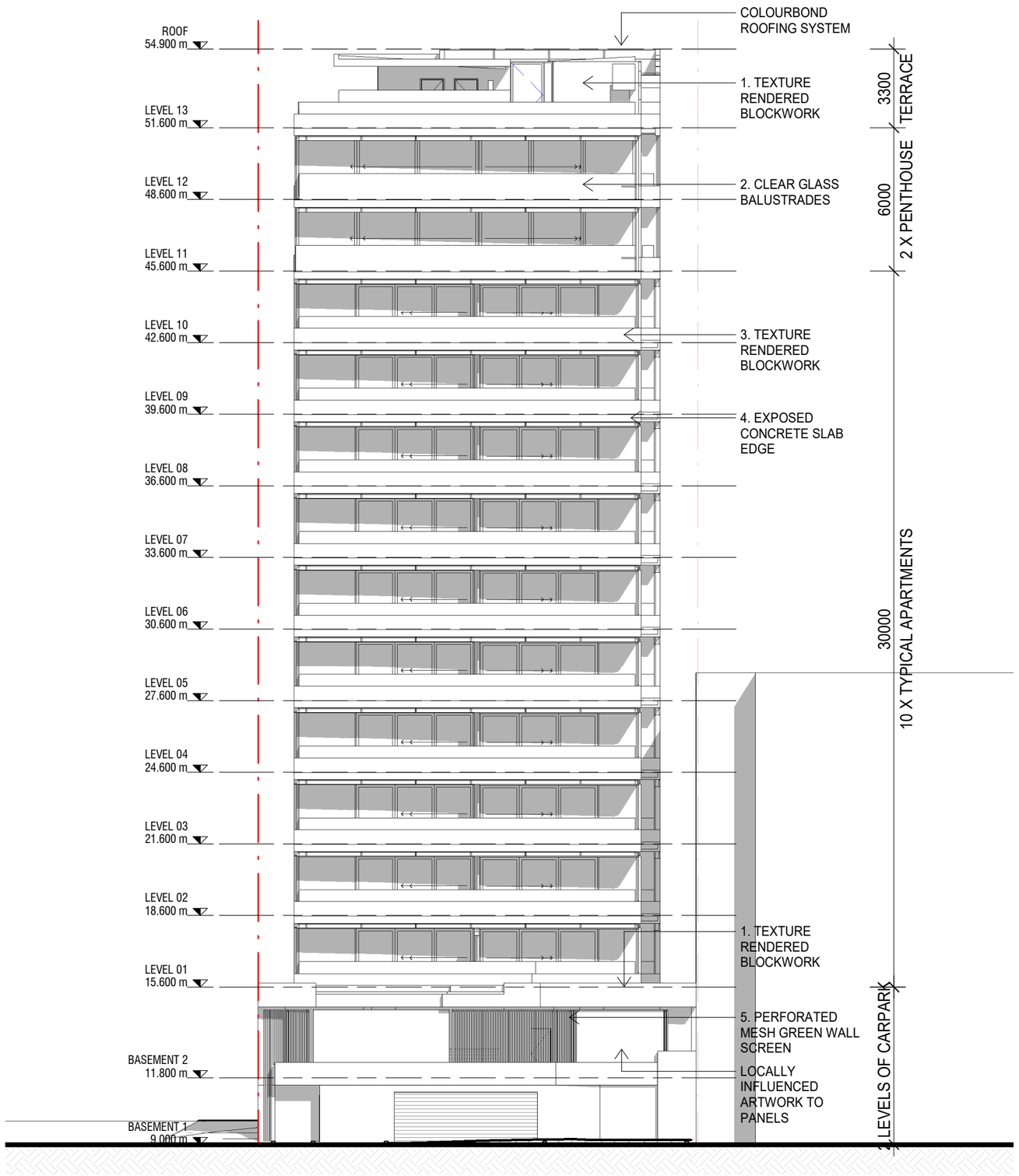

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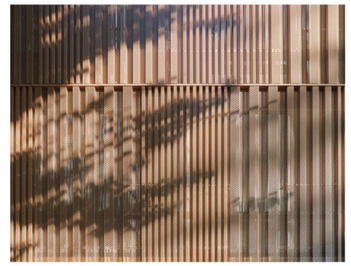
2. CLEAR GLASS BALUSTRADES

3. TEXTURE RENDER B

4. EXPOSED CONCRETE



5. PERFORATED MESH SCREEN

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28 VICTORIA PARADE, ROCKHAMPTON

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220682

Status

Date Plotted 12/13/2023 2:34:52 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
NORTH EAST ELEVATION

Drawing Number
A-DA-3000

Revision
2

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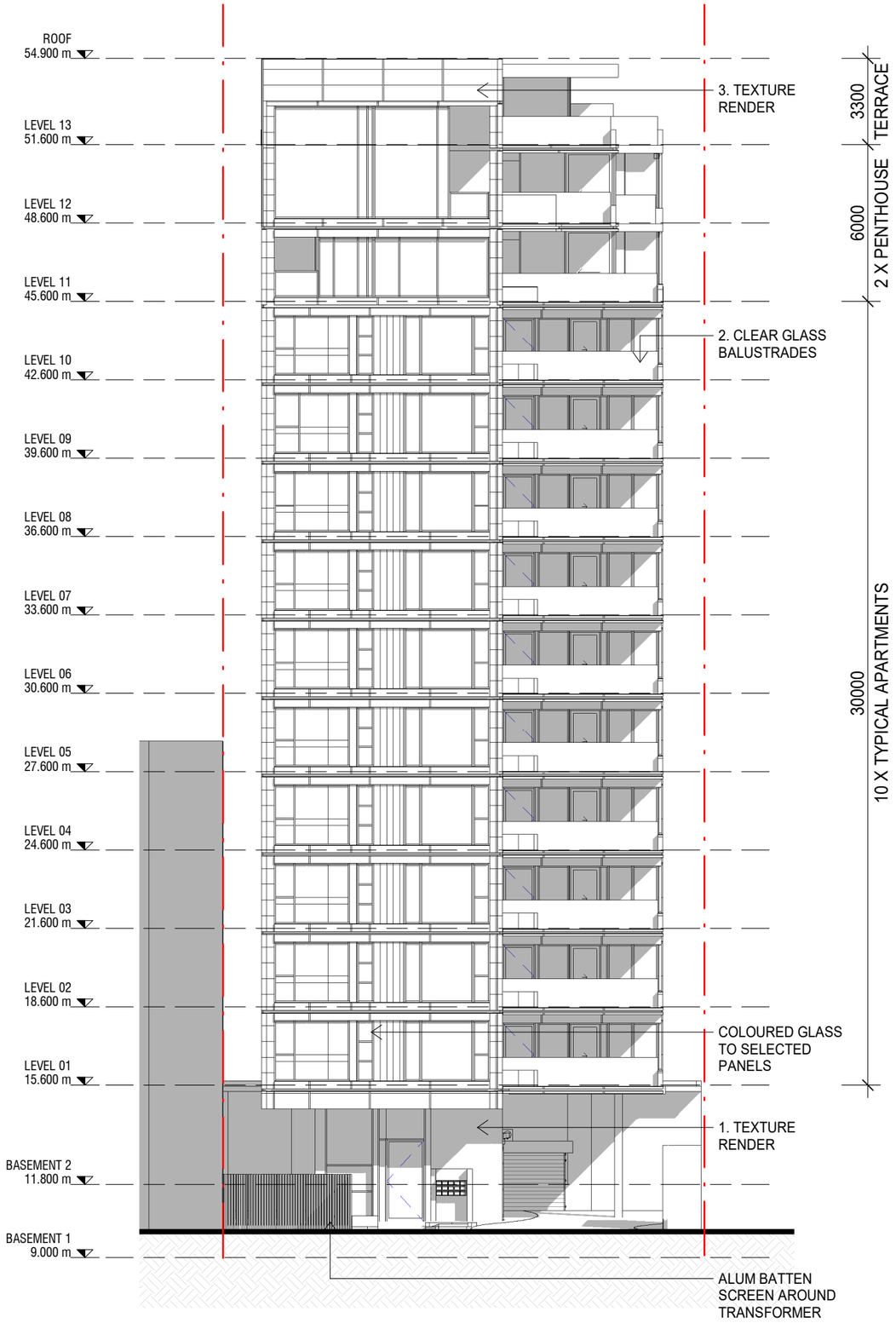

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2. CLEAR GLASS BALUSTRADES

3. TEXTURE RENDER B

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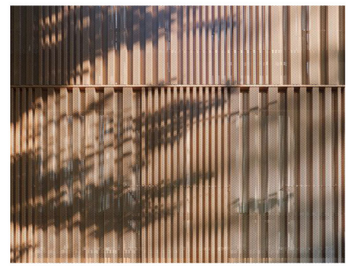

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Scale 1 : 200 @A3

Drawing Title
SOUTH WEST ELEVATION

Drawing Number
A-DA-3001

Revision
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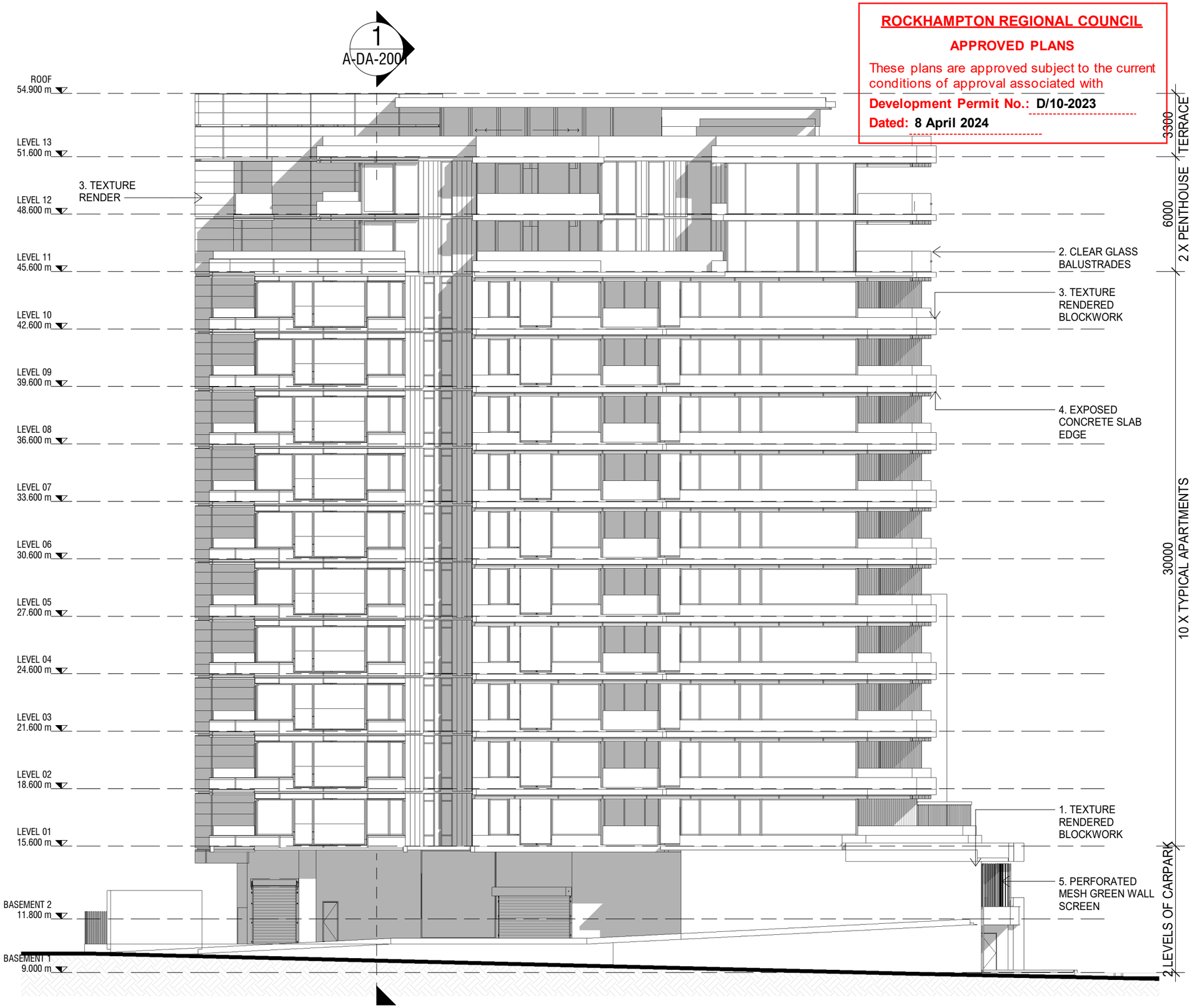

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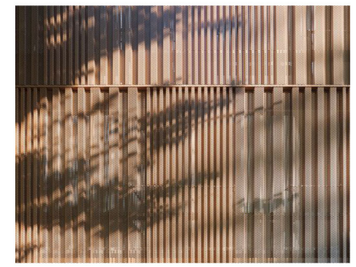
2. CLEAR GLASS BALUSTRADES

3. TEXTURE RENDER B

4. EXPOSED CONCRETE



5. PERFORATED MESH SCREEN

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2	13.12.23	FOR INFORMATION	JR	PW

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28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:35:35 PM

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Scale 1 : 200 @A3

Drawing Title
SOUTH EAST ELEVATION

Drawing Number
A-DA-3002

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2

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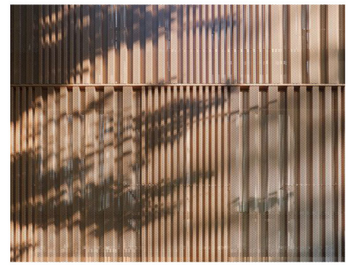
1. TEXTURE RENDER A

2. CLEAR GLASS BALUSTRADES

3. TEXTURE RENDER B

4. EXPOSED CONCRETE



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2	13.12.23	FOR INFORMATION	JR	PW

File

Project
28 VICTORIA PARADE, ROCKHAMPTON

Project Number
220682

Status

Date Plotted 12/13/2023 2:35:57 PM

Date Issued 13.12.23

Scale 1 : 200 @A3

Drawing Title
NORTH WEST ELEVATION

Drawing Number
A-DA-3003

Revision
2

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Project
28 VICTORIA PARADE, ROCKHAMPTON

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220682

Status

Date Plotted 12/13/2023 2:36:10 PM

Date Issued 13.12.23

Scale

Drawing Title
3D PERSPECTIVES

Drawing Number
A-DA-6000

Revision
2

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APPROVED PLANS

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Development Permit No.: D/10-2023

Dated: 8 April 2024

Rev.	Date	Description	Iss.	Appr.
1	18.07.23	DRAFT DA	JR	PW
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2023

DILEIGH

CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

ROCKHAMPTON REGIONAL COUNCIL

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PROPOSED MULTI-STOREY DWELLING
28 VICTORIA PARADE, ROCKHAMPTON

STORMWATER MANAGEMENT REPORT

FOR B KORTE

D23.205

B KORTE

STORMWATER MANAGEMENT PLAN

PROPOSED MULTI-STOREY DWELLING
28 VICTORIA PARADE, ROCKHAMPTON

Document History & Status

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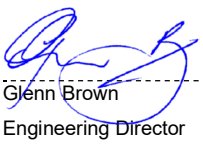

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1. Introduction

This report was prepared for B Korte in support of a proposed development to the subject site at 28 Victoria Parade, Rockhampton. This report should be read in conjunction with the overall application relating to this project. The proponent is seeking approval to develop the lot with a proposed multi-storey dwelling.

The land subject to this application is described as Lot 2 on RP604957 which has an area of 901m^2.

2. Existing Stormwater Conditions

28 Victoria Parade is currently developed with a commercial building. The site frontage falls to Victoria Parade with an average slope of 5%. The rear of the site where the existing building is situated is generally flat.

Based on site survey and aerial imagery, the existing fraction impervious is estimated to be 0.546.

Based on the average flowpath slope, overland flowpath length and assumed fraction impervious of the site, an overall time of concentration (Tc) of 10 minutes has been adopted in accordance with QUDM Figure 4.4 with a C_{10} value of 0.789 in accordance with QUDM Table 4.5.4.

Friends Equation (Eq 4.5) - Shallow overland sheet flow				
L	**Surface**	**n**	**S**	**Tc**
m		Manning's	%	minutes
25	Average Grassed	0.045	5	10

Utilising a Tc of 10 minutes and the relevant rainfall intensities, the following discharges for a range of events were calculated using the C_{10} value of 0.789 where Qy=C*I*A/360 for the existing site.

PRE-DEVELOPMENT CASE

Development Area **0.0901** ha

Event AEP	**C**	**I**	**A**	**Q**
%	coefficient	mm/hr	ha	m3/s
63.2	0.631	96	0.0901	0.0152
50	0.671	107	0.0901	0.0180
20	0.750	142	0.0901	0.0266
10	0.789	166	0.0901	0.0328
5	0.829	191	0.0901	0.0396
2	0.908	225	0.0901	0.0511
1	0.947	252	0.0901	0.0597

Fi	0.546
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	10
C_{10}	0.789

From QUDM Table 4.5.3

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3. Post Developed Site Flows and Management

3.1 Post Developed Flows

The proposed development of the site increases the fraction impervious to a value of 0.963 based on information provided by the applicant. Based on this value, a C_{10} value of 0.893 (From QUDM Table 4.5.3) was adopted.

A revised estimated time of concentration of 7 minutes was applied to post-development calculations, assuming standard inlet times in accordance with QUDM XXXX with an additional 2 minutes of pipe travel time given the scale of the development. A revised C_{10} value of 0.893 was adopted in accordance with QUDM Table 4.5.4.

Based on the revised fraction impervious and time of concentration, the following discharges from site were calculated:

POST-DEVELOPMENT

Development Area **0.0901** ha

Event AEP	**C**	**I**	**A**	**Q**
%	coefficient	mm/hr	ha	m^3/s
63.2	0.714	107	0.0901	0.0191
50	0.759	119	0.0901	0.0226
20	0.848	158	0.0901	0.0335
10	0.893	185	0.0901	0.0413
5	0.938	212	0.0901	0.0498
2	1.000	250	0.0901	0.0626
1	1.000	279	0.0901	0.0698

Fi	0.963
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	7
C_{10}	0.893

From QUDM Table 4.5.3

When compared with the pre-developed total site flows, we note an increase in flow for all recurrence intervals. Refer table below:

COMPARISON OF UNTREATED FLOWS			
Event AEP	**Pre-Development (Total)**	**Post-Development**	**Change**
%	**m^3/s**	**m^3/s**	**%**
63.2	0.0152	0.0191	26%
50	0.0180	0.0226	26%
20	0.0266	0.0335	26%
10	0.0328	0.0413	26%
5	0.0396	0.0498	26%
2	0.0511	0.0626	22%
1	0.0597	0.0698	17%

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3.2 Discharge Flow Management

3.2.1 Quantity Mitigation

It is proposed to mitigate the minor in site runoff by providing on-site detention capturing roof water flows.

It is proposed to install a 3,300L below-ground detention tank at Basement 1 level. A 150mm diameter outlet pipe with a 105mm orifice plate is to be provided. The outlet pipe will be connected to the existing road gully pit at the site frontage in Victoria Parade. Due to the restrictive level of the existing gully pit, the underground detention tank is to have an internal depth of no more than 1.0m, assuming a 150mm thick concrete slab for the carpark. An access chamber is to be provided at finished surface level for maintenance purposes.

All captured roofwater is to be routed via downpipes through the services chute of the building, assumed to be near the elevator shaft. Downpipes will connect to a 225mm diameter pipe mounted to the north interior wall of Basement 1. The pipe will break into the ground in proximity to the detention tank.

The rear of the site will be captured by a strip drain in the Quay Lane crossover, discharging to the existing 300mm diameter pipe in Quay Lane. The existing pipe will be broken into and a new 600mm diameter manhole installed. Although detailed levels are not available at the time of this report, information provided for the upstream and downstream pits from council's GIS team indicate there is sufficient depth to adequately outlet flows captured in the strip drain.

Overall site runoff is reduced by 1.77% (0.3 L/s reduction on pre-development flows) for the minor event (20% AEP) and 5.74% (3.4 L/s reduction on pre-development flows) for the major event (1% AEP).

Refer drawings in Appendix A for further detail of the on-site stormwater arrangement and detention area hydrographs.

3.2.2 Emergency Basement 1 Pump-Out

It is proposed to provide a suction pump in Basement 1 to ensure emergency pump-out is possible in the event of flood water ingress. Flows will be picked up by a nominal grated inlet at the lowest point of Basement 1. The pump well is to be located adjacent the underground detention tank and will outlet to the detention tank, allowing pumped water to slowly drain to infrastructure in Victoria Parade.

Design of the suction pump is to be undertaken at detailed design stage.

3.3 Stormwater Quality Management

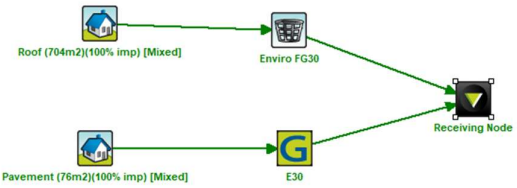
Due to the size of the development (>2500m^2), State Planning Policy (SPP) Healthy Water would usually not have been triggered.

However, due to the site being located within the "Matters of state environmental significance" (MSES) overlay for Fitzroy River, it is necessary to provide stormwater quality improvement device(s) (SQIDs) to treat the site in line with SPP reduction targets.

It is proposed to provide a EnviroAustralis FG30 at the downstream end of the proposed 225mm pipe on Basement 1. The FG30 will be mounted to the soffit of Basement 2 above.

An EnviroAustralis E30 device is to be installed in the garden bed adjacent the Quay Lane crossover strip drain, treating captured runoff prior to it discharging from site. The E30 will be appropriately backfilled and incorporated into the formation of the storage area in a manner that is least disruptive to the use of the remaining space at detailed design. The proposed position of the E30 has been nominated to avoid major reduction of the available storage area.

The below MUSIC model results indicate that these devices are sufficient to adequately treat the site.



Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.589	0.589	0
Total Suspended Solids (kg/yr)	37	3.57	90.3
Total Phosphorus (kg/yr)	0.129	0.0128	90.1
Total Nitrogen (kg/yr)	1.92	0.445	76.9
Gross Pollutants (kg/yr)	13.7	0.00263	100

Access to the FG30 is to be provided via a 600mm diameter access chamber at Basement 2 level directly above the device. Access to the E30 will also be at Basement 2 level. Refer drawings in Appendix A for further detail of the device configuration.

Outflows from the FG30 will be routed to the underground detention tank.

4. Conclusion

The proposed development will increase the impervious area of the site. It is proposed to mitigate the increase in runoff by an underground detention tank to capture all roof water flows. Quality improvement is to be achieved with EnviroAustralis FG30 and E30 devices.

Ashleigh Lucas
For and On Behalf of
Dileigh Consulting Engineers Pty Ltd

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Appendix A – Stormwater Management Strategy Drawings

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