

# NAXOS

ENGINEERS

## SITE BASED STORMWATER MANAGEMENT QUANTITY & QUALITY



Proposed Broadway Hotel & Residential Development  
93 Logan Road, Woolloongabba  
**Carbone Developments Pty Ltd**

REPORT NUMBER: 23-198 SBSMP Quantity & Quality V3  
DATE PREPARED: 28th August 2025  
APPLICATION No: TBC

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| DOCUMENTATION INFORMATION |                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Publication Ref:          | 23-198 - SBSMP – Quantity & Quality                                                                                     |
| Application No.:          | TBC                                                                                                                     |
| Address:                  | 93 Logan Road, Woolloongabba, QLD, 4102                                                                                 |
| Publication Date:         | 28 <sup>th</sup> August 2025                                                                                            |
| Version Number:           | Version 3                                                                                                               |
| Version Author:           | Jack Baillie                                                                                                            |
| Authorised By             | <br>Gregg Tyquin<br><b>RPEQ 1528</b> |
| Version Date:             | 28 <sup>th</sup> August 2025                                                                                            |

| REVISION / CHECKING |            |                      |              |                      |
|---------------------|------------|----------------------|--------------|----------------------|
| REV                 | ISSUE DATE | ISSUED BY            | REVIEWED BY  | REVISION TYPE        |
| 1                   | 12.09.2023 | Giuseppe Finocchiaro | Gregg Tyquin | Original Issue       |
| 2                   | 16.07.2023 | Giuseppe Finocchiaro | Gregg Tyquin | Architectural Update |
| 3                   | 28.08.2025 | Jack Baillie         | Gregg Tyquin | Architectural Update |



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## 1.0 INTRODUCTION

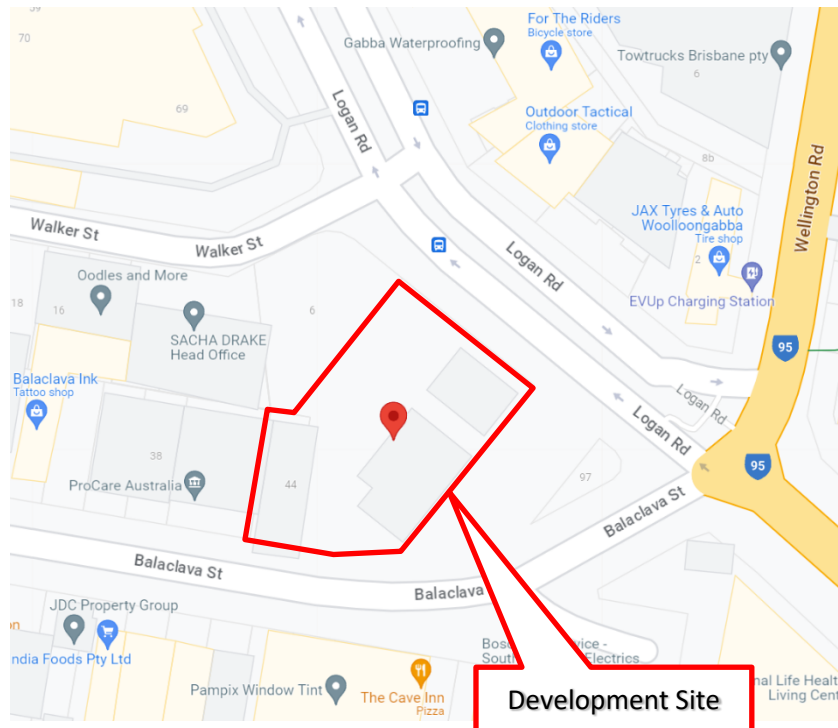
Naxos Engineers Pty Ltd has been engaged by our client Carbone Developments Pty Ltd to prepare a Site-Based Stormwater Management Report the proposed development at 93 Logan Road and 44 Balaclava Street, Woolloongabba.

### 1.1. AVAILABLE INFORMATION

- Detail Survey Plan: Ref No: 2643DT issue A prepared by WM Surveys Pty Ltd (Appendix A)
- Council eBiMAP2 Search Documentation (Appendix B)
- Brisbane City Council Floodwise Report (Appendix C)
- Brisbane City Council Interactive Mapping (Appendix D)
- Architectural Plans: Prepared by Reddoor, Drawing Reference 210178 (Appendix E)

### 1.2. LOCALITY PLAN

Figure 1-1 SITE LOCATION





## 2.0 SCOPE OF REPORT

This Report will address the following stormwater issues:

- Identify the location of the lawful discharge points for the development,
- Prepare a stormwater concept plan for the proposed development,

### STORMWATER QUANTITY

- Identify the increase in stormwater runoff that will be generated by the development (if any),
- If required identify management strategies to ensure that stormwater discharge from the development is maintained at pre-development flows for all storm events up to and including Q100, and
- Identify the location of the lawful discharge points for the development and demonstrate that the proposed stormwater discharge will not adversely affect the downstream properties and drainage systems.

### STORMWATER QUALITY

- Identify the development sites classification (high or low risk) and the relevant planning policies and guidelines that the development must comply with,
- If applicable, identify Water Quality Objective Targets as determined by Local Authority Planning Schemes & Department of Environment & Resource Management.
- Identify a suitable “stormwater treatment train” aimed to comply with the set Water Quality Objectives if applicable.
- If applicable, demonstrate compliance to the determined Water Quality Objectives with the use of “Model for Urban Stormwater Improvement Conceptualisation” Software
- Prepare a conceptual stormwater layout highlighting all stormwater quality treatment devices proposed for this development.
- Provide details on monitoring and maintenance requirements for all stormwater treatment devices incorporated within this development.

### EROSION AND SEDIMENT CONTROL

- Provide details of an Erosion and Sediment Control Management Plan which can be developed at the later stage during Operational Work.

## 3.0 SITE CHARACTERISTICS

### 3.1. LOCATION

The development site is located approximately 2.5km South-East of the Brisbane City CBD. The site address is 93 & 97 Logan Road and 44 Balaclava Street, Woolloongabba and is formally described as Lot 50 on RP217072 and Lot 76 on RP11846 respectively.

### 3.2. SITE DESCRIPTION

The development site in its current state slopes from the South-West to the North-East Boundary at Logan Road. Naxos understand that an approximate 2m Road widening along the Balaclava Street Frontage is proposed for the development site as indicated on the Architectural Plans. The total proposed development site area (excluding the proposed road widening) is approximately 2374m<sup>2</sup> and has an average grade of 4.29%.

Refer to Appendix A for Detailed Survey and Appendix E for Architectural Plans.

Figure 3-2 AERIAL PHOTOGRAPH



### 3.3. EXISTING LAND USE

#### 44 Balaclava Street

The site in its current state consists of an existing block and brick building that is slab on ground. The existing building has a tin roof which extends boundary to boundary.

Site access is via Balaclava Street.

Figure 3-3 44 BALACLAVA STREET – EXISTING BUILDING





## 93 Logan Road

The site in its current state contains the heritage listed Broadway Hotel that is slab on ground. The Broadway Hotel is heritage-listed and contains a tin roof.

The remainder of the site consists of non-heritage listed building extensions with tin roofing, hardstand carparking and minor landscaping.

Site access is via Balaclava Street and Logan Road.

Figure 3-4 93 LOGAN ROAD – BALACLAVA STREET - CARPARK ENTRANCE



Figure 3-5 93 LOGAN ROAD – SHORT STREET – EXISTING



Figure 3-6 93 LOGAN ROAD – SHORT STREET – LOGAN ROAD - EXISTING



### 3.4. EXISTING STORMWATER DISCHARGE

Based on available information from Councils eBiMAP2, via Google Maps/Street View and detailed survey undertaken of the proposed development site, it appears that the existing structures stormwater runoff is collected by a series of gutters and discharged to the kerb and channel located along the Balaclava Street, Short Street and Logan Road frontages. The stormwater is ultimately collected by a series of gully pits located north east of the development site towards the Logan Road frontage.

Refer to Appendix A for Detailed Survey and Appendix B for Brisbane City Council e-BiMap2.

It is noted that is site is affected by Brisbane River Flood Planning Area 5 (FPA5) and Creek/Waterway Flood Planning Area (FPA4 and FPA5). Refer to Appendix C for Floodwise Property Report and Appendix D for Brisbane City Council Interactive Mapping.

For the pre-development catchment properties refer to Table 3-1 below. For the purposes of this Report, the proposed road widening along Balaclava Street has been excluded from both the pre and post development catchments and the Post Development area of 2374m<sup>2</sup> will be utilised for both the Pre and Post Development scenarios for comparative measures.

Table 3-1 PRE-DEVELOPMENT AREAS

| Post-Development Areas – Total Site Area (2374m <sup>2</sup> ) |                    |       |
|----------------------------------------------------------------|--------------------|-------|
| Impervious Area                                                | 2333m <sup>2</sup> | 98.3% |
| Pervious Area                                                  | 41m <sup>2</sup>   | 1.7 % |



## 4.0 BRISBANE CITY COUNCIL INTERACTIVE MAPPING

Brisbane City Council (BCC) interactive mapping has been undertaken for the proposed development site. It is noted that the subject site is affected by Brisbane River Flood Planning Area 5 and appears to be in the bottom third of the catchment. Refer to Appendix and the below Figures for the Council Defined flood extents.

It is noted that in accordance with the Brisbane City Council Flood Planning Provisions, the Brisbane River and Creek/Waterway Flood Planning Area 5 (FPA5) the proposed Development is compatible with the Flood Hazard subject to meeting all other relevant requirements.

For Creek/Waterway Flood Planning Area 4 the proposed Development will require a Flood Risk Assessment in accordance with the Flood Planning Scheme Policy to demonstrate the use is compatible with the Flood Hazard.

Figure 4-7 BCC INTERACTIVE MAPPING – BRISBANE RIVER

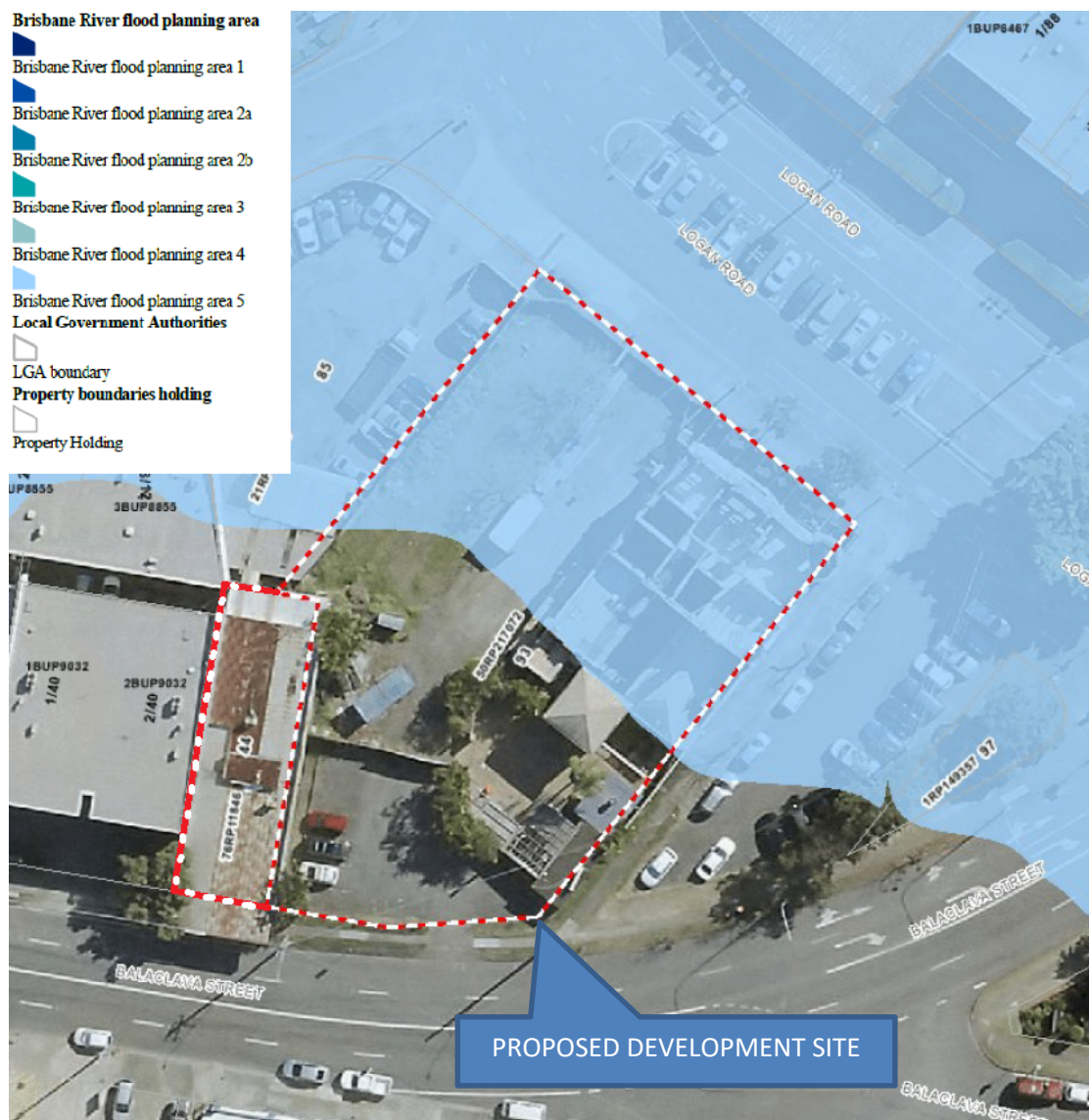




Figure 4-8 BCC INTERACTIVE MAPPING – CREEK/WATERWAY

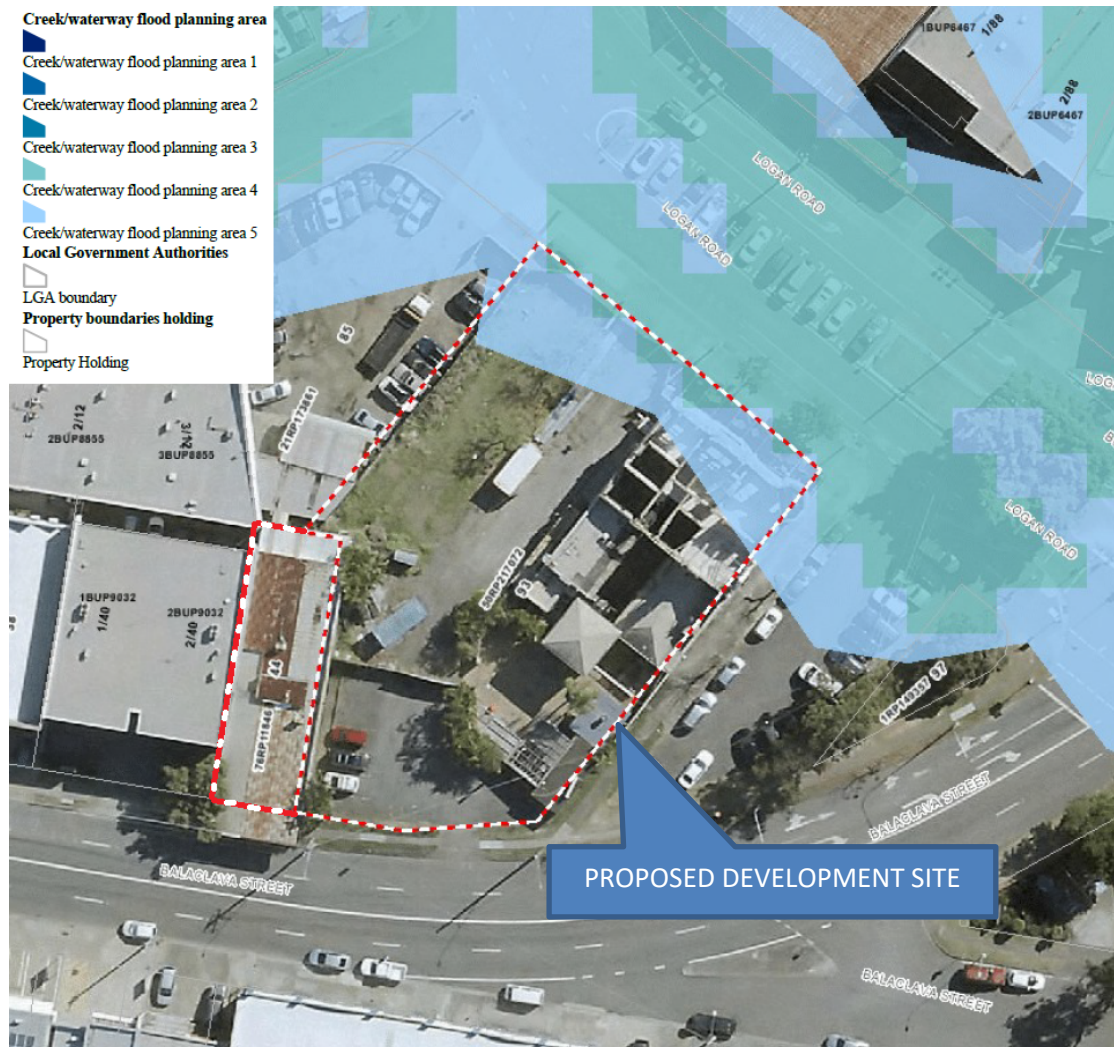


Figure 4-9 BCC INTERACTIVE MAPPING – OVERLAND FLOW





## 5.0 PROPOSED SITUATION

### 5.1. PROPOSED LAND USE

The proposal is to demolish the existing non-heritage structure/s and infrastructures whilst maintaining the original heritage listed structure located in the Eastern Corner of the development site as shown in the Figure Below.

Figure 5-10 AERIAL PHOTOGRAPH – HERITAGE BUILDING BEING MAINTAINED



Once the demolition is completed, it is proposed that a 34 storey apartment tower development will be constructed. Parking will be located throughout multiple levels of the development as listed below: Basement 4 to Basement 1, Level 2 Podium to Level 6 Podium (7 Storeys of parking in total). Vehicular access to the development will be from Balaclava Street at Level 1.

Level 7 and the Roof Top will be communal facilities with all levels in between this being residential apartments. Refer Appendix E for Architectural Plans.

For the post development catchment properties refer to Table5-2 below.

Table 5-2 POST-DEVELOPMENT AREAS

| Post-Development Areas – Total Site Area (2374m <sup>2</sup> ) |                    |      |
|----------------------------------------------------------------|--------------------|------|
| Impervious Area                                                | 2374m <sup>2</sup> | 100% |
| Pervious Area                                                  | 0                  | 0%   |

## 5.2. DEVELOPED STORMWATER DISCHARGE

The proposed development has an impervious area of approximately 99.6% of the site and comprises roof and hardstand areas and makes up the entirety of the development site.

The roof area is to be collected by a series of gutters and down pipes that will ultimately be directed to the sites nominated lawful point of discharge being the existing Gully Pit (N16036012) located along the Logan Road frontage.

The un-roofed driveway/ground areas are to be captured by a series of Field Inlets fitted with SPEL StormSack (or approved equivalent) prior to discharging to the above mentioned lawful point of discharge.

All captured internal drainage is to be designed by the Hydraulic Consultant during the detailed design phase of the project.

To promote sustainability, it is recommended that rainwater re-use tanks be utilised to harvest collected water from the roof areas for re-use in landscaping however it shall be noted Brisbane City Council do not consider/approve the use of harvest tanks (rainwater tanks) for the use of on-site detention storage to manage and mitigate peak stormwater discharge from site as a result of development.



## 6.0 STORMWATER QUANTITY: RATIONAL METHOD

### 6.1. STORMWATER ANALYSIS

The 'Rational Method' was utilised to calculate the peak stormwater discharge for a series of storm events ranging from Q1 to Q100.

The following sections summarise the input values used within the 'Rational Method' and the corresponding peak discharge flows for both pre-development and post-development scenarios.

Supporting 'Rational Method' calculations can be found in Appendix G.

### 6.2. PRE-DEVELOPMENT

The Rational Method (in accordance with QUDM and Brisbane City Council City Plan) has been used to assess pre-development stormwater discharge.

The following parameters have been adopted:

|                                    |                                    |
|------------------------------------|------------------------------------|
| Time of Concentration:             | 10 mins (based on QUDM Figure 4.4) |
| Run-off Co-efficient C10:          | 0.900 (based on QUDM Table 4.5.4)  |
| Area (m <sup>2</sup> ):            | 2374                               |
| Impervious Area (m <sup>2</sup> ): | 2364                               |
| Impervious Site Area (%):          | 99.6                               |
| Pervious Area (m <sup>2</sup> ):   | 10                                 |
| Pervious Site Area (%):            | 0.4                                |

Table 6-3 PRE-DEVELOPMENT DISCHARGE

| ARI (yr) | C     | I (mm/hr) | Pre-Development Discharge (m <sup>3</sup> /s) |
|----------|-------|-----------|-----------------------------------------------|
| 1        | 0.720 | 92        | 0.044                                         |
| 2        | 0.765 | 105       | 0.053                                         |
| 5        | 0.855 | 142       | 0.080                                         |
| 10       | 0.900 | 167       | 0.099                                         |
| 20       | 0.945 | 192       | 0.120                                         |
| 50       | 1.000 | 223       | 0.147                                         |
| 100      | 1.000 | 247       | 0.163                                         |

### 6.3. POST-DEVELOPMENT

The Rational Method (in accordance with QUDM and Brisbane City Council City Plan) has been used to assess pre-development stormwater discharge.

The following parameters have been adopted:

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Time of Concentration:             | 5 mins (based on QUDM Figure 4.4) |
| Run-off Co-efficient C10:          | 0.900 (based on QUDM Table 4.5.4) |
| Area (m <sup>2</sup> ):            | 2374                              |
| Impervious Area (m <sup>2</sup> ): | 2374                              |
| Impervious Site Area (%):          | 100                               |
| Pervious Area (m <sup>2</sup> ):   | 0                                 |
| Pervious Site Area (%):            | 0                                 |

Table 6-4 POST-DEVELOPMENT DISCHARGE

| ARI (yr) | C     | I (mm/hr) | Post-Development Discharge (m <sup>3</sup> /s) |
|----------|-------|-----------|------------------------------------------------|
| 1        | 0.720 | 112       | 0.053                                          |
| 2        | 0.765 | 127       | 0.064                                          |
| 5        | 0.855 | 174       | 0.098                                          |
| 10       | 0.900 | 205       | 0.122                                          |
| 20       | 0.945 | 236       | 0.147                                          |
| 50       | 1.000 | 276       | 0.182                                          |
| 100      | 1.000 | 307       | 0.202                                          |

## 6.4. PRE-DEVELOPMENT vs POST-DEVELOPMENT (UN-MITIGATED)

A comparison of pre-development and post-development discharge flow rates (un-mitigated) from the development site highlights the net change in post-development flows as noted below.

Table 6-5 PRE-DEVELOPMENT vs POST-DEVELOPMENT (UN-MITIGATED)

| ARI Storm Event (yr) | Pre-Developed Conditions (m <sup>3</sup> /s) | Post-Development Conditions (m <sup>3</sup> /s) | Difference +/- (m <sup>3</sup> /s) |
|----------------------|----------------------------------------------|-------------------------------------------------|------------------------------------|
| 1                    | 0.044                                        | 0.053                                           | + 0.009                            |
| 2                    | 0.053                                        | 0.064                                           | + 0.011                            |
| 5                    | 0.080                                        | 0.098                                           | + 0.018                            |
| 10                   | 0.099                                        | 0.122                                           | + 0.023                            |
| 20                   | 0.120                                        | 0.147                                           | + 0.027                            |
| 50                   | 0.147                                        | 0.182                                           | + 0.035                            |
| 100                  | 0.163                                        | 0.202                                           | + 0.039                            |

The above table indicates an increase in stormwater discharge from Pre to Post Development. During a 10yr ARI and a 100yr ARI there is an increase of 23L/s and 39L/s respectively.

As per Brisbane City Council City Plan 2014, SC6.16 Infrastructure Design Planning Scheme Policy / Chapter 7 Stormwater, Brisbane City Council provides advice on when to provide stormwater detention. Please find an Extract below in italics.

### ***When to provide stormwater detention***

1. *As a general rule, stormwater detention is less likely to be required at the bottom one-third of the catchment.*
2. *The majority of infill development should not require stormwater detention, although stormwater detention may be required under 3 specific conditions, being:*
  - a. *when a development is likely to increase run-off to such an extent that the downstream drainage (both piped and overland) cannot cater for the additional capacity or adverse impacts are created;*
  - b. *where there is no practical way to increase the downstream system capacity;*
  - c. *if the increase in flows from the development would cause adverse flooding impacts to adjacent or downstream properties.*
3. *Stormwater detention requirements may be waived where:*
  - a. *The development will not cause adverse impacts or actionable nuisance to surrounding properties;*
  - b. *the site discharges directly into the Brisbane River or Moreton Bay where flooding is controlled by river flooding or storm tide;*
  - c. *the site discharges directly into the lower catchments of creeks or major drains where it would generally be undesirable to have detention where it may allow peak flows from the site to coincide with the wider catchment flood peak;*
  - d. *the proposal is for residential development where stormwater is disposed to Council's kerb and channel or piped stormwater system and major flows from the site would drain to Council's road reserve;*
  - e. *for infill development only, the development site has an existing actual impervious fraction greater than 60%;*



- f. the applicant can demonstrate to Council's satisfaction that, if the total catchment containing the site were developed to its full potential while maintaining the existing infrastructure, stormwater detention on the subject site would not be of benefit in reducing adverse flooding impacts on downstream roads, properties and open watercourses, which may be the case at the lower end of major catchments;*
- g. the downstream drainage system has been upgraded, or is proposed to be upgraded by the development to cater for fully developed peak flows from the catchment to the Council's standard of service;*
- h. the development site is located entirely within the 1% AEP floodplain (waterway/creek or river flooding sources).*

In accordance with the above mentioned the proposed development site falls under item 3e, ie. the pre-development fraction impervious exceeds 60% of the site area.

Therefore no on-site detention is proposed.

## 7.0 STORMWATER QUALITY

### 7.1. SITE CLASSIFICATION

The implementation of a suitable stormwater management plan for the proposed development is determined from the following:

- Identify if compliance with the Department of Environment and Resource Management, State Planning Policy is required, or
- Identify if compliance with the local authorities Stormwater Quality is required, or
- Implement Best Management Practice Guidelines for low risk sites as per local authority development guidelines.

Either compliance objective will still be designed based on the following key principles:

- The use of Water Sensitive Urban Design (WSUD) principles are to be adopted throughout the site where possible,
- Water Quality controls are to be considered under two separate phases of the development, the construction phase and the operational phase,
- The construction phase requires the assessment of the site during the construction and maintenance period of the development.
- The operational phase requires assessment of the site over the total life of the site and its water quality control measures.

## 7.2. STATE PLANNING POLICY ASSESSMENT

To determine whether compliance with the Department of Environment and Resource Management (DERM) State Planning Policy 4/10 Healthy Waters is required, it is required to undertake the State Planning Policies Checklist. Below is an extract from section 2.7 in table format. If any of the trigger questions are answered Yes, then compliance is expected with the State Planning Policy. If all trigger questions are answered No, then stormwater quality best management practices will be adopted.

Table 7-6 STATE PLANNING POLICY CHECKLIST

| Development Application Types                                                                                                       |           |                                                                                                                                                  |           |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Material Change in Use MCU                                                                                                          | Yes / No? | Reconfiguration of Lots ROL                                                                                                                      | Yes / No? |
| A material change of use for an urban purpose that involves premises 2500m <sup>2</sup> or greater in size?<br><b>AND</b> , If yes: | NO        | Reconfiguring a lot for an Urban purpose that involves premises 2500m <sup>2</sup> or greater in size AND will result in six or more lots?<br>OR | NO        |
| Will result in six or more dwellings;<br>OR                                                                                         | NO        | Operational work for an urban purpose that involves disturbing a land area 2500m <sup>2</sup> or greater in size?                                | NO        |
| Will result in an impervious area greater than 25% of the NET development area?                                                     | NO        |                                                                                                                                                  |           |

As demonstrated in the table above, none of the questions have answered 'Yes', therefore Naxos Engineers has identified that the development is deemed 'Low Risk' and will adopt a stormwater quality best practice approach as per Brisbane City Councils City Plan 2014.

## 7.3. POLLUTANT CONCERNS

The pollutants of concern are summarised below. These pollutants can have adverse environmental impacts within the downstream catchment. It is proposed to adopt Site-Based Water Sensitive Urban Design to provide capture and treatment to the below mentioned pollutants.

Table 7-7 TYPICAL POLLUTANTS

| POLLUTANT              | SOURCE                                                        |
|------------------------|---------------------------------------------------------------|
| LITTER                 | PAPER, CONSTRUCTION PACKAGING, FOOD WASTE, CEMENT, OFF - CUTS |
| SEDIMENT               | UNPROTECTED EXPOSED SOILS, STOCKPILES, EROSION                |
| HYDROCARBONS           | FUEL AND OIL SPILLS, LEAKS FROM MACHINERY                     |
| TOXIC MATERIALS        | CEMENT SLURRY, ASPHALT PRIMER, SOLVENTS, CLEANING AGENTS      |
| PH ALTERING SUBSTANCES | ACID SULPHATE SOILS, CEMENT SLURRY, WASH WATER                |
| THERMAL POLLUTION      | VEHICLES AND MACHINERY, INCREASED IMPERVIOUS AREAS            |

#### 7.4. CONSTRUCTION PHASE

During the construction phase, the potential exists for significant increases in the amount of pollutants, particularly sediment, escaping from the site. During this period, an Erosion and Sediment Control Plan is required to be prepared as part of the overall Environmental Management Plan prepared for the construction phase.

An Erosion and Sediment Control Plan will be prepared during the detailed design phase of the development. This plan will be prepared in accordance with Local Authority Guidelines and with recognised industry standards. This plan may also be submitted to Brisbane City Council for Operational Works Approval.

#### 7.5. OPERATIONAL PHASE

Table 7-6 State Planning Policy Checklist has identified the development as a 'low risk' site.

As this development has been identified as 'low risk', selection of appropriate Stormwater Quality Best Management Practices (SQBMP) is essential to improve stormwater quality through the prevention, minimisation and/or trapping of pollutants.

#### 7.6. WATER QUALITY OBJECTIVES

Specific water quality objectives need not be identified for this Development as this Development has been identified as 'low risk' for water quality. Understanding the expected pollutants for this type of Development will assist in selection of which types of practices will be appropriately implemented for the pollutants of concern.



## 8.0 STORMWATER QUALITY BEST MANAGEMENT PRACTICES

### 8.1. SELECTION OF SQBMP's

There exist a number of publications describing the different types, functions, applications, and performance of many SQBMP's. Water Sensitive Urban Design should be used to look at the integration of SQBMP's within any Stormwater Quality Management Plan. Some of the more typical SQBMP's are listed in the below table for consideration.

Table 8-8 TYPICAL SQBMP'S

| STORMWATER QUALITY BEST MANAGEMENT PRACTICES |                                                                                                                                                                                                                                    |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Treatment Device / Practice                  | Benefits                                                                                                                                                                                                                           |
| Site Maintenance                             | Reduce the amount of gross pollutants and sediment runoff generated by the development by maintaining vegetated areas and the removal of debris and litter.                                                                        |
| Rubbish Bins                                 | Reduce the amount of gross pollutants generated by the development by collecting and dumping litter and/or waste.                                                                                                                  |
| Filter Baskets (within inlet pits)           | Reduction in gross pollutants and total suspended solids generated by the development by filtering water prior to entering the stormwater system which traps litter, debris and fine sediment.                                     |
| Gross Pollutant Traps (GPT's)                | Removal of gross pollutants generated by the development site. Some GPT's that are available on the market today can also remove hydrocarbons from runoff, thus reducing any oil and fuel pollutants generated by the development. |
| Rainwater Re-Use                             | Re-using generated site runoff for landscaping and irrigation purposes etc. will reduce pollutant loads generated by the development site.                                                                                         |
| Grass Swales                                 | Directing site runoff to grass swales prior to discharging will have a reduction to the total pollutants generated by the development.                                                                                             |
| Sand Filters (Bio-Retention)                 | Directing site runoff to a bio-retention basin prior to discharging will have a reduction to the total pollutants generated by the development.                                                                                    |

### 8.2. ADOPTED SQBMP's

When choosing to adopt selected SQBMP's, it is important to identify the expected pollutants that the proposed development will generate during its operational phase. A summary of the expected typical pollutants can be found within Table 6-4 of this Report.

Based on the expected pollutants and this development's expected residential activities, the following is a summary of the SQBMP's that are recommended to be adopted as a minimum.

- Site Maintenance
- Rubbish Bins
- Filter Baskets

#### Site Maintenance

As this Development is a Mixed Use Development, it is assumed that regular landscaping and general maintenance will occur including the removal of any rubbish or debris within the development by the Body Corporate thereby removing the gross pollutants on site.

## Rubbish Bins

The Development is required to have rubbish bins for general waste to remove gross pollutants generated by the Development.

## Filter Baskets

As part of the sites internal stormwater infrastructure, all inlet pits placed in hardstand and/or driveway areas are to be installed with Council-approved Filter Baskets to prevent debris and fine sediment entering the stormwater system. Filter Baskets are effective at removing gross pollutants and total suspended solids from stormwater runoff and are capable of operating under a high flow scenario (relative catchment).

Refer to Appendix H for Filter Basket Maintenance Documentation.

Figure 8-11      EXAMPLE FILTER BASKET 1



Figure 8-12      EXAMPLE FILTER BASKET 2



## 9.0 MONITORING AND MAINTENANCE

### 9.1. MAINTENANCE REQUIREMENTS

Routine maintenance of the proposed infrastructure is required to minimise the potential for untreated stormwater discharging from the site.

The stormwater treatment device(s) shall be maintained using the following documentation;

- Manufacturers specifications for proprietary stormwater management devices,
- Maintenance checklists and rectification works attached to this report.

### 9.2. MAINTENANCE FREQUENCY

More detailed performance information with regard to maintenance frequency and scheduled maintenance tasks for the site can be obtained by actively developing a maintenance log (refer below); however, it does not supersede maintenance requirements outlined in the manufacturers' specifications for proprietary elements of the SBSMP.

### 9.3. MAINTENANCE RECORD

A record of all maintenance checks for all stormwater controls on-site should be kept to evolve an appropriate maintenance routine to reflect the particular characteristics of the adopted treatment devices. It will also allow management of the site to refine the maintenance frequencies listed in this report, which were based on generic devices located in typical urban environments.

The record is to be used to create a chain of responsibility for maintenance and should include details of the following:

- The date of maintenance,
- The name of the persons performing the maintenance,
- What types of maintenance actions were performed for each water quality device,

The environmental state of the device including an estimate of the type and weight of litter removed and the amount of sediment captured where appropriate.

## 10.0 EROSION AND SEDIMENT MANAGEMENT

### 10.1. OBJECTIVES

The objective of Erosion and Sediment Management is to limit soil erosion and control sediment discharge from the proposed development by using suitable control devices during the four (4) primary phases; Existing, Earthworks, Construction and the Proposed Use.

Typical erosion and sediment control measures that will be incorporated into these development phases are highlighted in the following section.

### 10.2. EROSION & SEDIMENT MANAGEMENT DURING DEVELOPMENT PHASES

#### PHASE 1 - EXISTING

Prior to construction commencing, the following sediment and erosion control measures will be implemented to minimise disturbance and ensure water quality is maintained:

- Designation of transport routes to ensure minimal vegetation disturbance. Transport routes will have construction exits in accordance with IECA Aust Guidelines,
- Construction entry/exit to be installed and will comprise of a designed gravel pad or placement of hardwood logs in accordance with the IECA Aust Guidelines,
- Install sediment fences around the proposed site (along tow of batter alignment),
- Install check dams if required, and
- Install dust control fences adjacent to the proposed earthworks areas (along property boundary) if required.

#### PHASE 2 - EARTHWORKS AND PHASE 3 - CONSTRUCTION

The following measures will be undertaken to mitigate water quality impacts during construction phase:

- Sediment fences to be erected at the base of all batters and stockpiles to prevent sediment transportation off site,
- Turf filter strips to be placed along all road verges,
- Diversion swales to divert sediment laden water,
- Rock check dams are to be placed intermittently along diversion swales,
- Re-vegetation of all disturbed areas as soon as possible,



- All sediment control structures to be maintained in an effective manner and inspected after each stormwater event. No structure is to accumulate sediment above 40% of its capacity,
- Regular monitoring of water quality to determine the effectiveness of the sediment and erosion control measures.

#### PHASE 4 - PROPOSED DEVELOPMENT

Once construction is completed, the following strategies will be implemented to limit soil erosion and control sediment discharge leaving the site:

A monitoring program will be established for the stormwater treatment devices.

### 10.3. EROSION CONTROL MEASURES

The time of disturbance on-site should be kept to a minimum by ensuring that construction works immediately follow the earthworks phase. Consideration to staging works should be given to minimise the area of exposed works at any given time.

Areas that may be subject to concentrated flow and that have been cleared may require turfing to ensure gully erosion does not start.

Any overburden that is not to be taken off-site should be stockpiled nearby and covered to prevent the mobilization of any particles into the drainage system.

The remaining exposed areas of the site are to be damped down as deemed necessary by the site supervisor to prevent dust. All batters are to have mulch or erosion control mats installed immediately after achieving final level.

Dust fencing is to be installed around the perimeter of earthworks to prevent wind velocities at ground level over the site if required.

The site is to be landscaped and revegetated in accordance with the approved Landscape Plans immediately after completion of construction activities to minimise the risk of erosion from exposed earthworks.

## 10.4. SEDIMENT CONTROL MEASURES

With reference to the IECA Aust Guidelines and Current Best Practice methods, there are four fundamental sediment control principles that have been identified for use during construction for this development site and are as follows:

### Construction Exit

A dedicated construction exit is to be located at the sites entry and exit point for vehicles. This exit will be established to facilitate the removal of soil, mud, dust and debris from the tyres of vehicles prior to leaving the construction site. The construction exit can comprise of a gravel pad designed or placement of hardwood logs, constructed and maintained in accordance with the IECA Aust Guideline. Alternatively, a vibratory grid system can be hired or constructed. The advantages of the grid system include ease of movement and they can be used for several years.

### Sediment Fences

Sediment fencing is to be established down slope of any exposed earthworks where there is a risk of contaminated water leaving the site prior to clearing and site works commencing. Sediment fencing may be required at regular spacing down the disturbed grade to limit rutting caused by concentration of sheet flow. Sediment fences shall be used to protect any temporary stockpile areas on an as-needs basis. Sediment collected from sediment barriers is to be regularly removed and either taken off site as part of the earthworks phase of the proposed development or stockpiled for use during revegetation.

### Sediment Barriers

Sediment barriers are to be constructed around all stormwater drainage inlet points where contaminated water may drain to. This will aid in ensuring sediments are settled out prior to flows entering the underground stormwater drainage system. Sediment barriers are to be gravel wrapped in geotextile 'sausage' or similar.

### Turf Filter Strips

If required, turf filter strips approximately 600mm minimum wide can be placed on the upstream side of the proposed concreted footpath. These will act in conjunction with sediment fences to further treat any overland flow from the site. Turf filter strips are to be constructed and maintained in accordance with the IECA Aust Guidelines.

## 11.0 CONCLUSION

### 11.1. LAWFUL POINT OF DISCHARGE

The lawful point of discharge has been identified as the existing Gully Pit (N16036012) located North-East of the development site along the Logan Road Frontage.

### 11.2. STORMWATER QUANTITY

Due to the location of the Development Site, the Development will not cause adverse impacts or actionable nuisances to the surrounding properties.

As per Brisbane City Council City Plan 2014, SC6.16 Infrastructure Design Planning Scheme Policy / Chapter 7 Stormwater, Brisbane City Council provides advice on when to provide stormwater detention. Please find an Extract below in italics.

3e *for infill development only, the development site has an existing actual impervious fraction greater than 60%;*

In accordance with the above mentioned Extract the proposed development site falls under item 3e, ie. the pre-development fraction impervious exceeds 60% of the site area.

Therefore no on-site detention is proposed.

### 11.3. STORMWATER QUALITY

Stormwater quality improvement devices have been appropriately selected as to generally comply with Stormwater Quality Best Management Practices and incorporation of Water Sensitive Urban Design where possible.

The following is a summary of the minimum treatment devices and/or management practices required for the proposed development.

- Site Maintenance

As this development is a residential development, it is assumed that regular landscaping and general maintenance will occur including the removal of any rubbish or debris within the development by the Onsite Management thereby removing the gross pollutants on site.

- Rubbish Bins

The development is required to have rubbish bins for general waste as to remove gross pollutants generated by the development.

- Filter Baskets

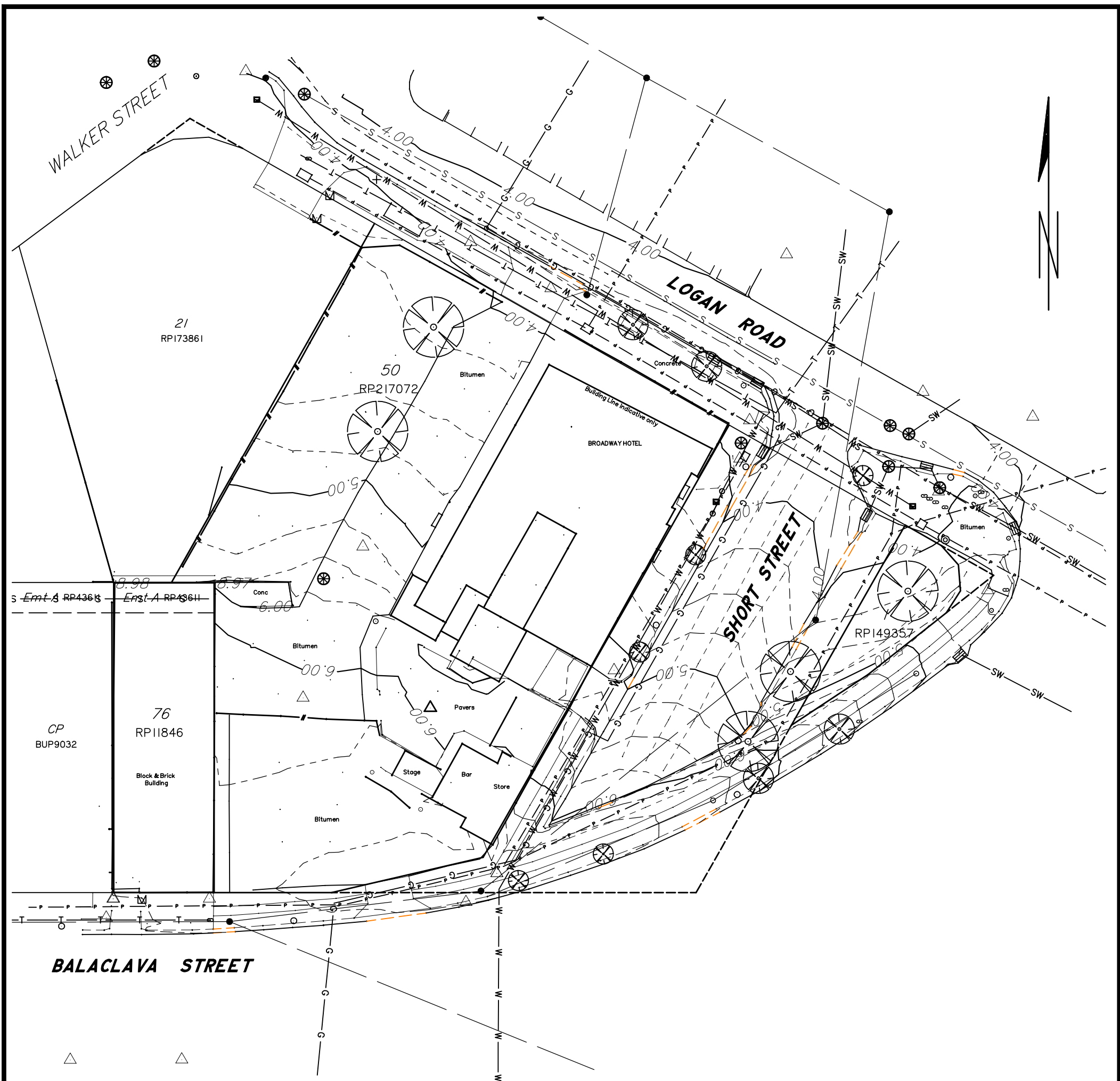
Driveway inlets to be fitted with Filter Baskets to prevent debris and fine sediment entering the stormwater system. Filter Baskets are effective at removing gross pollutants and total suspended solids from stormwater runoff.

#### 11.4. EROSION AND SEDIMENT CONTROL

An Erosion and Sediment Control (ESC) plan will be completed as part of the detailed design phase of this Development and shall incorporate the recommendations included within this Report. This Report and plan shall remain on site at all times, and it is the responsibility of the Contractor on-site to ensure the assembly and maintenance of all devices throughout the Development.



## Appendix A – DETAILED SURVEY



#### TREE DESCRIPTIONS

Tree types noted are the interpretation of WM Surveys staff. Tree species should be confirmed by a qualified Arborist/Botanist.

#### MAXIMUM BUILDING HEIGHT

As per Brisbane City Council City Plan 2014 the contours shown on this plan cannot be used to determine maximum building height. For further information contact WM SURVEYS

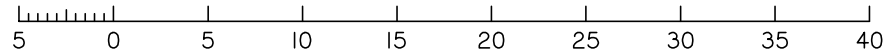
#### SERVICES BY RECORDS

WM SURVEYS take no responsibility for the location of non visible services. They are plotted from existing records. A Service Locator should be engaged to determine the exact location of underground services if required.

ALL SERVICES ARE BY RECORDS ONLY.

R – Roofline Level  
G – Guttering Level

Scale 1: 400 – Lengths are in Metres.



— P — P — POWER  
— T — T — U/G TELSTRA  
— G — G — U/G GAS  
— S — S — U/G SEWERAGE  
— W — W — U/G WATERMAIN  
— SW — SW — U/G STORMWATER

### CONTOUR & DETAIL SURVEY

Description LAND at 93 & 97 LOGAN ROAD  
WOOLLOONGABBA  
LOT 50 on RP217072,  
LOT 1 on RP149357  
and LOT 76 on RP11846  
Brisbane City Council

Datum

Datum for Levels ..... AHD  
Levelled from PSM No.44566.....RL4.071m AHD

Scale in Metres

1: 400 at A3

### WM SURVEYS PTY LTD

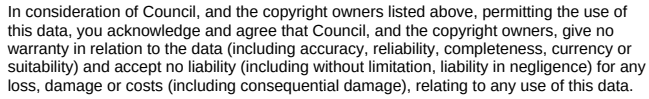
P.O.Box 7220  
Brendale QLD. 4500  
warwick@wmsurveys.com.au  
Ph 0419 685 538 Fax 07 3882 5168  
ACN 133 397 065 ABN 91 133 397 065

**NOTE:**  
This plan has been prepared from a combination of field survey and existing records for the purpose of designing new constructions on the property, and should not be used for any other purpose. The property boundaries have not been marked at the time of survey and have been determined from a combination of field and plan measurements. Further survey work may need to be undertaken to determine the exact boundary position. All visible services and features have been located by field measurements. If unable to have been located, services have been plotted by records and noted accordingly. Prior to any construction or to determine exact location, the relevant Authority should be contacted for detailed locations. This note forms an integral part of this plan.

|                        |                |         |          |
|------------------------|----------------|---------|----------|
|                        |                |         |          |
| A                      | ORIGINAL ISSUE | 30/8/21 | WM       |
| ISSUE:                 | DESCRIPTION    | DATE    | SIGNED   |
| FILE REF. 2643DT-A.DWG |                |         | ISSUE: A |
| Date                   | 30/08/2021     | Ref.    | 2643DT   |

## Appendix B – COUNCIL eBiMAP2





Projection:  
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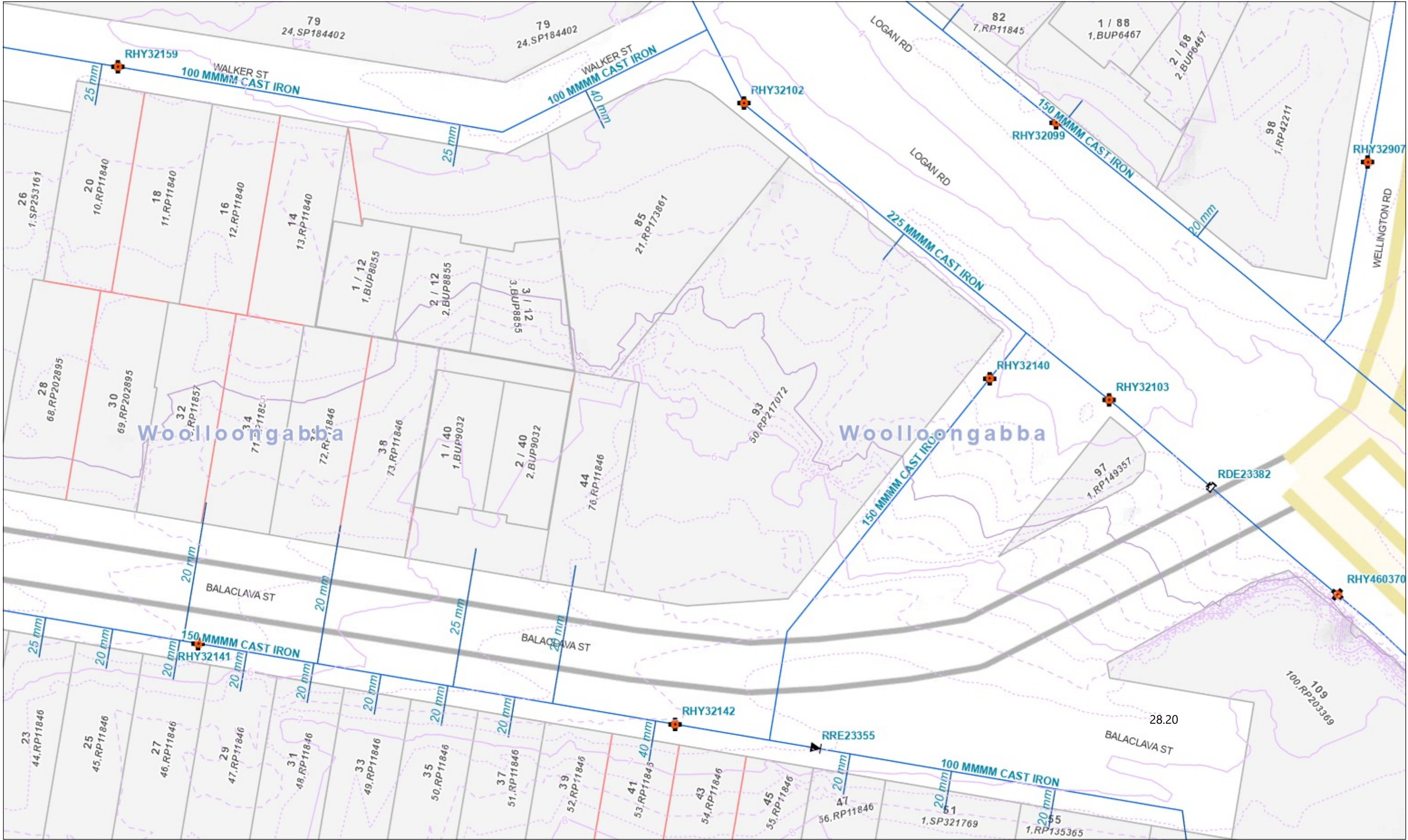
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Legend

|                                        |                                  |                                    |                                 |                              |
|----------------------------------------|----------------------------------|------------------------------------|---------------------------------|------------------------------|
| 1m Contour (2019)                      | 50m Contour                      | 10m Contour                        | 5m Contour                      | 1m Contour                   |
| 50cm Contour (2019)                    | 25cm Contour (2019)              | Sewer Chamber                      | CHAMBER                         | CHAMBER - OFFLINE            |
| Sewer Fitting - Main Fittings          | END FLUSHING POINT               | INLINE FLUSHING POINT              | OUTLET                          | VACUUM LIFT                  |
| Sewer Fitting - All Other Fittings     | JOINT                            | RODDING JOINT                      | PROPERTY CONNECTION BOUNDARY    | JUNCTION                     |
| END CAP                                | BEND                             | WYE                                | TEE                             | REDUCER                      |
| GIBAULT JOINT                          | CROSS                            | INLET                              | OUTLET                          | <all other values>           |
| Sewer Structure - by Type              | CONCRETE STOP                    | PIPE BRIDGE                        | ANCHOR BLOCK                    | HEAD WALL                    |
| PIER                                   | Sewer Support Structure Boundary | Sewer Manholes                     | MANHOLE                         | MANHOLE - OFFLINE            |
| <all other values>                     | Sewer Manhole -All Other Types   | End                                | Flume Pit                       | Sewer Manhole Stub           |
| Sewer Control Valve - by Type          | AIR                              | SCOUR                              | VACCUM, AS CONSTRUCTED          | REFLUX                       |
| AIR - OFFLINE                          | SCOUR - OFFLINE                  | VACCUM - OFFLINE                   | REFLUX - OFFLINE                | Sewer System Valve - by Type |
| SEWER DOOR                             | GATE                             | BUTTERFLY                          | SEWER DOOR - OFFLINE            | GATE - OFFLINE               |
| BUTTERFLY - OFFLINE                    | <all other values>               | Sewer Network Structure -Treatment | TREATMENT PLANT, AS CONSTRUCTED | TREATMENT PLANT - OFFLINE    |
| Sewer Network Structure - All Features | STORAGE FACILITY                 | ODOUR CONTROL                      | WET WELL                        | STORAGE FACILITY - OFFLINE   |
| WET WELL - OFFLINE                     | ODOUR CONTROL - OFFLINE          | Sewer Pump Station                 | PUMP STATION                    | PUMP STATION - OFFLINE       |
| Sewer Network Structure Boundary       | Sewer Vertical Gravity Main      | Sewer Vertical Pressure Main       | Sewer Service                   | Model Link                   |
| Service                                | <all other values>               | Sewer Gravity Main - by Type       | SYPHON                          | DISCHARGE                    |
| TRUNK MAIN                             | RETICULATION MAIN                | OVERFLOW MAIN                      | MODEL LINK                      | SYPHON - OFFLINE             |
| DISCHARGE - OFFLINE                    | TRUNK MAIN - OFFLINE             | RETICULATION MAIN - OFFLINE        | OVERFLOW MAIN - OFFLINE         | MODEL LINK - OFFLINE         |
| <all other values>                     | Sewer Pressure Main - by Type    | MODEL LINK                         | LOW PRESSURE MAIN               | RISING MAIN                  |
| VACUUM MAIN                            | MODEL LINK - OFFLINE             | LOW PRESSURE MAIN - OFFLINE        | RISING MAIN - OFFLINE           | VACUUM MAIN - OFFLINE        |
| Sewer Drainage Plan                    | Sewer Drainage Plan Joiner       | Sewer Drainage Plan Extension      | Property Holding                | Sealed Plan                  |
| Parcel                                 | Parcel - Outside Brisbane        |                                    |                                 |                              |





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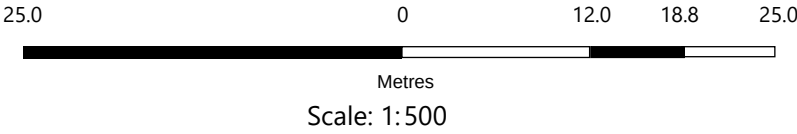
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Notes:



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Water





Legend

1m Contour (2019)

50cm Contour (2019)

LEVEL SENSOR

Water Fitting

JOINT

WYE

CHEMICAL INJECTION POINT

PIPE BRIDGE

Water Chamber

Water Service Valve

SEQWATER

QUU - OFFLINE

QUU

PRIVATE - OFFLINE

BORE PUMP

Water Vertical Pressure Main

Trunk Main

COMMON SERVICE

50m Contour

25cm Contour (2019)

FLOW METER - OFFLINE

BEND

GIBAULT JOINT

TEE

SAMPLING STATION

CONCRETE STOP

Water Hydrant

Service Valve, CLOSED

PRIVATE

SEQ - OFFLINE

SEQWATER

<all other values>

LIFT PUMP

Water Pressure Main - by Type

Scour Main

Property Holding

10m Contour

Water Device - All Other Assets

PRESSURE GAUGE - OFFLINE

PIGGING POINT

TAPPING BAND

RESERVOIR INLET

<all other values>

HEADWALL

PILLAR HYDRANT

Service Valve, OPEN

QUU - NON POT

PRIV - OFFLINE

PRIVATE

Water Sampling Point

BOOSTER PUMP - OFFLINE

Water - Model Link

Water Service

Sealed Plan

5m Contour

FLOW METER

LEVEL SENSOR - OFFLINE

END CAP

TAPPING

RESERVOIR OUTLET

Water Structures

PIER

INGROUND HYDRANT

Water Network Structure - Reser

SEQ - NON POT

Water Network Structure Boun

QUU - OFFLINE

Water Pumps

BORE PUMP - OFFLINE

Raw Water Main

SERVICE

Parcel

1m Contour

PRESSURE GAUGE

<all other values>

CROSS

REDUCER

SCOUR OUTLET

ANCHOR BLOCK

<all other values>

QUU

PRIVATE - NON POT

Water Pump Stations

SEQWATER - OFFLINE

BOOSTER PUMP

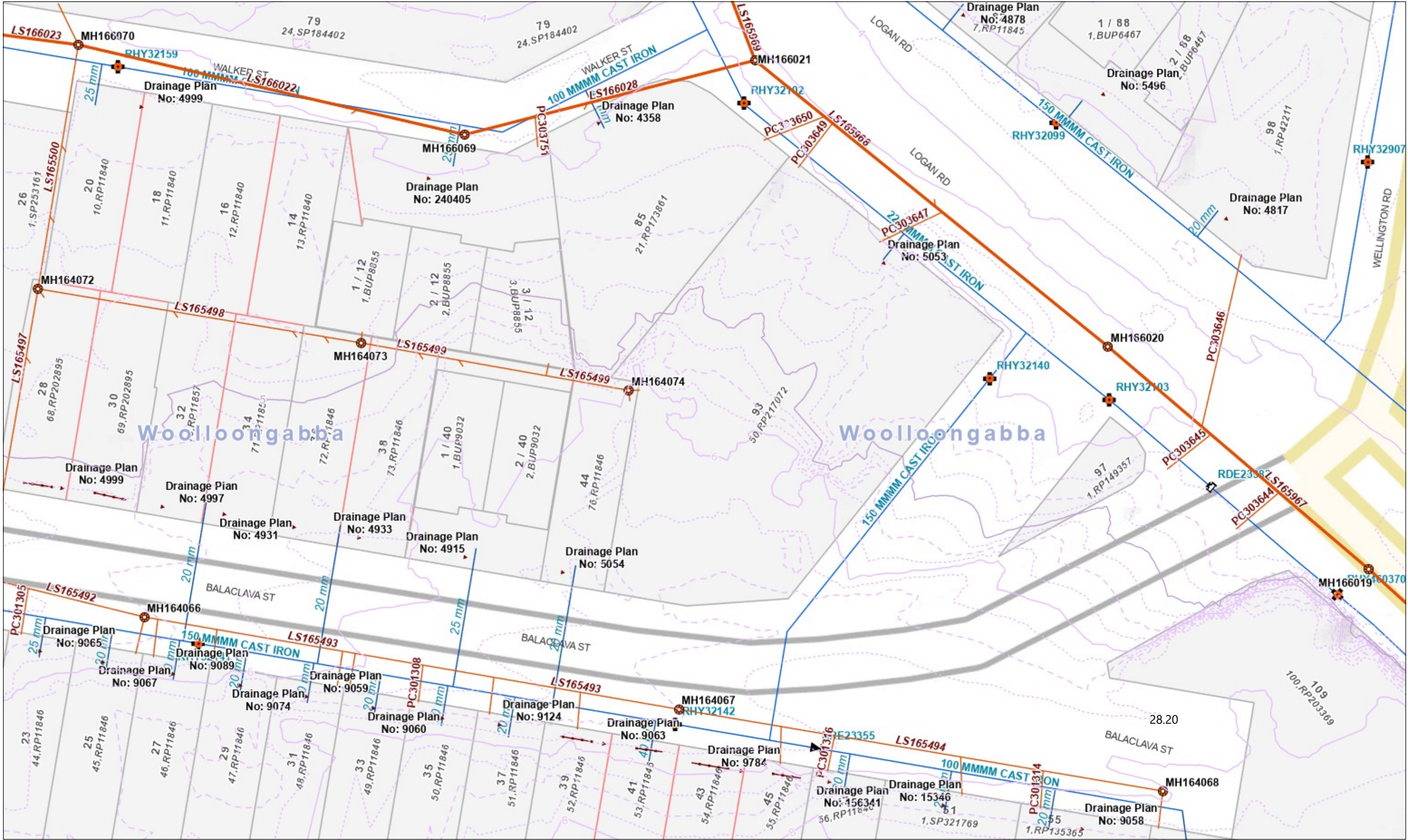
LIFT PUMP - OFFLINE

Reticulation Main

MODEL LINK

Parcel - Outside Brisbane





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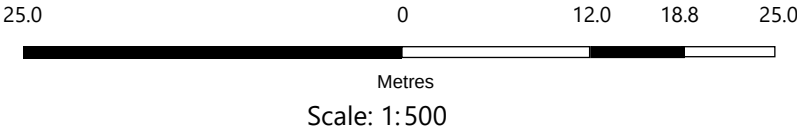
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Web Mercator Auxiliary Sphere

Notes:



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## Sewer-Water





Legend

1m Contour (2019)

50cm Contour (2019)

Sewer Fitting - Main Fittings

Sewer Fitting - All Other Fittings

END CAP

GIBAULT JOINT

Sewer Structure - by Type

PIER

<all other values>

Sewer Control Valve - by Type

AIR - OFFLINE

SEWER DOOR

BUTTERFLY - OFFLINE

Sewer Network Structure - All Fe

WET WELL - OFFLINE

Sewer Network Structure Bound

Service

TRUNK MAIN

DISCHARGE - OFFLINE

<all other values>

VACUUM MAIN

Sewer Drainage Plan

PRESSURE GAUGE

<all other values>

CROSS

REDUCER

SCOUR OUTLET

ANCHOR BLOCK

<all other values>

<all other values>

QUU

PRIVATE - NON POT

Water Pump Stations

SEQWATER - OFFLINE

BOOSTER PUMP

LIFT PUMP - OFFLINE

Reticulation Main

MODEL LINK

Parcel - Outside Brisbane

50m Contour

25cm Contour (2019)

END FLUSHING POINT

JOINT

BEND

CROSS

CONCRETE STOP

Sewer Support Structure Bound

Sewer Manhole -All Other Types

AIR

SCOUR - OFFLINE

GATE

<all other values>

STORAGE FACILITY

ODOUR CONTROL - OFFLINE

Sewer Vertical Gravity Main

<all other values>

RETICULATION MAIN

TRUNK MAIN - OFFLINE

Sewer Pressure Main - by Type

MODEL LINK - OFFLINE

Sewer Drainage Plan Joiner

LEVEL SENSOR

Water Fitting

JOINT

WYE

CHEMICAL INJECTION POINT

PIPE BRIDGE

Water Chamber

Water Service Valve

SEQWATER

QUU - OFFLINE

QUU

PRIVATE - OFFLINE

BORE PUMP

Water Vertical Pressure Main

Trunk Main

COMMON SERVICE

10m Contour

Sewer Chamber

INLINE FLUSHING POINT

RODDING JOINT

WYE

INLET

PIPE BRIDGE

Sewer Manholes

End

SCOUR

VACCUM - OFFLINE

BUTTERFLY

Sewer Network Structure -Treatn

ODOUR CONTROL

Sewer Pump Station

Sewer Gravity Main - by Type

OVERFLOW MAIN

RETICULATION MAIN - OFFLINE

MODEL LINK

LOW PRESSURE MAIN - OFFLINE

Sewer Drainage Plan Extension

FLOW METER - OFFLINE

BEND

GIBAULT JOINT

TEE

SAMPLING STATION

CONCRETE STOP

Water Hydrant

Service Valve, CLOSED

PRIVATE

SEQ - OFFLINE

SEQWATER

<all other values>

LIFT PUMP

Water Pressure Main - by Type

Scour Main

Property Holding

5m Contour

CHAMBER

OUTLET

PROPERTY CONNECTION BOUNDA

TEE

OUTLET

ANCHOR BLOCK

MANHOLE

Flume Pit

VACCUM, AS CONSTRUCTED

REFLUX - OFFLINE

SEWER DOOR - OFFLINE

TREATMENT PLANT, AS CONSTRUI

WET WELL

PUMP STATION

Sewer Service

SYPHON

MODEL LINK

OVERFLOW MAIN - OFFLINE

LOW PRESSURE MAIN

RISING MAIN - OFFLINE

Water Device - All Other Assets

PRESSURE GAUGE - OFFLINE

PIGGING POINT

TAPPING BAND

RESERVOIR INLET

<all other values>

HEADWALL

PILLAR HYDRANT

Service Valve, OPEN

QUU - NON POT

PRIV - OFFLINE

PRIVATE

Water Sampling Point

BOOSTER PUMP - OFFLINE

Water - Model Link

Water Service

Sealed Plan

1m Contour

CHAMBER - OFFLINE

VACUUM LIFT

JUNCTION

REDUCER

<all other values>

HEAD WALL

MANHOLE - OFFLINE

Sewer Manhole Stub

REFLUX

Sewer System Valve - by Type

GATE - OFFLINE

TREATMENT PLANT - OFFLINE

STORAGE FACILITY - OFFLINE

PUMP STATION - OFFLINE

Model Link

DISCHARGE

SYPHON - OFFLINE

MODEL LINK - OFFLINE

RISING MAIN

VACUUM MAIN - OFFLINE

FLOW METER

LEVEL SENSOR - OFFLINE

END CAP

TAPPING

RESERVOIR OUTLET

Water Structures

PIER

INGROUND HYDRANT

Water Network Structure - Reser

SEQ - NON POT

Water Network Structure Bounde

QUU - OFFLINE

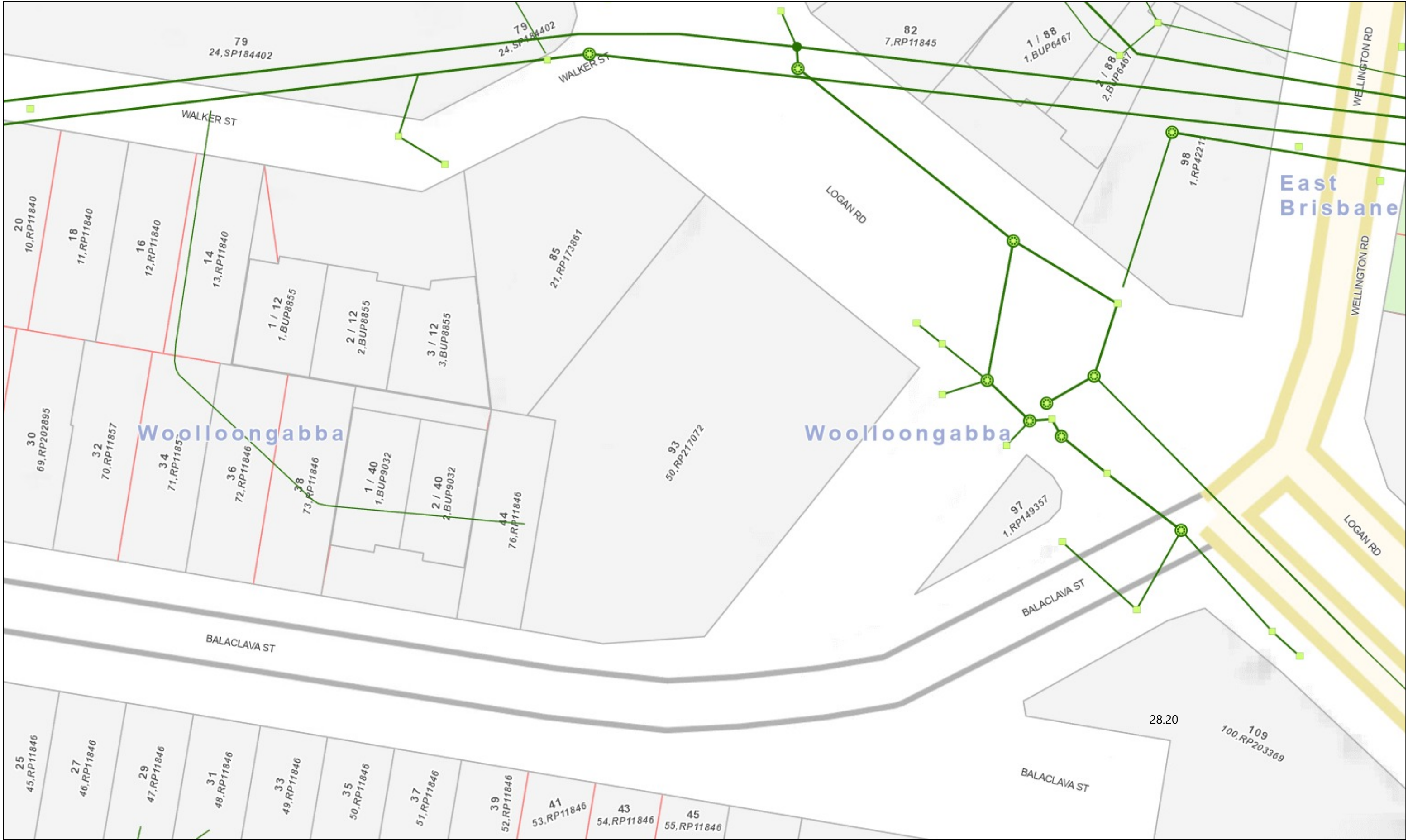
Water Pumps

BORE PUMP - OFFLINE

Raw Water Main

SERVICE

Parcel



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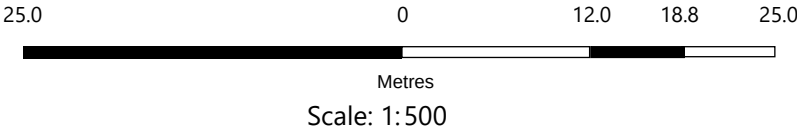
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Notes:



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## Stormwater



Legend

-  Culvert
-  Gully
-  Foul Water and Roof Water
-  Detention Basin
-  Parcel - Outside Brisbane
- End Structure

 Junction

 SQID

 Lake
-  End cap

 Manhole

 Surface Drain

 Property Holding
-  Flood Gate

 Drain

 Waterbody

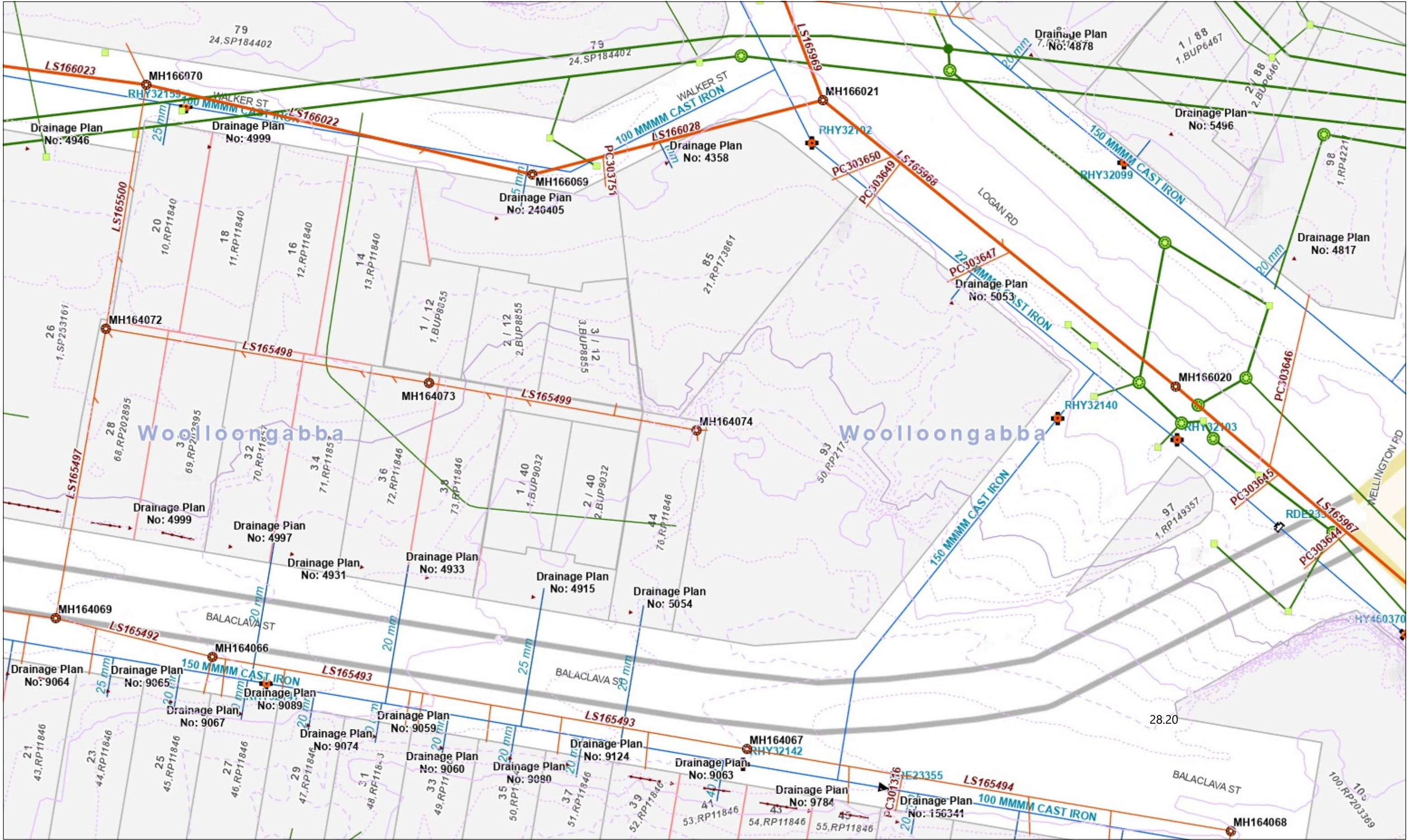
 Sealed Plan
-  Pipe End Outlet

 Gully Connect

 Artesian Well

 Parcel





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Print Date:  
16/06/2023 - 1:36 PM

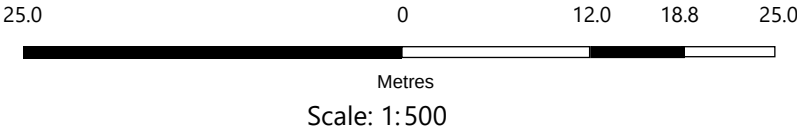
Projection:  
Web Mercator Auxiliary Sphere

Notes:



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## Sewer-Water-Stormwater





Legend

1m Contour (2019)

50cm Contour (2019)

Sewer Fitting - Main Fittings

Sewer Fitting - All Other Fittings

END CAP

GIBAULT JOINT

Sewer Structure - by Type

PIER

<all other values>

Sewer Control Valve - by Type

AIR - OFFLINE

SEWER DOOR

BUTTERFLY - OFFLINE

Sewer Network Structure - All Fe

WET WELL - OFFLINE

Sewer Network Structure Bounda

Service

TRUNK MAIN

DISCHARGE - OFFLINE

<all other values>

VACUUM MAIN

Sewer Drainage Plan

End cap

Manhole

Surface Drain

Water Device - All Other Assets

PRESSURE GAUGE - OFFLINE

PIGGING POINT

TAPPING BAND

RESERVOIR INLET

<all other values>

HEADWALL

PILLAR HYDRANT

Service Valve, OPEN

QUU - NON POT

PRIV - OFFLINE

PRIVATE

Water Sampling Point

BOOSTER PUMP - OFFLINE

Water - Model Link

Water Service

Sealed Plan

50m Contour

25cm Contour (2019)

END FLUSHING POINT

JOINT

BEND

CROSS

CONCRETE STOP

Sewer Support Structure Bounda

AIR

SCOUR - OFFLINE

GATE

<all other values>

STORAGE FACILITY

ODOUR CONTROL - OFFLINE

Sewer Vertical Gravity Main

<all other values>

RETICULATION MAIN

TRUNK MAIN - OFFLINE

Sewer Pressure Main - by Type

MODEL LINK - OFFLINE

Sewer Drainage Plan Joiner

Flood Gate

Drain

Waterbody

FLOW METER

LEVEL SENSOR - OFFLINE

END CAP

TAPPING

RESERVOIR OUTLET

Water Structures

PIER

INGROUND HYDRANT

Water Network Structure - Reser

SEQ - NON POT

Water Network Structure Bounda

QUU - OFFLINE

Water Pumps

BORE PUMP - OFFLINE

Raw Water Main

SERVICE

Parcel

10m Contour

Sewer Chamber

INLINE FLUSHING POINT

RODDING JOINT

WYE

INLET

PIPE BRIDGE

Sewer Manholes

End

SCOUR

VACCUM - OFFLINE

BUTTERFLY

Sewer Network Structure - Treatn

ODOUR CONTROL

Sewer Pump Station

Sewer Gravity Main - by Type

OVERFLOW MAIN

RETICULATION MAIN - OFFLINE

MODEL LINK

LOW PRESSURE MAIN - OFFLINE

Sewer Drainage Plan Extension

Pipe End Outlet

Gully Connect

Artesian Well

PRESSURE GAUGE

<all other values>

CROSS

REDUCER

SCOUR OUTLET

ANCHOR BLOCK

<all other values>

<all other values>

QUU

PRIVATE - NON POT

Water Pump Stations

SEQWATER - OFFLINE

BOOSTER PUMP

LIFT PUMP - OFFLINE

Reticulation Main

MODEL LINK

Parcel - Outside Brisbane

5m Contour

CHAMBER

OUTLET

PROPERTY CONNECTION BOUNDA

TEE

OUTLET

ANCHOR BLOCK

MANHOLE

Flume Pit

VACCUM, AS CONSTRUCTED

REFLUX - OFFLINE

SEWER DOOR - OFFLINE

TREATMENT PLANT, AS CONSTRUI

WET WELL

PUMP STATION

Sewer Service

SYPHON

MODEL LINK

OVERFLOW MAIN - OFFLINE

LOW PRESSURE MAIN

RISING MAIN - OFFLINE

Culvert

Gully

Foul Water and Roof Water

Detention Basin

LEVEL SENSOR

Water Fitting

JOINT

WYE

CHEMICAL INJECTION POINT

PIPE BRIDGE

Water Chamber

Water Service Valve

SEQWATER

QUU - OFFLINE

QUU

PRIVATE - OFFLINE

BORE PUMP

Water Vertical Pressure Main

Trunk Main

COMMON SERVICE

1m Contour

CHAMBER - OFFLINE

VACUUM LIFT

JUNCTION

REDUCER

<all other values>

HEAD WALL

MANHOLE - OFFLINE

Sewer Manhole Stub

REFLUX

Sewer System Valve - by Type

GATE - OFFLINE

TREATMENT PLANT - OFFLINE

STORAGE FACILITY - OFFLINE

PUMP STATION - OFFLINE

Model Link

DISCHARGE

SYPHON - OFFLINE

MODEL LINK - OFFLINE

RISING MAIN

VACUUM MAIN - OFFLINE

End Structure

Junction

SQID

Lake

FLOW METER - OFFLINE

BEND

GIBAULT JOINT

TEE

SAMPLING STATION

CONCRETE STOP

Water Hydrant

Service Valve, CLOSED

PRIVATE

SEQ - OFFLINE

SEQWATER

<all other values>

LIFT PUMP

Water Pressure Main - by Type

Scour Main

Property Holding

Appendix C – BRISBANE CITY COUNCIL (BCC)  
FLOOD WISE PROPERTY REPORT



# FloodWise Property Report

93 LOGAN RD, WOOLLOONGABBA 4102  
Lot 50 on RP217072

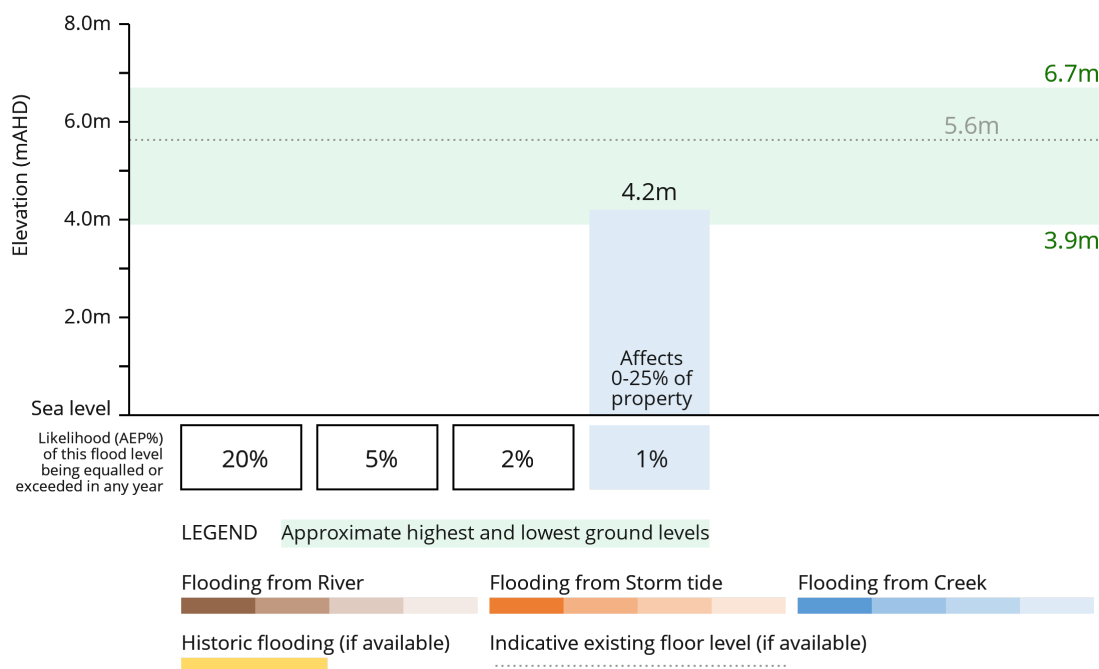


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## THE PURPOSE OF THIS REPORT IS FOR BUILDING AND DEVELOPMENT

Brisbane City Council's FloodWise Property Report provides technical flood planning information including estimated flood levels, habitable floor level requirements and more. This report uses the adopted flood planning information in CityPlan, that guides how land in Brisbane is used and developed for the future. Find out more about [planning and building](#). To understand how to be resilient and prepare for floods, visit Council's [Be Prepared](#) webpage. Find more information about [how to read a FloodWise Property Report](#).

Graph showing only the highest source/type of flooding for 1%, 2%, 5% and 20% likelihoods. Also shows historic flood levels. Other flood types and levels may be present and will be listed in the Flood Planning Information table below. This graph does not include overland flow flooding. If applicable, overland flow information is shown in the Planning and Development Information section below. **NOTE:** See Useful Definitions section to explain terminology.



**Combined** 1% AEP for river, creek and storm tide flood extent (if applicable). Aerial map shows river and creek flooding extent from the adopted CityPlan. Read more about [CityPlan](#).



Department of Resources and Brisbane City Council | Brisbane City Council | © Brisbane City Council... Powered by Esri

# Are you resilient and ready for flood?

- Sign up to the Brisbane Severe Weather Alert at [brisbane.qld.gov.au/beprepared](https://brisbane.qld.gov.au/beprepared)
- Visit [bom.gov.au](https://bom.gov.au) for the latest weather updates.
- Have an evacuation plan, emergency kit and important phone numbers ready.
- Observe where water flows from and to during heavy rain.
- Consider how flood-resilient building techniques will have you home faster and with less damage.

Life threatening emergencies  
**000** Police/fire/ambulance  
(mobiles **000** and **112**)

State Emergency Service (SES) **132 500**  
Energex **13 19 62**  
Brisbane City Council **3403 8888**

## Technical Summary

This section of the FloodWise Property Report contains more detailed flood information for this property so **surveyors, builders, certifiers, architects, and engineers can plan and build** in accordance with Council's planning scheme.

Find more information about [planning and building](#) in Brisbane or talk to a Development Services Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

## Property Information Summary

The following table provides a summary of flood information for this property. More detailed flood level information is provided in the following sections of this report.

| Property Summary                | Level (mAHD) / Comment | Data Quality Code |
|---------------------------------|------------------------|-------------------|
| Minimum ground level            | 3.9                    | C                 |
| Maximum ground level            | 6.7                    | C                 |
| Indicative existing floor level | 5.6                    | C                 |
| Source of highest flooding      | Creek/Waterway         |                   |

## Flood Planning Information

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning and Development Information section below for further information.

**Note this table does not include overland flow.** If overland flow is applicable to this property, refer to the Flood Planning and Development section below for further information.

| Likelihood / Description                       | Level (mAHD) | Source                            |
|------------------------------------------------|--------------|-----------------------------------|
| 20%                                            | N/A*         |                                   |
| 5%                                             | N/A*         |                                   |
| 2%                                             | N/A*         |                                   |
| 1%                                             | 3.5          | River (Brisbane River)            |
| 1%                                             | 4.2          | Creek/Waterway (NORMAN CREEK)     |
| 0.2%                                           | 5.1          | River (Brisbane River)            |
| 0.2%                                           | 4.1          | Creek/Waterway (NORMAN CREEK)     |
| Defined Flood Level (DFL)                      | 3.2          | Brisbane River and Creek/Waterway |
| Residential Flood Level (RFL)                  | 3.5          | Brisbane River and Creek/Waterway |
| Minimum Habitable Floor Level (dwelling house) | N/A*         |                                   |

\* Council does not have this data available. Customers are recommended to engage a Registered Professional Engineer of QLD for further advice.



## Flood Planning and Development Information

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

### Flood overlay code

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the flood planning areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in [Council's planning scheme](#).

| Flood planning areas (FPA) |                  |                |
|----------------------------|------------------|----------------|
| River                      | Creek / waterway | Overland flow  |
| FPA5                       | FPA4             | Not Applicable |
|                            | FPA5             |                |

To find more information about Council's flood planning areas (FPAs) for Brisbane River and Creek/waterway flooding to guide future building and development in flood prone areas, please review [Council's Flood Planning Provisions](#).

### Coastal hazard overlay code

The Coastal hazard overlay code of Council's planning scheme uses the following information to provide guidelines when conducting new developments. The table below summarises the coastal hazard categories that apply to this property. Development guidelines for the following Coastal hazard overlay sub-categories are explained in Council's [planning scheme](#).

| Coastal hazard overlay sub-categories                                                     |
|-------------------------------------------------------------------------------------------|
| There are currently no Coastal hazard overlay sub-categories that apply to this property. |

Note: Where land is identified within one for more flood planning areas on the Flood overlay or is identified within one of the Storm tide inundation area sub-categories on the Coastal hazard overlay, the assessment criteria that provides the highest level of protection from any source of flooding applies.

### Property development flags

**Large allotment** - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site.

For more information or advice, please consult a Registered Professional Engineer of Queensland (RPEQ).

## Useful Flood Information Definitions

**Australian Height Datum (AHD)** - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

**Annual Exceedance Probability (AEP)** - The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

- **0.2% AEP** - A flood event of this size is considered rare but may still occur. A flood of size or larger has a 1 in 500 chance or a 0.2% probability of occurring in any year.
- **1% AEP** - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
- **2% AEP** - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.
- **5% AEP** - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
- **20% AEP** - A flood of this size or larger has a 1 in 5 chance or a 20% probability of occurring in any year.

### Data quality

- **Data Quality Code A** - Level data based on recent surveyor report or approved as-constructed drawings.
- **Data Quality Code B** - Level data based on ground-based mobile survey or similar.
- **Data Quality Code C** - Level data derived from Airborne Laser Scanning or LiDAR information.

**Defined Flood Level (DFL)** - The DFL is used for commercial and industrial development. The Defined flood level (DFL) for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m<sup>3</sup>/s. DFL is only applicable for non-residential uses affected by Brisbane River flooding.

**Flood planning area (FPA)** - Council has developed five Flood planning areas (FPAs) as part of City Plan Flood overlay mapping for Brisbane River, Creek/waterway flooding and Overland flow to guide future building and development in flood prone areas. Storm tide flooding is mapped separately. The FPAs are designed to recognise the flood hazard for different flooding types. Flood hazard is a combination of frequency of flooding, the flood depth, and the speed at which the water is travelling. [Find more information here.](#)

**Maximum and minimum ground level** - Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

**Minimum habitable floor level (dwelling house)** - The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family, and rumpus rooms) must be constructed as required by the Brisbane City Plan.

**Indicative existing floor level** - The approximate level in metres AHD of the lowest habitable floor in the existing building. This data is sourced from a range of sources with varying accuracy levels.

**Property** - A property will contain 1 or more lots. The multiple lot warning is shown if you have selected a property that contains multiple lots.

**Residential flood level (RFL)** - This flood level for the Brisbane River equates to the 1% annual exceedance probability (AEP) flood level.

To learn more, visit [Brisbane City Council's Flood Information Hub](#)

## Brisbane City Council's Online Flood Tools

Council provides several online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Council's online flood tools for planning and development purposes include:

- **FloodWise Property Report**
- **Flood Overlay Code**

For more information on Council's planning scheme and online flood tools for planning and development:

- phone (07) 3403 8888 and ask to talk to a Development Services Planning Information Officer

- visit [brisbane.qld.gov.au/planning-building](https://brisbane.qld.gov.au/planning-building)

Council's Planning Scheme - The City Plan (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

### Disclaimer

1. Defined flood levels and residential flood levels, minimum habitable floor levels and indicative existing floor levels are determined from the best available information to Council at the date of issue. These levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



### Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit [brisbane.qld.gov.au/planning-building](https://brisbane.qld.gov.au/planning-building)

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help, with your building and development plans.



## Appendix D – BCC CITY PLAN – INTERACTIVE MAPPING



Users of the information recorded in this document (the Information) accept all responsibility and risk associated with the use of the Information and acknowledge that regard must be had to the planning scheme provisions in interpreting the Information. The Digital Cadastre Database (supplied by Queensland State Government) is subject to change without notice. Council gives no warranty in relation to the Information (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage), relating to any use of this Information.

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**Brisbane River flood planning area**

Brisbane River flood planning area 1



Brisbane River flood planning area 2a



Brisbane River flood planning area 2b



Brisbane River flood planning area 3



Brisbane River flood planning area 4



Brisbane River flood planning area 5

**Local Government Authorities**

LGA boundary

**Property boundaries holding**

Property Holding





**Creek/waterway flood planning area**

Creek/waterway flood planning area 1



Creek/waterway flood planning area 2



Creek/waterway flood planning area 3



Creek/waterway flood planning area 4



Creek/waterway flood planning area 5

**Local Government Authorities**

LGA boundary

**Property boundaries holding**

Property Holding





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**Overland flow flood planning area**



Overland flow flood planning area

**Local Government Authorities**



LGA boundary

**Property boundaries holding**



Property Holding

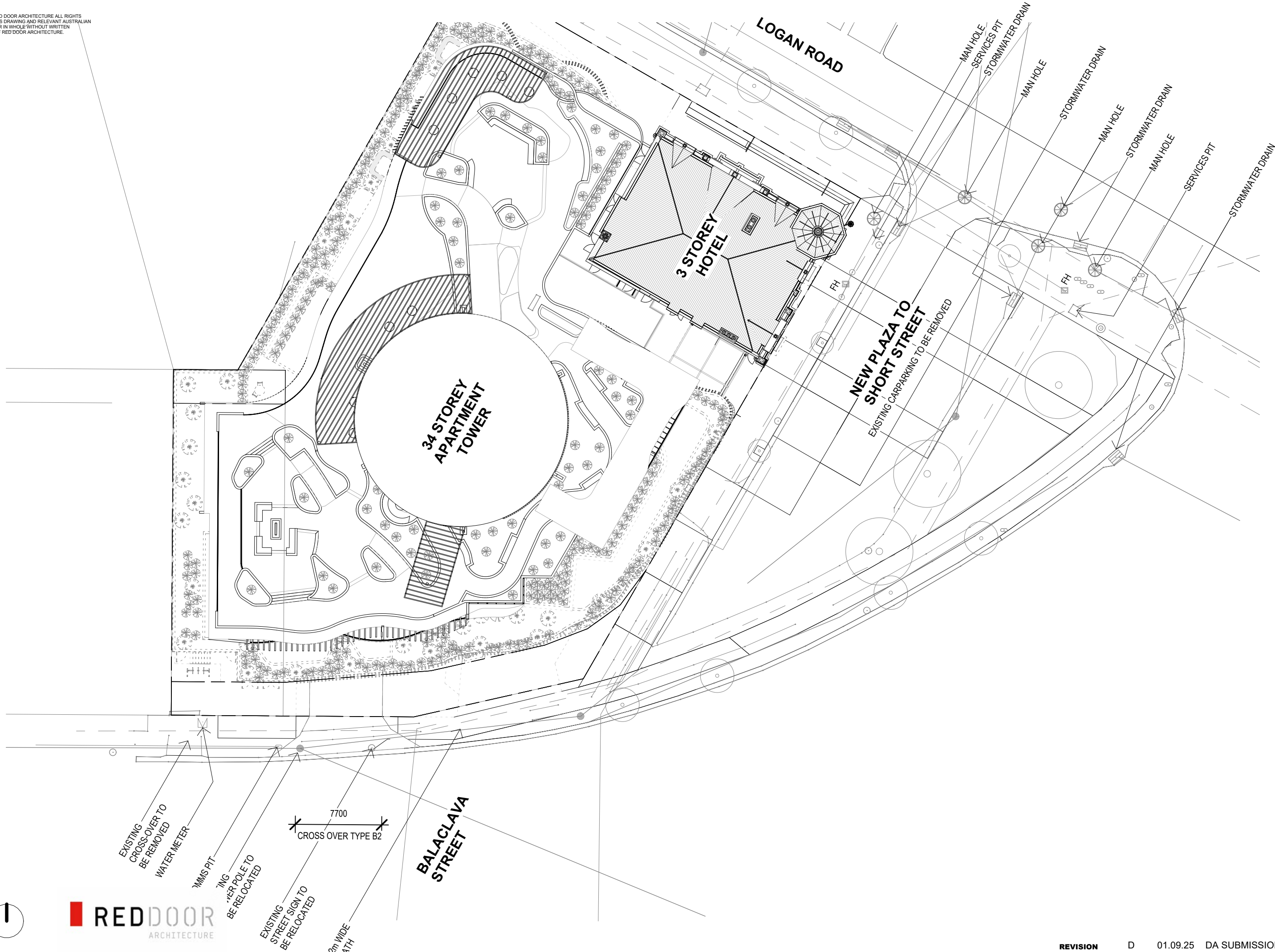
## Appendix E – ARCHITECTURAL PLANS



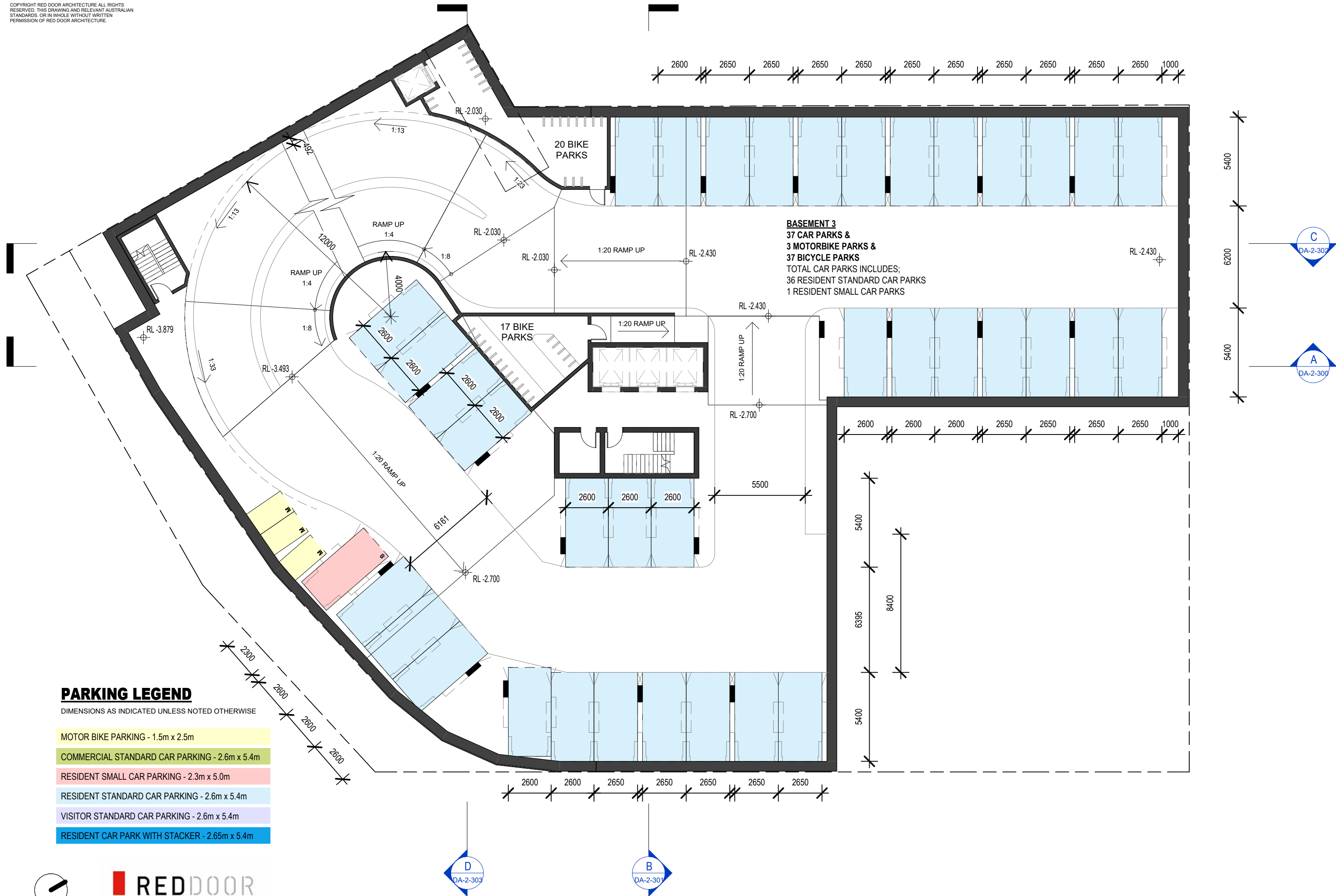
# BROADWAY HOTEL HERITAGE WORKS



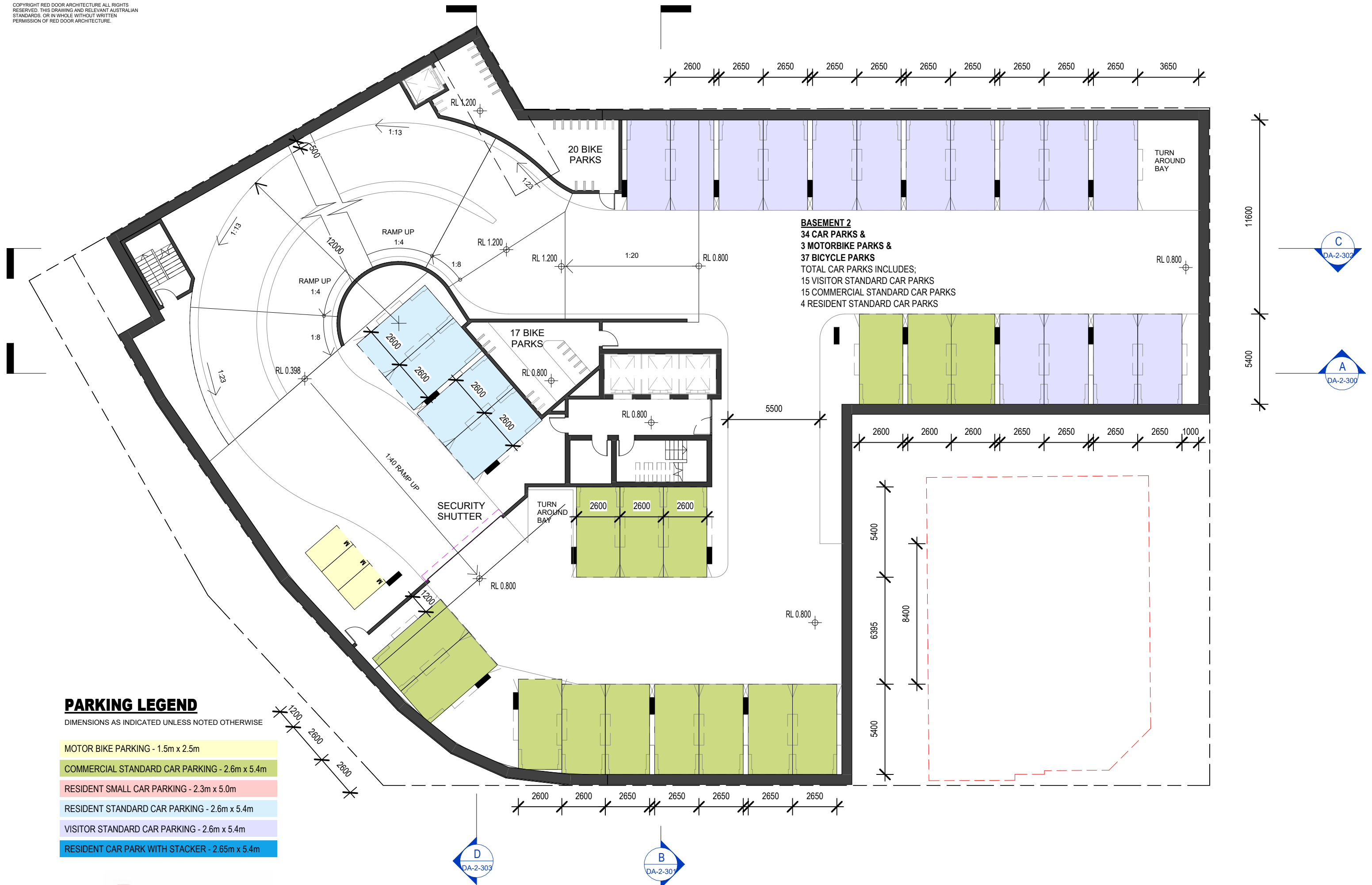


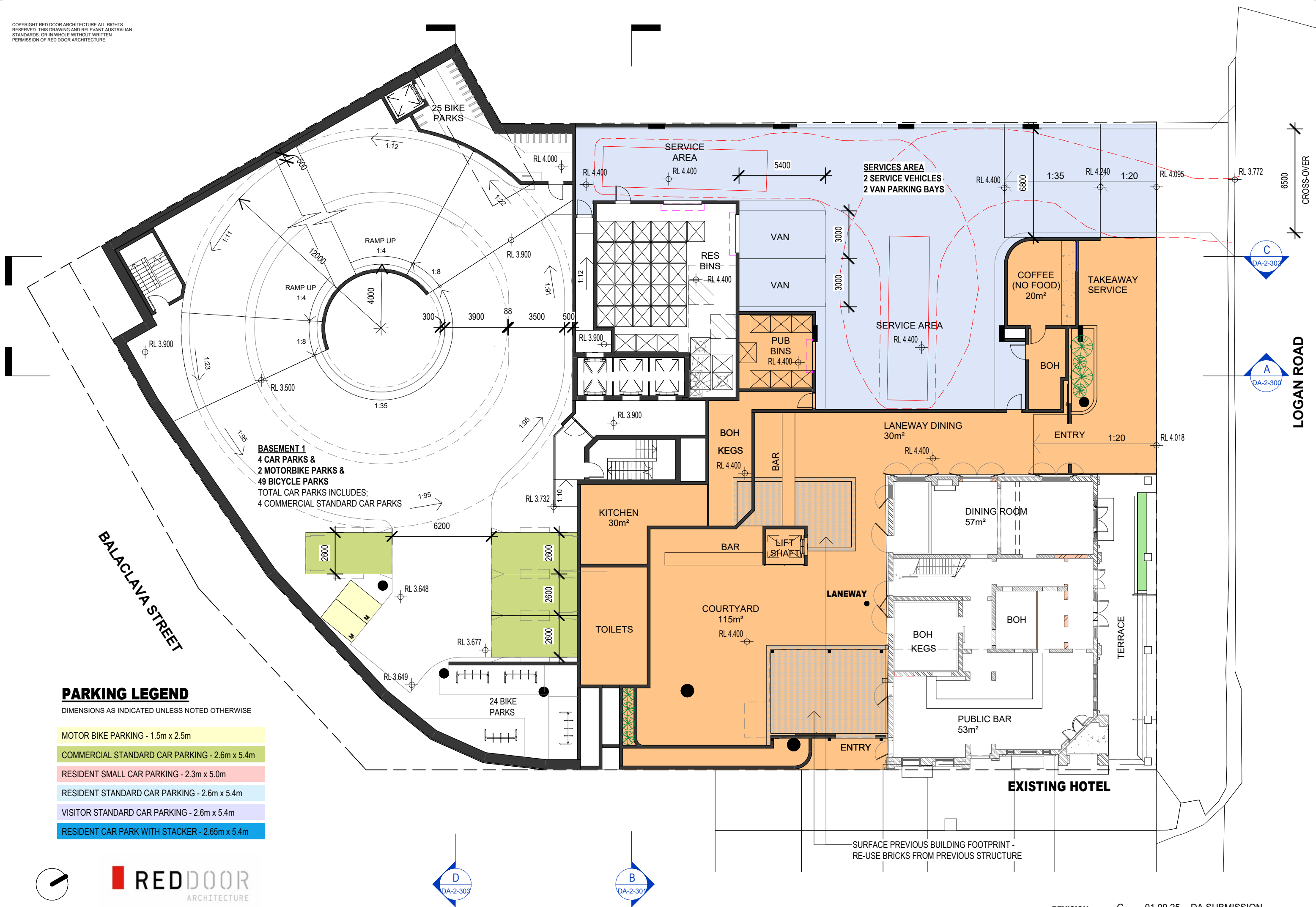


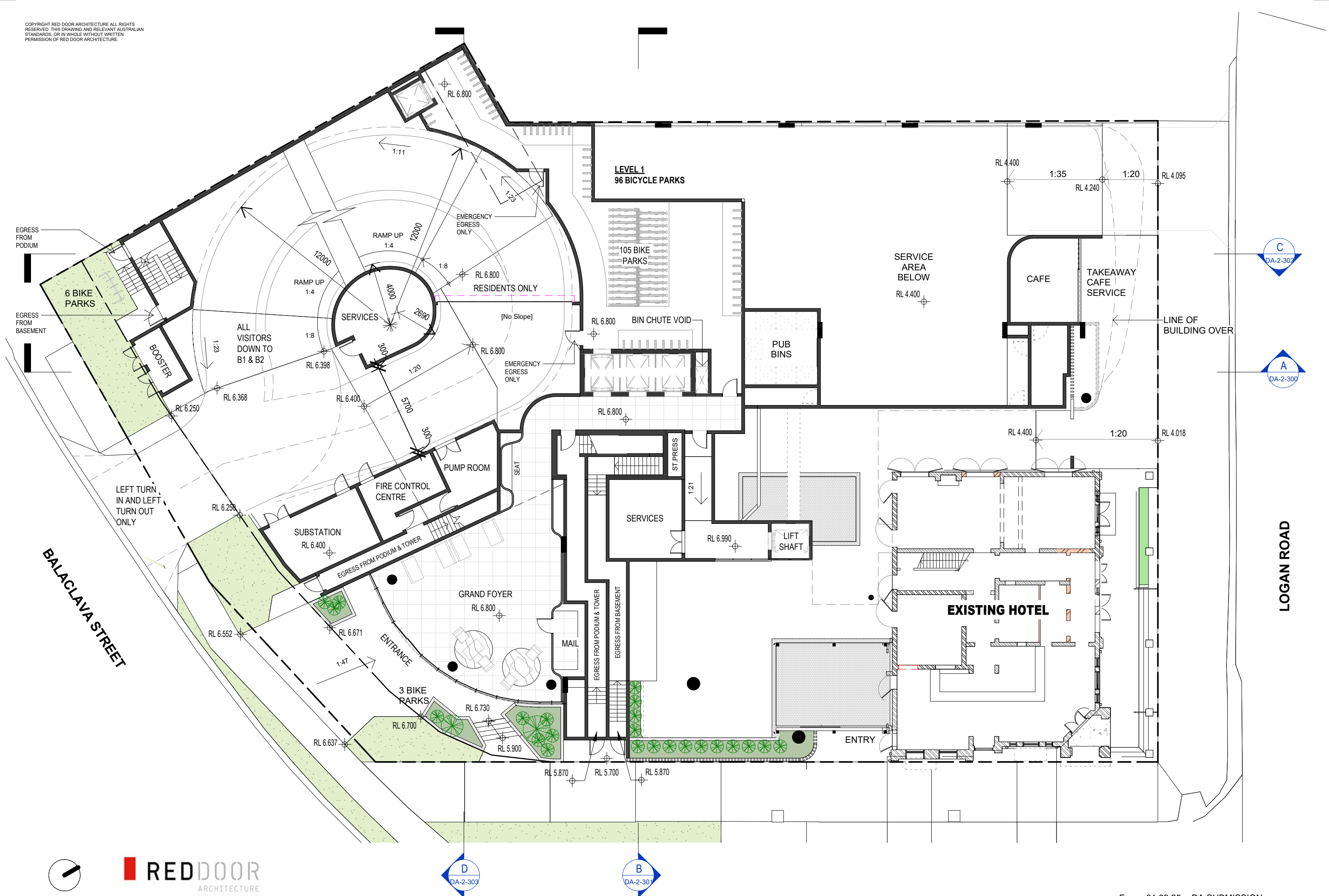






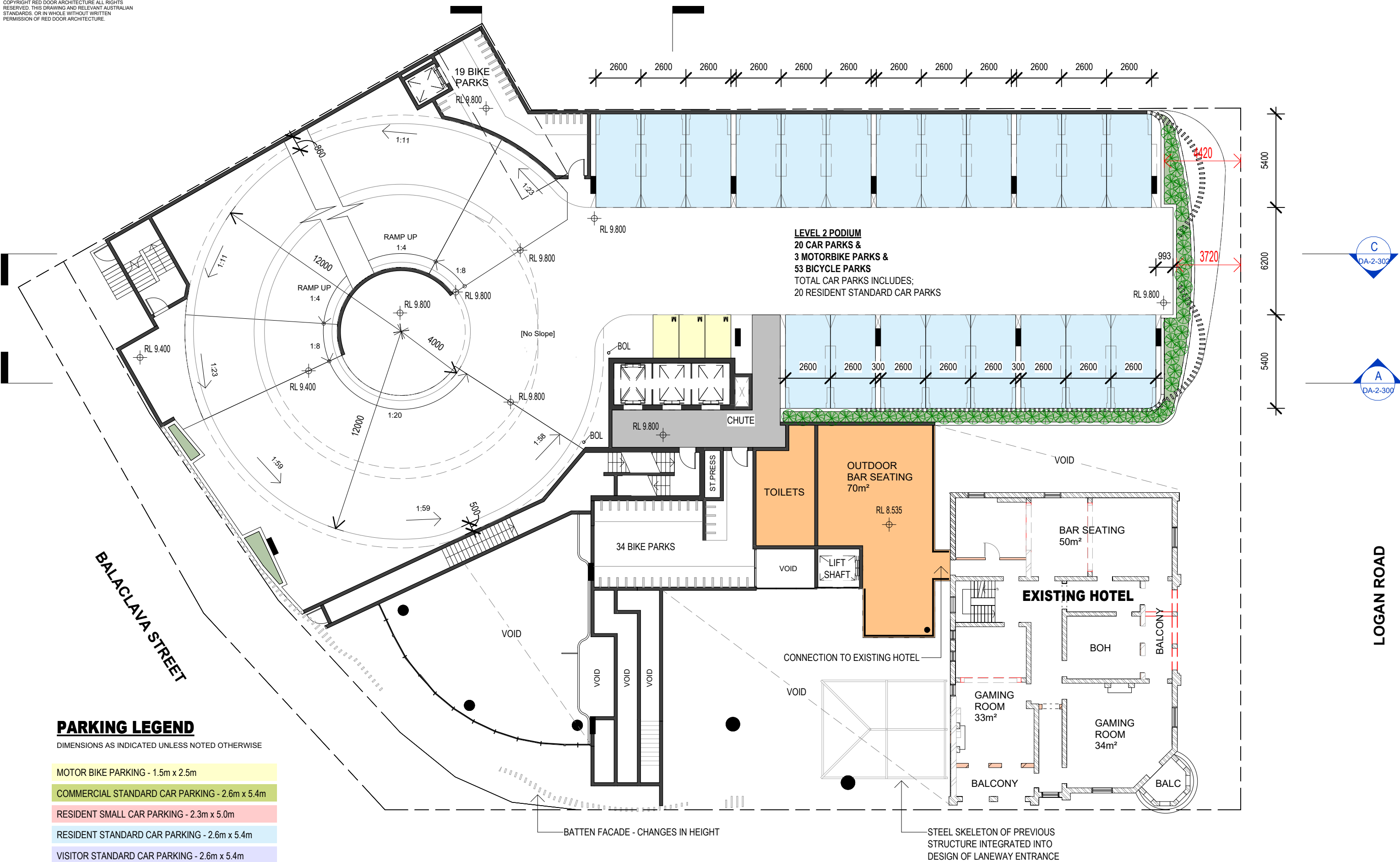


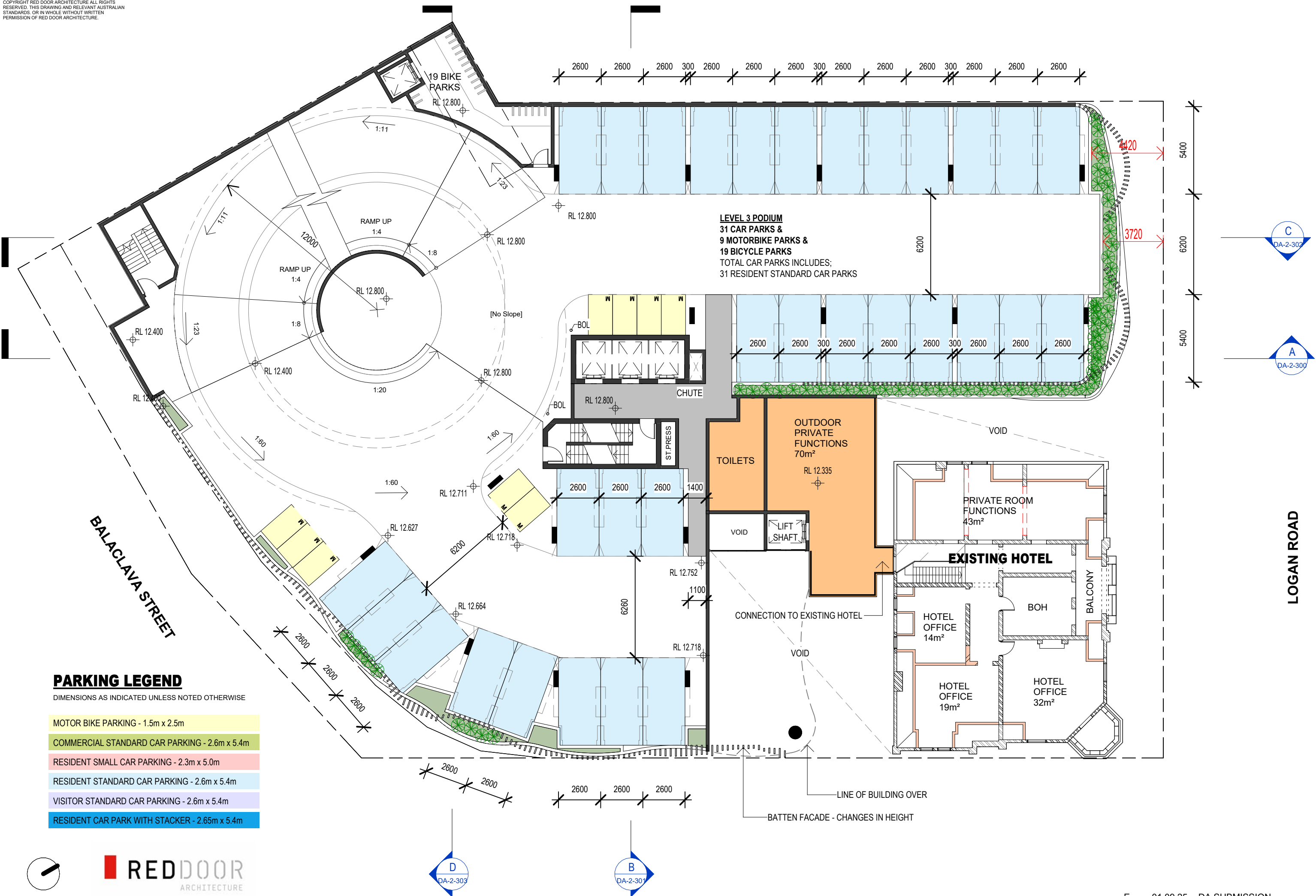


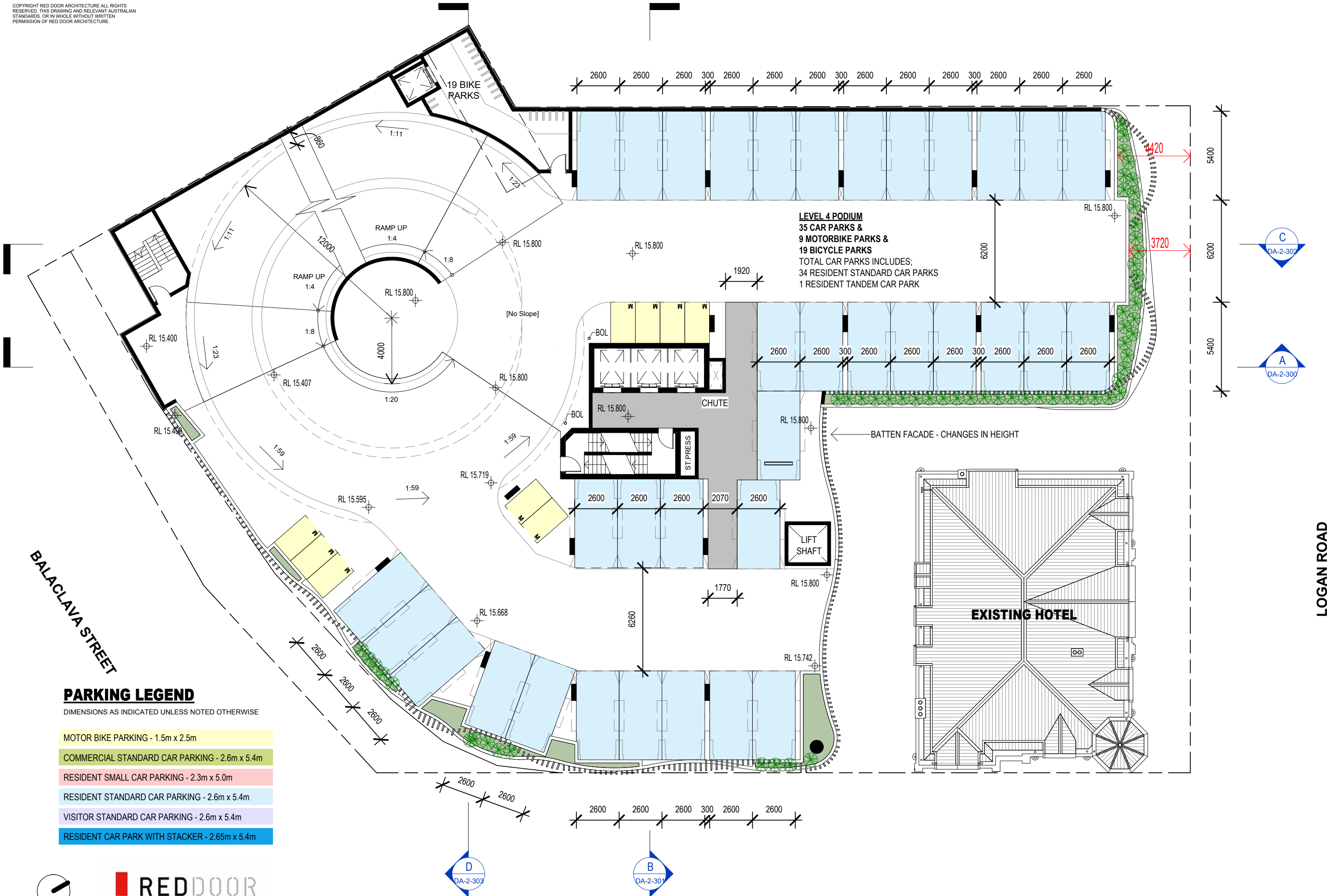


**REDDOOR**  
ARCHITECTURE









**PARKING LEGEND**

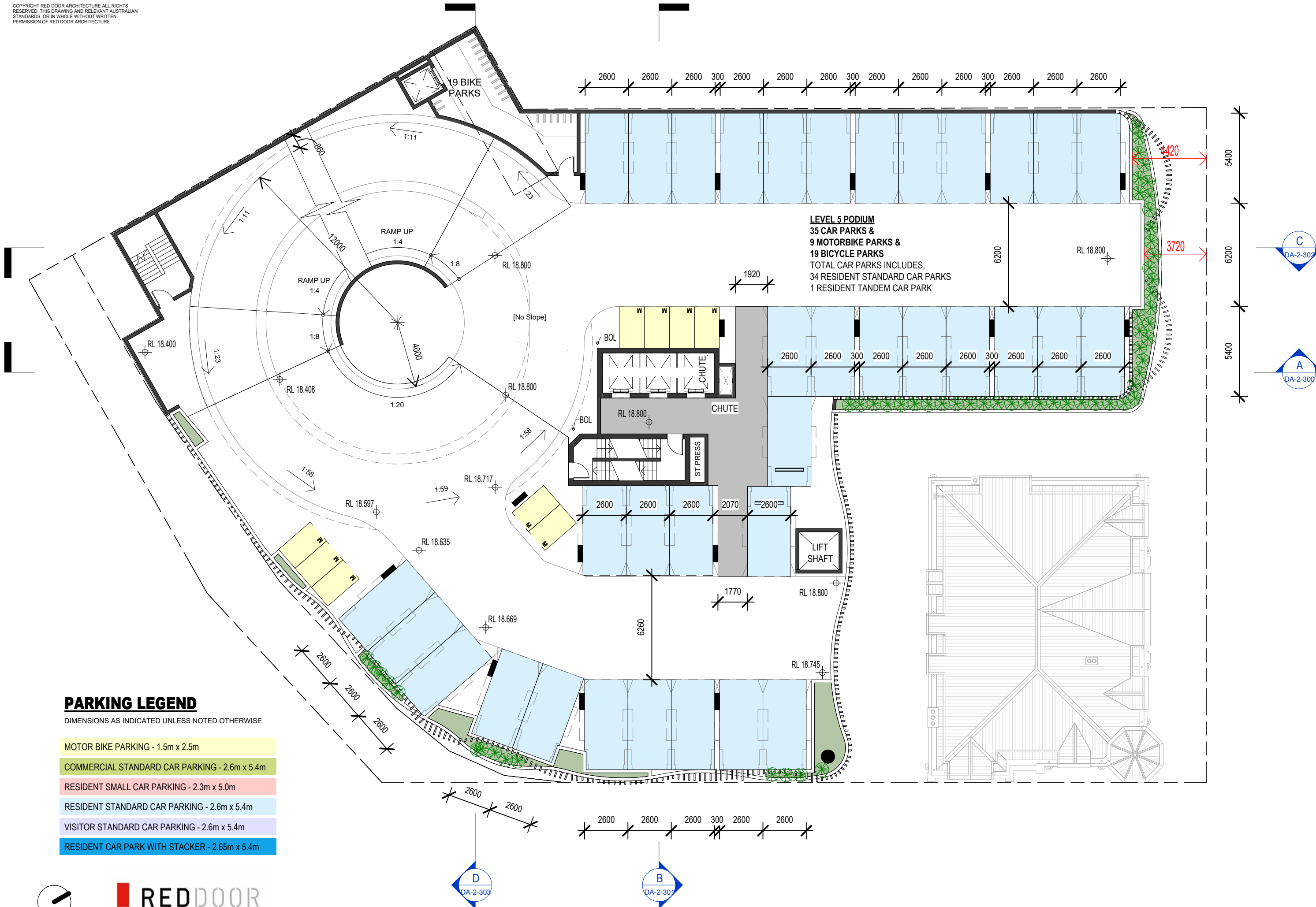
DIMENSIONS AS INDICATED UNLESS NOTED OTHERWISE

- MOTOR BIKE PARKING - 1.5m x 2.5m
- COMMERCIAL STANDARD CAR PARKING - 2.6m x 5.4m
- RESIDENT SMALL CAR PARKING - 2.3m x 5.0m
- RESIDENT STANDARD CAR PARKING - 2.6m x 5.4m
- VISITOR STANDARD CAR PARKING - 2.6m x 5.4m
- RESIDENT CAR PARK WITH STACKER - 2.65m x 5.4m



**REDDOOR**  
ARCHITECTURE





### PARKING LEGEND

DIMENSIONS AS INDICATED UNLESS NOTED OTHERWISE

MOTOR BIKE PARKING - 1.5m x 2.5m

COMMERCIAL STANDARD CAR PARKING - 2.6m x 5.4m

RESIDENT SMALL CAR PARKING - 2.3m x 5.0m

RESIDENT STANDARD CAR PARKING - 2.6m x 5.4m

VISITOR STANDARD CAR PARKING - 2.6m x 5.4m

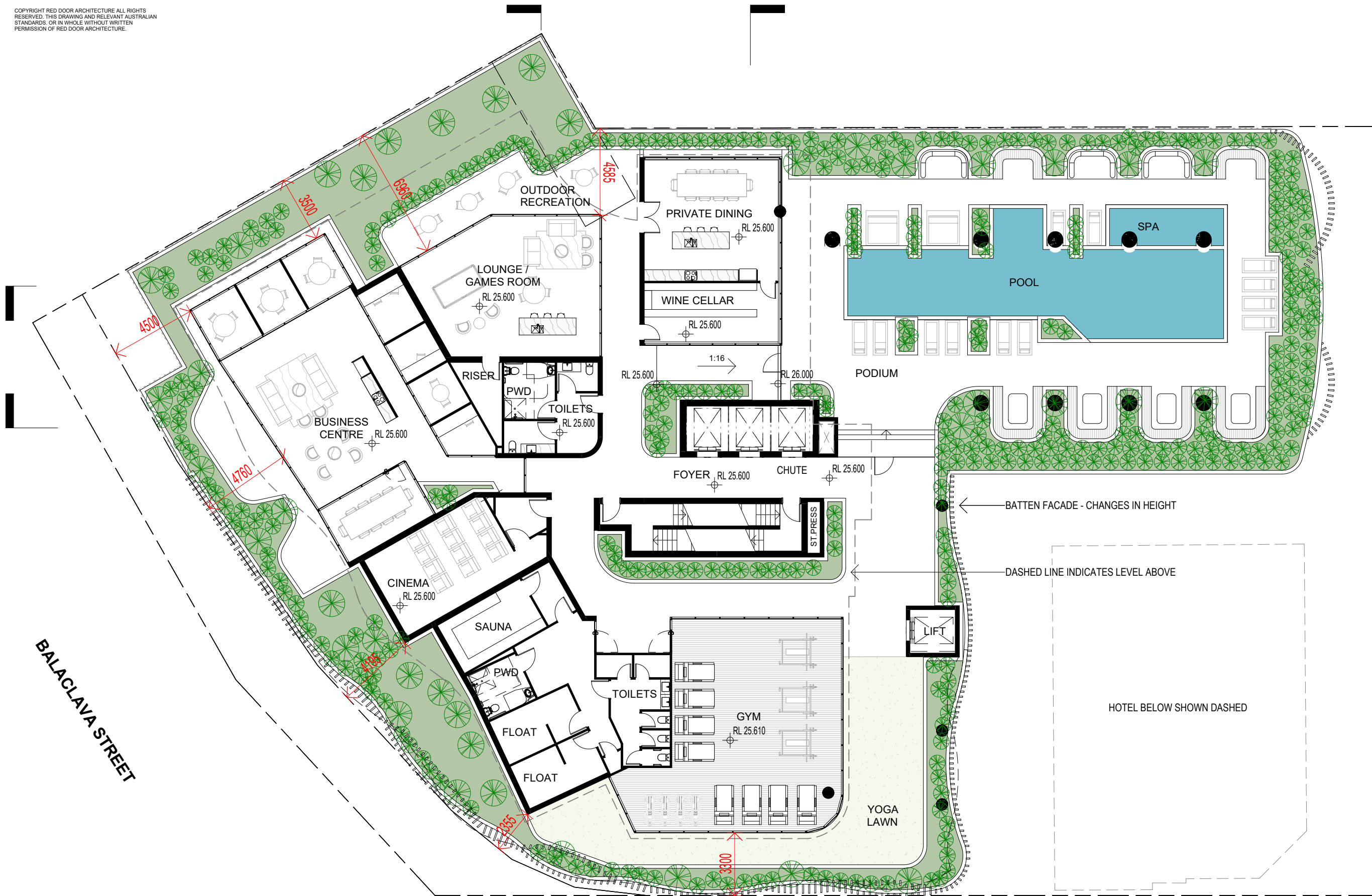
RESIDENT CAR PARK WITH STACKER - 2.65m x 5.4m



**REDDOOR**  
ARCHITECTURE



**REDDOOR**  
ARCHITECTURE



C  
DA-2-303

A  
DA-2-300

D  
DA-2-303

B  
DA-2-301



REDDOOR  
ARCHITECTURE



POTENTIAL FUTURE DEVELOPMENT

DASHED LINE INDICATES LEVEL ABOVE

COMMUNAL SPACE BELOW SHOWN DASHED

HOTEL BELOW SHOWN DASHED

BALACLAVA STREET

LOGAN ROAD



**REDDOOR**  
ARCHITECTURE

WWW.RDARCH.COM.AU

210078

SCALE 1 : 200

01.09.25

93 LOGAN ROAD, WOOLLOONGABBA, QLD. 4102

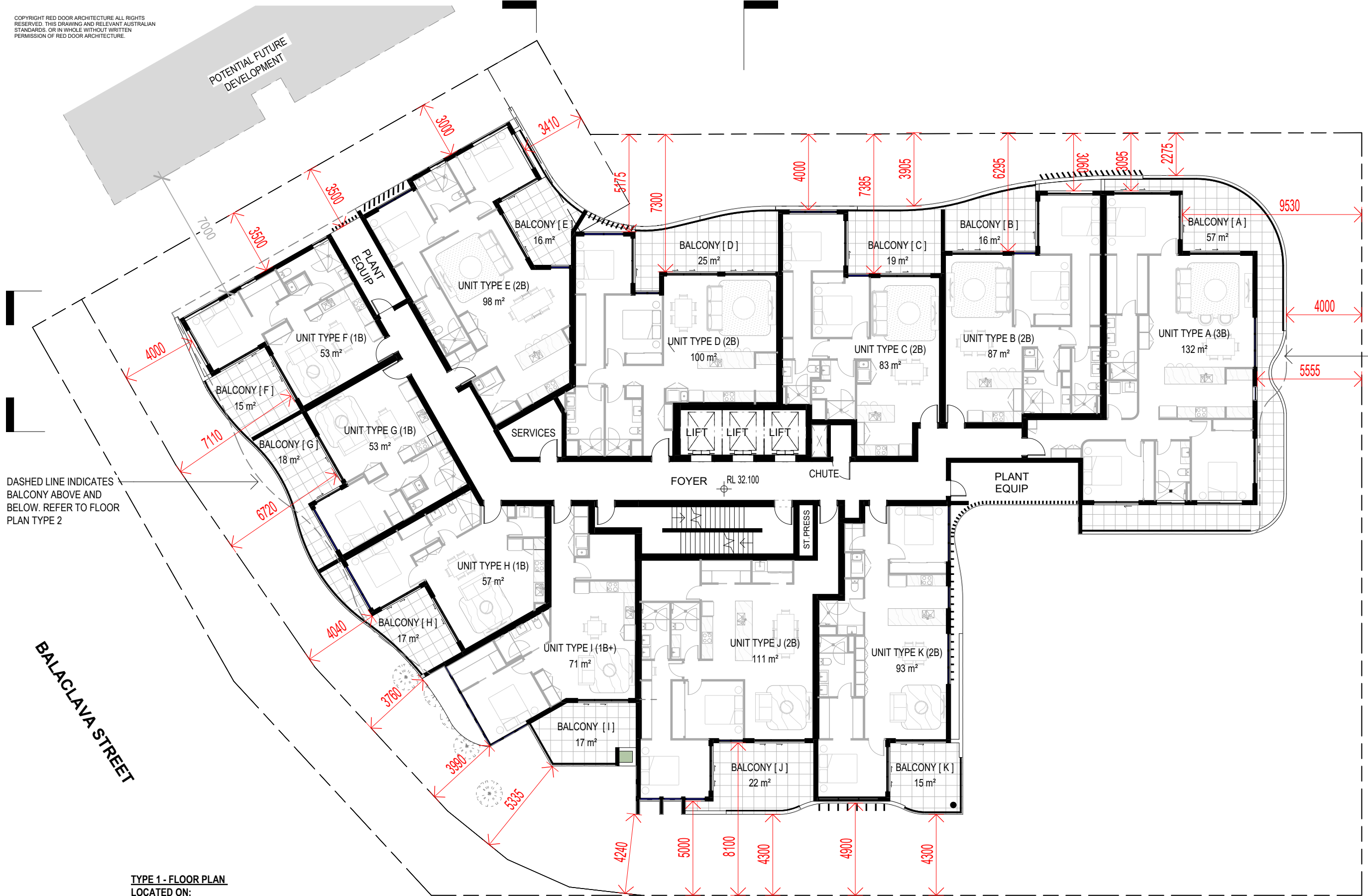
MIXED USE DEVELOPMENT

REVISION E 01.09.25 DA SUBMISSION

DA-2-117 LEVEL 8 FLOOR PLAN



POTENTIAL FUTURE DEVELOPMENT



DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 2

DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 2

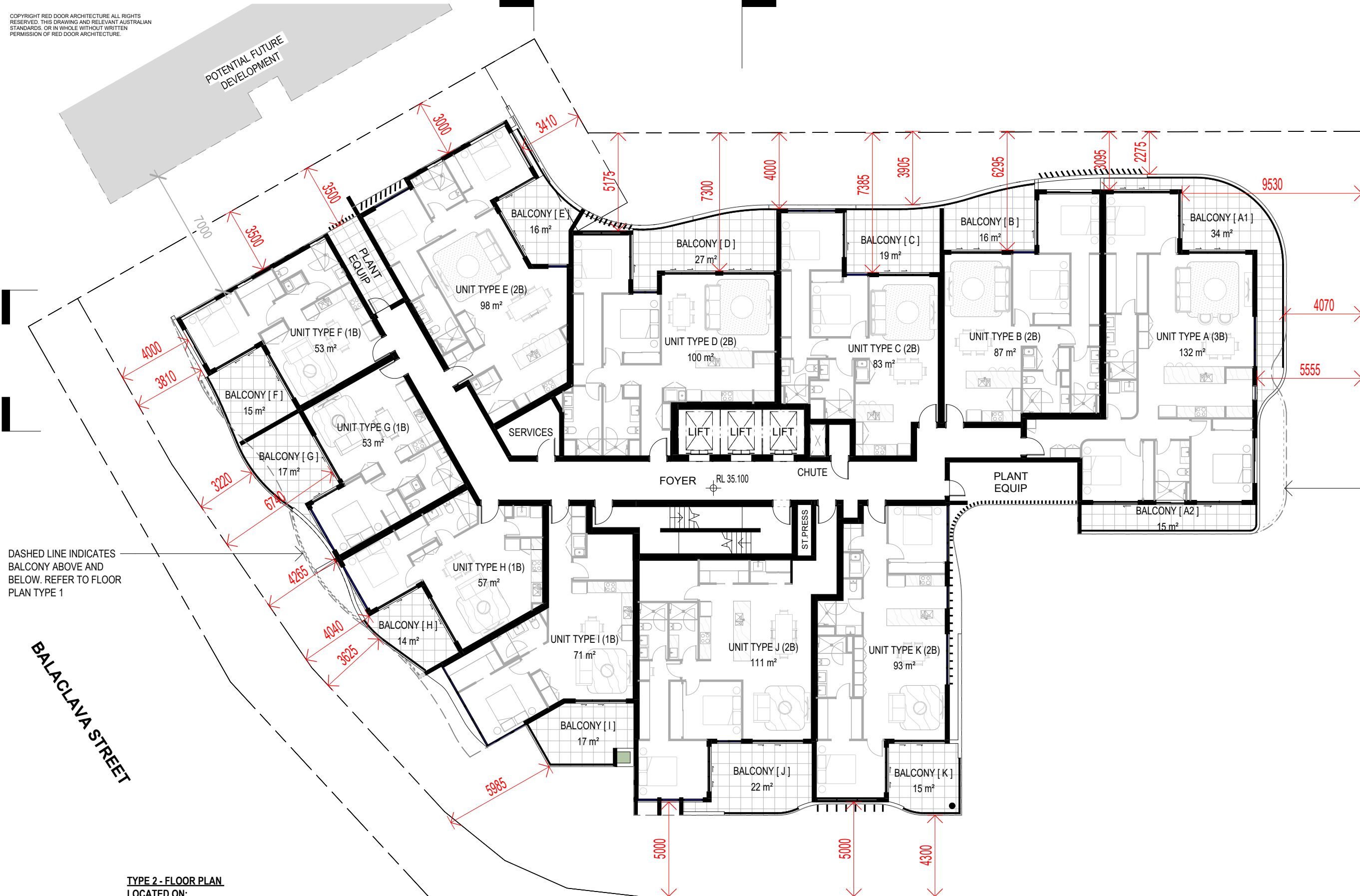
**TYPE 1 - FLOOR PLAN  
LOCATED ON:**

|          |          |
|----------|----------|
| LEVEL 9  | LEVEL 23 |
| LEVEL 13 | LEVEL 25 |
| LEVEL 15 | LEVEL 27 |
| LEVEL 17 | LEVEL 29 |
| LEVEL 19 | LEVEL 33 |



**REDDOOR**  
ARCHITECTURE

POTENTIAL FUTURE DEVELOPMENT



DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 1

DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 1

**TYPE 2 - FLOOR PLAN  
LOCATED ON:**

LEVEL 10    LEVEL 24  
LEVEL 14    LEVEL 26  
LEVEL 16    LEVEL 28  
LEVEL 18    LEVEL 30  
LEVEL 20



**REDDOOR**  
ARCHITECTURE



POTENTIAL FUTURE DEVELOPMENT

DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 2

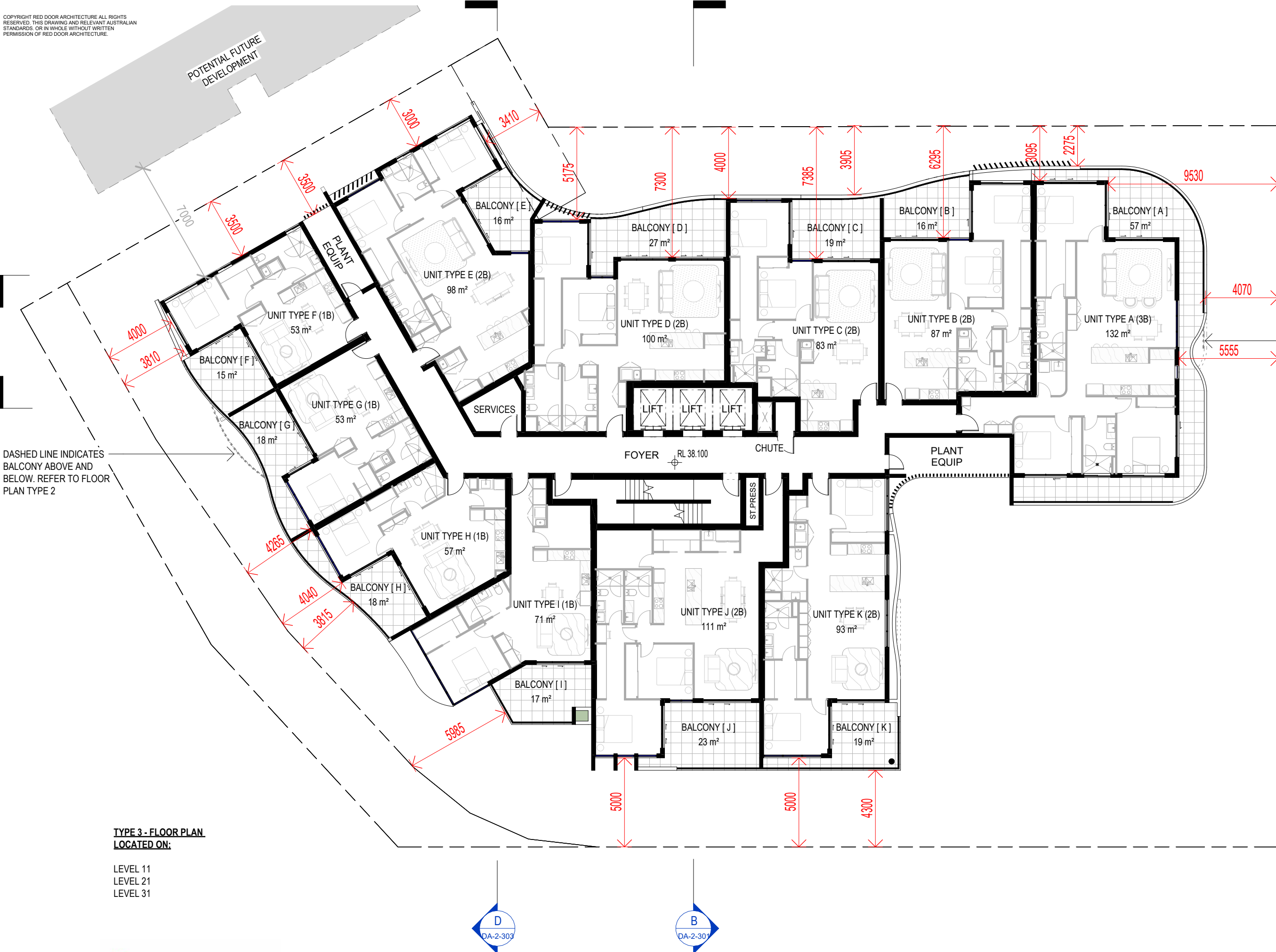
DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 2

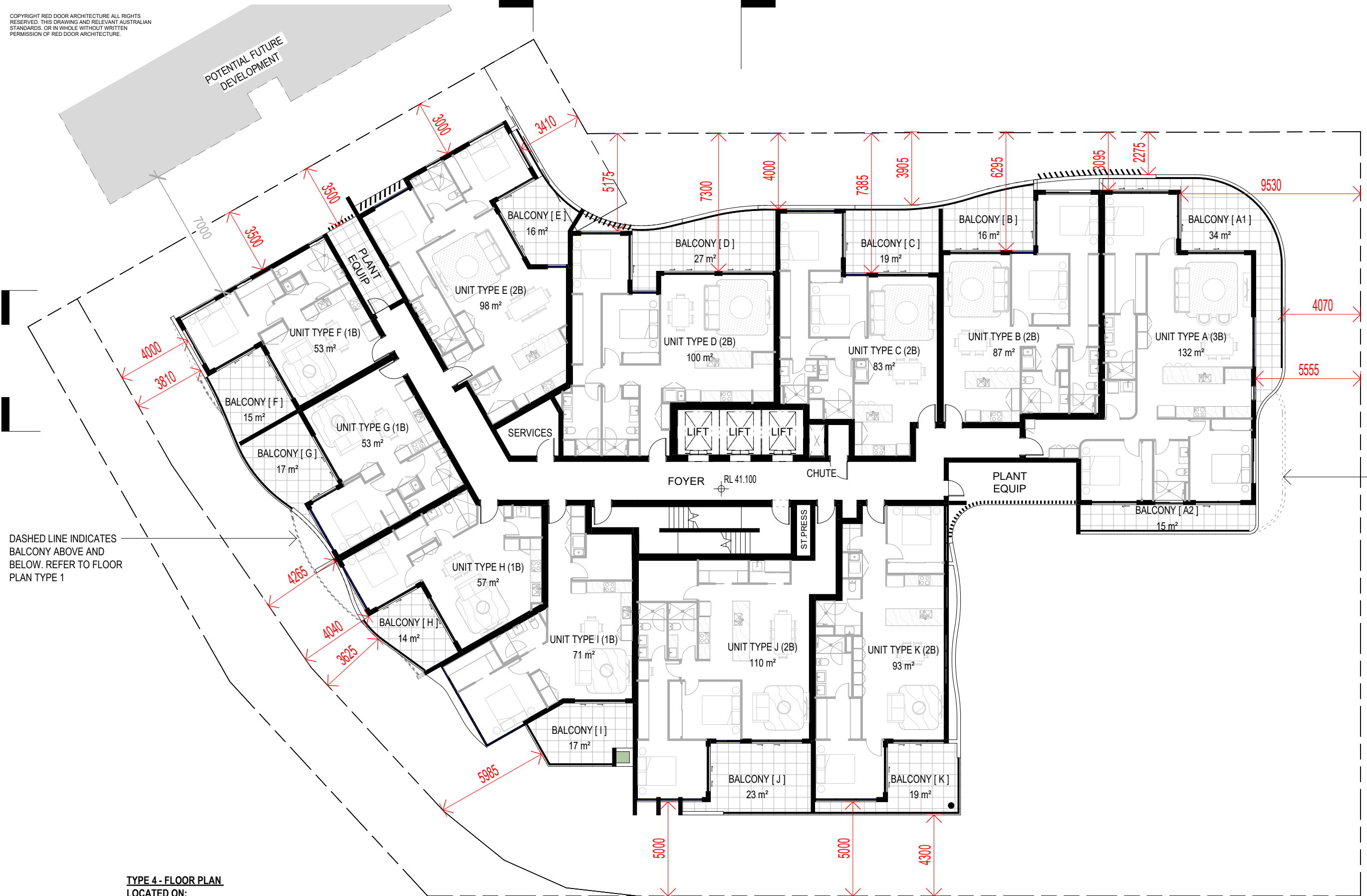
**TYPE 3 - FLOOR PLAN  
LOCATED ON:**

LEVEL 11  
LEVEL 21  
LEVEL 31



**REDDOOR**  
ARCHITECTURE





DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 1

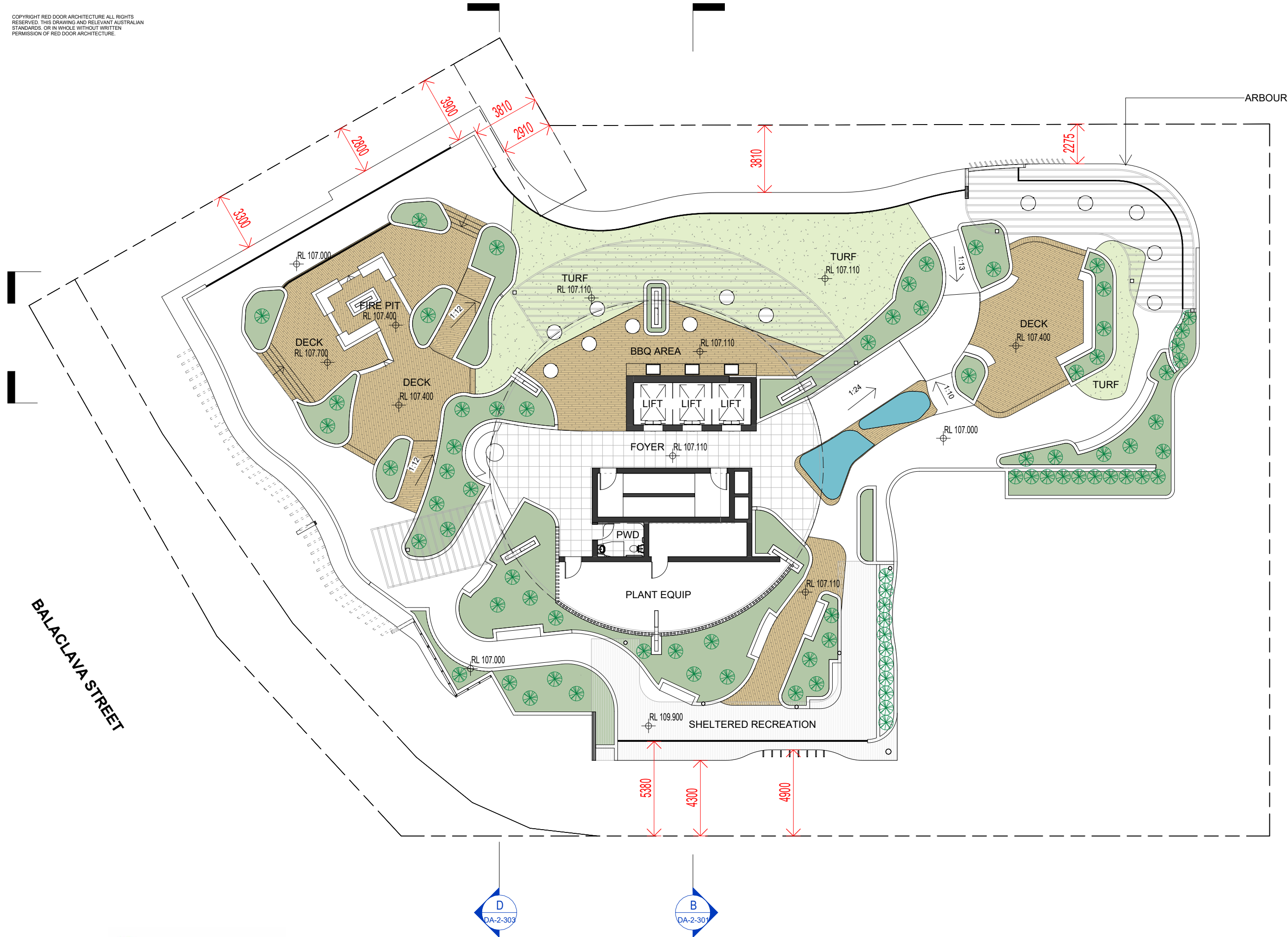
DASHED LINE INDICATES BALCONY ABOVE AND BELOW. REFER TO FLOOR PLAN TYPE 1

**TYPE 4 - FLOOR PLAN LOCATED ON:**

LEVEL 12  
LEVEL 22  
LEVEL 32



**REDDOOR**  
ARCHITECTURE





|              |  |  |  |  |  |
|--------------|--|--|--|--|--|
| ROOF TERRACE |  |  |  |  |  |
| 107100       |  |  |  |  |  |
| LEVEL 33     |  |  |  |  |  |
| 104100       |  |  |  |  |  |
| LEVEL 32     |  |  |  |  |  |
| 101100       |  |  |  |  |  |
| LEVEL 31     |  |  |  |  |  |
| 98100        |  |  |  |  |  |
| LEVEL 30     |  |  |  |  |  |
| 95100        |  |  |  |  |  |
| LEVEL 29     |  |  |  |  |  |
| 92100        |  |  |  |  |  |
| LEVEL 28     |  |  |  |  |  |
| 89100        |  |  |  |  |  |
| LEVEL 27     |  |  |  |  |  |
| 86100        |  |  |  |  |  |
| LEVEL 26     |  |  |  |  |  |
| 83100        |  |  |  |  |  |
| LEVEL 25     |  |  |  |  |  |
| 80100        |  |  |  |  |  |
| LEVEL 24     |  |  |  |  |  |
| 77100        |  |  |  |  |  |
| LEVEL 23     |  |  |  |  |  |
| 74100        |  |  |  |  |  |
| LEVEL 22     |  |  |  |  |  |
| 71100        |  |  |  |  |  |
| LEVEL 21     |  |  |  |  |  |
| 68100        |  |  |  |  |  |
| LEVEL 20     |  |  |  |  |  |
| 65100        |  |  |  |  |  |
| LEVEL 19     |  |  |  |  |  |
| 62100        |  |  |  |  |  |
| LEVEL 18     |  |  |  |  |  |
| 59100        |  |  |  |  |  |
| LEVEL 17     |  |  |  |  |  |
| 56100        |  |  |  |  |  |
| LEVEL 16     |  |  |  |  |  |
| 53100        |  |  |  |  |  |
| LEVEL 15     |  |  |  |  |  |
| 50100        |  |  |  |  |  |
| LEVEL 14     |  |  |  |  |  |
| 47100        |  |  |  |  |  |
| LEVEL 13     |  |  |  |  |  |
| 44100        |  |  |  |  |  |
| LEVEL 12     |  |  |  |  |  |
| 41100        |  |  |  |  |  |
| LEVEL 11     |  |  |  |  |  |
| 38100        |  |  |  |  |  |
| LEVEL 10     |  |  |  |  |  |
| 35100        |  |  |  |  |  |
| LEVEL 9      |  |  |  |  |  |
| 32100        |  |  |  |  |  |
| LEVEL 8      |  |  |  |  |  |
| 29100        |  |  |  |  |  |
| LEVEL 7      |  |  |  |  |  |
| 25600        |  |  |  |  |  |
| LEVEL 6      |  |  |  |  |  |
| 21800        |  |  |  |  |  |
| LEVEL 5      |  |  |  |  |  |
| 18800        |  |  |  |  |  |
| LEVEL 4      |  |  |  |  |  |
| 15800        |  |  |  |  |  |
| LEVEL 3      |  |  |  |  |  |
| 12800        |  |  |  |  |  |
| LEVEL 2      |  |  |  |  |  |
| 9800         |  |  |  |  |  |
| LEVEL 1 (GF) |  |  |  |  |  |
| 6800         |  |  |  |  |  |
| BASEMENT 1   |  |  |  |  |  |
| 3500         |  |  |  |  |  |



MATERIAL & FINISHES LEGEND

| CODE   | DESCRIPTION                                       | COLOUR        |
|--------|---------------------------------------------------|---------------|
| AR1 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | ANODIC BRONZE |
| AR2 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | WHITE         |
| BAL1 - | FRAMELESS GLASS BALUSTRADE                        | CLEAR         |
| BAL2 - | AFS TYPE - CONCRETE UPSTAND BALUSTRADE - PAINTED  | WHITE         |
| COL1 - | CIRCULAR CONCRETE COLUMN - PAINTED                | WHITE         |
| COL2 - | RECTANGULAR CONCRETE COLUMN - PAINTED             | WHITE         |
| CR1 -  | CONCRETE ROOF - PAINTED                           | WHITE         |
| DR1 -  | METAL DOME ROOF - COLORBOND                       | SHALE GREY    |
| GS1 -  | TINTED GLAZING, AL. WINDOW SYSTEM - POWDER COATED | MONUMENT      |
| GS2 -  | CURTAIN WALL WINDOW SYSTEM - POWDER COATED        | MONUMENT      |
| GS3 -  | SHOPFRONT WINDOW SYSTEM - POWDER COATED           | MONUMENT      |
| SC1 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | ANODIC BRONZE |
| SC2 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | WHITE         |
| WA1 -  | RENDER - PAINTED FINISH                           | WHITE         |
| WA2 -  | RENDER - PAINTED FINISH                           | MONUMENT      |
| WA3 -  | AL. TIMBER LOOK CLADDING                          | JARRAH        |
| WA4 -  | PRE-CAST PANELS - HORIZONTAL LINES                | FLOODED GUM   |
| WA5 -  | BRICK FINISH                                      | WHITE         |

|              |  |  |  |  |  |
|--------------|--|--|--|--|--|
| ROOF TERRACE |  |  |  |  |  |
| 107100       |  |  |  |  |  |
| LEVEL 33     |  |  |  |  |  |
| 104100       |  |  |  |  |  |
| LEVEL 32     |  |  |  |  |  |
| 101100       |  |  |  |  |  |
| LEVEL 31     |  |  |  |  |  |
| 98100        |  |  |  |  |  |
| LEVEL 30     |  |  |  |  |  |
| 95100        |  |  |  |  |  |
| LEVEL 29     |  |  |  |  |  |
| 92100        |  |  |  |  |  |
| LEVEL 28     |  |  |  |  |  |
| 89100        |  |  |  |  |  |
| LEVEL 27     |  |  |  |  |  |
| 86100        |  |  |  |  |  |
| LEVEL 26     |  |  |  |  |  |
| 83100        |  |  |  |  |  |
| LEVEL 25     |  |  |  |  |  |
| 80100        |  |  |  |  |  |
| LEVEL 24     |  |  |  |  |  |
| 77100        |  |  |  |  |  |
| LEVEL 23     |  |  |  |  |  |
| 74100        |  |  |  |  |  |
| LEVEL 22     |  |  |  |  |  |
| 71100        |  |  |  |  |  |
| LEVEL 21     |  |  |  |  |  |
| 68100        |  |  |  |  |  |
| LEVEL 20     |  |  |  |  |  |
| 65100        |  |  |  |  |  |
| LEVEL 19     |  |  |  |  |  |
| 62100        |  |  |  |  |  |
| LEVEL 18     |  |  |  |  |  |
| 59100        |  |  |  |  |  |
| LEVEL 17     |  |  |  |  |  |
| 56100        |  |  |  |  |  |
| LEVEL 16     |  |  |  |  |  |
| 53100        |  |  |  |  |  |
| LEVEL 15     |  |  |  |  |  |
| 50100        |  |  |  |  |  |
| LEVEL 14     |  |  |  |  |  |
| 47100        |  |  |  |  |  |
| LEVEL 13     |  |  |  |  |  |
| 44100        |  |  |  |  |  |
| LEVEL 12     |  |  |  |  |  |
| 41100        |  |  |  |  |  |
| LEVEL 11     |  |  |  |  |  |
| 38100        |  |  |  |  |  |
| LEVEL 10     |  |  |  |  |  |
| 35100        |  |  |  |  |  |
| LEVEL 9      |  |  |  |  |  |
| 32100        |  |  |  |  |  |
| LEVEL 8      |  |  |  |  |  |
| 29100        |  |  |  |  |  |
| LEVEL 7      |  |  |  |  |  |
| 25600        |  |  |  |  |  |
| LEVEL 6      |  |  |  |  |  |
| 21800        |  |  |  |  |  |
| LEVEL 5      |  |  |  |  |  |
| 18800        |  |  |  |  |  |
| LEVEL 4      |  |  |  |  |  |
| 15800        |  |  |  |  |  |
| LEVEL 3      |  |  |  |  |  |
| 12800        |  |  |  |  |  |
| LEVEL 2      |  |  |  |  |  |
| 9800         |  |  |  |  |  |
| LEVEL 1 (GF) |  |  |  |  |  |
| 6800         |  |  |  |  |  |
| BASEMENT 1   |  |  |  |  |  |
| 3500         |  |  |  |  |  |

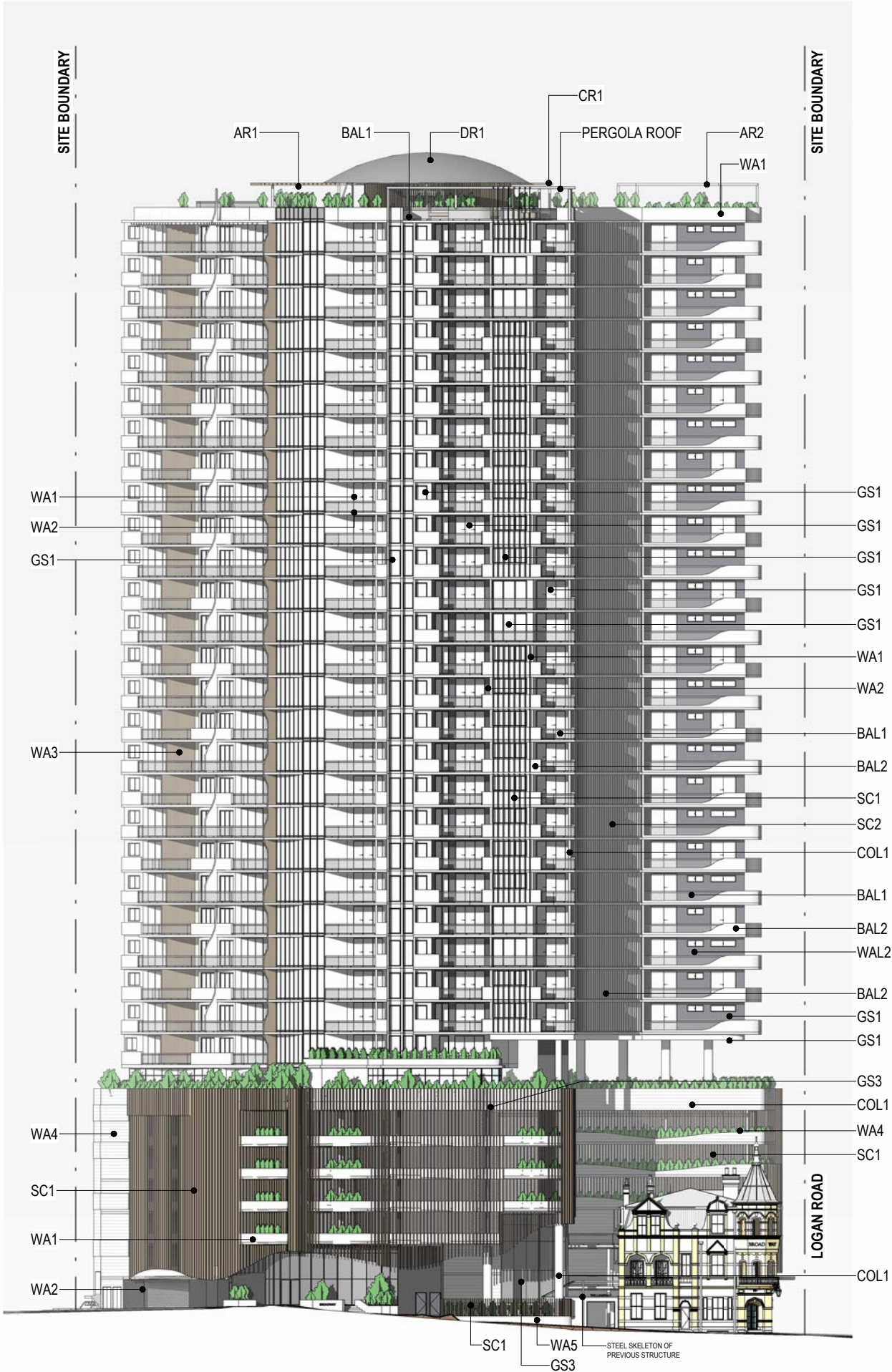


MATERIAL & FINISHES LEGEND

| CODE   | DESCRIPTION                                       | COLOUR        |
|--------|---------------------------------------------------|---------------|
| AR1 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | ANODIC BRONZE |
| AR2 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | WHITE         |
| BAL1 - | FRAMELESS GLASS BALUSTRADE                        | CLEAR         |
| BAL2 - | AFS TYPE - CONCRETE UPSTAND BALUSTRADE - PAINTED  | WHITE         |
| COL1 - | CIRCULAR CONCRETE COLUMN - PAINTED                | WHITE         |
| COL2 - | RECTANGULAR CONCRETE COLUMN - PAINTED             | WHITE         |
| CR1 -  | CONCRETE ROOF - PAINTED                           | WHITE         |
| DR1 -  | METAL DOME ROOF - COLORBOND                       | SHALE GREY    |
| GS1 -  | TINTED GLAZING, AL. WINDOW SYSTEM - POWDER COATED | MONUMENT      |
| GS2 -  | CURTAIN WALL WINDOW SYSTEM - POWDER COATED        | MONUMENT      |
| GS3 -  | SHOPFRONT WINDOW SYSTEM - POWDER COATED           | MONUMENT      |
| SC1 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | ANODIC BRONZE |
| SC2 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | WHITE         |
| WA1 -  | RENDER - PAINTED FINISH                           | WHITE         |
| WA2 -  | RENDER - PAINTED FINISH                           | MONUMENT      |
| WA3 -  | AL. TIMBER LOOK CLADDING                          | JARRAH        |
| WA4 -  | PRE-CAST PANELS - HORIZONTAL LINES                | FLOODED GUM   |
| WA5 -  | BRICK FINISH                                      | WHITE         |



|              |  |  |  |  |
|--------------|--|--|--|--|
| ROOF TERRACE |  |  |  |  |
| 107100       |  |  |  |  |
| LEVEL 33     |  |  |  |  |
| 104100       |  |  |  |  |
| LEVEL 32     |  |  |  |  |
| 101100       |  |  |  |  |
| LEVEL 31     |  |  |  |  |
| 98100        |  |  |  |  |
| LEVEL 30     |  |  |  |  |
| 95100        |  |  |  |  |
| LEVEL 29     |  |  |  |  |
| 92100        |  |  |  |  |
| LEVEL 28     |  |  |  |  |
| 89100        |  |  |  |  |
| LEVEL 27     |  |  |  |  |
| 86100        |  |  |  |  |
| LEVEL 26     |  |  |  |  |
| 83100        |  |  |  |  |
| LEVEL 25     |  |  |  |  |
| 80100        |  |  |  |  |
| LEVEL 24     |  |  |  |  |
| 77100        |  |  |  |  |
| LEVEL 23     |  |  |  |  |
| 74100        |  |  |  |  |
| LEVEL 22     |  |  |  |  |
| 71100        |  |  |  |  |
| LEVEL 21     |  |  |  |  |
| 68100        |  |  |  |  |
| LEVEL 20     |  |  |  |  |
| 65100        |  |  |  |  |
| LEVEL 19     |  |  |  |  |
| 62100        |  |  |  |  |
| LEVEL 18     |  |  |  |  |
| 59100        |  |  |  |  |
| LEVEL 17     |  |  |  |  |
| 56100        |  |  |  |  |
| LEVEL 16     |  |  |  |  |
| 53100        |  |  |  |  |
| LEVEL 15     |  |  |  |  |
| 50100        |  |  |  |  |
| LEVEL 14     |  |  |  |  |
| 47100        |  |  |  |  |
| LEVEL 13     |  |  |  |  |
| 44100        |  |  |  |  |
| LEVEL 12     |  |  |  |  |
| 41100        |  |  |  |  |
| LEVEL 11     |  |  |  |  |
| 38100        |  |  |  |  |
| LEVEL 10     |  |  |  |  |
| 35100        |  |  |  |  |
| LEVEL 9      |  |  |  |  |
| 32100        |  |  |  |  |
| LEVEL 8      |  |  |  |  |
| 29100        |  |  |  |  |
| LEVEL 7      |  |  |  |  |
| 25600        |  |  |  |  |
| LEVEL 6      |  |  |  |  |
| 21800        |  |  |  |  |
| LEVEL 5      |  |  |  |  |
| 18800        |  |  |  |  |
| LEVEL 4      |  |  |  |  |
| 15800        |  |  |  |  |
| LEVEL 3      |  |  |  |  |
| 12800        |  |  |  |  |
| LEVEL 2      |  |  |  |  |
| 9800         |  |  |  |  |
| LEVEL 1 (GF) |  |  |  |  |
| 6800         |  |  |  |  |
| BASEMENT 1   |  |  |  |  |
| 3500         |  |  |  |  |



MATERIAL & FINISHES LEGEND

| CODE   | DESCRIPTION                                       | COLOUR        |
|--------|---------------------------------------------------|---------------|
| AR1 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | ANODIC BRONZE |
| AR2 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | WHITE         |
| BAL1 - | FRAMELESS GLASS BALUSTRADE                        | CLEAR         |
| BAL2 - | AFS TYPE - CONCRETE UPSTAND BALUSTRADE - PAINTED  | WHITE         |
| COL1 - | CIRCULAR CONCRETE COLUMN - PAINTED                | WHITE         |
| COL2 - | RECTANGULAR CONCRETE COLUMN - PAINTED             | WHITE         |
| CR1 -  | CONCRETE ROOF - PAINTED                           | WHITE         |
| DR1 -  | METAL DOME ROOF - COLORBOND                       | SHALE GREY    |
| GS1 -  | TINTED GLAZING, AL. WINDOW SYSTEM - POWDER COATED | MONUMENT      |
| GS2 -  | CURTAIN WALL WINDOW SYSTEM - POWDER COATED        | MONUMENT      |
| GS3 -  | SHOPFRONT WINDOW SYSTEM - POWDER COATED           | MONUMENT      |
| SC1 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | ANODIC BRONZE |
| SC2 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | WHITE         |
| WA1 -  | RENDER - PAINTED FINISH                           | WHITE         |
| WA2 -  | RENDER - PAINTED FINISH                           | MONUMENT      |
| WA3 -  | AL. TIMBER LOOK CLADDING                          | JARRAH        |
| WA4 -  | PRE-CAST PANELS - HORIZONTAL LINES                | FLOODED GUM   |
| WA5 -  | BRICK FINISH                                      | WHITE         |

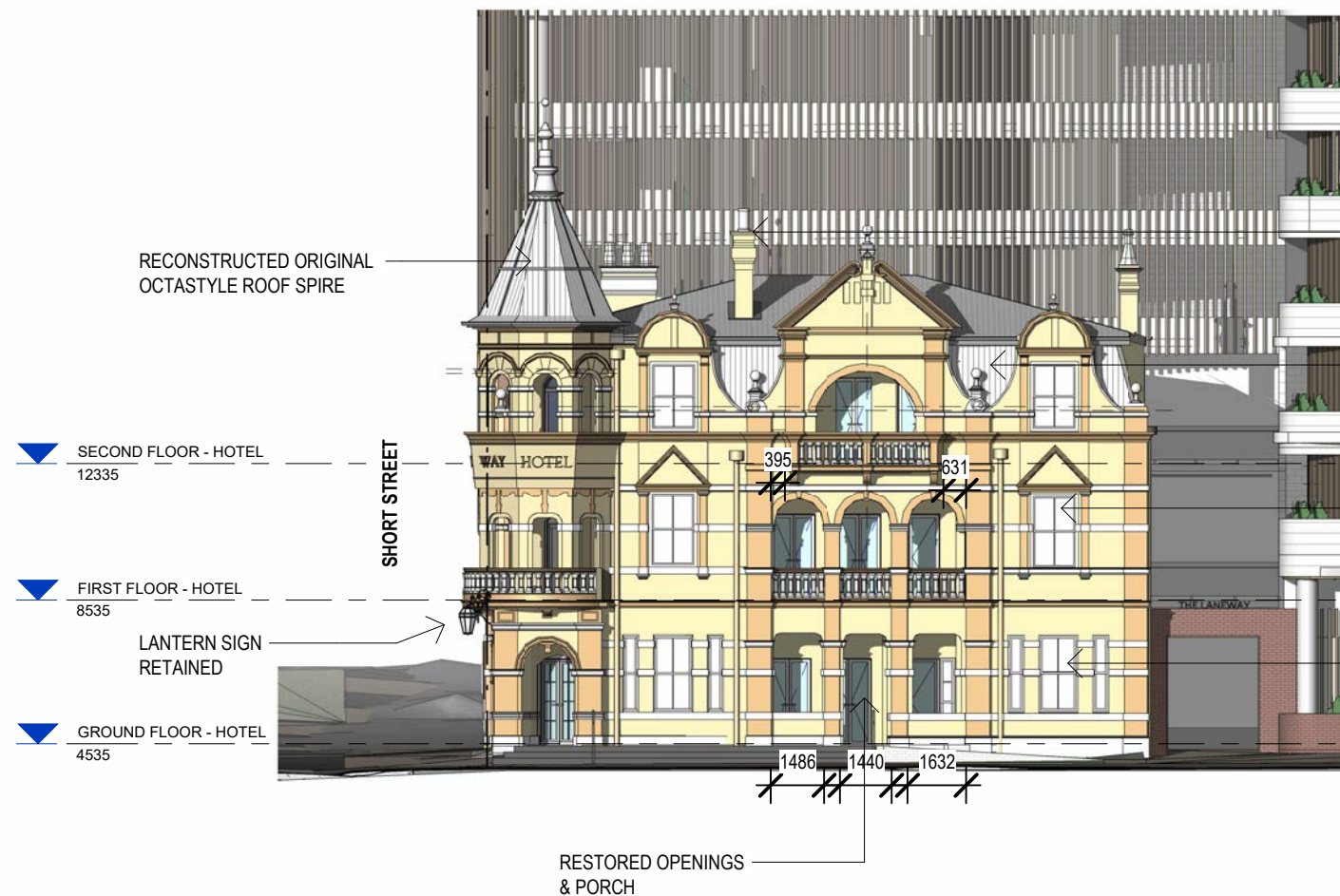


|              |  |  |  |  |
|--------------|--|--|--|--|
| ROOF TERRACE |  |  |  |  |
| 107100       |  |  |  |  |
| LEVEL 33     |  |  |  |  |
| 104100       |  |  |  |  |
| LEVEL 32     |  |  |  |  |
| 101100       |  |  |  |  |
| LEVEL 31     |  |  |  |  |
| 98100        |  |  |  |  |
| LEVEL 30     |  |  |  |  |
| 95100        |  |  |  |  |
| LEVEL 29     |  |  |  |  |
| 92100        |  |  |  |  |
| LEVEL 28     |  |  |  |  |
| 89100        |  |  |  |  |
| LEVEL 27     |  |  |  |  |
| 86100        |  |  |  |  |
| LEVEL 26     |  |  |  |  |
| 83100        |  |  |  |  |
| LEVEL 25     |  |  |  |  |
| 80100        |  |  |  |  |
| LEVEL 24     |  |  |  |  |
| 77100        |  |  |  |  |
| LEVEL 23     |  |  |  |  |
| 74100        |  |  |  |  |
| LEVEL 22     |  |  |  |  |
| 71100        |  |  |  |  |
| LEVEL 21     |  |  |  |  |
| 68100        |  |  |  |  |
| LEVEL 20     |  |  |  |  |
| 65100        |  |  |  |  |
| LEVEL 19     |  |  |  |  |
| 62100        |  |  |  |  |
| LEVEL 18     |  |  |  |  |
| 59100        |  |  |  |  |
| LEVEL 17     |  |  |  |  |
| 56100        |  |  |  |  |
| LEVEL 16     |  |  |  |  |
| 53100        |  |  |  |  |
| LEVEL 15     |  |  |  |  |
| 50100        |  |  |  |  |
| LEVEL 14     |  |  |  |  |
| 47100        |  |  |  |  |
| LEVEL 13     |  |  |  |  |
| 44100        |  |  |  |  |
| LEVEL 12     |  |  |  |  |
| 41100        |  |  |  |  |
| LEVEL 11     |  |  |  |  |
| 38100        |  |  |  |  |
| LEVEL 10     |  |  |  |  |
| 35100        |  |  |  |  |
| LEVEL 9      |  |  |  |  |
| 32100        |  |  |  |  |
| LEVEL 8      |  |  |  |  |
| 29100        |  |  |  |  |
| LEVEL 7      |  |  |  |  |
| 25600        |  |  |  |  |
| LEVEL 6      |  |  |  |  |
| 21800        |  |  |  |  |
| LEVEL 5      |  |  |  |  |
| 18800        |  |  |  |  |
| LEVEL 4      |  |  |  |  |
| 15800        |  |  |  |  |
| LEVEL 3      |  |  |  |  |
| 12800        |  |  |  |  |
| LEVEL 2      |  |  |  |  |
| 9800         |  |  |  |  |
| LEVEL 1 (GF) |  |  |  |  |
| 6800         |  |  |  |  |
| BASEMENT 1   |  |  |  |  |
| 3500         |  |  |  |  |

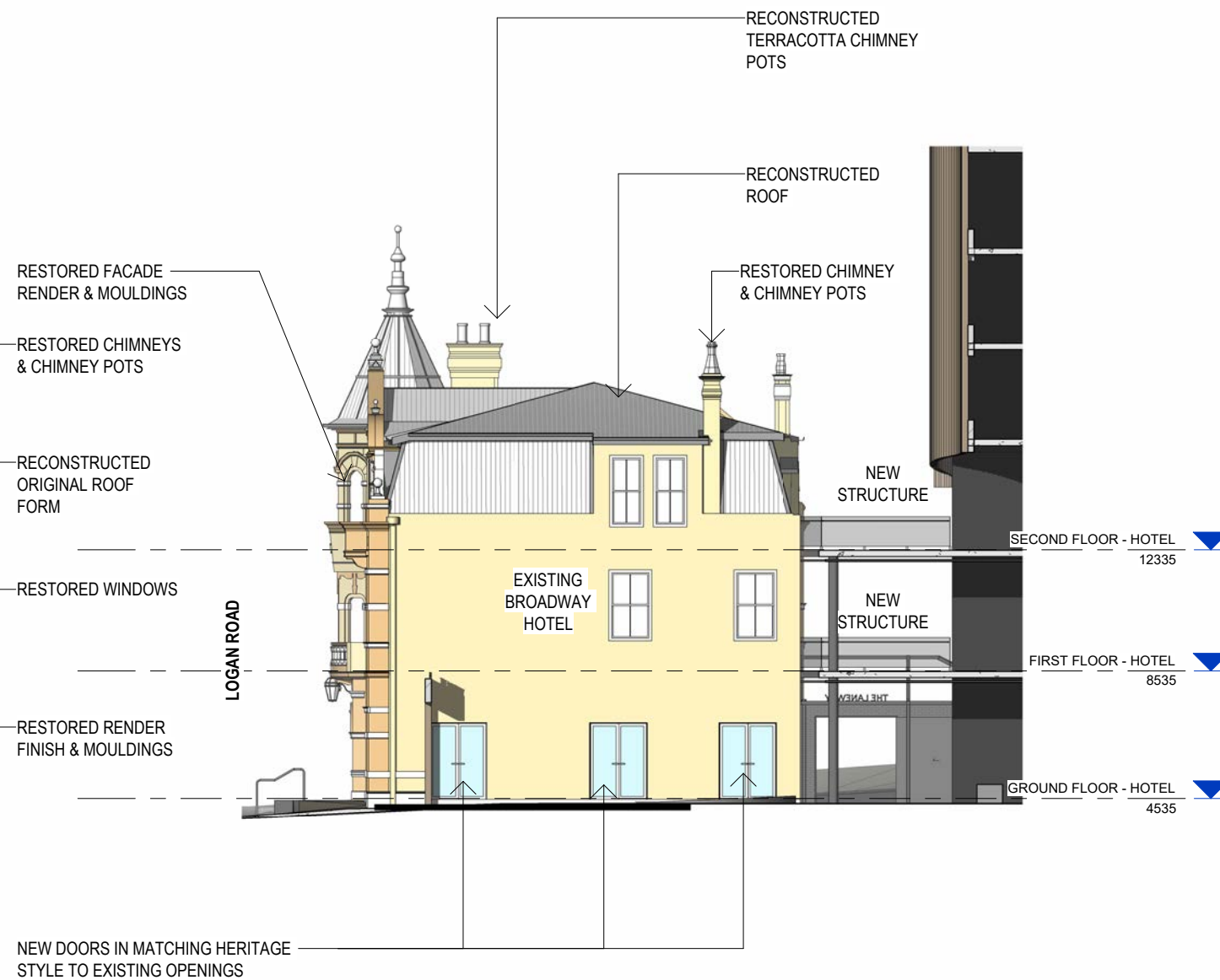


MATERIAL & FINISHES LEGEND

| CODE   | DESCRIPTION                                       | COLOUR        |
|--------|---------------------------------------------------|---------------|
| AR1 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | ANODIC BRONZE |
| AR2 -  | ARBOUR STRUCTURE - ALUMINIUM POWDERCOAT           | WHITE         |
| BAL1 - | FRAMELESS GLASS BALUSTRADE                        | CLEAR         |
| BAL2 - | AFS TYPE - CONCRETE UPSTAND BALUSTRADE - PAINTED  | WHITE         |
| COL1 - | CIRCULAR CONCRETE COLUMN - PAINTED                | WHITE         |
| COL2 - | RECTANGULAR CONCRETE COLUMN - PAINTED             | WHITE         |
| CR1 -  | CONCRETE ROOF - PAINTED                           | WHITE         |
| DR1 -  | METAL DOME ROOF - COLORBOND                       | SHALE GREY    |
| GS1 -  | TINTED GLAZING, AL. WINDOW SYSTEM - POWDER COATED | MONUMENT      |
| GS2 -  | CURTAIN WALL WINDOW SYSTEM - POWDER COATED        | MONUMENT      |
| GS3 -  | SHOPFRONT WINDOW SYSTEM - POWDER COATED           | MONUMENT      |
| SC1 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | ANODIC BRONZE |
| SC2 -  | VERTICAL AL. BATTEN SCREENING - POWDER COATED     | WHITE         |
| WA1 -  | RENDER - PAINTED FINISH                           | WHITE         |
| WA2 -  | RENDER - PAINTED FINISH                           | MONUMENT      |
| WA3 -  | AL. TIMBER LOOK CLADDING                          | JARRAH        |
| WA4 -  | PRE-CAST PANELS - HORIZONTAL LINES                | FLOODED GUM   |
| WA5 -  | BRICK FINISH                                      | WHITE         |



1 HOTEL - NORTH EAST ELEVATION  
1 : 200@A3

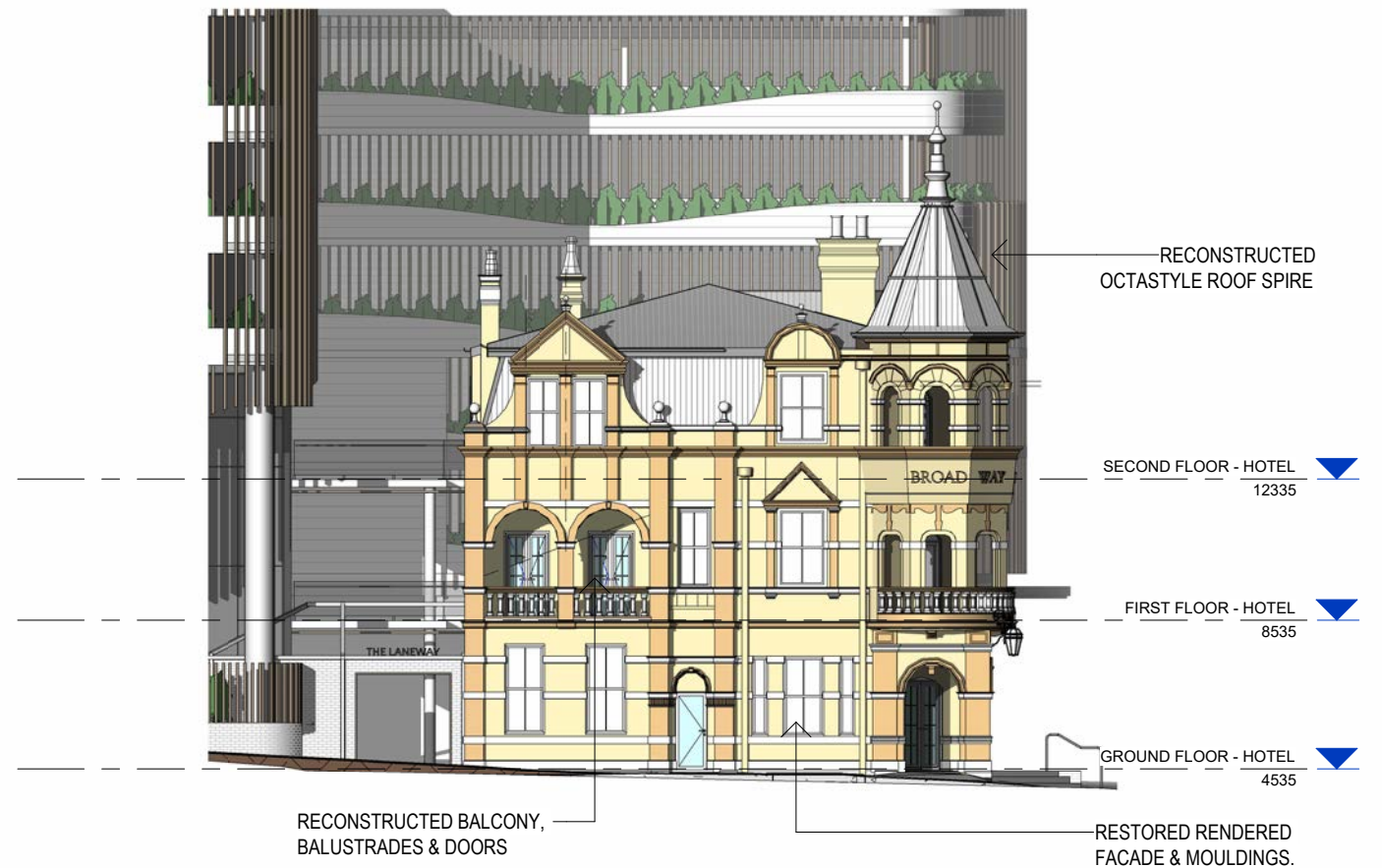


2 HOTEL - NORTH WEST ELEVATION  
1 : 200@A3



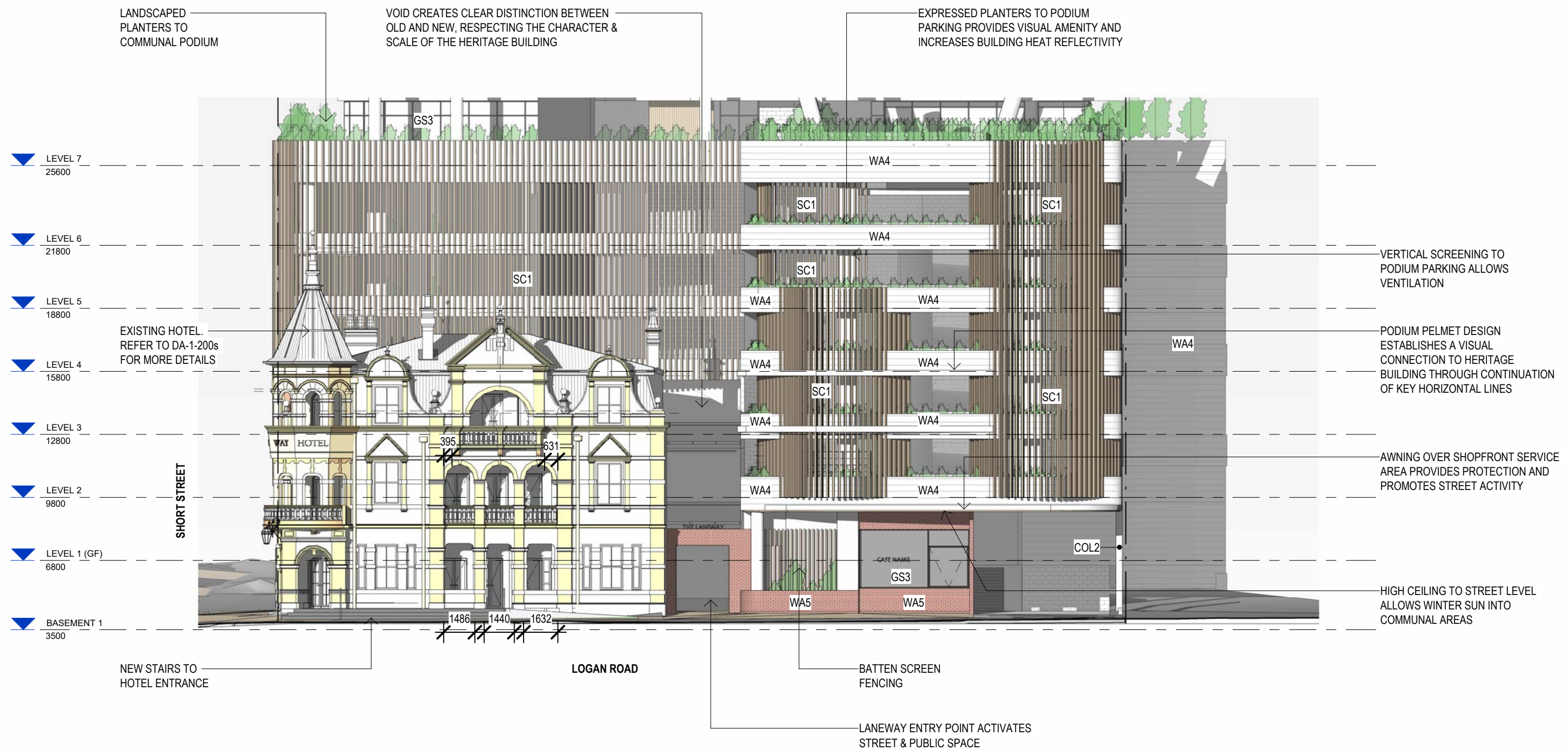


1 HOTEL - SOUTH-WEST ELEVATION  
1 : 200@A3

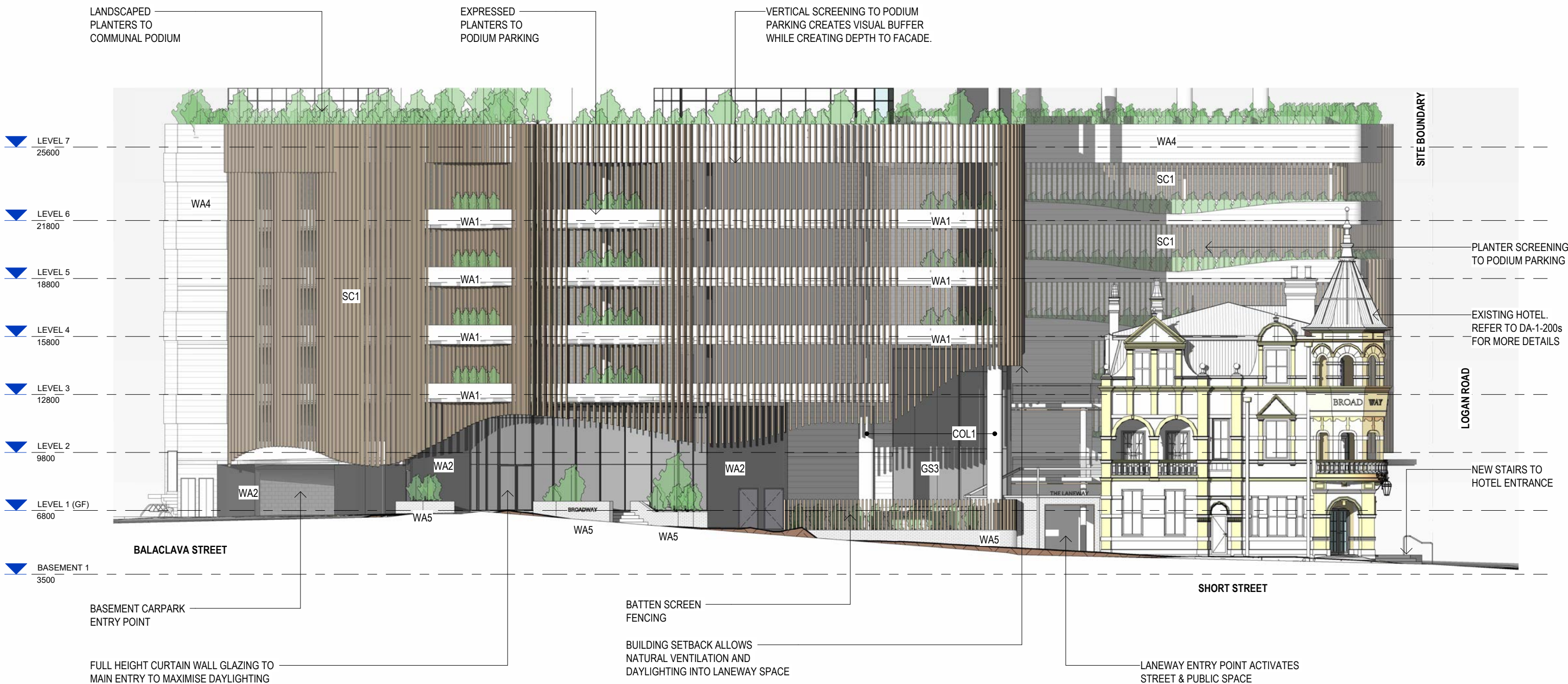


2 HOTEL - SOUTH EAST ELEVATION  
1 : 200@A3





1 NORTH-EAST ELEVATION - LOGAN ROAD  
- 1:200@A3



1 SOUTH-EAST ELEVATION - SHORT STREET  
1:200@A3

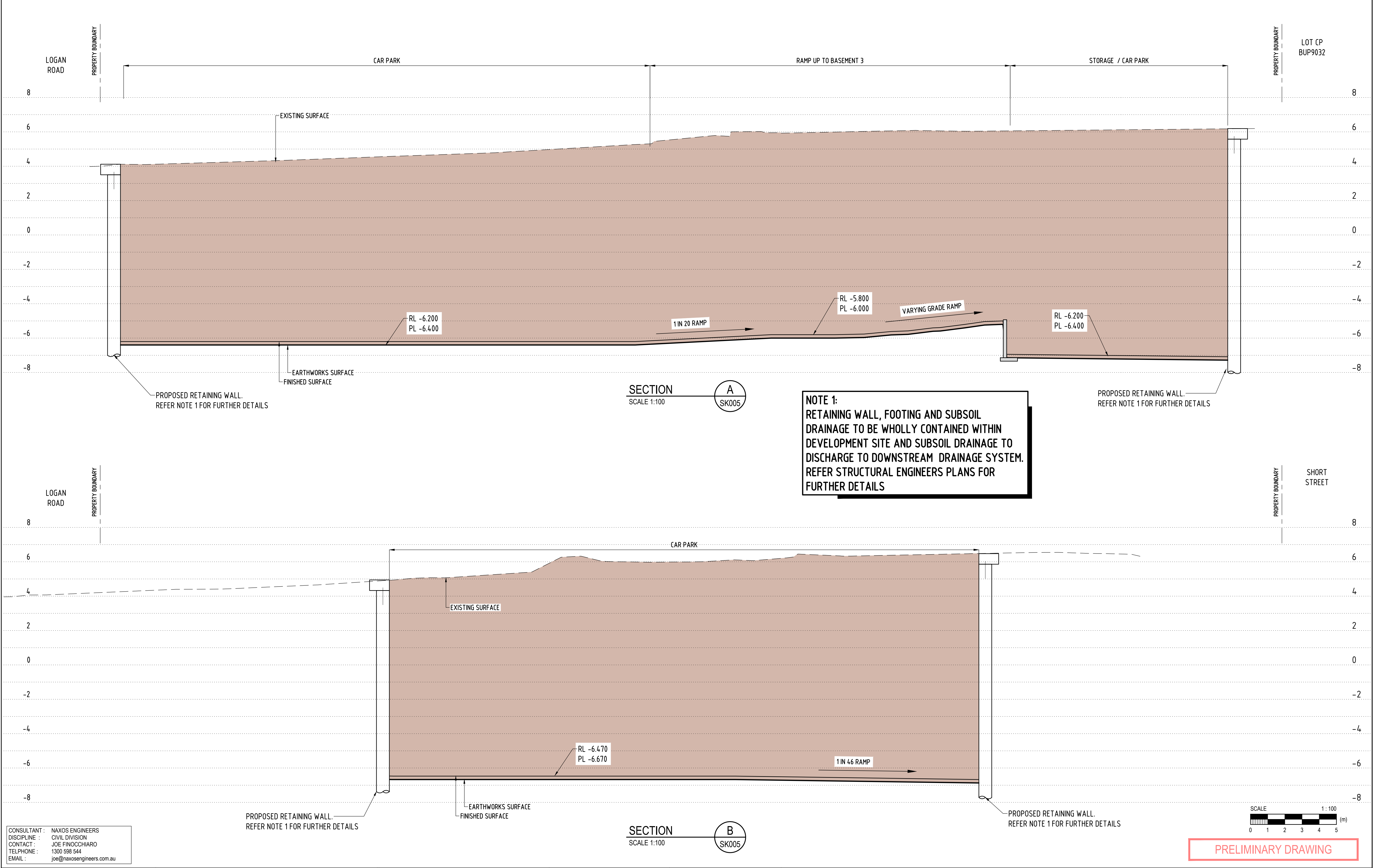


## Appendix F – CONCEPT STORMWATER PLANS









CONSULTANT : NAXOS ENGINEERS  
DISCIPLINE : CIVIL DIVISION  
CONTACT : JOE FINOCCHIARO  
TELEPHONE : 1300 598 544  
EMAIL : joe@naxosengineers.com.au

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T 1300 598 544

E info@naxosengineers.com.au

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557 Gregory Terrace, Fortitude Valley, Qld 4006

PO Box 224, Spring Hill QLD 4004

NAXOSENGINEERS.COM.AU

| AMENDMENTS |            |                   |       |
|------------|------------|-------------------|-------|
| No.        | DATE       | DESCRIPTION       | DRAWN |
| A          | 26.06.2023 | PRELIMINARY ISSUE | SD    |
| B          | 06.09.2023 | PRELIMINARY ISSUE | NP    |
| C          | 16.07.2025 | PRELIMINARY ISSUE | NP    |
|            |            |                   |       |
|            |            |                   |       |
|            |            |                   |       |

|                                                 |             |                |       |
|-------------------------------------------------|-------------|----------------|-------|
| Associated Consultant:<br>RED DOOR ARCHITECTURE |             |                |       |
| Approved: GREGG TYQUIN                          | Drawn: NP   | Design: NP     |       |
| RPEQ. 1528                                      | Checked: GT | Supervisor: GF | Date: |

**DISCLAIMER NOTE:**  
THIS PLAN WAS PREPARED FOR DISCUSSION AND ESTIMATING PURPOSES. THE LAYOUT SHOWN IS INDICATIVE ONLY AND MAY BE SUBJECT TO LOCAL AUTHORITY / GOVERNMENT REQUIREMENTS AND FURTHER DETAILED ENGINEERING DESIGN.  
  
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North:

Size of Land:  
2374M<sup>2</sup>

Client:  
CARBONE DEVELOPMENTS PTY LTD

Scale:  
AS SHOWN

Project:  
PROPOSED MULTI-USE DEVELOPMENT  
93 LOGAN ROAD, WOOLLOONGABBA, QLD 4102

Job No.  
23-198

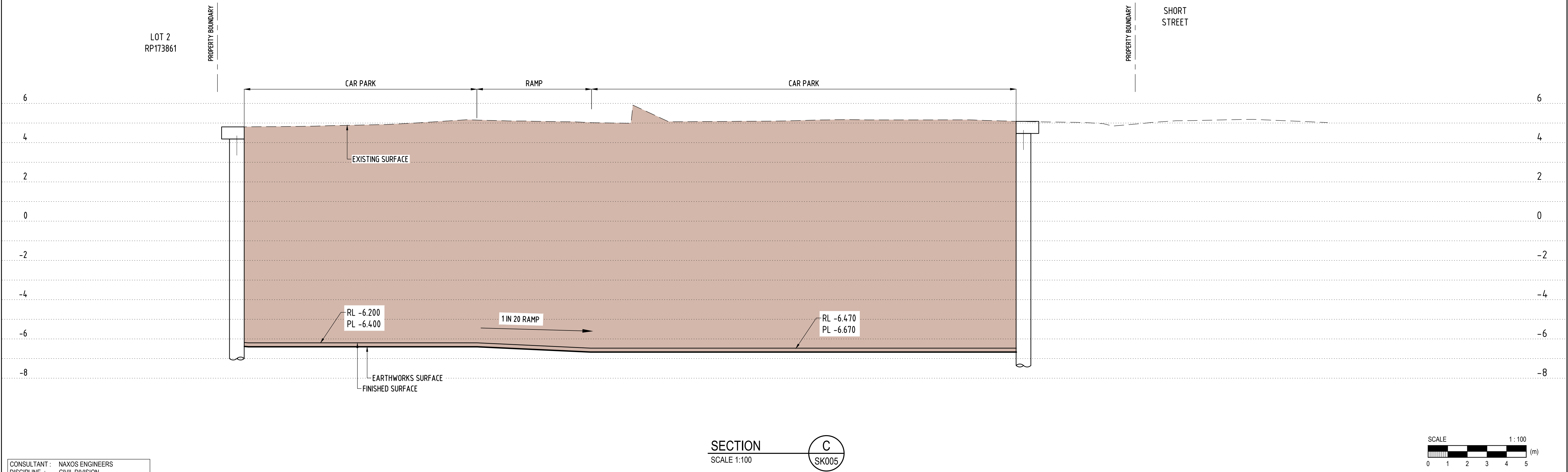
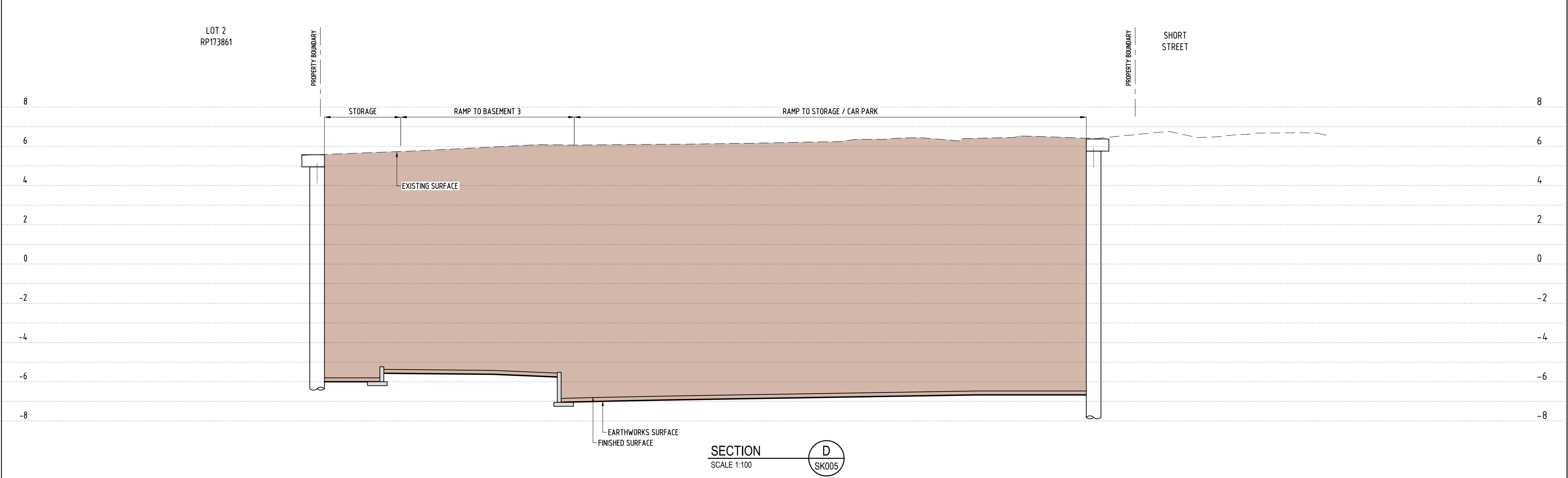
Drawing No.  
SK006

Revision:  
C

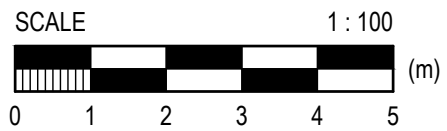
## CONCEPT EARTHWORKS SECTIONS (SHEET 1 OF 2)

PRELIMINARY DRAWING





CONSULTANT : NAXOS ENGINEERS  
DISCIPLINE : CIVIL DIVISION  
CONTACT : JOE FINOCCHIARO  
TELEPHONE : 1300 598 544  
EMAIL : joe@naxosengineers.com.au



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PO Box 224, Spring Hill QLD 4004  
NAXOSENGINEERS.COM.AU

| AMENDMENTS |            |                   |       |
|------------|------------|-------------------|-------|
| No.        | DATE       | DESCRIPTION       | DRAWN |
| A          | 06.09.2023 | PRELIMINARY ISSUE | NP    |
| B          | 06.09.2023 | PRELIMINARY ISSUE | NP    |
| C          | 16.07.2025 | PRELIMINARY ISSUE | NP    |
|            |            |                   |       |
|            |            |                   |       |
|            |            |                   |       |

Associated Consultant:  
RED DOOR ARCHITECTURE

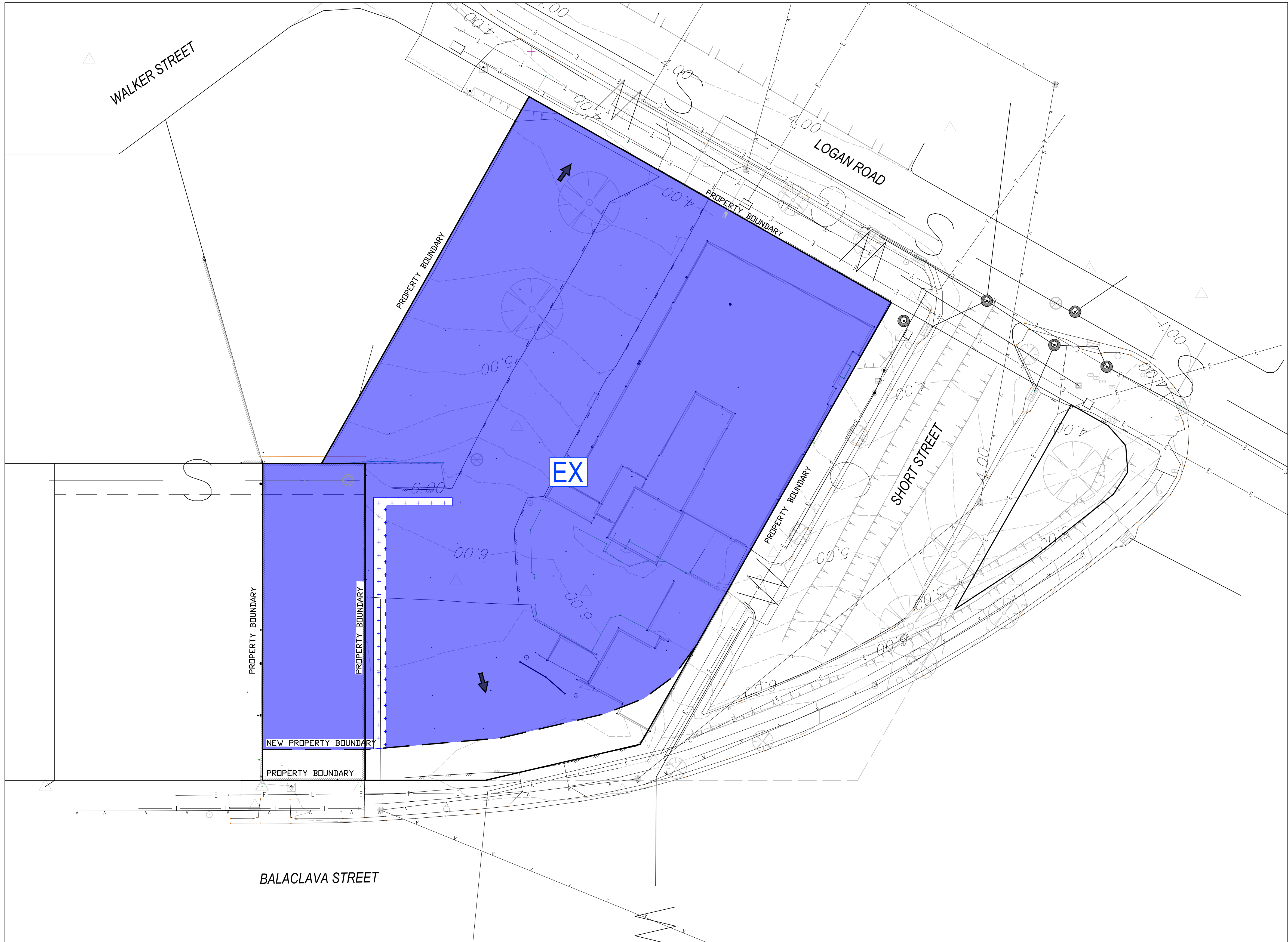
|                        |             |                |
|------------------------|-------------|----------------|
| Approved: GREGG TYQUIN | Drawn: NP   | Design: NP     |
| RPEQ. 1528             | Checked: GT | Supervisor: GF |
| Date:                  |             |                |

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|                    |                                                                                   |                                      |                |             |
|--------------------|-----------------------------------------------------------------------------------|--------------------------------------|----------------|-------------|
| North:             | Size of Land: 2374M <sup>2</sup>                                                  | Client: CARBONE DEVELOPMENTS PTY LTD | Job No. 23-198 | Revision: C |
| Scale: 1:100       | Project: PROPOSED MULTI-USE DEVELOPMENT<br>93 LOGAN ROAD, WOOLLOONGABBA, QLD 4102 | Drawing No. SK007                    |                |             |
| Orig. Dwg. Size A1 |                                                                                   |                                      |                |             |

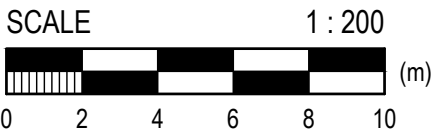




| STORMWATER CATCHMENT TABLE |                     |                                 |                                  |                                |                              |                     |                   |
|----------------------------|---------------------|---------------------------------|----------------------------------|--------------------------------|------------------------------|---------------------|-------------------|
| CATCHMENT NAME             | CATCHMENT AREA (m²) | MINOR COEFFICIENT (ARI 10 YEAR) | MAJOR COEFFICIENT (ARI 100 YEAR) | IMPERVIOUS CATCHMENT AREA (m²) | PERVIOUS CATCHMENT AREA (m²) | IMPERVIOUS AREA (%) | PERVIOUS AREA (%) |
| EX                         | 2374                | 0.900                           | 1.000                            | 2333                           | 41                           | 98.3                | 1.7               |

NOTES:  
1. SITE EXTENTS BASED OFF NEAR MAP IMAGERY.  
2. SUBJECT TO DETAILED DESIGN AND SITE SURVEY.

| LEGEND |                              |
|--------|------------------------------|
|        | PROPERTY BOUNDARY            |
|        | NEW PROPERTY BOUNDARY        |
|        | OVERLAND FLOW DIRECTION      |
|        | IMPERVIOUS AREA              |
|        | PERVIOUS AREA                |
|        | CATCHMENT LABEL              |
|        | EXISTING KERB AND CHANNEL    |
|        | EXISTING CROWN OF ROAD       |
|        | EXISTING CONTOUR             |
|        | EXISTING STORMWATER DRAINAGE |
|        | EXISTING WATER               |
|        | EXISTING SEWER               |
|        | EXISTING TELSTRA             |
|        | EXISTING GAS                 |
|        | EXISTING TREE                |



PRELIMINARY DRAWING

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|------------|------------|-------------------|-------|
| No.        | DATE       | DESCRIPTION       | DRAWN |
| A          | 26.06.2023 | PRELIMINARY ISSUE | SD    |
| B          | 16.07.2025 | PRELIMINARY ISSUE | NP    |
|            |            |                   |       |
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|            |            |                   |       |

Associated Consultant:  
RED DOOR ARCHITECTURE

Approved: GREGG TYQUIN

RPEQ 1528

Date:

Drawn:

SD

Design:

SD

Checked:

GT

Supervisor

GF

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North:



Orig. Dwg. Size  
A1

Size of Land:

2374M²

Scale:

1:200

Client:

Project:

CARBONE DEVELOPMENTS PTY LTD

PROPOSED MULTI-USE DEVELOPMENT  
93 LOGAN ROAD, WOOLLOONGABBA, QLD 4102

Job No.

23-198

Drawing No.

SK001

Revision:

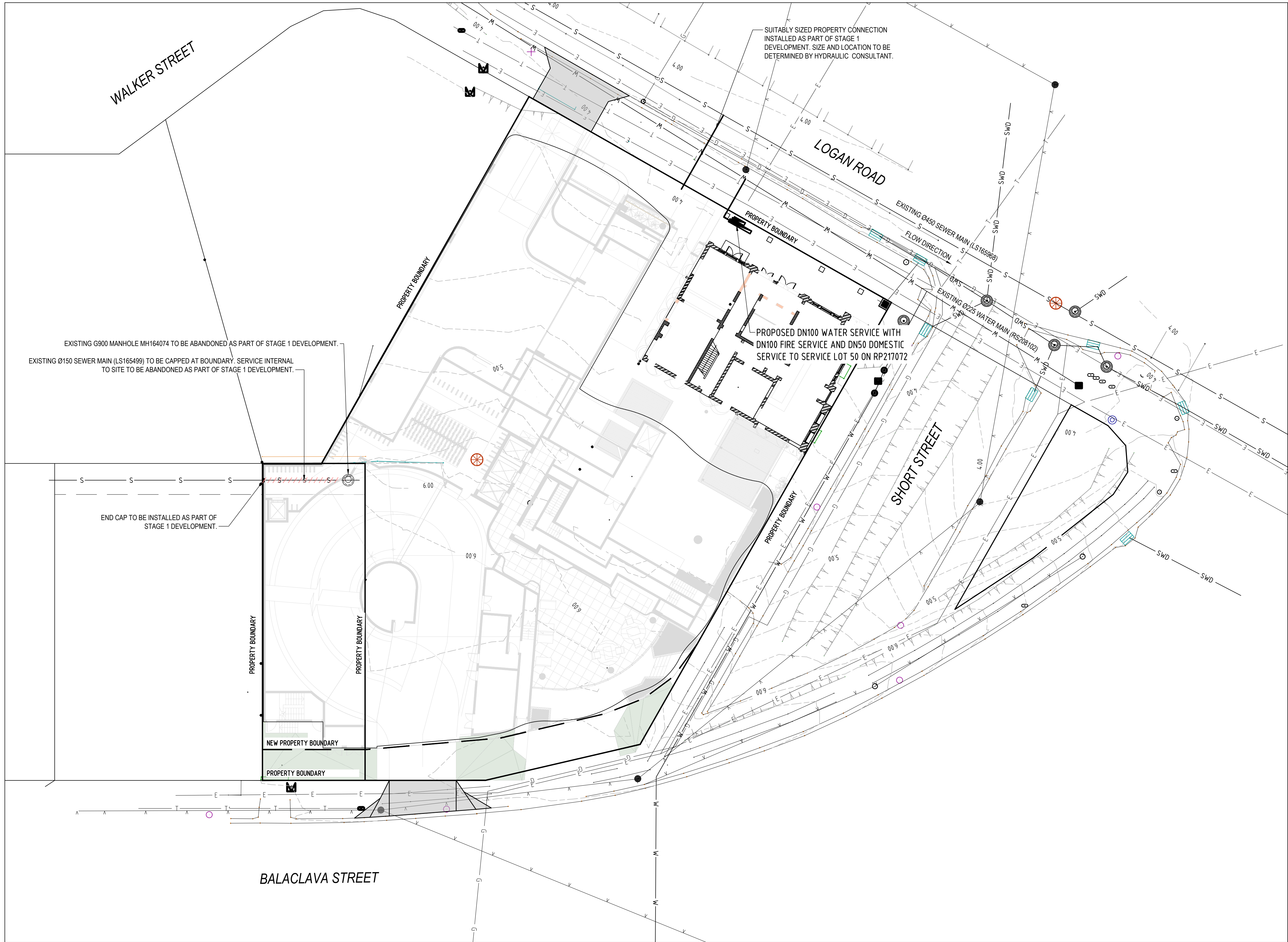
B

PRE-DEVELOPMENT STORMWATER CATCHMENT PLAN

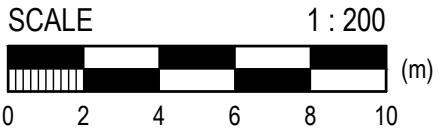








| SERVICES LEGEND                                                                                                                                                                      |          |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| EXISTING                                                                                                                                                                             | PROPOSED | ITEM DESCRIPTION                  |
|                                                                                                                                                                                      |          | WATER RETICULATION MAIN - POTABLE |
|                                                                                                                                                                                      |          | WATER METER (SMALL / LARGE)       |
|                                                                                                                                                                                      |          | WATER SERVICE ABANDONED           |
|                                                                                                                                                                                      |          | GRAVITY MAIN                      |
|                                                                                                                                                                                      |          | SEWER MAIN ABANDONED              |
|                                                                                                                                                                                      |          | SEWER PROPERTY CONNECTION         |
|                                                                                                                                                                                      |          | SEWER MANHOLE STRUCTURE (MH)      |
|                                                                                                                                                                                      |          | SEWER MAINTENANCE STRUCTURE       |
|                                                                                                                                                                                      |          | STORMWATER DRAINAGE PIPE          |
|                                                                                                                                                                                      |          | STORMWATER FIELD INLET WITH GRATE |
|                                                                                                                                                                                      |          | STORMWATER MANHOLE STRUCTURE (MH) |
|                                                                                                                                                                                      |          | KERB AND CHANNEL                  |
|                                                                                                                                                                                      |          | CROWN OF ROAD                     |
|                                                                                                                                                                                      |          | CONTOUR MAJOR                     |
|                                                                                                                                                                                      |          | CONTOUR MINOR                     |
|                                                                                                                                                                                      |          | TELSTRA                           |
|                                                                                                                                                                                      |          | GAS                               |
|                                                                                                                                                                                      |          | TREE                              |
|                                                                                                                                                                                      |          | PROPERTY BOUNDARY                 |
| NOTES:<br>1. THIS IS A GENERIC LEGEND. NOT ALL ITEMS WITHIN THIS LEGEND MAY BE PRESENT ON THIS PLAN AND THE SCALE OF THE ITEMS MAY BE DIFFERENT TO THE ITEMS PRESENTED ON THIS PLAN. |          |                                   |



PRELIMINARY DRAWING

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| B          | 16.07.2025 | PRELIMINARY ISSUE | NP    |
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|            |            |                   |       |

Associated Consultant:  
RED DOOR ARCHITECTURE

Approved: GREGG TYQUIN

RPEQ. 1528 Date:

Drawn: SD

Design: SD

Checked: GT

Supervisor: GF

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North:

Orig. Dwg. Size A1

Size of Land:

2374M²

Scale:

1:200

Client:

Project:

# CONCEPT SERVICES LAYOUT PLAN

CARBONE DEVELOPMENTS PTY LTD

PROPOSED MULTI-USE DEVELOPMENT  
93 LOGAN ROAD, WOOLLOONGABBA, QLD 4102

Job No.

23-198

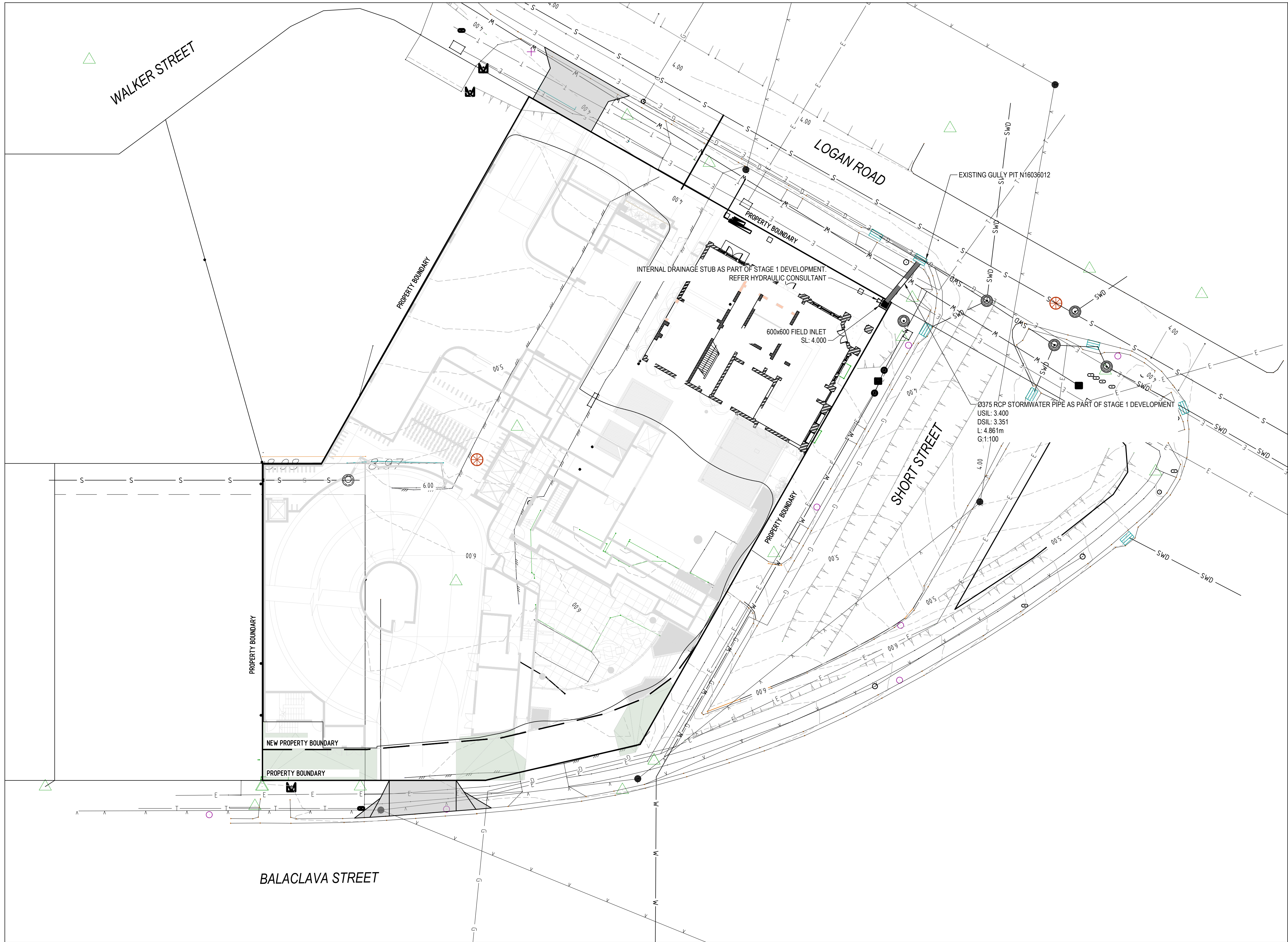
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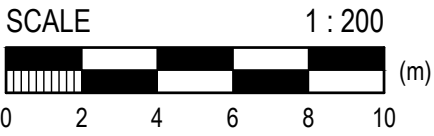
Revision:

B





| SERVICES LEGEND                                                                                                                                                                      |          |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| EXISTING                                                                                                                                                                             | PROPOSED | ITEM DESCRIPTION                  |
|                                                                                                                                                                                      |          | WATER RETICULATION MAIN - POTABLE |
|                                                                                                                                                                                      |          | WATER METER (SMALL / LARGE)       |
|                                                                                                                                                                                      |          | WATER SERVICE ABANDONED           |
|                                                                                                                                                                                      |          | GRAVITY MAIN                      |
|                                                                                                                                                                                      |          | SEWER MAIN ABANDONED              |
|                                                                                                                                                                                      |          | SEWER PROPERTY CONNECTION         |
|                                                                                                                                                                                      |          | SEWER MANHOLE STRUCTURE (MH)      |
|                                                                                                                                                                                      |          | SEWER MAINTENANCE STRUCTURE       |
|                                                                                                                                                                                      |          | STORMWATER DRAINAGE PIPE          |
|                                                                                                                                                                                      |          | STORMWATER FIELD INLET WITH GRATE |
|                                                                                                                                                                                      |          | STORMWATER MANHOLE STRUCTURE (MH) |
|                                                                                                                                                                                      |          | KERB AND CHANNEL                  |
|                                                                                                                                                                                      |          | CROWN OF ROAD                     |
|                                                                                                                                                                                      |          | CONTOUR MAJOR                     |
|                                                                                                                                                                                      |          | CONTOUR MINOR                     |
|                                                                                                                                                                                      |          | TELSTRA                           |
|                                                                                                                                                                                      |          | GAS                               |
|                                                                                                                                                                                      |          | TREE                              |
|                                                                                                                                                                                      |          | PROPERTY BOUNDARY                 |
| NOTES:<br>1. THIS IS A GENERIC LEGEND. NOT ALL ITEMS WITHIN THIS LEGEND MAY BE PRESENT ON THIS PLAN AND THE SCALE OF THE ITEMS MAY BE DIFFERENT TO THE ITEMS PRESENTED ON THIS PLAN. |          |                                   |



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| AMENDMENTS |            |                   |       |
|------------|------------|-------------------|-------|
| No.        | DATE       | DESCRIPTION       | DRAWN |
| A          | 26.06.2023 | PRELIMINARY ISSUE | SD    |
| B          | 16.07.2025 | PRELIMINARY ISSUE | NP    |
|            |            |                   |       |
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|            |            |                   |       |
|            |            |                   |       |
|            |            |                   |       |

Associated Consultant:  
MIRVAC DESIGN

Approved: GREGG TYQUIN

RPEQ 1528

Date:

Drawn:

SD

Design:

SD

Checked:

GT

Supervisor:

GF

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North:



Orig. Dwg. Size  
A1

Size of Land:

LAND SIZE

Scale:

1:200

Client:

Project:

# CONCEPT STORMWATER LAYOUT PLAN

MIRVAC

SKYRING TERRACE  
57 SKYRING TERRACE, NEWSTEAD, QLD-4006

Job No.

23-096

Drawing No.

SK004

Revision:

B

## Appendix G – RATIONAL METHOD CALCULATIONS



# STORMWATER DISCHARGE CALCULATION

Refer QUDM 4th Ed. Section 4.3, "The Rational Method"



|                 |                                     |
|-----------------|-------------------------------------|
| Project Number  | 23-198                              |
| Project Address | 93 Logan Road                       |
| Description     | Pre-Development Vs Post-Development |
| Author          | GF                                  |
| Date            | 16 th July 2025                     |

NAXOS ENGINEERS PTY LTD  
ABN 65 613 555 687  
PO Box 224, Spring Hill QLD 4004  
1300 598 544  
info@naxosengineers.com.au

## Catchment Details

| Development Type                  | Pre-Development | Post-Development |
|-----------------------------------|-----------------|------------------|
| Catchment Area (m <sup>2</sup> )  | 2374            | 2374             |
| Total Area (ha)                   | 0.237           | 0.237            |
| Impervious Area (m <sup>2</sup> ) | 2333            | 2374             |
| Pervious Area (m <sup>2</sup> )   | 41              | 0                |

## Fraction Impervious Details

|                                                                                   |       |       |
|-----------------------------------------------------------------------------------|-------|-------|
| Calculated Fraction Impervious fi (%)                                             | 0.983 | 1.000 |
| Manually override Fraction Impervious (fi)                                        |       |       |
| Fraction Impervious (fi) used                                                     | 0.983 | 1.000 |
| Is Fraction Impervious (fi) is less than 0.2<br>(If Yes soil properties required) | NO    | NO    |
| Soil Description                                                                  |       |       |
| Soil Permeability                                                                 |       |       |

## 1 hour rainfall intensity (<sup>1</sup>I<sub>10</sub>) Details

|                                             |       |
|---------------------------------------------|-------|
| IFD value calculated from IFD Input (mm/hr) | 64.40 |
| Manually override IFD value (mm/hr)         |       |
| IFD value used (mm/hr)                      | 64.40 |

## Discharge Coefficient C<sub>10</sub> Details

|                                                         |       |       |
|---------------------------------------------------------|-------|-------|
| QUDM 10 year Discharge Coefficient C <sub>10</sub>      | 0.895 | 0.900 |
| Manually override Discharge Coefficient C <sub>10</sub> | 0.9   | 0.9   |
| 10 year Discharge Coefficient C <sub>10</sub> used:     | 0.900 | 0.900 |

## Time of Concentration T<sub>c</sub> Details

|                                               |        |       |
|-----------------------------------------------|--------|-------|
| Time of Concentration T <sub>c</sub> (min.) : | 10.000 | 5.000 |
|-----------------------------------------------|--------|-------|

## Pre-Development

## Post-Development

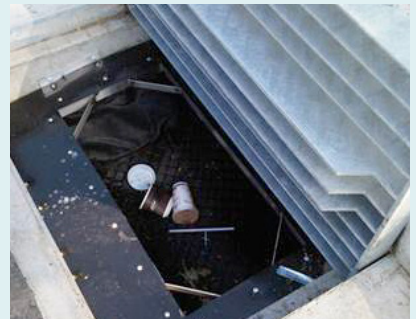
| Flood Event | Frequency Factor | Coeff. of Discharge                               | Intensity | Peak Discharge | Coeff. of Discharge                               | Intensity | Peak Discharge |
|-------------|------------------|---------------------------------------------------|-----------|----------------|---------------------------------------------------|-----------|----------------|
| ARI         | F <sub>y</sub>   | C <sub>y</sub> = F <sub>y</sub> x C <sub>10</sub> | mm/hr     | Q <sub>y</sub> | C <sub>y</sub> = F <sub>y</sub> x C <sub>10</sub> | mm/hr     | Q <sub>y</sub> |
| 1           | 0.80             | 0.720                                             | 92        | 0.044          | 0.720                                             | 112       | 0.053          |
| 2           | 0.85             | 0.765                                             | 105       | 0.053          | 0.765                                             | 127       | 0.064          |
| 5           | 0.95             | 0.855                                             | 142       | 0.080          | 0.855                                             | 174       | 0.098          |
| 10          | 1.00             | 0.900                                             | 167       | 0.099          | 0.900                                             | 205       | 0.122          |
| 20          | 1.05             | 0.945                                             | 192       | 0.120          | 0.945                                             | 236       | 0.147          |
| 50          | 1.15             | 1.000                                             | 223       | 0.147          | 1.000                                             | 276       | 0.182          |
| 100         | 1.20             | 1.000                                             | 247       | 0.163          | 1.000                                             | 307       | 0.202          |

Rational Method

$$Q = CIA / 360$$



## Appendix H - FILTER BASKET OPERATION & MAINTENANCE MANUAL



Model Number

Job Number

# SPEL StormSack

OPERATIONS & MAINTENANCE

[www.spel.com.au](http://www.spel.com.au)

# Manual Introduction

**Maintenance of the SPEL StormSack is essential to preservation of its condition to ensure lifetime operational effectiveness.**

The SPEL StormSack is a highly engineered water quality device that is deployed directly in the stormwater system as primary treatment to capture contaminants close to the surface. To ensure full operational capacity, it is vital to ensure that the pollutants it captures are periodically removed, and filtration components are thoroughly cleaned.

Maintenance frequencies and requirements of the SPEL StormSack are dependent on the biological factors of the site in which it is situated. These factors can include excessive sediment loading or occurrence of toxic chemicals due to the natural and unnatural factors such as site erosion, chemical spills or extreme storms.

**This manual has been designed by the SPEL StormSack Manufacturer the client or device owner in the maintenance of the SPEL StormSacks.**

This manual should be used in conjunction with the relevant site traffic management and safety plans, as well as any other provided documentation from SPEL.



# SPEL StormSack

## Specifications/Features

## CHAPTER 2

### 1. General Description

The SPEL StormSack provides effective filtration of solid pollutants and debris typical of urban runoff, while utilising the existing or new storm drain infrastructure. The StormSack is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.

#### Components:

- a. Adjustable Flange and Deflector: Aluminium Alloy 6063-T6
- b. Splash Guard: neoprene rubber
- c. StormSack: woven polypropylene geotextile with US Mesh 20
- d. Corner Filler: Aluminium Alloy 5052-H32
- e. Lifting Tabs: Aluminium Alloy 5052-H32
- f. Replaceable Oil Boom: polypropylene 3 inch (76 mm) diameter
- g. Mesh Liner: HDPE, diamond configuration
- h. Support Hardware: CRES 300 Series

#### Sizes:

STANDARD SPEL STORMSACK TO SUIT PIT SIZES

- 450x450mm
- 600x600mm
- 900x600mm
- 900x900mm

Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times.

# Health and Safety

## CHAPTER 3

### 1. Personal Health & Safety

When carrying out maintenance operations of the SPEL StormSack all contractors and staff personnel must comply with all current workplace health and safety legislation.

The below measures should be adhered to as practically as possible:

- Comply with all applicable laws, regulations and standards
- All those involved are informed and understand their obligations in respect of the workplace health and safety legislation.
- Ensure responsibility is accepted by all employees to practice and promote a safe and healthy work environment.

### 2. Personal Protective Equipment

When carrying out maintenance operations of the SPEL StormSack, wearing the appropriate personal protective equipment is vital to reducing potential hazards. Personal protective equipment in this application includes:

- Eye protection
- Safety apron
- Fluorescent safety vest
- Form of skin protection
- Puncture resistant gloves
- Steel capped safety boots



### 3. Maintenance of the SPEL StormSacks is a specialist activity.

When carrying out maintenance operations of the SPEL StormSack, factors such as equipment handling methods, pollutants and site circumstances can impose potential risks to the maintainer and nearby civilians.

### 4. Captured Pollutants

The material captured by the SPEL StormSack can be harmful and needs to be handled correctly. The nature and amount of the captured pollutants depends on the characteristics of the site. Pollutants can include from organic material such as leaves and sticks through to debris such as plastics, glass and other foreign objects such as syringes.

### 5. Site Circumstances

It is essential that Occupational Safety and Health guidelines and site specific safety requirements are followed at all times. It is important that all following steps specified by SPEL are carried out to ensure safety in the entire maintenance operation. The general workplace hazards associated with working outdoors also need to be taken into account.

### 6. Equipment Handling

Handling activities such as removing the drain grate as well as managing pedestrians and other non-worker personnel at the site should be exercised in accordance with specified safety procedures and guidelines.

## 7. Confined Spaces

Confined space entry procedures are not covered in this manual. It is requested that all personnel carrying out maintenance of the SPEL StormSack must evaluate their own needs for confined space entry and compliance with occupational health and safety regulations

When maintenance operations cannot be carried out from the surface and there is a need to enter confined space, only personnel that currently hold a Confined Space Entry Permit are allowed to enter the confined space. All appropriate safety equipment must be worn, and only trained personnel are permitted to use any required breathing apparatus gear. Necessary measures and controls must always be exercised to meet the confined space entry requirements. Non trained staff are not permitted to participate in any confined space entries.

## 8. Traffic Management

Typically stormwater gully pits are situated on roads and carparks, or adjacent to roads in a footpath or swale. As traffic requirements vary depending on the circumstance of the site, separate traffic control plans should be prepared for each site.

The specific road safety requirements for each site can be obtained from the relevant road authority to ensure all maintenance operations comply with the laws and regulations. State government publications can also be useful to find out the signage requirements, placement of safety cones and barricades that are required when working on public roads.



### 1. General Monitoring

The SPEL Stormsack must be checked on a regular basis to analyse whether it requires maintenance or cleaning.

As gully pit grates are usually quite heavy, it is vital to exercise the correct lifting techniques and also ensure that the area surrounding the open pit is shielded from access of non-work personnel.

To ensure optimal performance of the SPEL Stormsack, the material collected by the filter bag should not exceed the level of approximately a half to two thirds of the total bag depth. When this material collected is showing signs of exceeding this level they should be scheduled to be emptied.

It is also recommended that additional monitoring is conducted following moderate to extreme rainfall events, especially when previous months have had little or no rainfall.



## 2. Gully Pit Cover Removal

### Opening a Hinged Pit Cover

- A. Insert the lifting hooks beneath the grate
- B. Check hinge points are not damaged and debris is not caught in the hinge area
- C. Fully open pit grate, ensuring that the grate will stay in the open position without any external forces applied. Grates that do not remain open without being held, should be removed or secured during maintenance activities.



### Opening a Non-Hinged Pit Cover

- A. Place lifting hooks beneath grate, where possible in the four corners of the grate. Concrete lids may have Gatic lifting points, a key arrangement or holes in the lid, which may require special equipment such as Gatic lifters. Alternatively if safe to do so grip the grate with your hands.
- B. Position each person on either side of the grate.
- C. Lift the grate, ensuring that good heavy lifting posture is used at all times.
- D. Place the grate on angle on the gutter, to allow for the lifting hooks to be removed.
- E. For extremely heavy one-piece grates and concrete Gatic covers, insert the lifters in place and slide the lids back.





## 3. Cleaning Methods

### Cleaning using an inductor truck

- A. Open Gully pit
- B. Place the indicator hose, suck out all of the sediment, organic leaf material, litter and other materials that were collected in the filter bag
- C. Allow the filter bag to be sucked up in the inductor hose for a few seconds to allow for the filter mesh pores to be cleaned.
- D. Use the inductor hose to remove any build-up of material around the overflows and in the bottom of the pit.
- E. Remove filter back from pit
- F. Remove any sediment and litter caught in the Gully pit grate
- G. Back opening channels are to be cleared of any debris to ensure flow is not hindered.
- H. Thoroughly examine the structural integrity of the filter bag and frame.
- I. Reinstate filter bag and gully pit covers

### Hand Maintenance

- A. Open Gully pit
- B. Using the correct lifting technique, lift the StormSack out by the diagonal lifting corners fitted to the frame.
- C. For extremely heavy and overfilled bags either use a hydraulic lifting arm to lift the StormSack, or remove excess material using a shovel or etc. Take care not to damage the bag when removing litter from the bag.
- D. Lift the StormSack clear of the stormwater pit.



- E. Position the StormSack over the collection bin or vehicle.
- F. Lift and empty the bag by holding the bottom lifting loops only.
- G. Brush the StormSack with a stiff brush to remove the sediment from the filter pores.
- H. Thoroughly examine the structural integrity of the filter bag and frame.
- I. Reinstate StormSack and gully pit covers.





## 4. SPEL StormSack Post Maintenance Inspection

After the SPEL StormSack has been removed, emptied and cleaned, it should be thoroughly examined to sure that:

- There is no movement or damage to the Cage
- There is no movement or damage to the plastic pit seals
- Structural integrity is in good condition including all fixings, joints and connections.
- The filter bag pores are not clogged
- The filter bag is not damaged in anyway.

The gully pit, pipe inlet/outlets and its cover should also be inspected to ensure there is no damage, debris build up or any potential to cause the SPEL StormSack to operate inefficiently.



## 5. Material Disposal

Collected materials can be potentially harmful to humans and the environment.

Once all captured material from the SPEL StormSack has been removed, it must be taken off site and disposed of at a transfer station or a similar approved disposal site.

## 6. SPEL StormSack Repairs

Depending on the extent of the damage to the SPEL StormSack unit, it can usually be repaired.

Small tears to the filter bag can be repaired by either sewing the tear back together with additional fabric to increase the strength of the stitching, or by sewing a patch of filter material onto the filter bag.

If large tears or irreparable damage to the frame and structure are present, it is advisable to replace the components.

All required spare parts can be sourced from SPEL Environmental at a cost to the owner of the SPEL Stormsack.

## 7. Emergency Procedures

Spills and blockages can be detrimental to the performance of a stormwater management system, potentially damaging the surrounding built infrastructure, waterways and environment.

### Spill Procedures

In the event of a spill discharging into a gully pit, all effected sediment must be removed from the filter bags and the filter bags are to be removed and replaced with new filter bags. All additional cleaning as a result of the spill should also be carried out in accordance with the normal operation procedures.

### Blockages

In the unlikely event of surface flooding around a gully pit which has a SPEL StormSack fitted, the following steps should be carried out:

- A. Check the overflow bypass.
- B. If overflow is clear and surface flooding still exists remove the SPEL StormSack and check the outlet pipe for blockages. Removal of the SPEL StormSack can be difficult if clogged with sediment and holding water.
- C. If the filter is clogged brush the side walls to dislodge particles trapped at the interface allowing water to flow through the filter.
- D. If the outlet pipe is blocked, it is likely that a gully sucker truck will be required to unblock it. Litter can be removed from the SPEL StormSack using the gully sucker truck before the SPEL StormSack is removed. If a gully sucker truck is not available and the SPEL StormSacks need to be removed by hand follow the below steps.
  - i. Remove excess debris by hand or brush the side of the filter bag
  - ii. Remove entire SPEL Stormsack by taking hold of the inside of the frame.
  - iii. Unblock the outlet pipe



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