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PLANS AND DOCUMENTS
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DEVELOPMENT APPROVAL

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Queensland
Government

ENGINEERING SERVICE REPORT

Proposed Mixed Use Development
1-7 Adler Circuit
Yarrabilba QLD 4207

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1. Introduction

1.1 Background

van der Meer Consulting has been commissioned by B Planned & Surveyed Pty Ltd to prepare an Engineering Service Report (ESR) forming part of the DA package lodgement with Economic Development Queensland for the Mixed Use Development for 1-7 Adler Circuit, Yarrabilba

The purpose of this ESR is to provide advice on the development regarding management with respect to water quantity and quality of the site stormwater runoff, water, sewer and other infrastructure such as gas, electricity and telecommunications. The required stormwater infrastructure will be required to meet conditions outlined in the Development Approval to be issued by Economic Development Queensland; van der Meer will propose a conceptual plan to address infrastructure requirements for the development that meet Economic Development Queensland performance criteria.

The following information and documents were utilised in this investigation:

- Economic Development Queensland Engineering Standards
- Queensland Urban Drainage Manual (QUDM) 2016
- State Planning Policy (2017)
- Australian Rainfall and Run-off 2016
- MUSIC Modelling Guidelines November 2018 (Water by Design)
- Dial Before You Dig
- Architectural plans defining proposed works and existing infrastructure.

1.2 Existing Site

The subject site is located within Yarrabilba and lies within Logan City Council 's Priority Development Area. The site occupies a total area of 3,950m². It is bound by Yarrabilba Drive to the north, Wongawallan Drive to the east, Adler Circuit to the south and a vacant lot to the west.

Refer to Figure 1-1 below of an aerial view of the site and its surroundings.

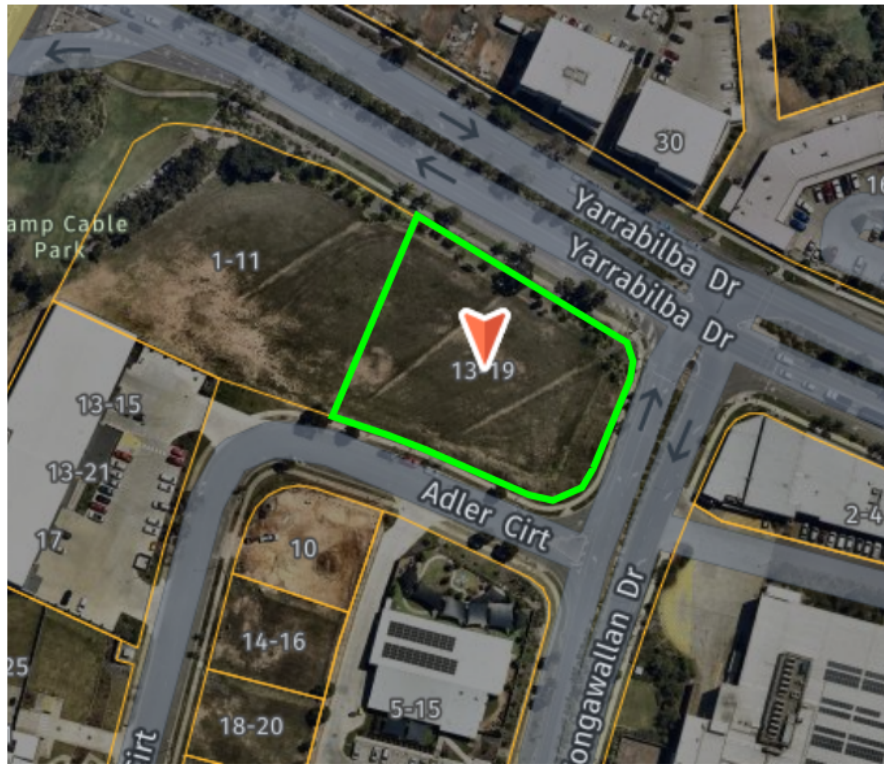


Figure 1-1: Site Location

1.3 Site Topography

The subject site has a high point located in the south-western corner. The majority of the site falls from this high point down towards northeast from 55.11m AHD to 52.24m AHD at a grade of 3.3%.

Refer to the survey plan information in Appendix A for further details.

1.4 Proposed Works

The proposed development consists of a four-storey mixed use building that comprises a basement parking facility, an open car park on ground level, and commercial areas for retail stores. The site is accessible through Adler Street.

Refer to Figure 1-2 below:

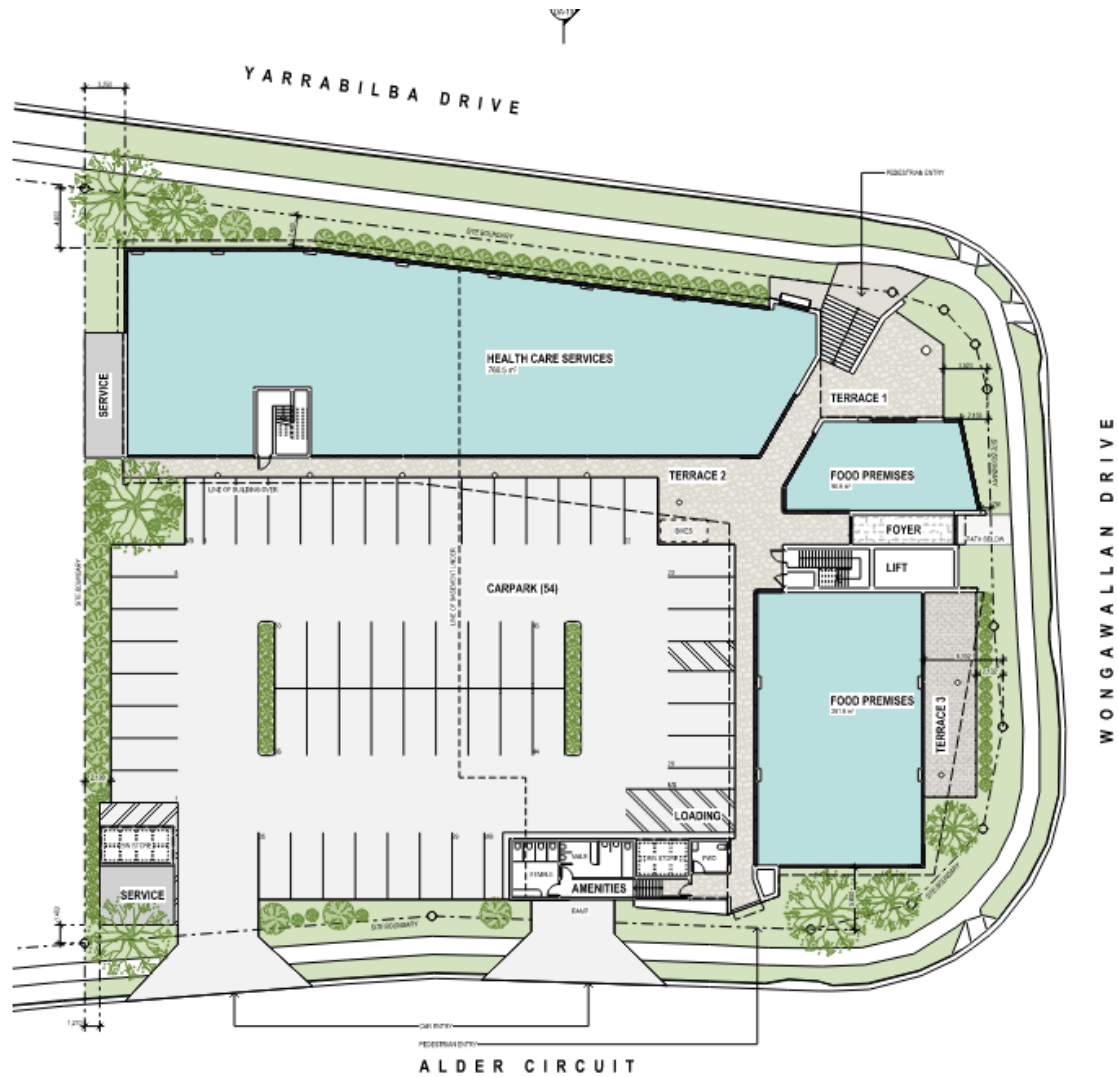


Figure 1-2: Proposed work

Refer to Appendix B for the proposed lot layout plan.

2. Existing Services

The following section will outline the existing services within the vicinity of the site.

Refer to Appendix C for all concept engineering services plans showing the proposed connections for water, sewer, and stormwater.

2.1 Stormwater

There are existing stormwater mains runs within the verge of Yarrabilba Drive and Wongawallan Drive. Stormwater runoff is currently collected by the existing swales onsite and conveyed to the headwall in the northeast corner before discharging to Yarrabilba Drive.

2.1.1 Proposed Stormwater

Site runoff for the proposed development will be discharged to the existing stormwater main within Yarrabilba Drive road reserve via a proposed gully pit.

Refer to section 4 for further details regard to stormwater strategies of this site and the nominated lawful point of discharge.

2.2 Sewer

There is an existing sewer main runs within the eastern verge of Wongawallan Drive. The subject site is current serviced by this main via an existing sewer property connection.

2.2.1 Proposed Sewer

It is proposed to reuse the existing sewer property connection to service the site. Further details will be confirmed during detailed design, along with the confirmation of the proposed connection point through discussion with Logan Water.

2.3 Water

There is an existing water main runs within the northern verge of Adler Circuit. It extends further to join the water main within the eastern verge of Wongawallan Drive.

2.3.1 Proposed Water

It is proposed to service the development via the existing water main within Adler Circuit. Further details will be confirmed during detailed design, along with the confirmation of the proposed connection point through discussion with Logan Water.

2.4 Other Services

Electricity, gas and telecommunication infrastructure is available in the near vicinity of the subject site. The appropriate consultants should be engaged to assess the available capacity in the network to service the development. The location of the existing electricity, communication and gas should be confirmed via potholing prior to construction.

Note that the location of infrastructure external to the site has been determined from DBYD data.

3. Filling and Excavation

Specification and quality control measures are outlined by Economic Development Queensland in their Development guidelines.

Refer to Appendix C which shows a schematic of the earthworks proposed for the site.

Given that the site is above 50m AHD, the proposed development is not considered to be prospective land for the existence of acid sulphate soils (ASS). Therefore, no further investigations are deemed to be required.

3.1 Erosion and Sedimentation Control Measures

All works must be carried out in accordance with an Erosion and Sediment Control Plan (ESCP) for each stage of the project. The following sediment and erosion control measures will be deemed an acceptable solution by minimising ground disturbance and ensure water quality in accordance with 'Soil and Sediment Control – Engineering Guidelines for Queensland Construction Sites 1996'. This will be done by:

3.1.1 Pre-development Phase

The following measures are used to support ESC construction phase

- Setout transport routes to ensure minimise and isolate site disturbance
- Construct entry/exit areas that comprise a designed gravel pad or hardwood logs in accordance with the IECA (2001)
- Install sediment control fences around proposed bulk earthworks where most effective and efficient
- Install dust control fences adjacent to proposed bulk earthworks

3.1.2 Bulk Earthworks Phase

- Diversion drains to isolate clean upstream overland flow around the development
- Stockpiles and construction materials are not permitted to be stored within the road reserve
- Earthworks, pollutants, and water measures as *3.1.1 Pre-development Phase*.

3.1.3 Construction Phase

- Sediment fences to be erected at the base of all batters and stockpiles to prevent sediment transportation off site
- Grass filter strips to be placed along all road verges
- Re-vegetation of all disturbed areas within two weeks of completion using retained topsoil
- All sediment control structures to be maintained in an effective manner and inspected after each storm event. No structure is to accumulate sediment above 40% of its capacity
- Dust producing areas to be swept to remove silt/dust and wetting of roads is only permitted where sweeping has failed
- At least one bin or litter trap is to be provided for waste material.

3.1.4 Post-development maintenance period

Silt fences and regular inspections will be required until revegetation is established on formerly exposed areas. Once established, all sediment and erosion measures are to be removed.

3.1.5 Performance objectives

Construction phase erosion and sediment control measures must achieve the following water quality objectives (WQO's) for a site runoff up to the design event as per Economic Development Queensland Engineering Standards and the requirements of IECA. Table 3-1 summarises the pollutants and the criteria required to be achieved.

Table 3-1 – Pollutant criteria

Pollutant	Criteria
Total Suspended Solids	Maximum suspended solids concentration in stormwater does not exceed 50mg/l
pH	6.5 – 8.5
Hydrocarbons	No releases of oils or visible sheen to released waters
Litter	No litter or gross pollutants

3.1.6 Monitoring and Maintenance

The following monitoring and maintenance procedures will be undertaken by the land developer during all phases of the project:

- Earthworks and site cleaning are undertaken in accordance with the Erosion and Sediment Control plans
- Self-auditing program must be developed
- Any worn, damaged, or defective materials are to be immediately rectified to prevent uncontrolled discharge from the site
- Monitoring frequencies to be undertaken as per *3.1.8 Monitoring Frequency*

Self-audits, original test results and weekly sheet shall be kept on-site and available for Economic Development Queensland officers. Non-complying test results (*Table 3-1 – Pollutant criteria*) must be reported to Economic Development Queensland immediately.

3.1.7 Self-auditing requirements

The self-auditing program will be performed at least once a week, immediately before site closure and following rainfall events that cause runoff. These self-audits must be undertaken systematically and record:

- Installation/removal of any erosion and sediment control measures
- Condition of each device employed
- Circumstances contributing to damage of any measure
- Storage capacity available in pollution control structures (e.g., portable toilets, pollutant traps etc)
- Time, date, volume, and type of additional flocculants
- Maintenance or repair requirements for each measure

3.1.8 Monitoring frequency

Stormwater monitoring shall take place at the following intervals when surface water leaves the site:

Table 3-2 – Monitoring Frequency

Parameter	Frequency
TSS, NFR	Monthly or during discharge event (>25mm in any 24-hour period)
pH	In acid sulphate soils risk area, daily or during controlled discharge event
Total P, Total N	3 monthly

3.2 Earthworks

There is expected to be moderate filling earthworks performed to obtain flat building pads, basement and achieve stormwater drainage. As a result of this work, the following measures will be used:

- Topsoil removed to 100mm depth during earthworks and must be stockpiled and stockpiled separately clear of contaminants
- Unsuitable materials unsuitable as per Section 4.2 of AS3798-2007 must be removed and fill with appropriate fill
- Compaction will be achieved in accordance with AS 1289.5.1.1, or not less than 98 percent

4. Stormwater Management

The following guidelines will be followed as part of this stormwater strategy for the water quality management:

Water Quality

Guidelines: Economic Development Queensland Engineering Standards
State Planning Policy 2017
MUSIC Modelling Guidelines November 2018 (Water by Design)

Water Quantity

Guidelines: Queensland Urban Drainage Manual 2016
Economic Development Queensland Engineering Standards
Australian & Rainfall Runoff 2019 methods

The main objective for stormwater quality is to minimise the impacts on downstream properties and waterways.

4.1 Lawful Point of Discharge (LoPD)

The nominated lawful point of discharge for the proposed development is the existing stormwater infrastructure within Yarrabilba Drive road reserve. A new gully pit is proposed to capture the runoff.

4.2 Quantity Calculations

The following calculations are based on using the Rational Method calculation to compare pre and post-development flows based on the catchment plans provided in *Appendix C*. The IFD data has been obtained from The Bureau of Metrology for the purposes of the following calculations.

4.2.1 Existing Case

Based on the survey information, the existing site consists of one catchment:

- EX1 (Ground) – 3,950m² (0% impervious)

The total fraction impervious for the existing catchment is 0%. Note that the existing catchment case includes the development site and does not include any external catchments.

The existing flow rates have been calculated and represent existing stormwater flows from the site. A time of concentration of 10 minutes from Friends Equation have been undertaken in accordance with QUDM Chapter 4 and are provided as reference in the table below.

The flow results are outlined in *Table 4-1* below:

Table 4-1 – Pre-development flows – Rational Method

Storm Event	AEP					
	39%	20%	10%	5%	2%	1%
Pre-developed Flows (L/s) EX1	58.5	89.4	110.9	133.4	170.1	196.2

4.2.2 Proposed Case

The proposed development consists of catchments. The below outlines the assumptions that were made for the purposes of the calculations:

- C1 (Roof) – assume 1,763 m² (100% impervious)
- C2 (Carpark & Paved surface) – 1,740 m² (100% impervious)
- C3 (Landscape) – 447 m² (10% impervious)

The total fraction impervious for the developed catchment is 90%. A time of concentration of 6 minutes from Friends Equation have been undertaken in accordance with QUDM Chapter 4 and are provided as reference in the table below.

Proposed flow rates have been calculated and the results are outlined in *Table 4-2* below:

Table 4-2 – Post-development flows – Rational Method

Storm Event	AEP					
	39%	20%	10%	5%	2%	1%
Pre-developed Flows (L/s) PR1	38.8	59.5	74.0	89.2	112.9	125.3
Pre-developed Flows (L/s) PR2	38.3	58.7	73.0	88.0	111.5	123.7
Pre-developed Flows (L/s) PR3	5.6	8.6	10.7	12.8	16.3	18.8
Total Pre-developed Flows (L/s)	82.8	126.7	157.6	190.1	240.7	267.9

4.2.3 External Catchment

There is an external catchment to the east of the site. It is proposed to capture the external catchment runoff via a grass lined swale along western boundary and convey the flow to Yarrabilba Drive.

4.3 Stormwater Detention Requirements

As part of Economic Development Queensland's stormwater requirements, the stormwater strategy is to achieve a non-worsening outcome to adjacent, upstream, and downstream properties. Given the proposed development increases impervious area onsite, stormwater detention is required to limit flows to pre-development flow rates.

By controlling the runoff of post-development stormwater, it is proposed to restrict peak flow to mimic pre-development conditions for all storm events up to and including the 1% AEP event.

4.3.1 Stormwater Detention Modelling

An on-site detention solution has been proposed to limit discharges to pre-developed conditions.

DRAINS runoff-routing model was used to estimate the runoff from the existing and developed site and any on-site requirements. Separate models were developed for existing and developed conditions to reflect the changes in catchment associated with the development. The Time of Concentration values calculated in the Rational Method calculations were adopted. The 39%, 10%, 5%, 2% and 1% AEP design storm events were analysed for all standard durations ranging from 5 minutes to 120 minutes.

The critical duration for the combined peak site discharge was determined to be the 15-minute storm for the pre-development and post-development scenarios respectively. The combined peak discharge rates for the site calculated by the DRAINS model are shown below for both scenarios.

4.3.2 Catchment Parameters

Existing Catchment Area:

- EX – 3,950 m² (0% Impervious)

Proposed Catchment Area:

- C1 and C2 – 3,503m² (100% Impervious) – Discharge to detention tank
- C3 - 447 m² (10% Impervious) – Bypass detention tank

4.3.3 Model Configuration

The model configurations under existing and developed conditions are shown below in Figures 4-1 to Figure 4-3.

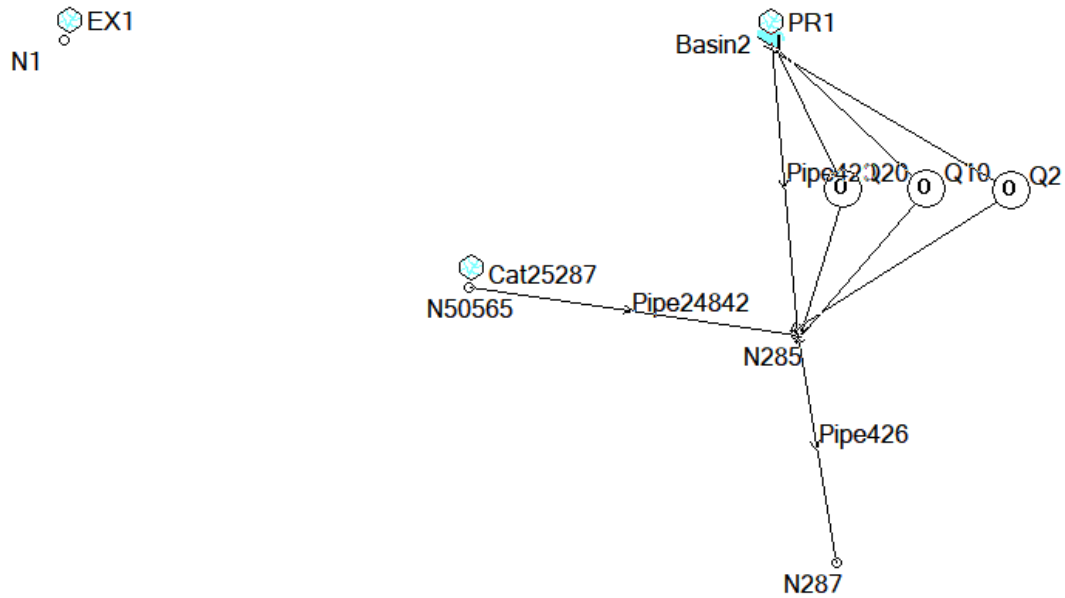


Figure 4-1: DRAINS model setup

Sub-Catchment Data

Sub-catchment name: EX1 Sub-catchment area (ha): 0.395

Hydrological Model

Use

☒ Default model ☐ You specify

☒ abbreviated data ☐ more detailed data

	Paved	Supplementary	Grassed
Percentage of area	0	0	100
Time of concentration (mins)	5	2	10

Notes

OK Cancel Customise Storms Help

Figure 4-2: Pre-development catchment parameters

Sub-Catchment Data

Sub-catchment name

PR2

Sub-catchment area (ha)

0.0447

Hydrological Model

☒ Default model
 ☐ You specify

Use

☒ abbreviated data
 ☐ more detailed data

Percentage of area

Paved

10

Supplementary

0

Grassed

90

Time of concentration (mins)

Paved

5

Supplementary

2

Grassed

7

Notes

OK

Cancel

Customise Storms

Help

Sub-Catchment Data

Sub-catchment name

PR1

Sub-catchment area (ha)

0.3503

Hydrological Model

☒ Default model
 ☐ You specify

Use

☒ abbreviated data
 ☐ more detailed data

Percentage of area

Paved

100

Supplementary

0

Grassed

0

Time of concentration (mins)

Paved

6

Supplementary

2

Grassed

0

Notes

OK

Cancel

Customise Storms

Help

Figure 4-3: Post-development catchment parameters

4.3.4 Detention Volumes

The following detention storage parameters were adopted to achieve the target mitigated pre-development flow rates.

Table 4-3 Adopted Detention Tank Parameters

Minimum Detention Area	50m ²
Detention Tank Internal Height	1.3m
Low Flow Outlet (at invert of tank)	210mm
Intermediate Flow Outlet (@0.66m above invert of tank)	110mm
Intermediate Flow Outlet (@0.82m above invert of tank)	160mm
High Flow Outlet (@0.93m above invert of tank)	160mm
Minimum Detention Volume	65m ³

The 15-minutes design storm was determined as the critical storm duration for determining the required volume within the detention tank. A comparison of the pre-development and mitigated flow rates based on the above arrangement are shown in Table 4-4 below. The hydrograph for the critical duration of the 1% AEP storm event is shown in Figure 4-4

Table 4-4: Comparison Between Pre and Post Development Peak Flow Rate

Condition	Design Event					
	39% (2yr ARI)	20% (5yr ARI)	10% (10yr ARI)	5% (20yr ARI)	2% (50yr ARI)	1% (100yr ARI)
Pre Development Flows (m3/s)	71	96	122	145	176	195
Post Development Unmitigated (m3/s)	115	143	170	196	228	253
Post Development Mitigated (m3/s)	71	93	119	145	174	190
Difference	0	3	3	0	2	5

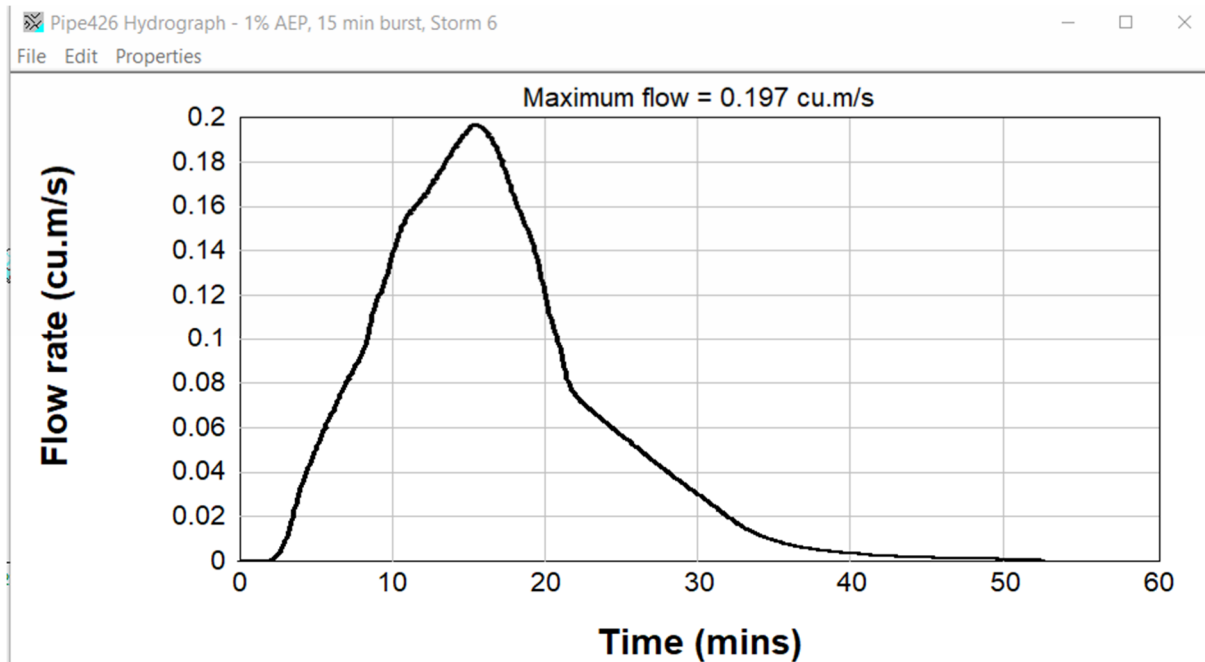


Figure 4-4: Mitigated Post Development Flow Rate for the 1% AEP design storm event

As demonstrated in the results displayed in Table 4-4, the detention arrangement can be seen to effectively mitigate the post development flows in the adopted critical design storm AEP events.

The hydraulic analysis using the DRAINS model has determined that a minimum total of 65m³ of storage is required for runoff attenuation.

The detention tanks are to be fitted with an outlet pipe configuration (with low and high flow outlets) as detailed in Table 4-3 to satisfy the mitigation requirements. Refer to van der Meer, Stormwater Layout Plan in Appendix C for details of the tank's location.

5. Operational Phase Stormwater Quality

The State Planning Scheme (2017) states that for receiving waters, a development application must achieve water quality objectives in the following scenarios:

1. a material changes of use for an urban purpose that involves premises 2000m² or greater in size and;
 - a. will result in six or more dwellings; or
 - b. will result in an impervious area greater than 25 per cent of the net developable area; or
2. reconfiguring a lot for an urban purpose that involves premises 2000m² or greater in size and will result in six or more lots; or
3. operational works for an urban purpose that involves disturbing a land area 2500 m² or greater in size

As the development falls into category 1b from the above, the SPP water quality objectives will be required to be achieved.

5.1 Water Quality Objectives

Economic Development Queensland Engineering Standards states a solution is deemed to comply with *water sensitive urban design* when South East Queensland solutions outlined in the *Urban Stormwater Quality Planning Guidelines* (2009) are met. The target reductions required to protect downstream receiving waters are outlined below:

Pollutant	Reduction Target
Total Suspended Solids (kg/yr)	80%
Total Phosphorus (kg/yr)	60%
Total Nitrogen (kg/yr)	45%
Gross Pollutants (kg/yr)	90%

5.2 Water Quality Strategy

The proposed treatment strategy that can achieve the SPP water quality objectives will incorporate the following:

- Minimum of 3x ATLAN Stormsack to be installed in each field inlet
- Minimum of 4x ATLAN Filter cartridges to be installed in the proposed detention tank

5.2.1 Protection of SQID during Construction and Building Phase

In accordance with the Water by Design Construction & Establishment Bioretention guidelines (2010), measures should be in place for both the construction and building phases.

Construction Phase

During the construction phase of the development, the following can be implemented:

- Erosion and sediment control in accordance with IECA and local government standards; and
- Placing protective measures around and through the bioretention system (e.g. sediment fences around the bioretention basin, sacrificial turf over the bioretention area etc.)

Refer to Appendix C for the full set of drawings including the erosion and sediment control plans.

Building Phase

After the construction phase is completed, the building phase will commence (houses and/or buildings being erected). The following measures can be implemented to protect the SQID during the building phase:

- Sediment fencing around each bioretention basin;
- Sandbags upstream of gully pits to avoid sediment washing into the stormwater network; and
- General best practice erosion and sediment control measures by contractors onsite.

Once turf or hydro mulching has been established on at least 80% of the site, these measures can be removed as this will be sufficient to prevent further erosion.

5.3 MUSIC Modelling

The effectiveness of the proposed water quality measures has been assessed using numerical modelling. Water quality modelling has been conducted using the software program MUSIC (Model for Urban Stormwater Improvement Conceptualisation) version 6.3.

The model's obtains rainfall data from station 40406 (Beenleigh Bowls Club) with 6-minute time step from 01/01/1990 to 31/12/1999 as well as pollutant loads and catchment properties from Water by Design's 'MUSIC Modelling Guidelines' (2010).

The following tables outlines the parameters that were used for the purposes of MUSIC modelling based on the Water by Design MUSIC Modelling Guideline (2019).

Table 5-1 – MUSIC parameters

Parameter	Adopted Parameter Input
Development Type	Commercial Nodes
Rainfall Station ID	40406
Rainfall Station Name	Beenleigh Bowls Club

Rainfall Data Time Step	6 minute steps
Climate Period for MUSIC	01/01/1990 to 31/12/1999

Table 5-2 - MUSIC Source Node Parameters (Commercial)

Rainfall Runoff Parameters	Values
Rainfall Threshold (mm/day)	1.00
Soil Storage Capacity (mm)	18
Initial Storage (% of capacity)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient – a	243
Infiltration Capacity Exponent – b	0.6
Initial Depth (mm)	50
Daily Recharge rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage (%)	0

Table 5-3 - MUSIC Pollutant Concentration Parameters (Commercial Parameters)

Node	Parameter	TSS		TP		TN	
		Base Flow	Storm Flow	Base Flow	Storm Flow	Base Flow	Storm Flow
Road	Mean (Log mg/L)	0.78	2.43	-0.6	-0.3	0.32	0.37
	Std Dev (Log mg/L)	0.39	0.38	0.5	0.34	0.30	0.34
Roof	Mean (Log mg/L)	0	1.3	0	-0.89	0	0.37
	Std Dev (Log mg/L)	0	0.38	0	0.34	0	0.34
Ground	Mean (Log mg/L)	0.78	2.16	-0.60	-0.39	0.32	0.37
	Std Dev (Log mg/L)	0.39	0.38	0.50	0.34	0.30	0.34

5.3.1 Catchments

As the intended land use of the proposed development is rural residential lots with a community title scheme for the access road, only the proposed access road will be treated. The impervious percentage assumed in based on Table 3.6 from the Modelling Guidelines.

The following were the calculated catchments based on the above:

- Roof Areas = 1,763m² (100% impervious)
- Road Areas = 1,740m² (100% impervious)
- Ground Area = 447m² (100% impervious) – Bypass to be treated by Atlan Stormsacks

5.3.2 Results

The following is the results from the MUSIC modelling which has been undertaken to demonstrate that the water quality objectives outlined have been achieved. Refer to Figure 5-1 for further clarity regarding the stormwater strategy arrangement and evidence of the results.

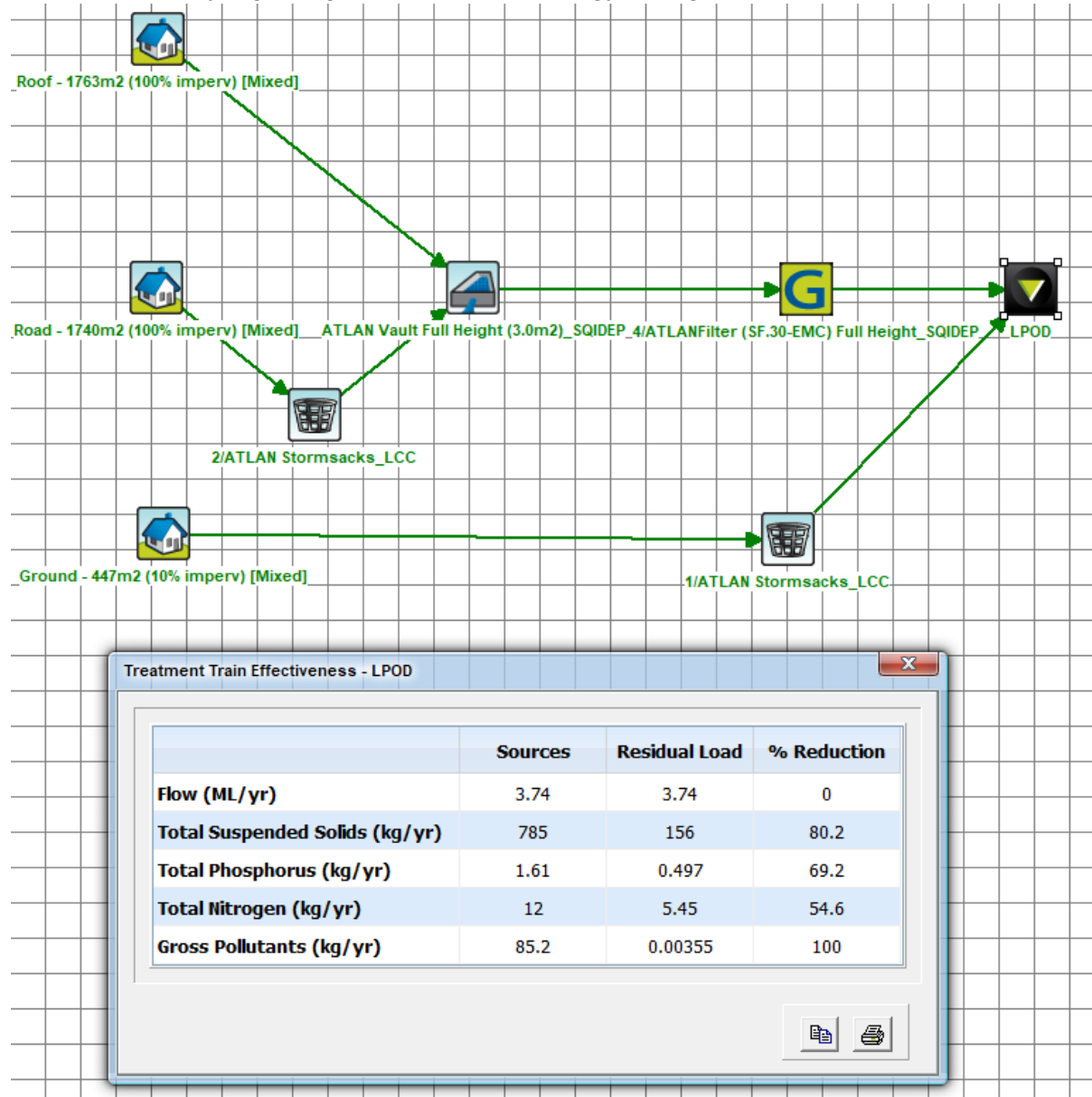


Figure 5-1 – MUSIC model treatment train and results

It is clear from the table above that the proposed water quality measures enable the reduction targets to be achieved for all key stormwater pollutants, thus satisfying the SPP and Economic Development Queensland requirements.

6. Conclusion

This Engineering Services Report has assessed the stormwater management, servicing and earthworks for the proposed development at 1-7 Adler Circuit, Yarrabilba.

It has been determined that the site can be serviced with water and sewer connections. The earthworks that have been proposed is to ensure that the proposed development can achieve the required pad level while also ensuring the proposed building envelopes can achieve gravity drain to the lawful point of discharge.

During construction and building works, the following measures will be put in place to reduce pollutants, erosion and sediment while also protecting the water quality devices:

- Erosion and sediment control in accordance with IECA and local government standards;
- Placing protective measures around and through the bioretention system (sacrificial turf, sediment fencing);
- Sediment fencing around each bioretention basin; and
- Sandbags upstream of gully pits to avoid sediment washing into the stormwater network.

The stormwater management strategy has the following components:

- Nomination of a lawful point of discharge:
 - Proposed new gully pit in Yarrabilba Drive
- A grass lined swale to capture and convey upstream catchment
- Provision of underground piped stormwater infrastructure to collect and convey development flows to the onsite treatment.

The stormwater quality treatment strategy consists of the following components to achieve pollutant reductions in line with SPP (2017) targets and Environmental Protection (Water and Wetland Biodiversity) Policy 2019:

- Minimum of 3x ATLAN Stormsack to be installed in each field inlet
- Minimum of 4x ATLAN Filter cartridges to be installed in the proposed detention tank

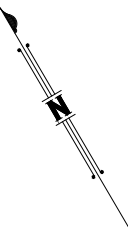
By implementing the above, the required water quality objectives outlined by Economic Development Queensland can be achieved.

Appendix A – Detailed Site Survey



Tree List			
Point Number	Spread Dia (m)	Height (m)	Trunk Dia (m)
2012	8	10	0.24
2013	4	8	0.18
2014	4	10	0.12
2015	2	4	0.1
2016	2	4	0.1
2155	8	10	0.3
2156	3	6	0.15
2157	2	4	0.15
2203	4	6	0.18
2220	4	4	0.1
2222	4	4	0.1
2223	4	4	0.1
2749	4	9	0.23
2750	6	10	0.26
2751	3	6	0.14
2772	4	8	0.2
2773	3	6	0.12
2777	4	8	0.2
2778	2	5	0.1
2779	4	8	0.17
2780	3	7	0.16

LEGEND	
	Water
	Sewer
	Stormwater
	Vegetation
	Electrical (U/G)
	Electrical (A/G)



NOTE:
This plan has been prepared for Harpal Waraich, from a combination of field survey and existing records for the purpose of designing new constructions on the land and should not be used for any other purpose.

The spot heights shown represent the existing features in general only.

The title boundaries shown hereon were marked at the time of the survey and are as shown on IS315075.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of underground services and detailed locations of all services.

This note is an integral part of this plan/field



DETAIL SURVEY
of Lot 10 on SP296372.
1-7 Adler Circuit, Yarrabilba.

Client - Harpal Waraich.

L.A. Logan C. C.
LOCALITY Yarrabilba
CONTOUR INT 0.2m
MERIDIAN SP296372
LEVEL ORIGIN OPM 186642
DATUM RL 51.869m AHD
SURVEYOR JIB
CHECKED BY JAH
SCALE 1:200 @ A1
DATE 16/09/2022
SHEET 1 of 1

DRAWING No. 001719_detail
REV A

Scale 1:200 - Lengths are in Metres.
2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

Appendix B – Proposed Layout Plan

SITE ADDRESS
LOT 10, ADLER CIRCUIT, YARRABILBA QLD 4207

RPD
LOT 10 ON SP296372

SITE AREA
3950 SQM

LOCAL COUNCIL:
LOGAN CITY COUNCIL

DEVELOPMENT DATA		
TOTAL GFA AREAS		
HEALTH CARE SERVICES & FOOD PREMISES (GROUND)	1,156.6 sqm	
BUSINESS (LEVEL 1)	1,501.9 sqm	
RESIDENTIAL (LEVEL 2 & 3)	2,216.2 sqm	

CARPARKING REQUIRED		
RESIDENTIAL		
1.25 CARPARKS / UNIT	1.25 x 24 = 30	30 CARPARKS

HEALTH CARE SERVICES		
1 CARPARK/ 30sqm	767 sqm / 30 = 25.5	26 CARPARKS

FOOD PREMISES		
1 CARPARK/ 20sqm	390 sqm / 20 = 19.5	20 CARPARKS

BUSINESS		
1 CARPARK/ 30sqm	1502 sqm / 30 = 50	50 CARPARKS

TOTAL (RESIDENTIAL)	30 CARPARKS	
TOTAL (FOOD PREMISES & BUSINESS)	96 CARPARKS	

CARPARKING PROVIDED		
RESIDENTIAL		
BASEMENT	30 CARPARKS + 9 MOTORBIKES	

HEALTH CARE SERVICES, FOOD PREMISES & BUSINESS		
BASEMENT	12 CARPARKS	
GROUND	53 CARPARKS	
TOTAL	66 CARPARKS + 3 MOTORBIKE	

TOTAL (BASEMENT)	42 CARPARKS + 9 MOTORBIKES	
TOTAL (GROUND)	53 CARPARKS + 3 MOTORBIKE	

TOTAL	95 CARPARKS + 12 MOTORBIKES	
--------------	------------------------------------	--

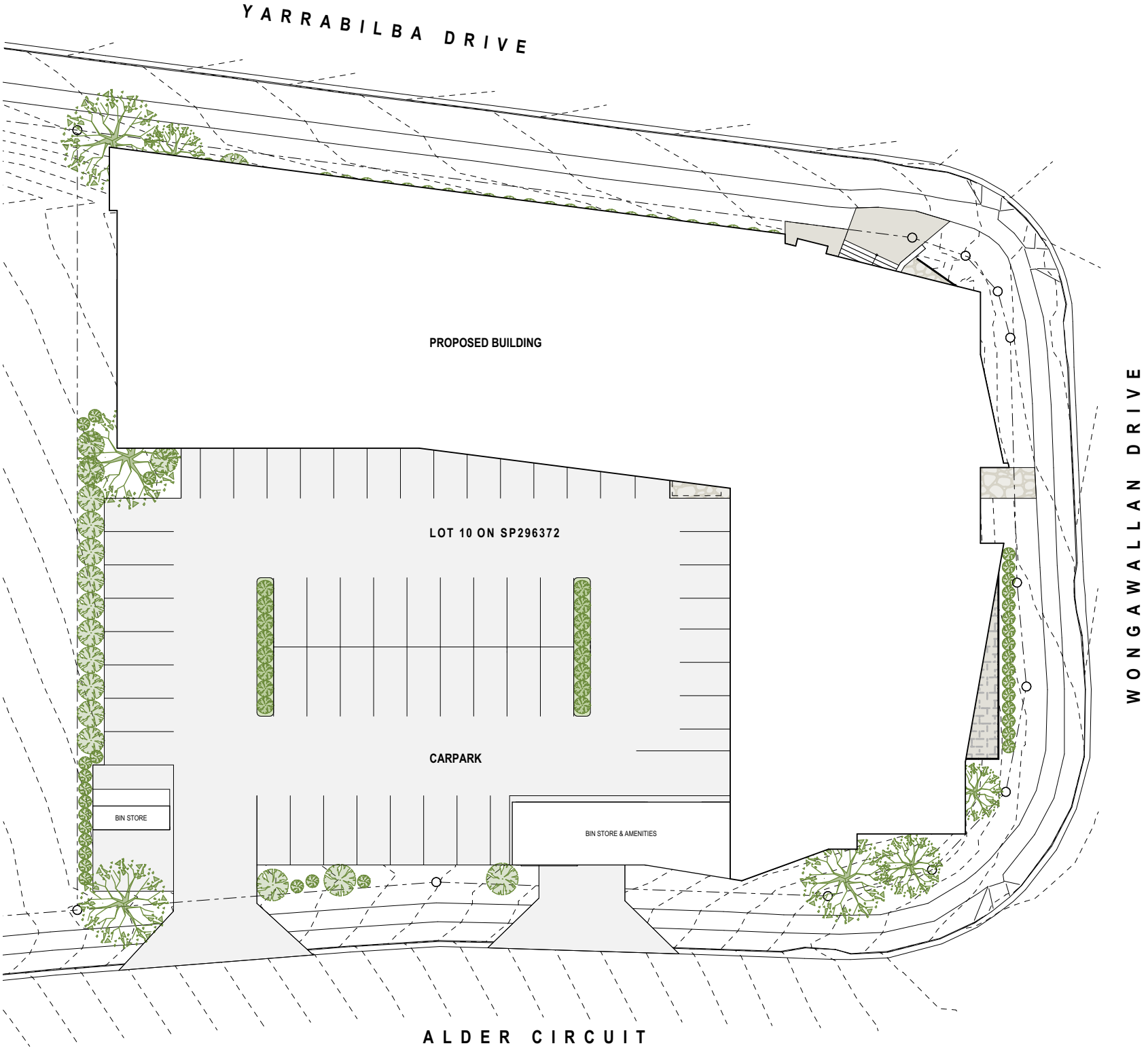
UNITS			
	2 BED	3 BED	TOTAL
LEVEL 2	10	2	12
LEVEL 3	10	2	12
TOTAL	20	4	24

LANDSCAPING PROVIDED		
TOTAL	536.2 sqm	

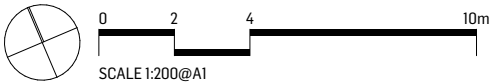
NOTES:
AREAS ARE APPROXIMATE ONLY AND SUBJECT TO SURVEY.

DRAWING SCHEDULE	
DA-00	COVERPAGE
DA-01	SITE PLAN & DEVELOPMENT DATA
DA-02	FLOOR PLAN - BASEMENT
DA-03	FLOOR PLAN - GROUND
DA-04	FLOOR PLAN - LEVEL 1
DA-05	FLOOR PLAN - LEVEL 2
DA-06	FLOOR PLAN - LEVEL 3
DA-07	ROOF PLAN
DA-08	ELEVATIONS
DA-09	ELEVATIONS
DA-10	SECTIONS
DA-11	3D VIEWS

LEGEND	
BAL-1	BATTEN BALUSTRADE
BAL-2	GLASS BALUSTRADE
BAL-3	SOLID BALUSTRADE
CL-1	FIBRE CEMENT SHEETING
CONC	CONCRETE FINISH
EG	EAVES GUTTER
EGL	EXISTING GROUND LINE
MB	MOTOR BIKE CARPARK
MRS	METAL ROOF SHEETING
MWS	METAL WALL SHEETING
SCR-1	BATTEN SCREEN
SCR-2	FIXED BLADES SCREEN
RL	REDUCED LEVEL
RND	RENDERED
WH	WINDOW HOOD



 **SITE PLAN**
SCALE 1:200



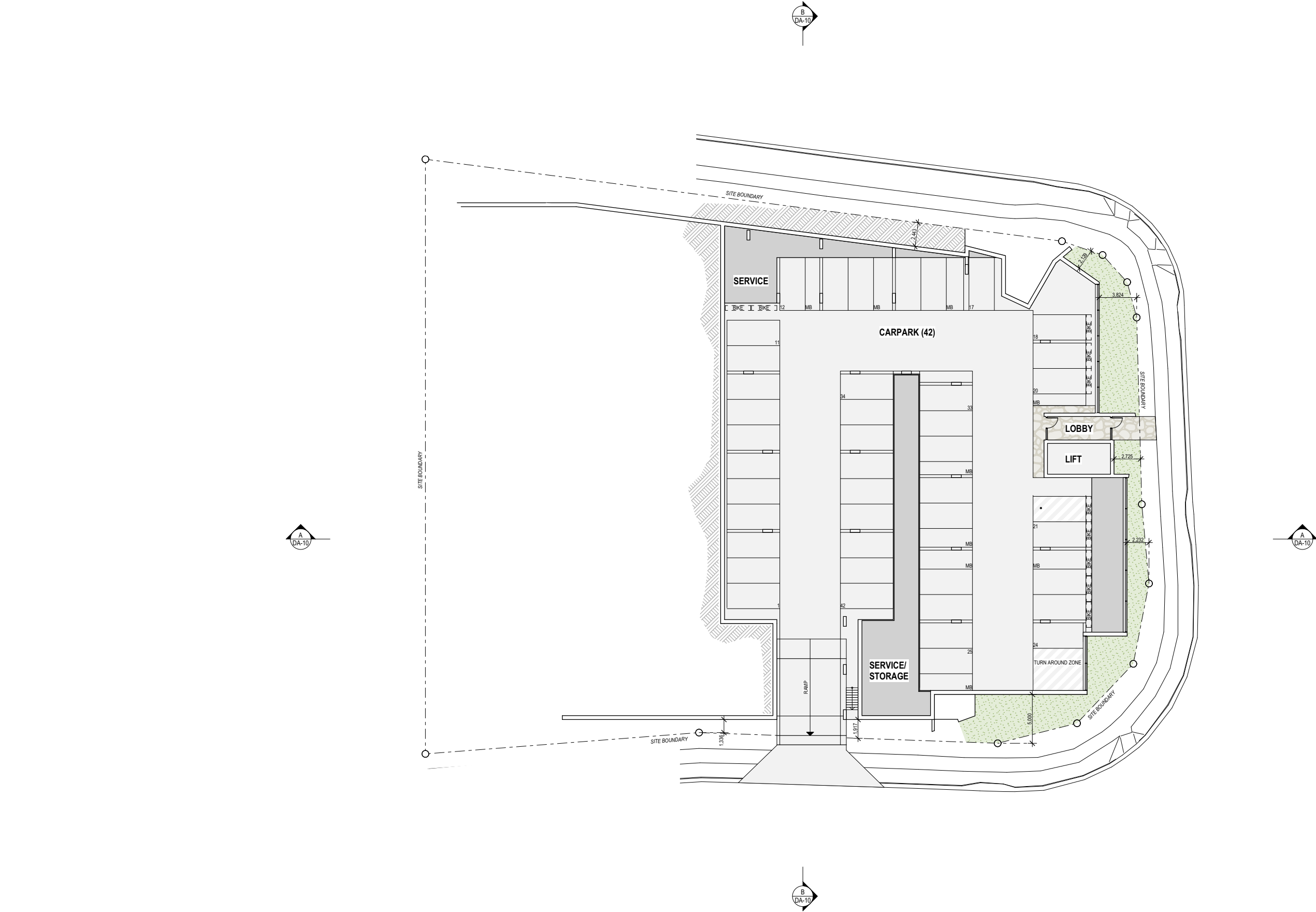
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B	15.08.2023	CL	DEVELOPMENT APPLICATION	JO

YARRABILBA MIXED USE

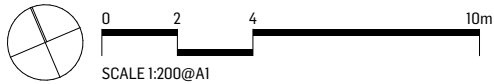
DRAWING SITE PLAN & DEVELOPMENT DATA

PROJECT NO.	DRAWING NO.	ISSUE
2789-427	DA-01	B





FLOOR PLAN - BASEMENT
SCALE 1:200



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A	28.07.2023	CL	DEVELOPMENT APPLICATION	JO
B	03.08.2023	CL	AMENDMENT	JO

YARRABILBA MIXED USE

DRAWING
FLOOR PLAN - BASEMENT
PROJECT NO. **2789-427** DRAWING NO. **DA-02** ISSUE **B**

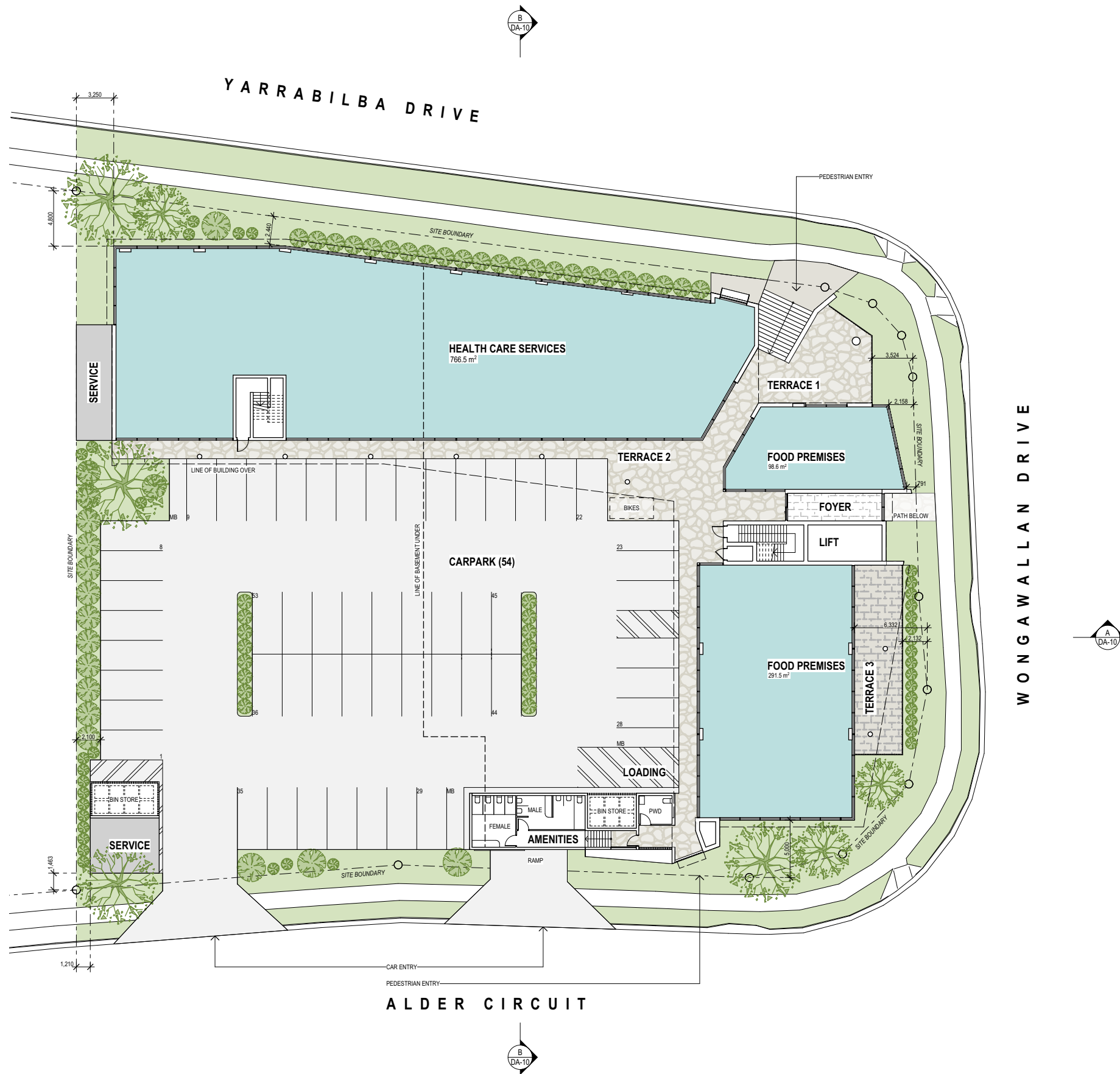
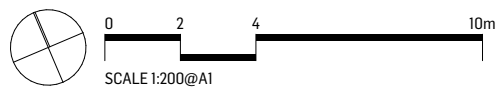


FLOOR PLAN - GROUND
SCALE 1:200

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C	15.08.2023	CL	AMENDMENT	JO

YARRABILBA MIXED USE

DRAWING

FLOOR PLAN - GROUND

PROJECT NO.

2789-427

DRAWING NO.

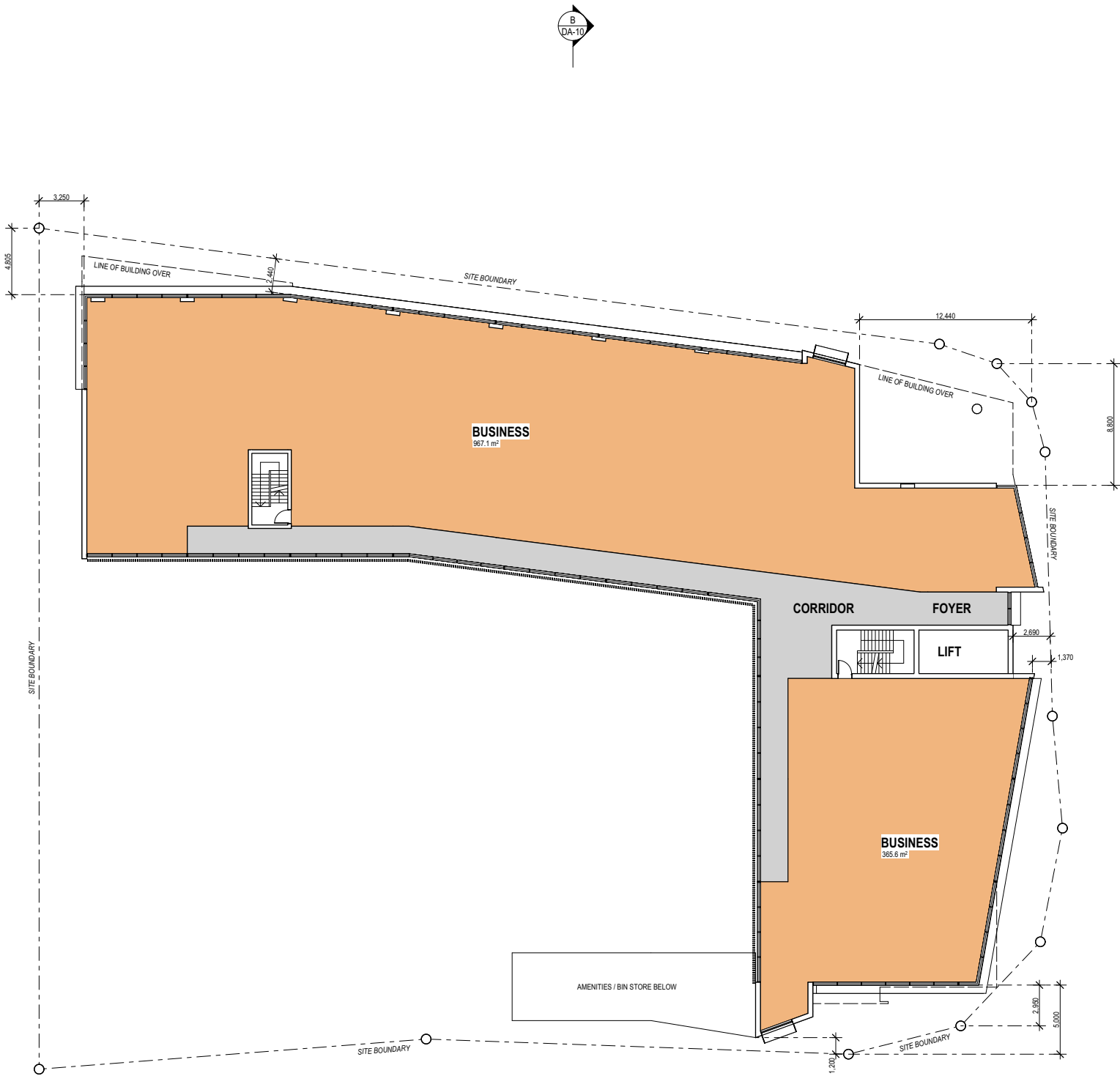
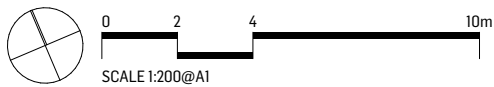
DA-03

ISSUE

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FLOOR PLAN - LEVEL 1
SCALE 1:200



ISSUE	DATE	BY	DESCRIPTION	CHKD
A	28.07.2023	CL	DEVELOPMENT APPLICATION	JO
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DRAWING
FLOOR PLAN - LEVEL 1

PROJECT NO. **2789-427** DRAWING NO. **DA-04** ISSUE **B**



FLOOR PLAN - LEVEL 2
SCALE 1:200



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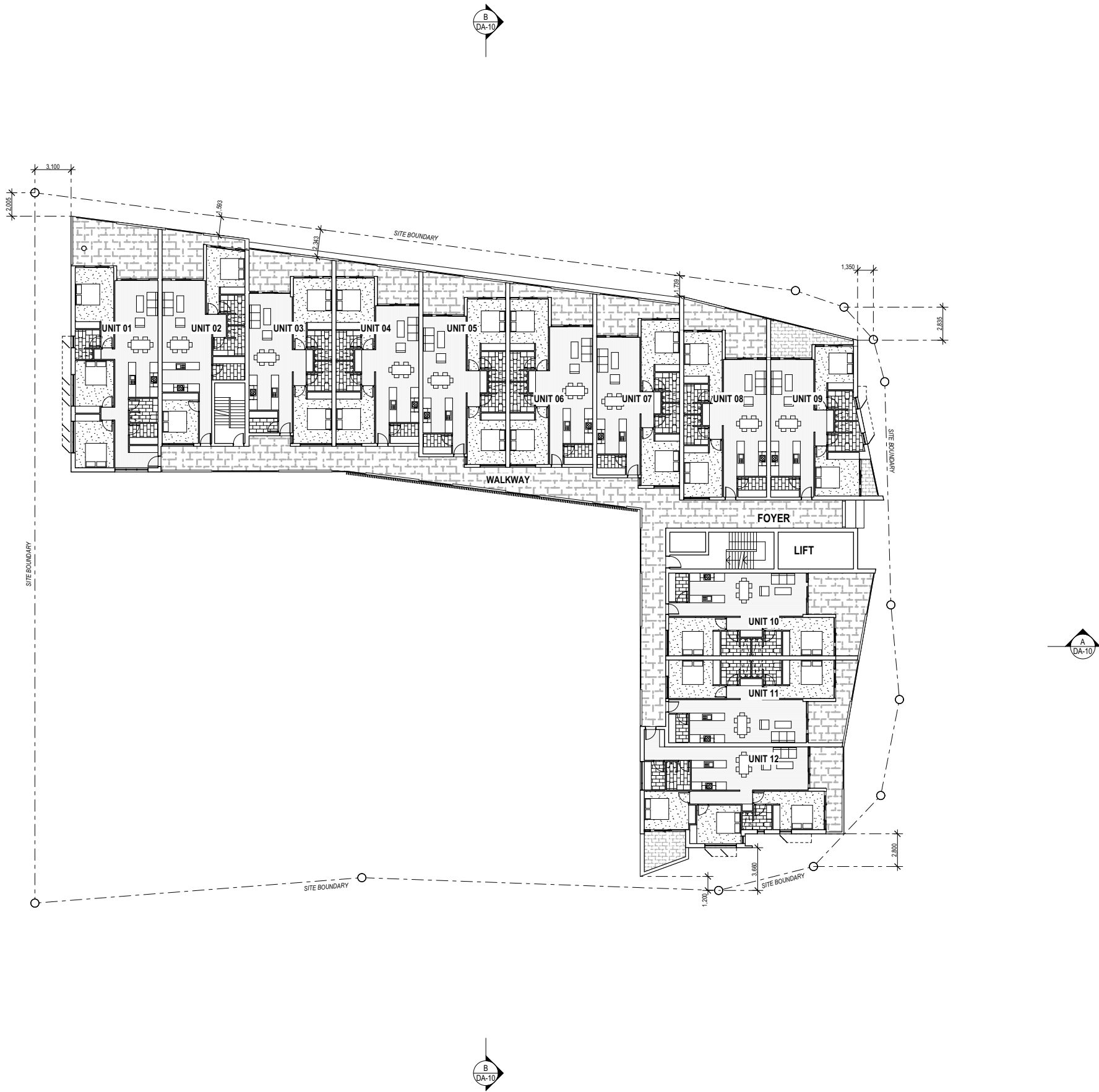
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ISSUE	DATE	BY	DESCRIPTION	CHKD
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YARRABILBA MIXED USE

DRAWING
FLOOR PLAN - LEVEL 2

PROJECT NO. **2789-427**
DRAWING NO. **DA-05**
ISSUE **A**



FLOOR PLAN - LEVEL 3
SCALE 1:200

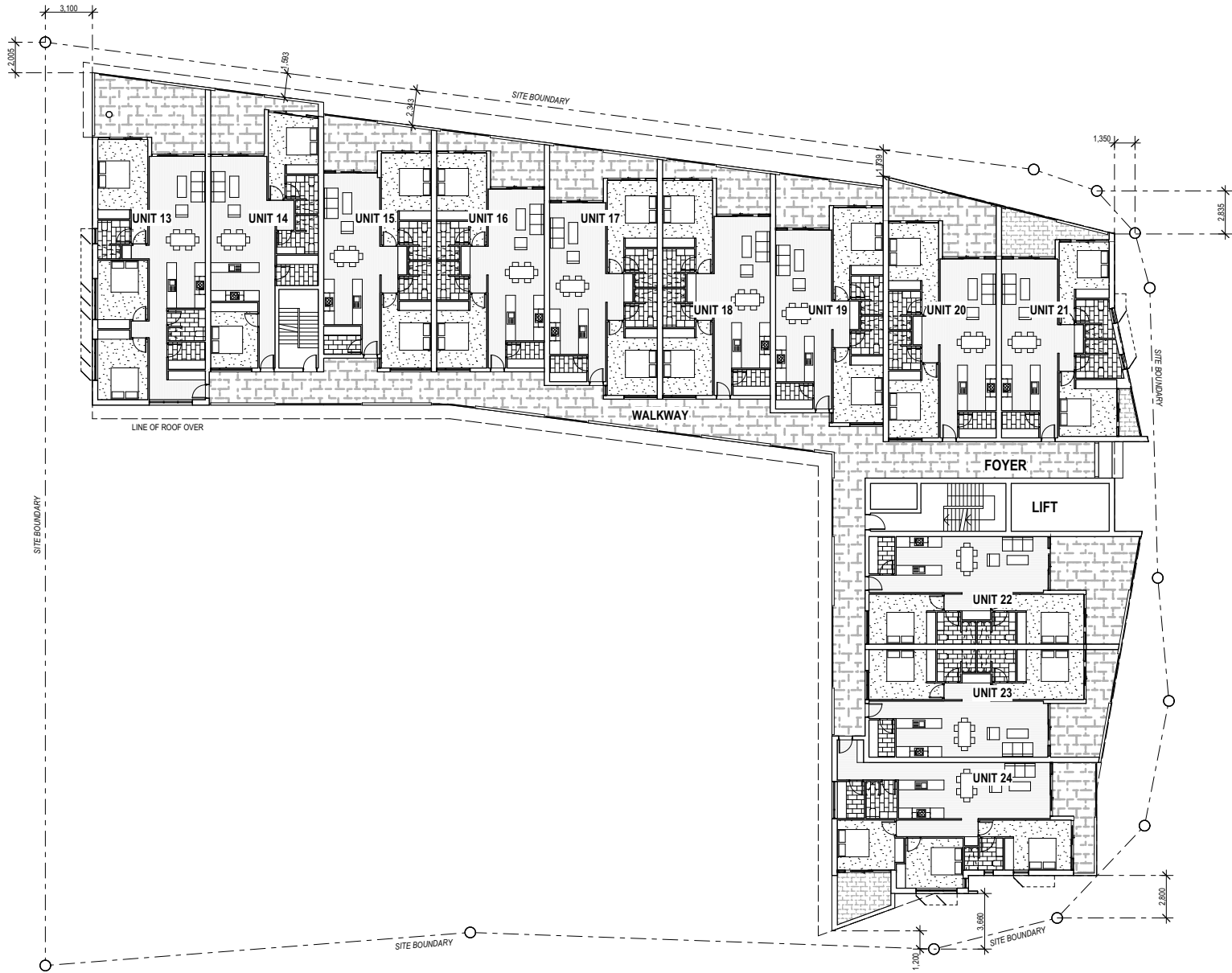


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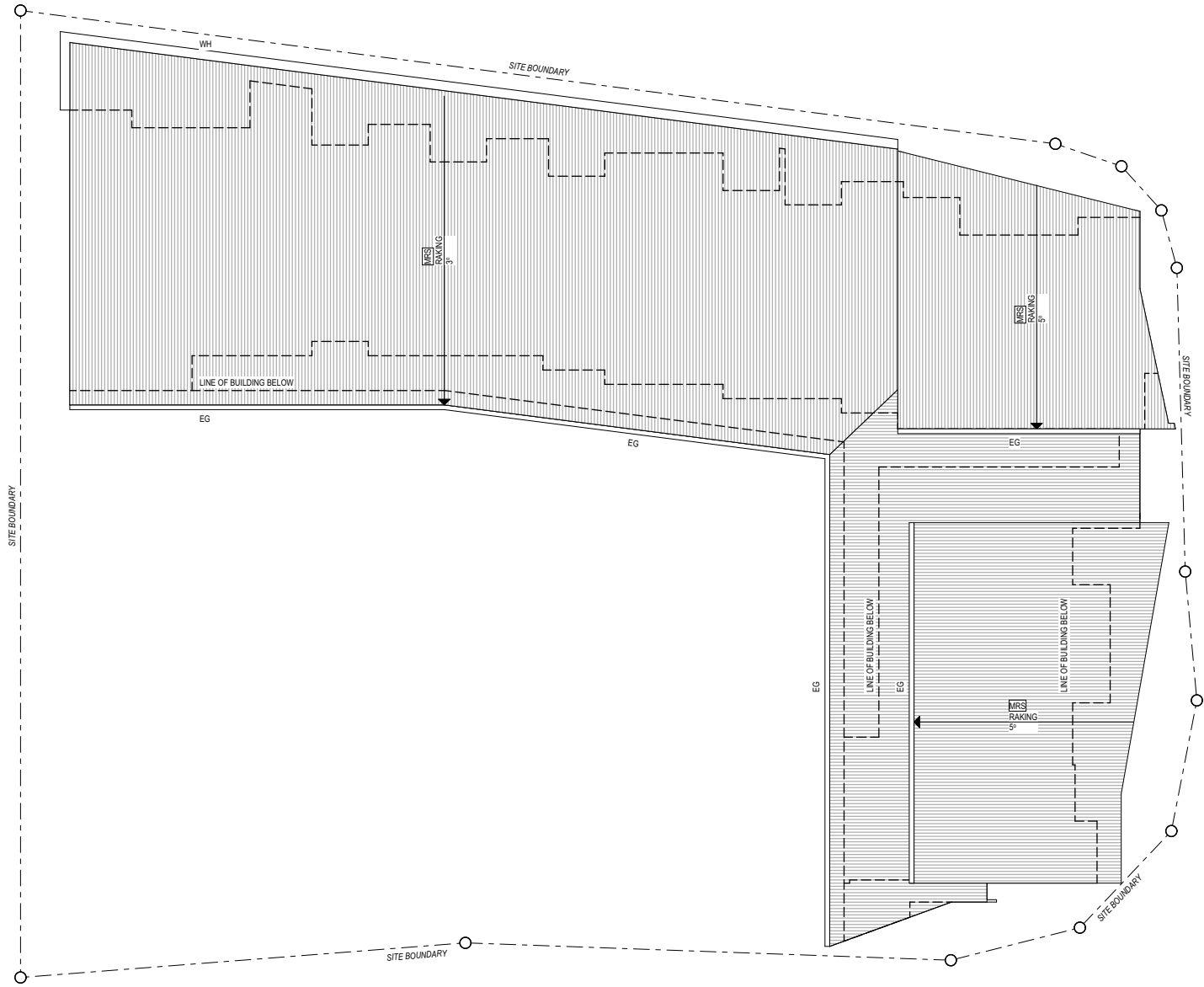
YARRABILBA MIXED USE

DRAWING
FLOOR PLAN - LEVEL 3

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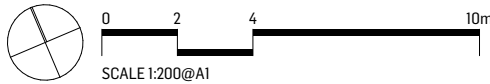


- LEGEND**
- BAL-1 BATTEN BALUSTRADE
 - BAL-2 GLASS BALUSTRADE
 - BAL-3 SOLID BALUSTRADE
 - PAINT FINISH
 - CL-1 FIBRE CEMENT SHEETING
 - PAINT FINISH
 - CONC CONCRETE FINISH
 - EG EAVES GUTTER
 - MRS METAL ROOF SHEETING
 - MWS METAL WALL SHEETING
 - SCR-1 BATTEN SCREEN
 - SCR-2 FIXED BLADES SCREEN
 - RND RENDERED
 - PAINT FINISH
 - WH WINDOW HOOD



ROOF PLAN
SCALE 1:200

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DRAWING
ROOF PLAN

PROJECT NO.
2789-427

DRAWING NO.
DA-07

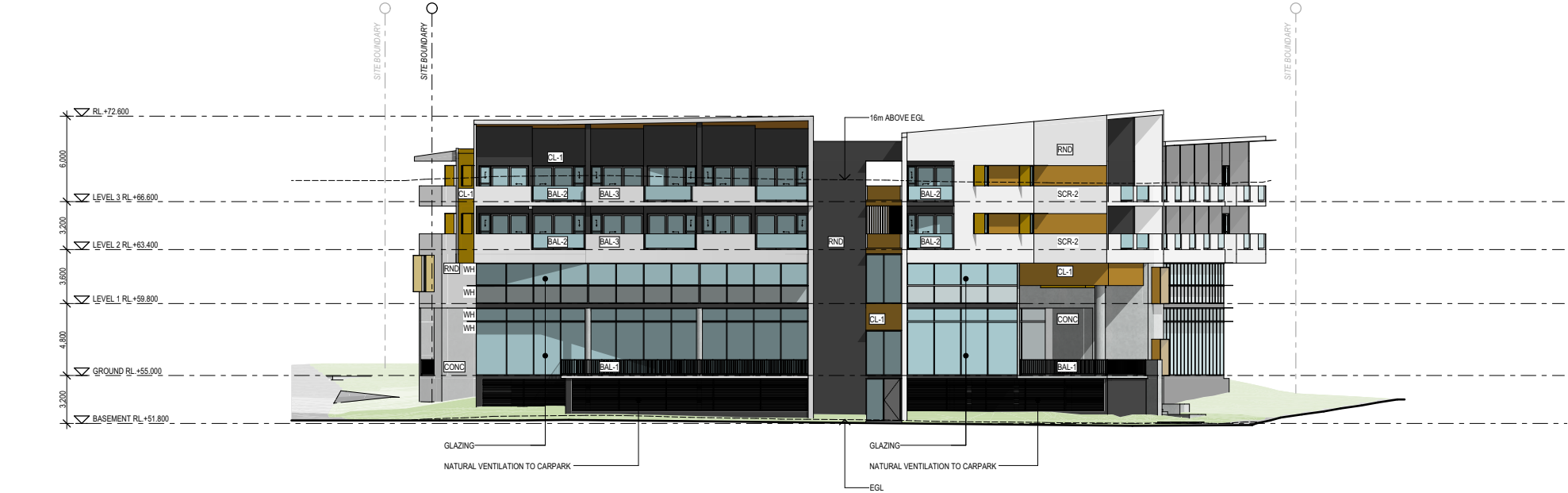
ISSUE
A



- LEGEND**
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 - BAL-2 GLASS BALUSTRADE
 - BAL-3 SOLID BALUSTRADE
 - CL-1 FIBRE CEMENT SHEETING
 - CL-2 PAINT FINISH
 - CL-3 PAINT FINISH
 - CONC CONCRETE FINISH
 - EG EAVES GUTTER
 - MRS METAL ROOF SHEETING
 - MWS METAL WALL SHEETING
 - SCR-1 BATTEN SCREEN
 - SCR-2 FIXED BLADES SCREEN
 - RND RENDERED
 - WH WINDOW HOOD



ELEVATION - NORTH
SCALE 1:200



ELEVATION - EAST
SCALE 1:200

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DRAWING

ELEVATIONS

PROJECT NO.

2789-427

DRAWING NO.

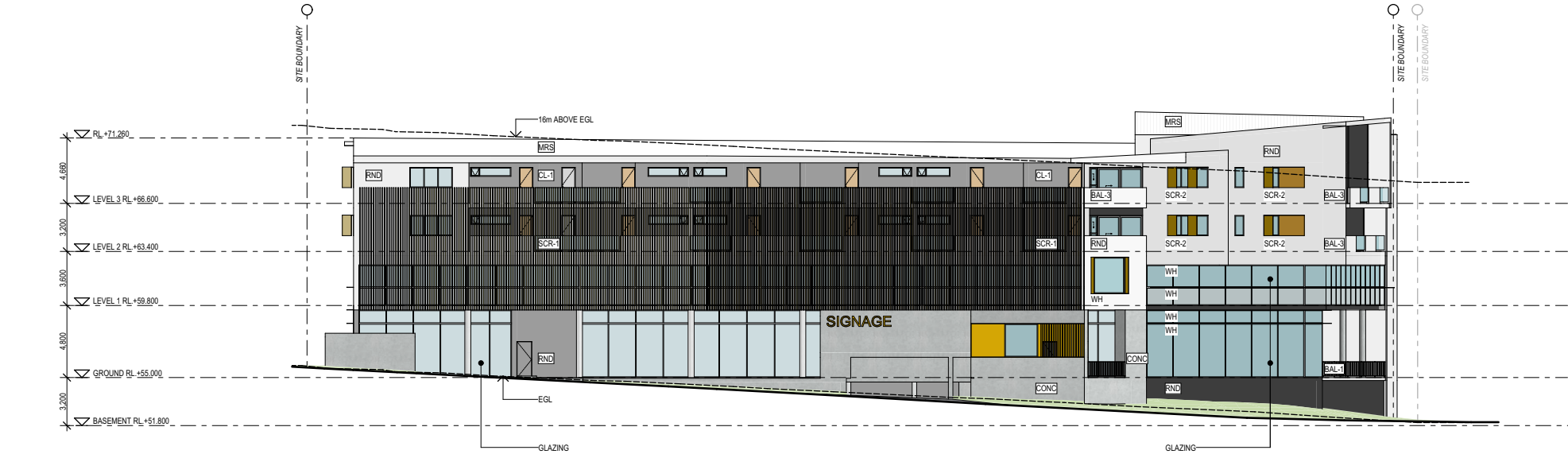
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ISSUE

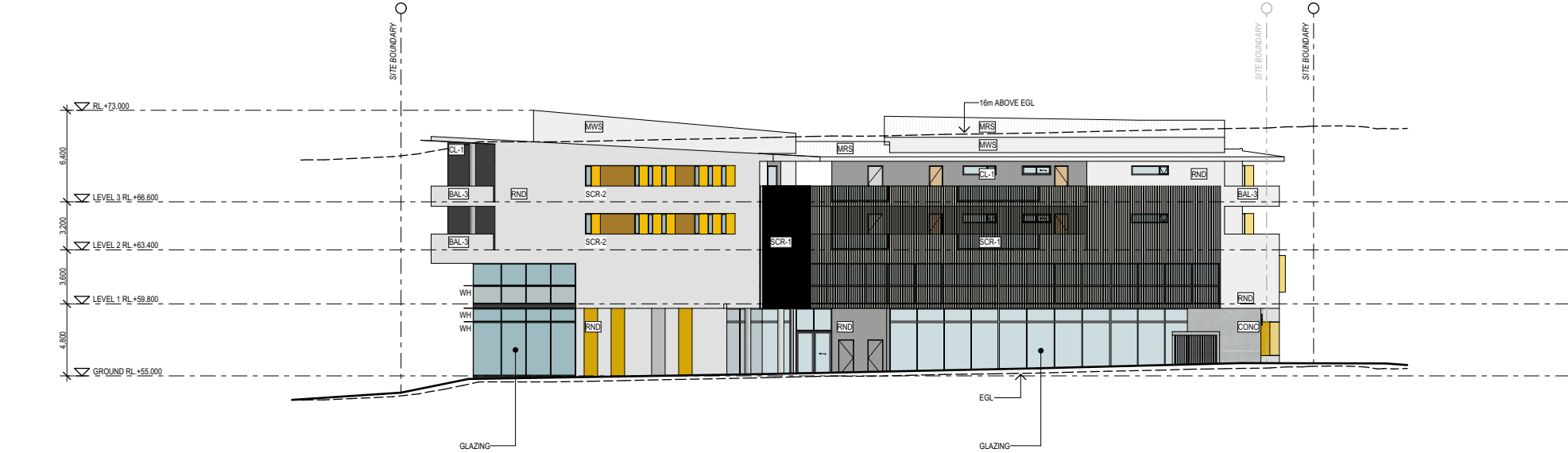
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- LEGEND**
- BAL-1 BATTEN BALUSTRADE
 - BAL-2 GLASS BALUSTRADE
 - BAL-3 SOLID BALUSTRADE
 - PAINT FINISH
 - CL-1 FIBRE CEMENT SHEETING
 - PAINT FINISH
 - CONC CONCRETE FINISH
 - EG EAVES GUTTER
 - MRS METAL ROOF SHEETING
 - MWS METAL WALL SHEETING
 - SCR-1 BATTEN SCREEN
 - SCR-2 FIXED BLADES SCREEN
 - RND RENDERED
 - WH WINDOW HOOD



ELEVATION - SOUTH
SCALE 1:200



ELEVATION - WEST
SCALE 1:200



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YARRABILBA MIXED USE

DRAWING

ELEVATIONS

PROJECT NO.

2789-427

DRAWING NO.

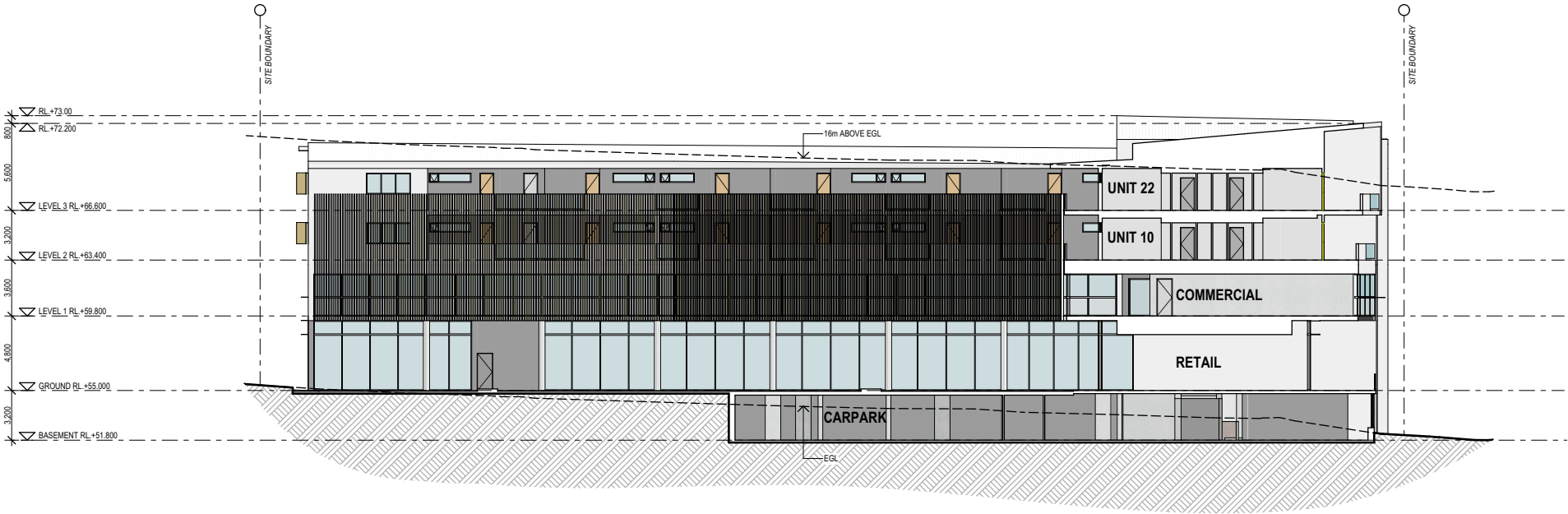
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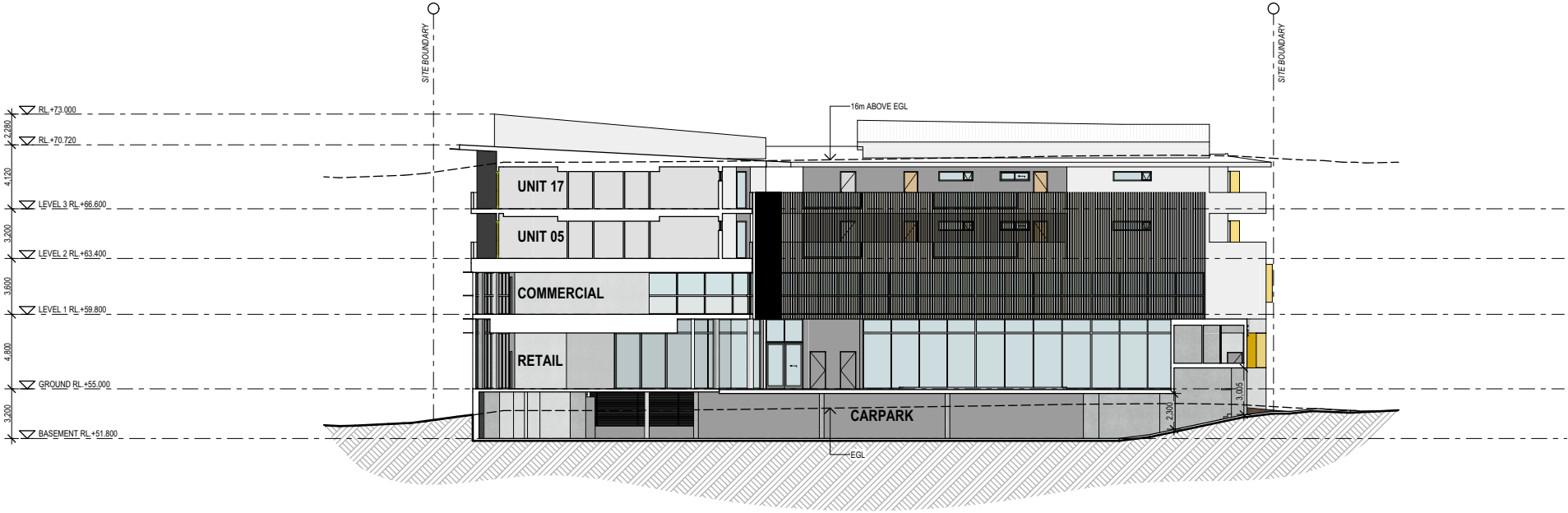
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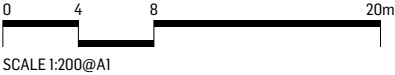
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 - BAL-3 SOLID BALUSTRADE
 - RENDERED
 - PAINT FINISH
 - CL-1 FIBRE CEMENT SHEETING
 - PAINT FINISH
 - CONC CONCRETE FINISH
 - EG EAVES GUTTER
 - MRS METAL ROOF SHEETING
 - MWS METAL WALL SHEETING
 - SCR-1 BATTEN SCREEN
 - SCR-2 FIXED BLADES SCREEN
 - RND RENDERED
 - PAINT FINISH
 - WH WINDOW HOOD



A SECTION
SCALE 1:200



B SECTION
SCALE 1:200



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DRAWING
SECTIONS

PROJECT NO.
2789-427

DRAWING NO.
DA-10

ISSUE
B





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DRAWING

3D VIEWS

PROJECT NO.

2789-427

DRAWING NO.

DA-11

ISSUE

A



Appendix C – Civil Plans

LEGEND

- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- XXXX-

EXISTING CONTOURS (AT 0.25m INTERVALS)
- EXISTING KERB
- EXISTING ROAD CENTRELINE
- EXISTING TOP OF BATTER
- EXISTING BOTTOM OF BATTER
- SWD

EXISTING STORMWATER DRAINAGE
- C

EXISTING COMMUNICATIONS
- SE

EXISTING SEWER
- W

EXISTING WATER
- E

EXISTING UNDERGROUND ELECTRICAL
- G

EXISTING GAS
- NBN

EXISTING NBN
- SURFACE FLOW DIRECTION
- PRE DEVELOPMENT CATCHMENT BOUNDARY
- EX1

CATCHMENT LABEL

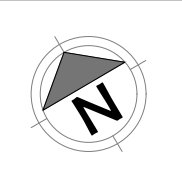


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No.	REVISION DESCRIPTION	DRAWN	DATE
C	REVISED ARCHITECTURAL	JP	16.05.23
B	ISSUED FOR APPROVAL	EZD	13.07.23
A	ISSUED FOR APPROVAL	EZD	27.03.23

SCALE BAR

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SCALE 1:200



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CLIENT

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1/858 OLD CLEVELAND RD, CARINA, QLD, 4152.

ARCHITECT

REDDOG ARCHITECTS
139 GOTH A ST, FORTITUDE VALLEY, QLD, 4006.

PROJECT TITLE

PROPOSED DEVELOPMENT
1-7 ADLER CIRCUIT,
YARRABILBA, QLD, 4207.

DRAWING TITLE

STORMWATER DRAINAGE PRE
DEVELOPMENT CATCHMENT PLAN

DRAWING STATUS

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

PROJECT LEADER

C. KIRK

DESIGNER

EZD

SIGNATURE

C. KIRK

RPEQ 19838
NER 393220

JOB No.

BR222157

SCALE

1:200

DATE

27.03.2023

DRAWING No.

SK001

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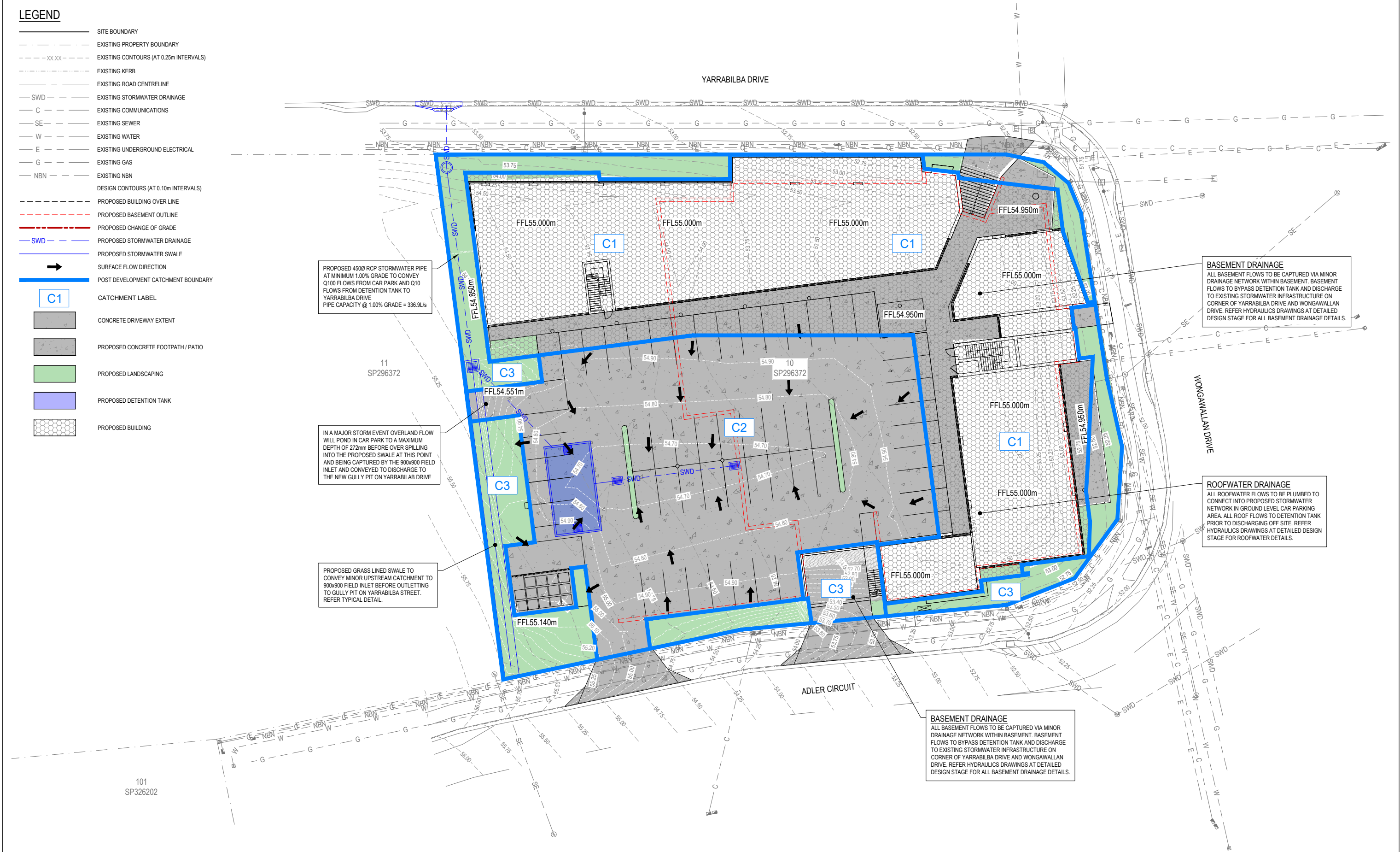
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REVISION

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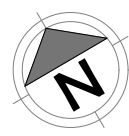
LEGEND

- SITE BOUNDARY
--- EXISTING PROPERTY BOUNDARY
--- XXXX --- EXISTING CONTOURS (AT 0.25m INTERVALS)
--- EXISTING KERB
--- EXISTING ROAD CENTRELINE
--- SWD --- EXISTING STORMWATER DRAINAGE
--- C --- EXISTING COMMUNICATIONS
--- SE --- EXISTING SEWER
--- W --- EXISTING WATER
--- E --- EXISTING UNDERGROUND ELECTRICAL
--- G --- EXISTING GAS
--- NBN --- EXISTING NBN
--- DESIGN CONTOURS (AT 0.10m INTERVALS)
--- PROPOSED BUILDING OVER LINE
--- PROPOSED BASEMENT OUTLINE
--- PROPOSED CHANGE OF GRADE
--- SWD --- PROPOSED STORMWATER DRAINAGE
--- PROPOSED STORMWATER SWALE
--- SURFACE FLOW DIRECTION
--- POST DEVELOPMENT CATCHMENT BOUNDARY
C1 CATCHMENT LABEL
CONCRETE DRIVEWAY EXTENT
PROPOSED CONCRETE FOOTPATH / PATIO
PROPOSED LANDSCAPING
PROPOSED DETENTION TANK
PROPOSED BUILDING



REVISIONS:			
No.	REVISION DESCRIPTION	DRAWN	DATE
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A	ISSUED FOR APPROVAL	EZD	27.03.23

SCALE BAR			
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SCALE 1:200			
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CLIENT

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ARCHITECT

REDDOG ARCHITECTS
139 GOTH A ST, FORTITUDE VALLEY, QLD, 4006.

PROJECT TITLE

PROPOSED DEVELOPMENT
1-7 ADLER CIRCUIT,
YARRABILBA, QLD, 4207.

DRAWING TITLE

**STORMWATER DRAINAGE POST
DEVELOPMENT CATCHMENT PLAN**

DRAWING STATUS

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

PROJECT LEADER C. KIRK	DESIGNER EZD	SIGNATURE C. KIRK	RPEQ 19838 NER 393220
DRAFTSPERSON EZD	SCALE 1:200	DATE 27.03.2023	SHEET SIZE A1
JOB No. BR222157	DRAWING No. SK002	REVISION C	

LEGEND

- SITE BOUNDARY
--- EXISTING PROPERTY BOUNDARY
--- XXXX EXISTING CONTOURS (AT 0.25m INTERVALS)
--- EXISTING KERB
--- EXISTING ROAD CENTRELINE
--- SWD --- EXISTING STORMWATER DRAINAGE
--- C --- EXISTING COMMUNICATIONS
--- SE --- EXISTING SEWER
--- W --- EXISTING WATER
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--- PROPOSED STORMWATER SWALE
--- CONCRETE DRIVEWAY EXTENT
--- PROPOSED CONCRETE FOOTPATH / PATIO
--- PROPOSED LANDSCAPING
--- PROPOSED DETENTION TANK
--- PROPOSED BUILDING



REVISIONS:			
No.	REVISION DESCRIPTION	DRAWN	DATE
C	REVISED ARCHITECTURAL	JP	16.05.24
B	ISSUED FOR APPROVAL	EZD	13.07.23
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SCALE BAR			
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SCALE 1:200			
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CLIENT

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ARCHITECT

REDDOG ARCHITECTS
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PROJECT TITLE

PROPOSED DEVELOPMENT
1-7 ADLER CIRCUIT,
YARRABILBA, QLD, 4207.

DRAWING TITLE

**STORMWATER DRAINAGE
LAYOUT PLAN**

DRAWING STATUS

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NOT FOR CONSTRUCTION

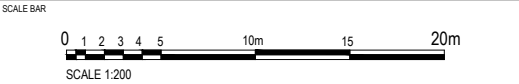
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C. KIRK	EZD	C. KIRK	
DRAFTSPERSON	SCALE	DATE	SHEET SIZE
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JOB No.	DRAWING No.	REVISION	
BR222157	SK003	C	

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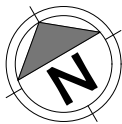
- SITE BOUNDARY
--- EXISTING PROPERTY BOUNDARY
--- XXXX --- EXISTING CONTOURS (AT 0.25m INTERVALS)
--- EXISTING KERB
--- EXISTING ROAD CENTRELINE
--- SWD --- EXISTING STORMWATER DRAINAGE
--- C --- EXISTING COMMUNICATIONS
--- SE --- EXISTING SEWER
--- W --- EXISTING WATER
--- E --- EXISTING UNDERGROUND ELECTRICAL
--- G --- EXISTING GAS
--- NBN --- EXISTING NBN
--- XX.XX --- DESIGN CONTOURS (AT 0.10m INTERVALS)
--- PROPOSED BUILDING OVER LINE
--- PROPOSED BASEMENT OUTLINE
--- PROPOSED CHANGE OF GRADE
--- SWD --- PROPOSED STORMWATER DRAINAGE
--- PROPOSED STORMWATER SWALE
--- W --- PROPOSED WATER
CONCRETE DRIVEWAY EXTENT
PROPOSED CONCRETE FOOTPATH / PATIO
PROPOSED LANDSCAPING
PROPOSED DETENTION TANK
PROPOSED BUILDING



REVISIONS:			
No.	REVISION DESCRIPTION	DRAWN	DATE
C	REVISED ARCHITECTURAL	JP	16.05.24
B	ISSUED FOR APPROVAL	EZD	13.07.23
A	ISSUED FOR APPROVAL	EZD	27.03.23



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ARCHITECT
REDDOG ARCHITECTS
139 GOTH A ST, FORTITUDE VALLEY, QLD, 4006.

PROJECT TITLE
PROPOSED DEVELOPMENT
1-7 ADLER CIRCUIT,
YARRABILBA, QLD, 4207.

DRAWING TITLE
**CONCEPT SERVICES
LAYOUT PLAN**

DRAWING STATUS
ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

PROJECT LEADER C. KIRK	DESIGNER EZD	SIGNATURE C. KIRK	RPEQ 19838 NER 3953220
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DRAFTSPERSON EZD	SCALE 1:200	DATE 27.03.2023	SHEET SIZE A1
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JOB No. BR222157	DRAWING No. SK004	REVISION C
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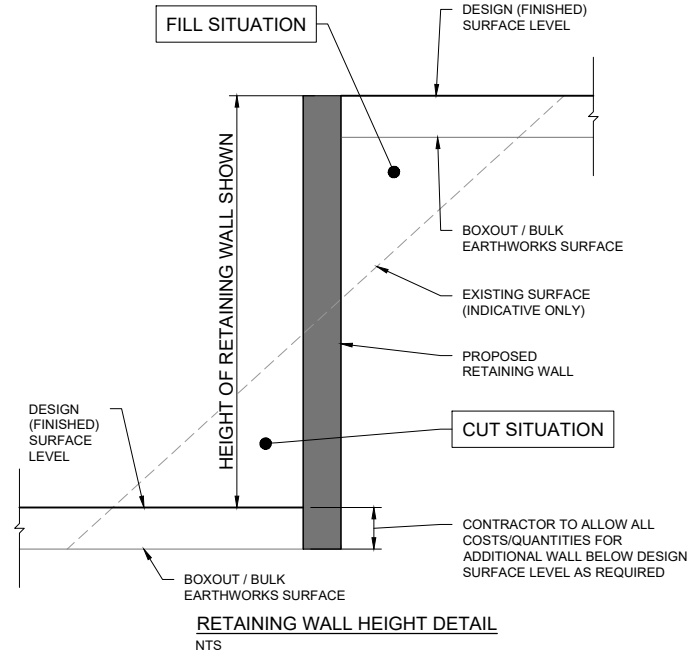
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EXISTING CONTOURS (AT 0.25m INTERVALS)
EXISTING KERB
EXISTING ROAD CENTRELINE
EXISTING TOP OF BATTER
EXISTING BOTTOM OF BATTER
EXISTING STORMWATER DRAINAGE
EXISTING COMMUNICATIONS
EXISTING SEWER
EXISTING WATER
EXISTING UNDERGROUND ELECTRICAL
EXISTING GAS
EXISTING NBN
DESIGN CONTOURS (AT 0.10m INTERVALS)
PROPOSED BUILDING OVER LINE
PROPOSED BASEMENT OUTLINE
PROPOSED CHANGE OF GRADE
PROPOSED STORMWATER DRAINAGE
PROPOSED STORMWATER SWALE
PROPOSED RETAINING WALL
XX.XXXm* FINISHED SURFACE ELEVATION LABEL
XX.XXXm* EXISTING SURFACE ELEVATION LABEL
XX.XXXm* PROPOSED RETAINING WALL HEIGHT
FFLXX.XXXm FINISHED FLOOR LEVELS

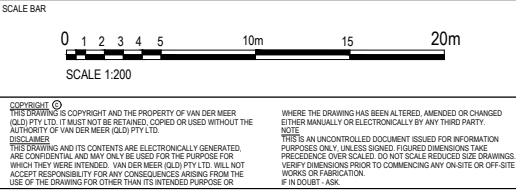
EARTHWORKS VOLUMES (EXISTING SURFACE TO EARTHWORKS SURFACE)	
TOTAL CUT	3730m³
TOTAL FILL	715m³
TOTAL BALANCE (CUT TO EXPORT)	3015m³

- EARTHWORKS LEVELS**
1. EARTHWORKS VOLUMES AND LEVELS BASED ON DRIVEWAY SLAB THICKNESS OF 200mm, BUILDING SLAB THICKNESS OF 200mm AND LANDSCAPE THICKNESS OF 200mm. REFER STRUCTURAL DESIGN DRAWINGS AT DETAILED DESIGN STAGE FOR FINAL PAD THICKNESS.
2. ALL RETAINING WALL HEIGHTS ARE GIVEN FROM EXISTING SURFACE TO DESIGN (FINISHED) SURFACE. REFER RETAINING WALL HEIGHT DETAIL.

CUT & FILL LEGEND		
MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOUR
-2.800m	-2.100m	
-2.100m	-1.400m	
-1.400m	-0.700m	
-0.700m	0.000m	
0.000m	0.700m	
0.700m	1.400m	
1.400m	2.100m	
2.100m	2.800m	



REVISIONS:			
No.	REVISION DESCRIPTION	DRAWN	DATE
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ARCHITECT

REDDOG ARCHITECTS
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PROJECT TITLE

PROPOSED DEVELOPMENT
1-7 ADLER CIRCUIT,
YARRABILBA, QLD, 4207.

DRAWING TITLE

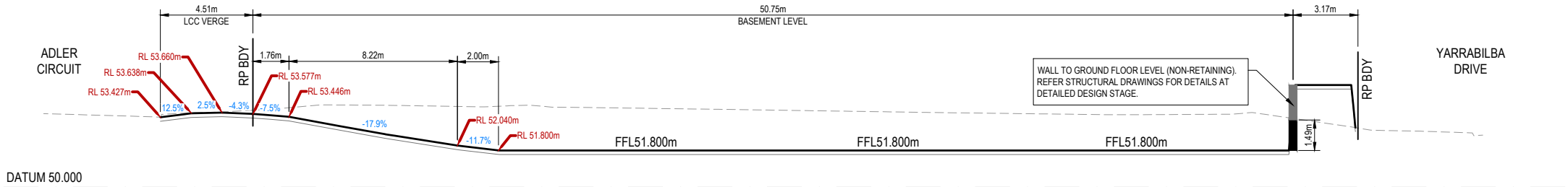
BULK EARTHWORKS
LAYOUT PLAN

DRAWING STATUS			
ISSUED FOR APPROVAL NOT FOR CONSTRUCTION			
PROJECT LEADER C. KIRK	DESIGNER EZD	SIGNATURE C. KIRK	RPEQ 19838 NER 393220
DRAFTSPERSON EZD	SCALE 1:200	DATE 27.03.2023	SHEET SIZE A1
JOB No. BR222157	DRAWING No. SK005	REVISION C	

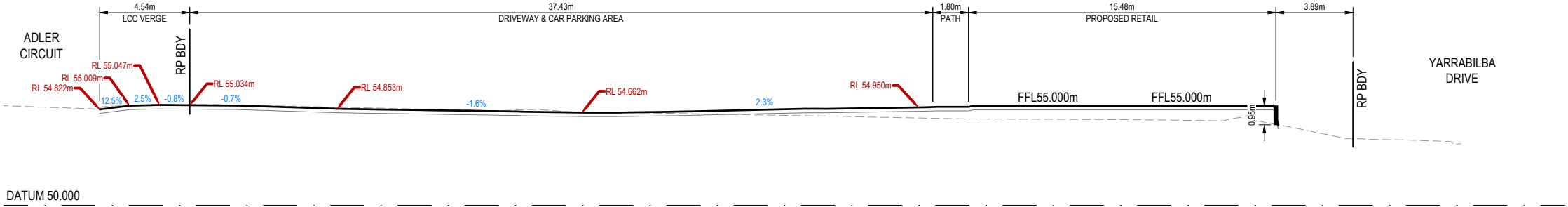
LEGEND

- DESIGN SURFACE
- BULK EARTHWORKS SURFACE
- DATUM LINE
- EXISTING SURFACE
- PROPOSED RETAINING WALL
- X.X%

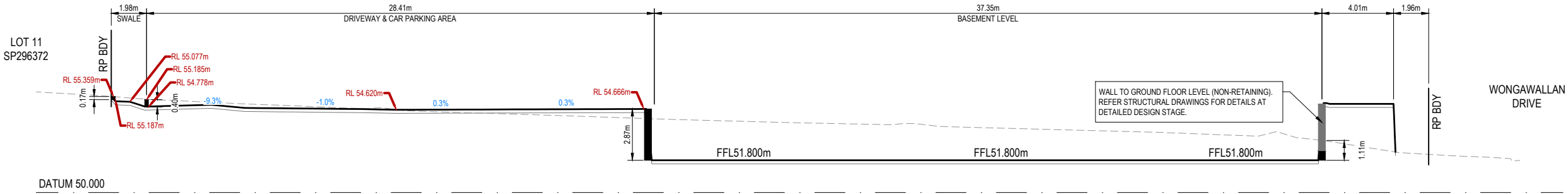
PROPOSED SURFACE SLOPE



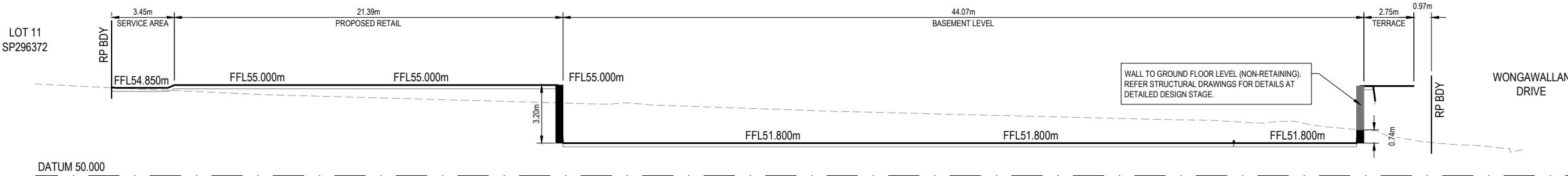
SECTION D
SCALE 1:150
SK005



SECTION C
SCALE 1:150
SK005



SECTION B
SCALE 1:150
SK005

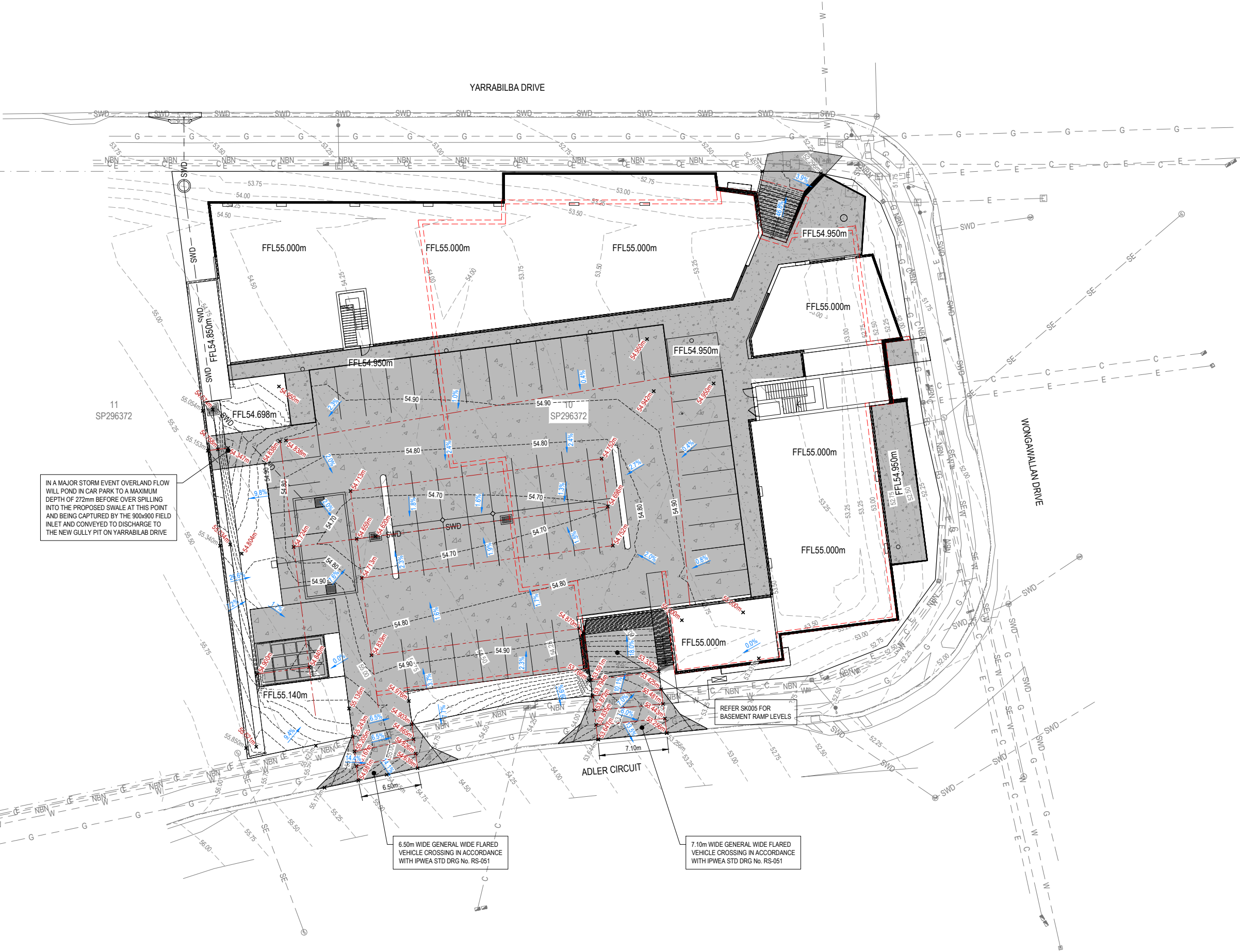


SECTION A
SCALE 1:150
SK005

REVISIONS:				SCALE BAR				van der Meer Consulting van der meer LEVEL 1, 51 ALFRED STREET FORTITUDE VALLEY QLD 4006 Telephone +61 7 3021 6600 www.vandermeer.com.au van der Meer (QLD) Pty Ltd A.B.N. 63 609 812 615	CLIENT		PROJECT TITLE		DRAWING STATUS	
				0 1 2 3 4 5m 10m 15m SCALE 1:150					HARPAL SINGH WARAICH C/- BPLANNED & SURVEYED 1/858 OLD CLEVELAND RD, CARINA, QLD, 4152.		PROPOSED DEVELOPMENT 1-7 ADLER CIRCUIT, YARRABILBA, QLD, 4207.		ISSUED FOR APPROVAL NOT FOR CONSTRUCTION	
									ARCHITECT		DRAWING TITLE		PROJECT LEADER	
									REDDOG ARCHITECTS 139 GOTH A ST, FORTITUDE VALLEY, QLD, 4006.		BULK EARTHWORKS SITE SECTIONS		C. KIRK	
													DESIGNER	
													EZD	
													SCALE	
													1:150	
													DATE	
													27.03.2023	
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													A1	
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													C	
													JOB No.	
													BR222157	
													DRAWING No.	
													SK006	

LEGEND

- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING CONTOURS (AT 0.25m INTERVALS)
- EXISTING KERB
- EXISTING ROAD CENTRELINE
- EXISTING STORMWATER DRAINAGE
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- EXISTING SEWER
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- PROPOSED STORMWATER SWALE
- PROPOSED SURFACE LEVEL
- EXISTING SURFACE LEVEL
- PROPOSED SURFACE SLOPE
- CONCRETE DRIVEWAY EXTENT
- PROPOSED CONCRETE FOOTPATH / PATIO



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SCALE 1:200

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ARCHITECT REDDOG ARCHITECTS 139 GOTH A ST, FORTITUDE VALLEY, QLD, 4006.		DRAWING TITLE ACCESS & GRADING LAYOUT PLAN		PROJECT LEADER C. KIRK	DESIGNER EZD
				SIGNATURE C. KIRK	RPEQ 19838 NER 393220
				DRAFTSPERSON EZD	SCALE 1:200
				JOB No. BR222157	SHEET SIZE A1
				DRAWING No. SK007	REVISION C

Appendix D – Code Compliance Table

Project Location: 1-7 Adler Circuit, Yarrabilba Job Reference: BR222157

LCC – Acid Sulphate Soils Codes

Performance outcomes	Acceptable outcomes	Outcome	Comments
Land in the Potential and actual acid sulfate soil area			
PO1 Development in the Potential and actual acid sulfate soil area identified on Acid sulfate soils overlay map–OM-01.01 that involves disturbing soil or sediment at or below 5 metres AHD: avoids disturbing acid sulfate soils; or is managed to avoid the: release of acid and metal contaminants; is managed to avoid the release of nutrients that contribute to coastal algal blooms. For development to which this overlay code applies, undertake an acid sulfate soils investigation conforming to the Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland and the current Queensland Acid Sulfate Soil Technical Manual: Laboratory Methods Guidelines. Where the presence	AO1 Development in the Potential and actual acid sulfate soil area identified on Acid sulfate soils overlay map–OM-01.01: that involves disturbing soil or sediment at or below 5 metres AHD avoids the disturbance of acid sulfate soils by: not excavating or otherwise removing soil or sediment identified as containing acid sulfate soils; or not extracting ground water that results in the aeration of previously saturated acid sulfate soils; or not undertaking filling that results in moving acid sulfate soils below the water table; or not allowing previously saturated acid sulfate soils being aerated; or that disturbs acid sulfate soils at or below 5 metres AHD avoids the release of acid and metal contaminants by: neutralising existing acidity and prevent the generation of acid and metal contaminants using strategies documented in the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines;	AO	It is not expected that the development works would disturb acid sulphate soils, as no excavation is proposed below RL 5.0m AHD.

Performance outcomes	Acceptable outcomes	Outcome	Comments
of acid sulfate soils is confirmed, prepare an acid sulfate soils management plan in accordance with the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.	preventing the generation of acid and metal contaminants; preventing the release of surface or groundwater flows containing acid and metal contaminants into the environment; preventing the in situ oxidation of acid sulfate soils through groundwater level management; complying with documented management strategies and reporting requirements in an acid sulfate soils management plan prepared in accordance with the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines; prevents the release of nutrients that contribute to coastal algal blooms.		
Treatment and disposal of acid sulfate soils			
PO2 Development manages the treatment and disposal of acid sulfate soils.	AO2 Where acid sulfate soils are identified, the acid sulfate soils are managed in accordance with an acid sulfate soils management plan prepared in accordance with the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.	AO	Any acid sulphate soils identified on site will be managed in accordance with an acid sulfate soils management plan.

LCC – Filling and Excavation Codes

Performance outcomes	Acceptable outcomes	Outcome	Comments
For self-assessable and assessable development			
Protection of natural processes and ecosystems			
PO1 The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	AO1 The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3—Filling and excavation standards in planning scheme policy 5—Infrastructure.	AO	Filling and excavation will not result in discharge of harmful sediments or pollutants into a waterway or the stormwater network.
PO2 Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	AO2 Topsoil and spoil is stockpiled to comply with part 3.3—Filling and excavation standards in planning scheme policy 5—Infrastructure.	AO	Stockpiling of topsoil and spoil will comply with LCC Standards
PO3 Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	AO3 Filling complies with part 3.3—Filling and excavation standards in planning scheme policy 5—Infrastructure.	AO	Filling will be carried out in accordance with LCC Standards using stable, solid clean earth.

Performance outcomes	Acceptable outcomes	Outcome	Comments
Protection of existing and planned infrastructure			
PO4 Filling or excavation works do not adversely affect infrastructure, including any services.	AO4 Filling or excavation works comply with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	AO	Filling and excavation works will comply with LCC Standards and will not adversely affect existing infrastructure.
Protection and enhancement of personal health and safety and premises			
PO5 Filling or excavation works do not adversely affect personal health and safety.	AO5 Filling or excavation works comply with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	AO	Filling and excavation works will comply with part 3.3 of PSP 5 and will not adversely affect personal health and safety.
Surface water flow			
PO6 Surface water drainage does not cause any of the following: ponding on any premises; or a hazard or adversely affect personal health and safety and premises; or diversion or concentration of flow from or onto adjoining premises or infrastructure.	AO6 Surface water drainage complies with part 3.3–Filling or excavation standards in planning scheme policy 5–Infrastructure.	AO	Surface water drainage will complies with part 3.3 and will not cause ponding, adversely affect personal health and safety, or divert or concentrate flow from or onto adjoining premises and infrastructure.

Performance outcomes	Acceptable outcomes	Outcome	Comments
Batters			
PO7 A batter: does not adversely affect the natural physical processes and ecosystems; protects existing and planned infrastructure; is safe, stable and easily maintained; is landscaped to enhance visual amenity.	AO7 A batter is designed and constructed to comply with the standards specified in section 3.3.6–Batters and retaining walls in planning scheme policy 5–Infrastructure.	AO	A batter will be designed and constructed to comply with the standards specified in section 3.3.6–Batters and retaining walls in planning scheme policy 5–Infrastructure.
Retaining walls			
PO8 A retaining wall: is not constructed of timber and are not located on existing or proposed lot boundaries, or movement networks; does not adversely affect the natural physical processes and ecosystems; is located to avoid conflict with adjoining premises; is located such that existing and planned infrastructure is not adversely affected;	AO8 A retaining wall is designed and constructed to comply with the standards specified in section 3.3.6.2–Retaining walls in planning scheme policy 5–Infrastructure.	AO	Any required retaining walls will be designed and constructed in accordance with section 3.3.6.2.

Performance outcomes	Acceptable outcomes	Outcome	Comments
protects the visual amenity of adjoining premises or a public open space; is located within the premises that is being filled; is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot; is safe and stable; enables easy access for maintenance.			
Filling of a dam			
PO9 The filling of a dam: does not adversely affect the natural physical processes and ecosystems; creates a safe and stable surface; is integrated into the landscape.	AO9 The filling of a dam complies with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	N/A	The development does not involve the filling of a dam.

LCC - Infrastructure Codes

Performance outcomes	Acceptable outcomes	Outcome	Comments
For self-assessable and assessable development			
Provision, design, construction and location of infrastructure			
PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.	AO1 Reports, plans and drawings are provided in accordance with part 2 of planning scheme policy 5—Infrastructure.	AO	Reports, plans and drawings have been provided in accordance with part 2 of PSP 5.
PO2 Development: provides necessary infrastructure to service the development; provides that the design, construction and location of necessary infrastructure: protects existing and planned infrastructure networks; services proposed development; integrates with existing and planned infrastructure networks; delivers a standard of service that is efficient and equitable; minimises the cost to the community for the life of the infrastructure by providing	AO2 Development: in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres; in a sewerage supply service area connects to the waste water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code; provides stormwater infrastructure in accordance with part 3.6 of planning scheme policy 5—Infrastructure;	AO	The development will connect to local water and sewerage networks in accordance with the SEQ Water Supply and Sewerage Design and Construction Code and planning scheme policy 5. Stormwater infrastructure has been provided in accordance with part 3.6 of PSP5. Electricity, telecommunications and other relevant infrastructure will be provided as required.

a suitable design life, ease of maintenance and ease of replacement; protects personal health, safety and premises; protects environmental values.	provides a movement network infrastructure in accordance with part 3.4 of planning scheme policy 5—Infrastructure; provides parks in accordance with part 3.12 of planning scheme policy 5—Infrastructure; provides road lighting in accordance with part 3.5 of planning scheme policy 5—Infrastructure; provides electricity reticulation in accordance with part 3.8 of planning scheme policy 5—Infrastructure; provides gas and telecommunications reticulation in accordance with part 3.9 of planning scheme policy 5—Infrastructure. <i>The delivery of any part of a network identified in the plans for trunk infrastructure is governed by Part 4—Priority infrastructure plan.</i>		
Location of development			
PO3 Development is located to protect existing and planned infrastructure networks.	AO3 Development is located outside: planned widening of a road or a new road identified in Table 7.3.1.1—Road encroachment maps of planning scheme policy 5—Infrastructure; planned public transport network identified on Figure 3.4.1.3.1—Public transport network in planning scheme policy 5—Infrastructure; a planned cycle network identified on Figure 3.4.1.2.1—Cycle network in planning scheme policy 5—Infrastructure; a planned park network identified in PIP map 09.00 Plan for trunk park infrastructure in Schedule 3—Priority infrastructure plans and mapping.	AO	The development will be located to protect existing and planned infrastructure networks.

Fire fighting			
PO4 Development in a water service area accessed by common private title provides: fire hydrant infrastructure; unimpeded access for emergency services vehicles. <i>The term common private title refers to areas such as access roads in community title developments or strata title unit access, which are private and under group or body corporate control.</i>	AO4 Development in a water service area accessed by common private title complies with the Acceptable outcomes of the SPP code: Fire services in developments accessed by common private title in Appendix 1 of the state planning policy.	N/A	The development is not access by private common title.
PO5 Development not in a water service area provides sufficient water storage with adequate pressure, volume and flow to service development for fire fighting purposes.	AO5 Development: is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for fire fighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa; or has an on-site water storage in accordance Table 9.4.3.3.2—Water storage for fire fighting, dedicated or retained for fire fighting purposes that is made of fire resistant materials and is: a separate tank; or a reserve section in the bottom part of the main water supply tankwater tank . <i>The requirement in AO5 is;</i>	AO	The development will be connected to reticulated water supply which has sufficient flow and pressure characteristics for firefighting purposes. It is noted that the 90m hydrant coverages of the WSAA SEQ Code Edition cannot be achieved for the full property due to the hydrant locations on the opposite side of the road. Refer to the concept services plan for the 90m hydrant coverage area for each lot.

	<i>in addition to the requirement for potable water supply/storage in AO2 in Table 9.4.3.3.2–Infrastructure code: self-assessable and assessable development;</i> <i>reflected in AO5 in Table 8.2.3.3.1–Bushfire hazard overlay code: self-assessable and assessable development.</i>		
Disposal of trade waste			
PO6 The disposal of trade waste in a sewerage supply service area does not adversely affect the sewerage network.	AO6 The disposal of trade waste in a sewerage supply service area complies with the sewer admission standards in section 3.2.6–Sewer admission standards in planning scheme policy 3–Environmental management.	N/A	Not applicable to this development.
Roof water drainage and surface water drainage			
PO7 Development provides stormwater infrastructure for the drainage of the premises so as not to cause any of the following: ponding of stormwater on the premises; a hazard to personal health and safety; damage to premises; an increased risk of flooding to premises within the catchment.	AO7 Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5–Infrastructure.	AO	The development will provide stormwater infrastructure in accordance with part 3.6 Policy 5.

Natural flow of surface water			
PO8 Development provides that the natural flow of surface water is: not altered so as to cause a risk to personal health and safety or damage to property; not increased in intensity, velocity or frequency; not concentrated onto adjoining premises.	AO8 Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5—Infrastructure.	AO	The development allows surface water to flow in accordance with part 3.6 Policy 5.
Water sensitive urban design			
PO9 Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to: protecting existing natural features and ecological processes; protecting the natural hydrologic behaviour of catchments; protecting the existing natural flow and water quality regimes of waterways;	AO9 Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5—Infrastructure.	AO	Stormwater infrastructure complies with WSUD principles and the standards specified in part 3.6 Policy 5.

protecting water quality of surface and ground waters; minimising demand on the water network; minimising sewage discharges to the natural environment; integrating water into the landscape to enhance visual and ecological values.			
Movement network			
PO10 The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.	AO10 Development does not cause or contribute to projected traffic levels: exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in planning scheme policy 5—Infrastructure; or exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in planning scheme policy 5—Infrastructure.	AO	The development will not cause or contribute to traffic levels or control delays at intersections exceeding those outlined in Tables 3.4.1.4.2 and 3.4.1.4.3.
Integrated movement concept report			
PO11 Development which generates more than 3,000 vehicle trips per average weekday is designed to integrate the movement network to minimise the transportation costs required to service the use.	AO11 Development which generates more than 3,000 vehicle trips per average weekday provides an integrated movement concept report which integrates the planning of the movement network in accordance with part 2 and 3 of planning scheme policy 5—Infrastructure.	N/A	The development does not generate more than 3,000 vehicle trips per average weekday.

For assessable development only			
Land use and transport integration			
PO12 Development within 400 metres of existing or future public passenger transport facilities where the total site area is 5000m ² or more: supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future public passenger transport facilities; enhances connectivity between existing and future public passenger transport facilities and other transport modes; optimises the walkable catchment to existing and future public passenger transport facilities; provides for direct and safe access to and use of existing or future public passenger transport facilities. SPP code: Land use and transport integration in Appendix 4 of the state planning policy provides guidance to achieve this outcome.	No acceptable outcome provided.	N/A	Not applicable to the development.

