



Proposed Mixed Use Development

254-260 Franklin Street, Adelaide, SA 5000

Stormwater Management Report

Prepared for: PACT Architects

Ref: AU250888_R001

Dated: 24.04.2026

Document Verification

Document Title	Stormwater Management Report
Project	Proposed Mixed Use Development
Project Address	254-260 Franklin Street, Adelaide, SA 5000
Client	Ben Hewitson – PACT Architects
EDGE Project No.	AU250888

DOCUMENT VERSION				
Rev	Date	Description	Prepared By	Checked By
P01	20.01.2026	Preliminary Issue	GM	RP
P02	27.01.2026	Preliminary Issue	GM	RP
P03	16.03.2026	Preliminary Issue	GM	RP
P03	24.04.2026	Preliminary Issue	GM	RP

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1 Introduction

1.1 Purpose

EDGE Consulting Engineers (EDGE) have been engaged to provide the civil engineering services for the proposed development at 254-260 Franklin Street, Adelaide. This report informs of the Water Sensitive Urban Design (WSUD) for the proposed development and is the basis for the future drainage design on the civil engineering documentation. It outlines the design requirements for site drainage and discharge, details the design procedure and presents the proposed stormwater drainage plan for the management of site runoff.

1.2 Design Inputs

The preliminary architectural plans from PACT Architects (Project No: 24170 dated 08/04/2026) and the topographical survey of the site from Alexander Symonds Surveying Consultants (Drawing no: A018615 dated 04/03/2015) were used to provide input into the Stormwater Management Report.

1.3 Revision History

This version of the report is the first version and has been prepared for coordination and feedback with the project team.

1.4 Related Reporting

This version of the report is the first version and has been prepared for coordination and feedback with the project team.

2 Property Description

2.1 Site Locality

The site is located within the City of Adelaide local governing area with the address of 254-260 Franklin Street, Adelaide. It is bounded by Franklin Street along the southern boundary, Gray Street at the eastern boundary, and existing neighbouring properties along the northern and western boundaries. Refer Figure 2.1 for site location. The registered area of the existing allotment contained within this development is 1,328m²



Figure 2.1 - Site Location (source: ANZ Vexcel Viewer, image taken: 14/01/2025, date accessed: 20/01/2026).

2.2 Land Usage

254-260 Franklin Street is currently comprised of a building, paved areas at the rear, and landscaping at the front. The existing impervious areas have been estimated from the survey and historical data to cover approximately 93% of the site. Contrary to what is shown on the survey and satellite imaging, the existing buildings at the

south have been demolished. Refer Figure 2.2 for photograph taken on site at August 2025.



Figure 2.2 - Site Photograph taken August 2025, received from PACT Architects.

2.3 Topography and Drainage

The detailed survey obtained for the project site indicates that the site surface grades generally to the south west corner. Council records show there is an existing stormwater main along Franklin Street. Approximate levels within the site boundary vary from RL 41.10 to 41.90 m AHD. The average grade of the existing site has been calculated to be approximately 2% towards the south west corner. A copy of the detailed survey by Alexander Symonds Surveying Consultants has been attached to Appendix A of this report.

3 Property Description

3.1 Development Description

The proposed development consists of:

- The construction of a 12-level mixed use development consisting of:
 - Retail units and retail and carpark areas at level 1.
 - Carpark areas at level 2
 - Residential apartments at levels 3-12

The impervious areas of the proposed development have been measured to cover approximately 100% of the development site.

4 Legal Point of Discharge

It is proposed that flows for developed site be connected to a pit and pipe system which subsequently connect into the existing stormwater main within Franklin Street via a catch pit and pipe-to-pipe connection to the satisfaction of City of Adelaide Council. The flows generated from site are to be detained and treated internally prior to discharge to the existing stormwater main. This arrangement is outlined in the Engineering Schematic attached as Appendix B.

The proposed point of discharge is to be confirmed by the City of Adelaide. Flow treatment and onsite stormwater detention (OSD) is considered to comply with local requirements and is to be maintained following the development of the site. It is not anticipated that any stormwater will be directed towards any adjacent properties, nor will flows to the existing receiving stormwater system be worsened.

5 Stormwater Quantity

5.1 Introduction

The proposed development will involve the construction of a 12-level facility with associated driveway, retail, and residential spaces. These changes in site layout vary from the existing site's coefficient of discharge and thereby affect the peak stormwater discharge rates for the development site.

This section of the report presents an assessment of the peak stormwater discharge resulting from the site and identifies whether attenuation measures are necessary to ensure "no worsening" of the peak flows from the site.

5.2 Methodology

The methodology of hydrologic analysis involves a combination of the Rational Method and OSD Mass Curve Technique. The Rational Method provides a simple means for the assessment of the peak discharge rate for design storms. The Mass Curve Technique provides a simple means to determine the minimum required OSD storage by finding the maximum difference between the storage's inflow and outflow demand.

5.3 Hydrologic Parameters

The permissible site discharge (PSD) has been set to 15 L/s as required by City of Adelaide for all storm events up to the 1 in 100-year ARI. For the pre-development case, the site has been modelled to incorporate the existing (prior to demolition of buildings) fraction impervious at approximately 0.93. Table 5.1 below summarizes the catchment properties used for the stormwater modelling.

Table 5.1 – Catchment Definitions

Catchment	Catchment Size	Fraction Impervious (f_i)	Estimated time of Concentration (t_c)
Pre-developed site	1,328 m ²	0.93	5
Post-developed site	1,328 m ²	1.00	5

The C_{10} values for the proposed site have been based on measured Fraction Impervious (f_i) areas from the site survey and the proposed architectural layouts.

Table 5.2 – C_{10} Values

Catchment	Area	C_{10}
Pre-developed site	1,328 m ²	0.798
Post-developed site	1,328 m ²	0.900

The Rational Method was used to calculate runoff from the site in the pre-developed and post-developed scenarios. The anticipated peak discharge rate per catchment is summarized in Table 5.3 below.

Table 5.3 – Rational Method Calculation Summary

Storm Event	1 in 5-year ARI (L/s)	1 in 100-year ARI (L/s)
Pre-developed	23.9	54.0
Post-developed	25.7	57.8
Flow Increase	+ 1.8	+ 3.8

As the proposed development increases the fraction impervious of the site and City of Adelaide requires flows to be restricted to 15 L/s, it will be necessary to provide the development with an OSD system or mitigation methods to reduce the peak discharge of local storm events. The permissible site discharge (PSD) has been set to 15 L/s as the peak discharge for each storm event for all durations from 10 minutes to 2 hours. The OSD system will therefore be designed to restrict the post-developed flow to the PSD for each storm event.

The Rational Method was used to calculate the runoff from the site in the pre-developed and post-developed scenario. The anticipated peak discharge per catchment in Table 5.4 below.

5.4 OSD Details

The OSD storage volume has been designed to allow for the detention of stormwater runoff resulting from up to a 1 in 100-year storm event utilizing the Mass Curve Technique described in the Australian Rainfall and Runoff (ARR). Refer to Figure 5.1 for required on-site storage quantities.

On Site Detention Sizing by Mass Curve Technique

DURATION (hr)	RAINFALL INTENSITY 100Year ARI (mm/hr)	CO-EFFICIENT OF RUNOFF (C _{ps})	SITE AREA (m ²)	ACTUAL DISCHARGE (L/s)	ACTUAL DISCHARGE VOLUME (m ³)	PERMISSIBLE SITE DISCHARGE (L/s)	PERMISSIBLE DISCHARGE VOLUME (m ³)	REQUIRED ON-SITE STORAGE (m ³)
0.083	174.0	0.90	1328	57.77	17.26	15.00	4.48	12.78
0.167	126.0	0.90	1328	41.83	25.15	15.00	9.02	16.13
0.250	101.0	0.90	1328	33.53	30.18	15.00	13.50	16.68
0.333	86.2	0.90	1328	28.62	34.31	15.00	17.98	16.33
0.500	67.6	0.90	1328	22.44	40.40	15.00	27.00	13.40
0.750	52.4	0.90	1328	17.40	46.97	15.00	40.50	6.47
1.000	43.4	0.90	1328	14.41	51.87	15.00	54.00	-2.13
2.000	27.1	0.90	1328	9.00	64.78	15.00	108.00	-43.22
3.000	20.3	0.90	1328	6.74	72.79	15.00	162.00	-89.21
6.000	12.3	0.90	1328	4.08	88.21	15.00	324.00	-235.79
12.000	7.2	0.90	1328	2.40	103.55	15.00	648.00	-544.45
24.000	4.2	0.90	1328	1.38	119.33	15.00	1296.00	-1176.67
48	2.3	0.90	1328	0.77	133.67	15.00	2592.00	-2458.33
MAX REQUIRED OSD (m³)								16.68

Figure 5.1 – Mass Curve Technique for OSD Sizing

Table 5.4 demonstrates the attenuation achieved by the OSD system for each storm event. The results demonstrate the total flow leaving the developed site with the proposed 16.68 cubic metre OSD and stormwater system is not greater than the PSD for each storm event.

Table 5.4 – OSD Sizing and Attenuation

Storm Event	1 in 5-year ARI (L/s)	1 in 100-year ARI (L/s)
Pre-developed	23.9	54.0
Post-developed	15.0	15.0
Flow Increase	- 8.9	- 39.0
Storage Required		16.68 m ³

5.5 Post-Development Stormwater System

The proposed stormwater system consists of a rainwater service collecting roof water and diverting it to the inground stormwater system for detention and treatment. Water Sensitive Urban Design (WSUD) modelling is outlined in the next section.

The OSD system consists of a series of pits, pipes, and an underground detention tank sized to detain a minimum of 16.68 m³ for up to a 1 in 100-year ARI storm event. Flows will be controlled via an orifice within the baffle pit prior to connecting to the existing drain at Franklin Street. Flows will be controlled to 15 L/s for up to a 1 in 100-year ARI storm event.

Major storm events will surcharge from a pit grate over the road reserve to the south. The internal drainage pipes are sized to convey up to the 1 in 100-year ARI flow to the final pit at the boundary.

6 Stormwater Quality

6.1 Introduction

This section of the report aims to identify the requirements for stormwater quality management resulting from the proposed development and identify suitable stormwater treatment devices to comply with relevant requirements of the South Australian Government Agencies and the City of Adelaide Infrastructure Guidelines.

6.2 Stormwater Treatment Train

The treatment train consists of the following devices:

6.2.1 Ocean Protect 460 StormFilter

The Ocean Protect StormFilter uses rechargeable, self-cleaning, media-filled cartridges to capture pollutants such as suspended solids, hydrocarbons, nutrients, soluble heavy metals, and other common pollutants. A siphon-actuated design draws water evenly through the high surface area filter media while a self-cleaning hood prevents surface blinding and extends cartridge life. The respective catchment will be channeled through this filter prior to discharge to the Legal Point of Discharge.

Table 1 – Proposed Stormwater Quality Improvement Devices

Proposed Stormwater Quality Improvement Devices	Quantity
Ocean Protect 460 StormFilter	3x cartridges

The Stormwater Quality Improvement Devices (SQID) are designed to capture stormwater at the end of the development catchment of the drainage network and treat the runoff prior to discharging into the local waterway. The pollutant reduction targets as required for the development conditions are achieved (as modelled in MUSIC). These are summarized in Table 1.

6.3 MUSIC Modelling

Water quality modelling has been undertaken of the post-development scenario using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software to demonstrate the load-based reduction targets are achieved. A stormwater treatment train has been developed and modelled to determine the effectiveness of the proposed system in achieving the relevant water quality objectives.

6.3.1 Modelling Results

Results of the MUSIC modelling for the treatment train effectiveness are summarised in Table 2. The results indicate the reduction targets for all pollutants are achieved for the rainfall data set simulated.

Table 2 – MUSIC Modelling Results

Pollutant	Objective (%)	Reduction (%)	Objective Achieved
Suspended Solids	80%	80.34%	Yes
Total Phosphorus	60%	67.04%	Yes
Total Nitrogen	45%	55.94%	Yes
Gross Pollutants	90%	100.0%	Yes

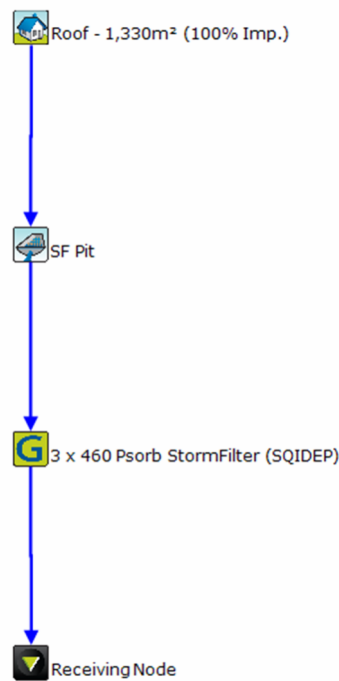


Figure 6.4.1.1 – MUSIC Modelling; Catchments and Treatments

Latest Run : Treatment Train Effectiveness : Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.3992	0.3992	0.004797
Total Suspended Solids (kg/yr)	10.79	2.12	80.34
Total Phosphorus (kg/yr)	0.06294	0.02074	67.04
Total Nitrogen (kg/yr)	0.889	0.3917	55.94
Gross Pollutants (kg/yr)	19.42	0	100

Figure 6.4.1.2 – MUSIC Modelling; Treatment Train Effectiveness

7 Conclusion

This report has been prepared to support the lodgment for Planning Consent to approve the construction of a mixed-use development, comprising of retail tenancies, residential units, and carpark areas.

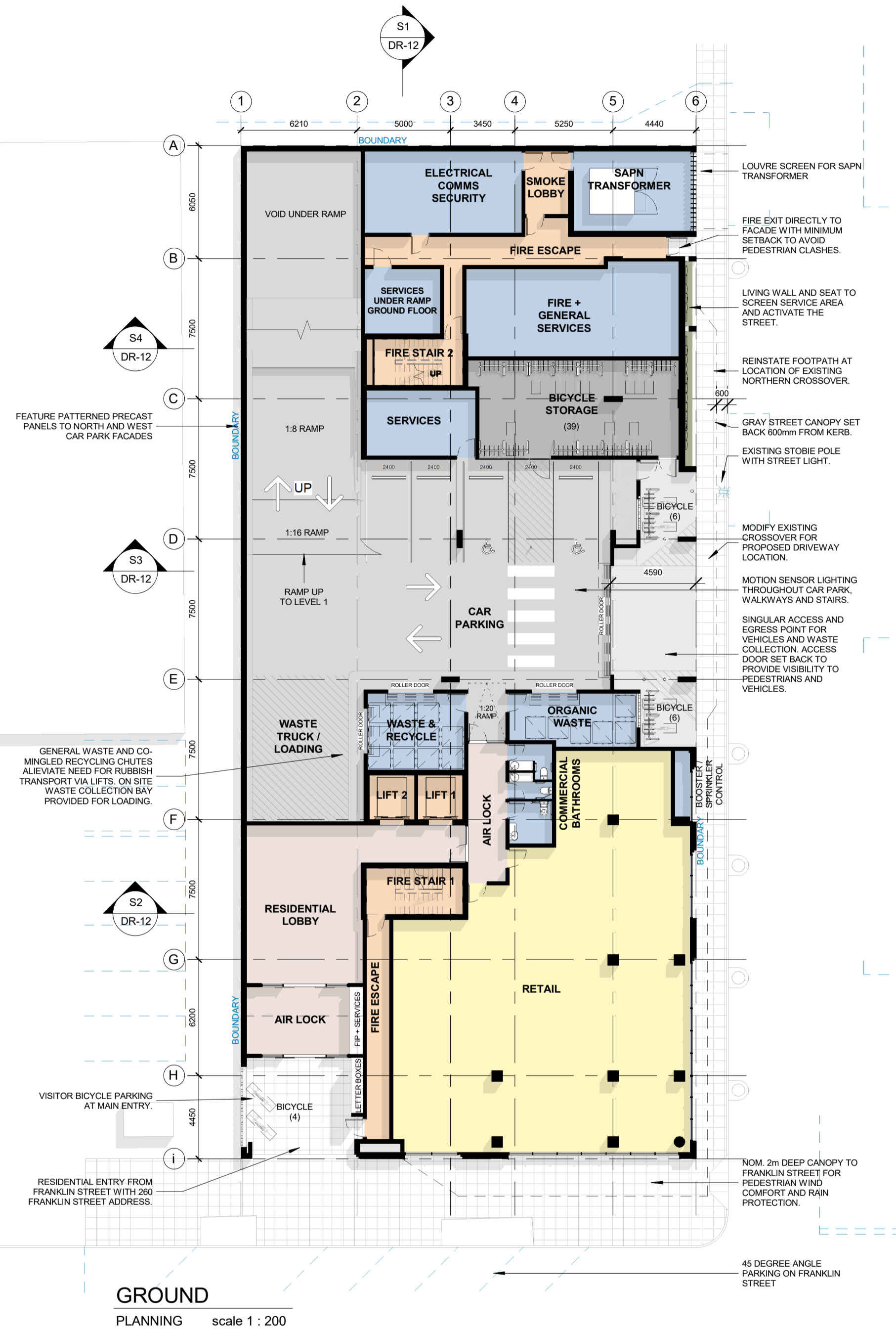
This report addresses the management of stormwater quantity and quality which aims to meet necessary state and local government policies.

This report describes the following design processes for specifications of key infrastructure elements that aim to achieve necessary standards.

- Stormwater detention for the proposed development.
 - The construction of minimum 16.68 m³ stormwater detention system in accordance with the details set out in Section 5.
- Stormwater quality treatment for the proposed development
 - The installation of three cartridge Ocean Protect StormFilter system to be located within a pit located at the underside of the ground floor slab, to treat flows generated from the proposed development site.

8 Appendices

Appendix A – Survey and Architectural Plans



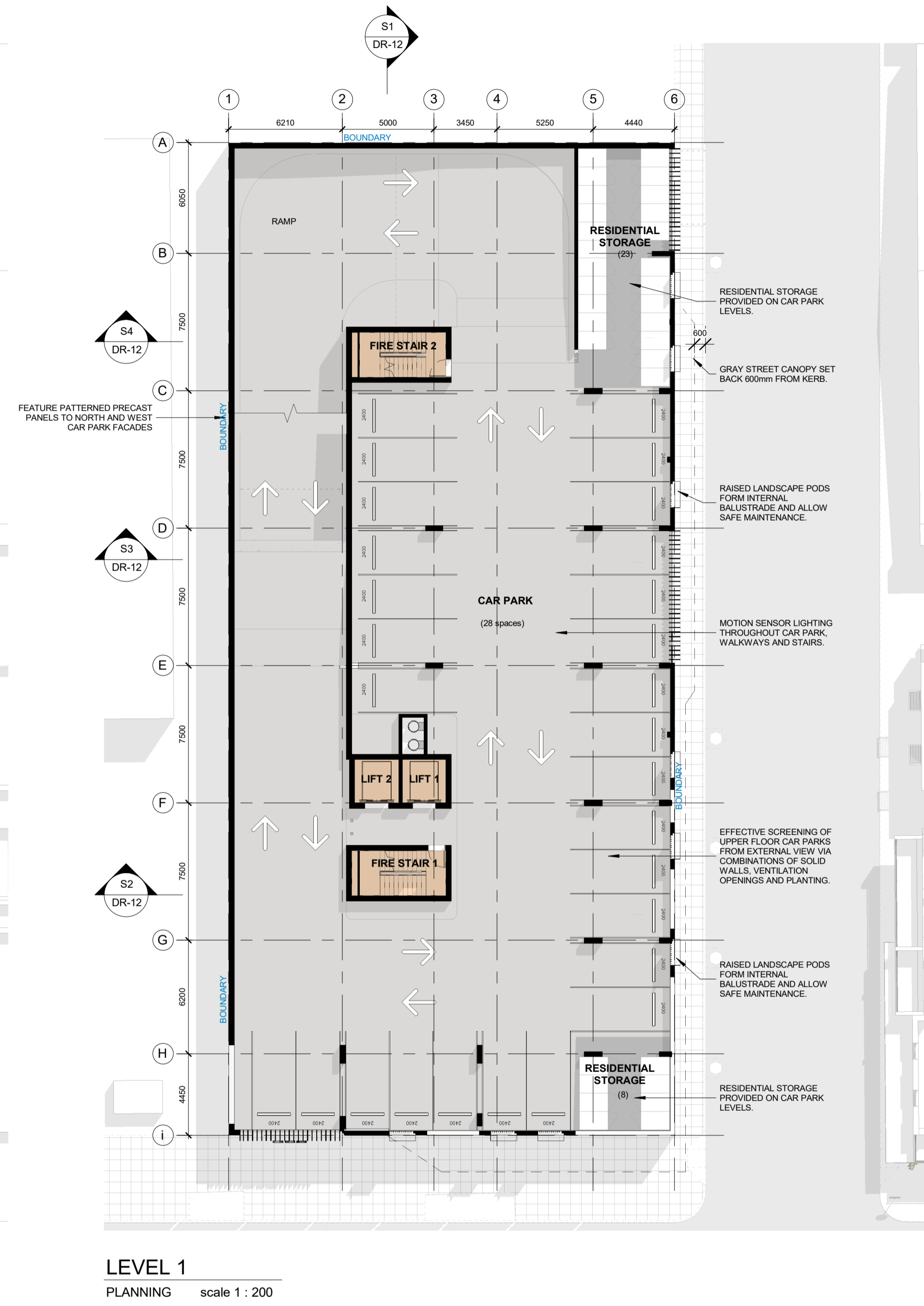
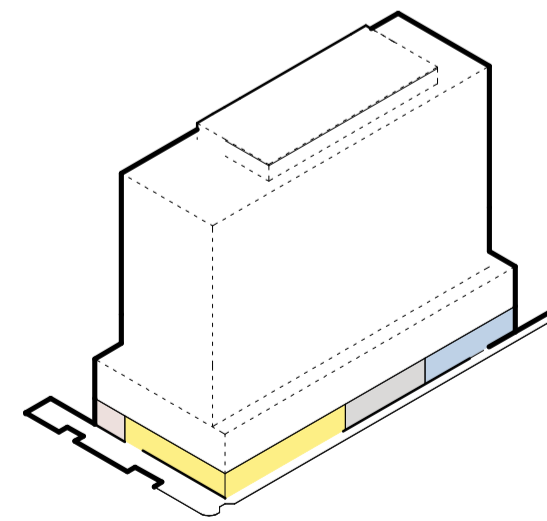
SCHEDULE OF AREAS (GF)

SITE: 1328m²
GFA TOTAL: 1328m²

COMMON
CORE (LIFT + STAIRS): 50m²
BOH: 538m²
RESI LIFT LOBBY: 60m²

RETAIL
RETAIL TENANCY: 270m²

CAR PARKING
GROUND CAR SPACES FOR STAFF: 4 (2 ACCESSIBLE)
BIKE PARKING SPACES: 35 PARKS

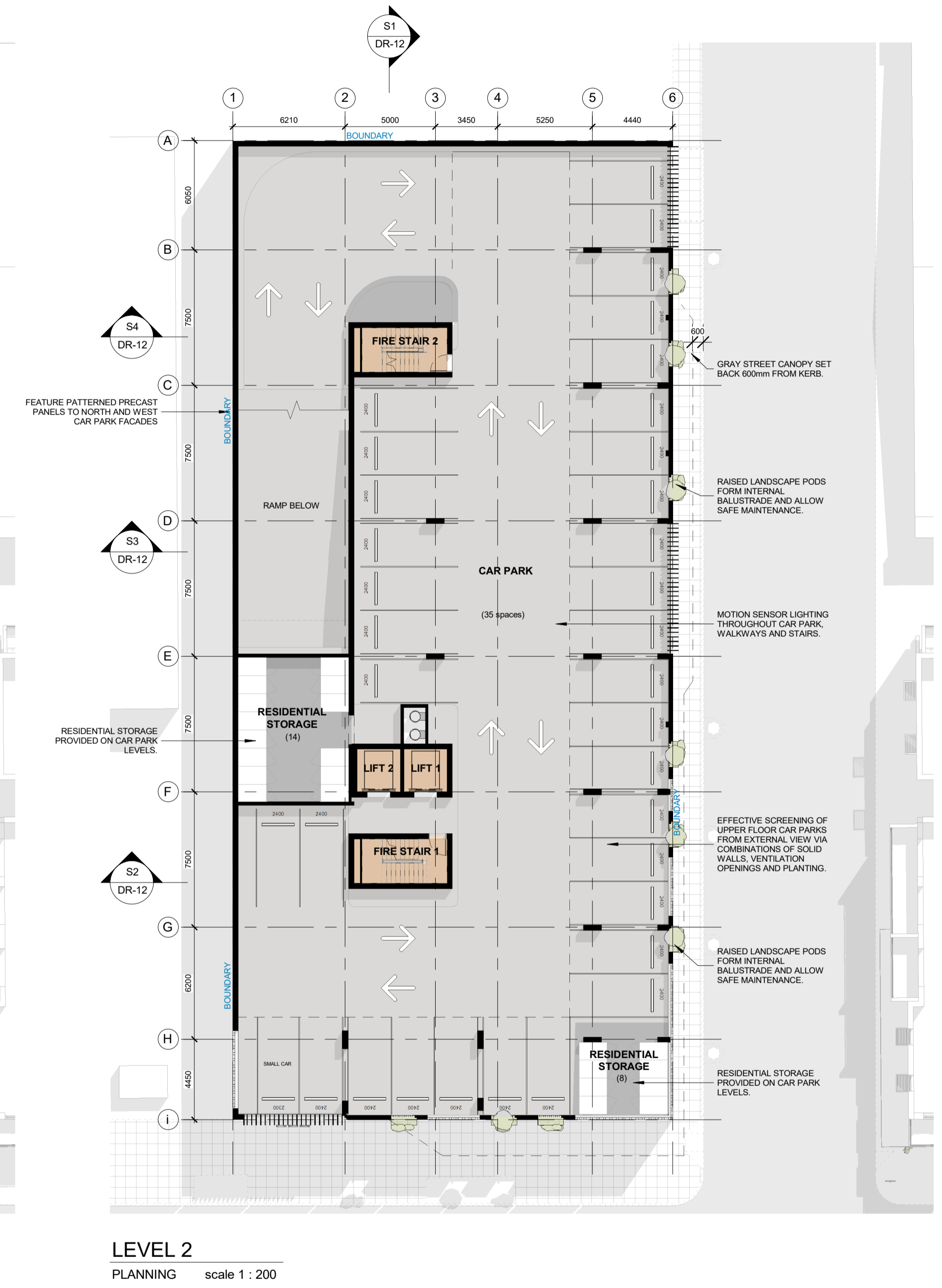
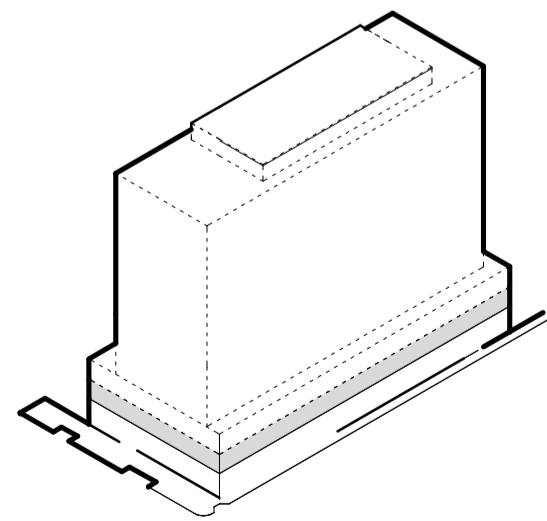


SCHEDULE OF AREAS (L1)

SITE: 1328m²
GFA TOTAL: 1328m²

COMMON
CORE (LIFT + STAIRS): 35m²
RESIDENTIAL STORAGE: 93m²
STORAGE LOCKERS: 31

CAR PARKING
L1 CAR SPACES: 28
TOTAL CAR SPACES FOR RESIDENTIAL: 63

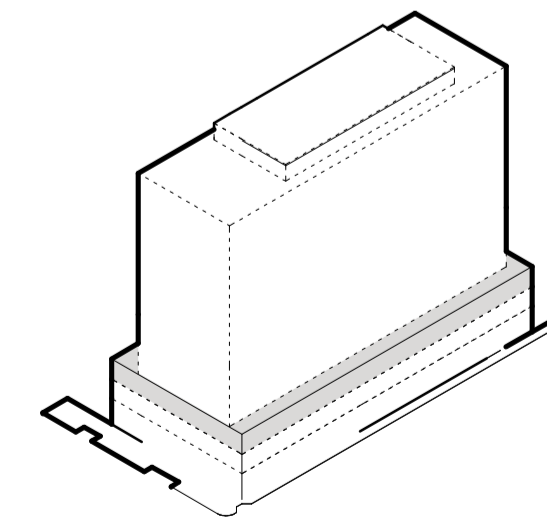


SCHEDULE OF AREAS (L2)

SITE: 1328m²
GFA TOTAL: 1328m²

COMMON
CORE (LIFT + STAIRS): 35m²
RESIDENTIAL STORAGE: 83m²
STORAGE LOCKERS: 22

CAR PARKING
L2 CAR SPACES: 35
TOTAL CAR SPACES FOR RESIDENTIAL: 63



ENVIRONMENTAL TARGETS

- ENGAGE WITH ESD PROFESSIONAL DURING DESIGN.
- CONSTRUCTION STORMWATER MANAGEMENT PLAN.
- RESIDENTIAL AND COMMERCIAL ELECTRICAL METERING.
- WATER EFFICIENT FIXTURES
- WATER EFFICIENT LANDSCAPING.
- HIGH PERFORMANCE (LOW E) GLAZING AND DOUBLE GLAZING.
- HIGH EFFICIENCY INTERNAL AND EXTERNAL LIGHTING.
- ENERGY RECOVERY ON LIFTS.
- TRI-STREAM WASTE SYSTEM.

ACOUSTIC TARGETS

- APARTMENT EXTERNAL WALLS TO ACHIEVE R_w + Ctr 50
- WALLS BETWEEN APARTMENTS TO ACHIEVE R_w + Ctr 50 AND L_{nw} + Cimpact < 62
- FLOORS BETWEEN APARTMENTS TO ACHIEVE R_w + Ctr 50 AND L_{nw} + Cimpact < 62
- APARTMENT ENTRY DOORS TO ACHIEVE R_w 30
- DOUBLE GLAZED WINDOWS TO APARTMENT BEDROOMS TO ENHANCE ACOUSTICS AND THERMAL LOAD/LOSS.
- PERFORMANCE GLASS TO LIVING AREAS AND OTHER HABITABLE ROOMS TO ENHANCE ACOUSTICS AND THERMAL LOAD/LOSS.

Appendix B – Engineering Schematic

NOTES

1. BUILDER TO CONFIRM ALL SURFACE & INVERT LEVELS ON SITE PRIOR TO CONSTRUCTION.
2. ALL SUSPENDED DRAINAGE BY HYDRAULICS CONSULTANT
3. EXISTING SERVICES DEPTHS AND LOCATION TO BE CONFIRMED.
4. LPD, WSUD AND OSD REQUIREMENTS PENDING TO BE CONFIRMED WITH COUNCIL.
5. ALL TERRACES AND EXTERNAL AREAS TO FALL WAY FROM BUILDING AT MIN 1:100.
6. FLOOD LEVELS TO BE CONFIRMED. FFLs NOMINATED ASSUMES NO FLOODING. TBC.

OSD PARAMETERS (TO BE CONFIRMED WITH COUNCIL)

TOTAL AREA: 1,328 sqm
 PRE-DEV FRACTION IMPERVIOUS: 0.93
 POST-DEV FRACTION IMPERVIOUS: 1.00
 Tc = 5 mins

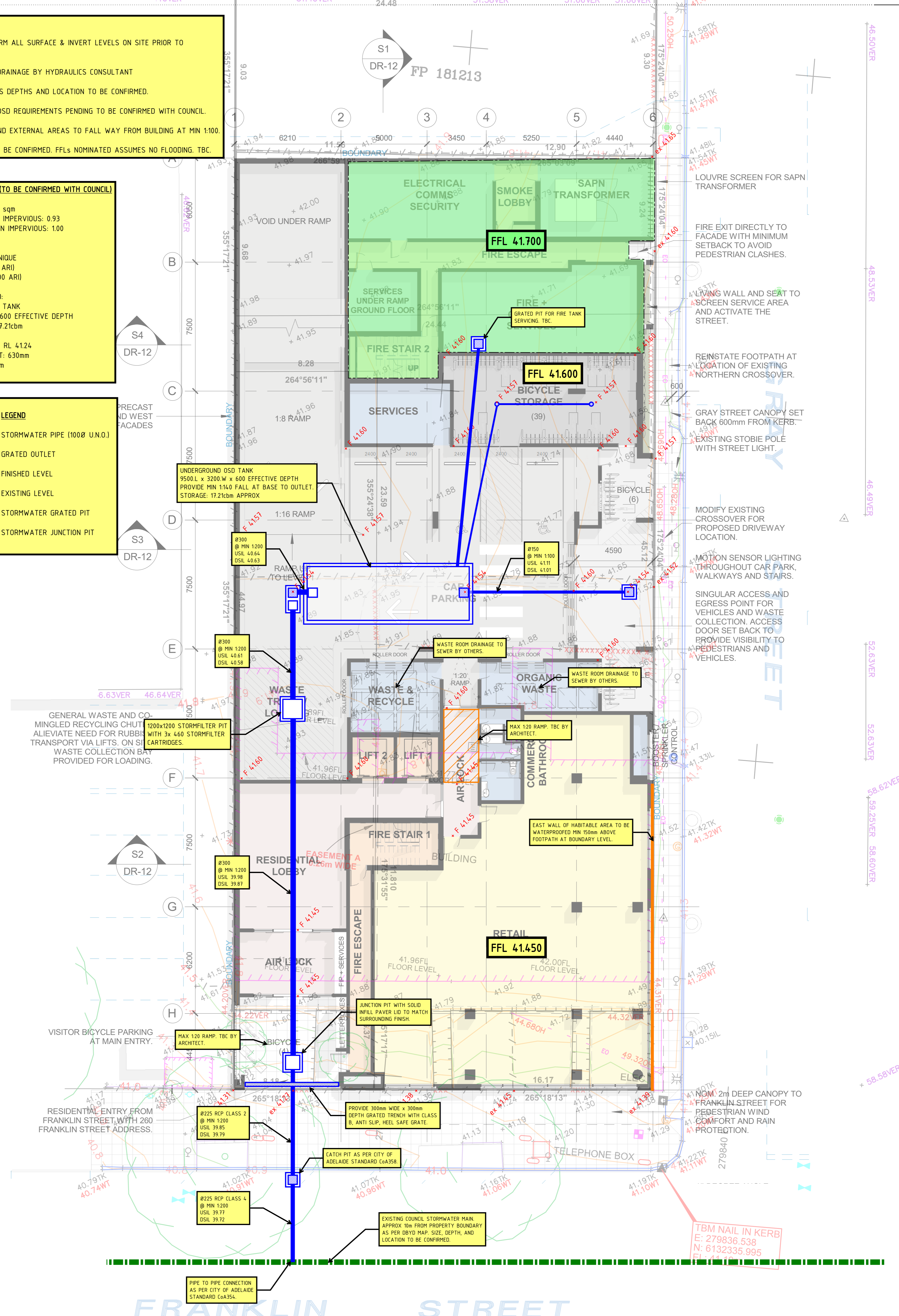
MASS CURVE TECHNIQUE
 PSD: 15.00L/s (1in5 ARI)
 SSR: 16.68cbm (1in100 ARI)

STORAGE PROVIDED:
 UNDERGROUND OSD TANK
 9500.L x 3200.W x 600 EFFECTIVE DEPTH
 TOTAL STORAGE: 17.21cbm

TOP WATER LEVEL: RL 41.24
 MAX WATER HEIGHT: 630mm
 ORIFICE SIZE: Ø95mm
 DISCHARGE: 15L/s

LEGEND

- STORMWATER PIPE (100Ø U.N.O.)
- GRATED OUTLET
- + F 52.00 FINISHED LEVEL
- + ex 52.00 EXISTING LEVEL
- STORMWATER GRATED PIT
- STORMWATER JUNCTION PIT



WARNING

THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING SERVICES ON AND EXTERIOR TO THE SITE INCLUDING WATER MAINS, SEWER MAINS, GAS MAINS, TELECOMMUNICATIONS CABLES, ELECTRICAL CABLES, AND STORMWATER PIPES PRIOR TO WORKS COMMENCING.

SHOULD ANY CONFLICTS OCCUR, EDGE CONSULTING ENGINEERS ARE TO BE NOTIFIED IMMEDIATELY.

ANY DAMAGE TO EXISTING SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

SCALE 1:100 @A1

Rev	Date	Description	By	Chk
P04	24.04.26	PRELIMINARY	GM	
P03	30.03.26	PRELIMINARY	GM	
P02	16.03.26	PRELIMINARY	GM	
P01	18.12.25	PRELIMINARY	GM	

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Project Name
**254-260 FRANKLIN STREET
 ADELAIDE
 SA 5000**

Client
BEAUSIGHT CONSTRUCTIONS PTY LTD

Designed: GM
 Drawn: GM
 Checked: GM

Drawing Title
**GROUND FLOOR
 DRAINAGE SCHEMATIC**

Project No.
AU250888

Drawing No.
CSK001

Revision
P04

**PRELIMINARY
 NOT FOR CONSTRUCTION**