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# FLOOD ASSESSMENT REPORT

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4 & 6 Playfield Street,  
Chermside

FEBRUARY 19 2026

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FLOOD SMART ENGINEERING PTY LTD



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**Report Title:** Flood Assessment Report  
**Project Address:** 4 & 6 Playfield Street, Chermside  
**Project No:** 24-122

**Client:** Roofbrook Consulting Engineers

| Revision No. | Report Date | Prepared By | Distributed To                 |
|--------------|-------------|-------------|--------------------------------|
| 001          | 19/02/2026  | K. Charan   | Roofbrook Consulting Engineers |



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RPEQ # 22518

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## 1. Introduction

Flood Smart Engineering Pty Ltd has been commissioned by Roofbrook Consulting Engineers to prepare a Flood Assessment Report for the proposed development works at 4 & 6 Playfield Street, Chermside.

The objective of this report is to assess the proposed development works with relation to Brisbane City Council's Flood Overlay Code. Detailed hydrologic and hydraulic assessments have been undertaken for this investigation.

This report has been prepared by Flood Smart Engineering Pty Ltd for use only by Roofbrook Consulting Engineers in the capacity of the agreed purpose. Conclusions and recommendations within this report have been based upon the information provided by the client or other closely related associates and third-party groups (eg. government authorities) which is assumed to be accurate. Flood Smart Engineering Pty Ltd does not hold liability for any inaccurate information.



## 2. Site Details

|                |                                   |
|----------------|-----------------------------------|
| <b>Address</b> | 4 & 6 Playfield Street, Chermside |
| <b>Title</b>   | Lots 133 & 134 on RP79690         |
| <b>Area</b>    | 971m <sup>2</sup>                 |

### 2.1 Location

The subject site is located in Chermside, bound by residential properties to the north, Playfield Street to the east, Hamilton Road to the south, and Westfield Chermside Shopping Centre to the west. The subject site is classed as Mixed Use (Centre Frame) MU2 under BCC's City Plan 2014 zoning.



Figure 1 – Locality Plan (BCC City Plan 2014)

## 2.2 Topography & Infrastructure

The site grades down from approximately RL20.20m AHD along the eastern boundary to approximately RL19.40m AHD at the north-western corner. The site is located within a local depression, receiving flows upstream of Hamilton Road and discharging downstream through Westfield Chermside Shopping Centre. Other properties in the surrounding area generally grade towards the local depression and Westfield Chermside Shopping Centre as shown in Figure 2 below.



Figure 2 – Local Area Topography: LiDAR Data (m AHD)

Significant underground stormwater networks are located upstream and within the surrounding area of the site. Flows upstream of the site are ultimately captured and conveyed by stormwater pits and pipes within Hamilton Road, discharging via 2/3600x3600mm stormwater culverts which run northerly underneath Westfield Chermside Shopping Centre. The stormwater culverts discharge further north (downstream) into Zillman Waterholes.



Figure 3 – Existing Stormwater Infrastructure

## 2.3 Existing Use

The site currently contains a single-storey residential dwelling and vegetation (grass and trees) at the northern end. The southern end of the site contains a gravelled car parking area. Two driveway crossovers are located along the eastern boundary of the site, providing vehicular access to and from Playfield Street.

## 2.4 Developed Use

The proposed development involves the following:

- Multi-level residential apartment building.
- Ground level to contain entry area, a single driveway crossover, internal driveway, ramps and vehicle manoeuvring areas, and an open vegetated area.
- Levels 1 and 2 to contain internal driveway, ramps and carparking.
- Levels 3 to 11 to contain residential living spaces.
- Roof level to contain non-habitable and recreational areas.

Development plans are presented in Appendix B.

## 2.5 Council Data

The site is located within BCC's Overland Flow Flood Planning Area as shown in Figure 4.



Figure 4 – Brisbane River Flood Planning Areas (BCC City Plan 2014)

---

## 3. Hydrology

### 3.1 Methodology

Hydrological calculations of the catchments were undertaken through DRAINS software using a Watershed Bounded Network Model (WBNM) runoff routing model. The WBNM runoff routing model utilises linking ordered basin or inter-basin storage sub-areas/sub-catchments.

The current 2016 IFD (Intensity-frequency-duration) rainfall data was sourced from BOM (Bureau of Meteorology). This data was utilised as a baseline and was uplifted in accordance with ARR (Australian Rainfall and Runoff) guidelines to provide consideration to newly adopted climate change factors. Uplifted IFD data was input into the WBNM model based upon the following parameters:

- Shared Socio-Economic Pathway (SSP) = SSP2-4.5 Moderate emissions
- Target Design Year = 2040
- 1.4 Degree Celsius temperature increase from 1990 IFD data baseline

### 3.2 Model Setup

The runoff routing model was set up to create inflow boundary conditions for the hydraulic TUFLOW model. The 2% AEP overland flow event was run for the 5, 10, 15, 20, 25, 60, 90, 120, 180, 270 and 360-minute rainfall durations. An initial loss of 15mm and continuing losses of 2.5mm/hr were used for the pervious catchments respectively. An initial loss of 0mm and continuing losses of 0mm/hr were used for the impervious catchments respectively. A lag parameter of 1.3 was utilised.

### 3.3 Catchment Delineation

Two catchments (Catchments 1 and 2) were identified to contribute flows to the local depression and through the site. The catchments were further delineated into multiple sub-catchments.

Sub-catchment slopes, impervious factors and routing lengths have been imported into the WBNM model to produce the design flows (2% AEP). The catchment plan is presented in Figure 2, Appendix A.

A summary of the sub-catchment properties and peak discharges is shown in Table 3-1 below. The critical storm for the site was found to be the 30-minute duration, storm pattern 5.

Table 3-1 – Sub-Catchment Properties and 2% AEP Peak Discharges (DRAINS)

| Catchment           | Sub-Catchment | Area (ha) | Impervious Area (%) | Peak Discharge (m <sup>3</sup> /s) |
|---------------------|---------------|-----------|---------------------|------------------------------------|
| <b>1 (218.12ha)</b> | 1-1           | 49.09     | 70                  | <b>21.70</b>                       |
|                     | 1-2           | 26.12     | 70                  | <b>11.80</b>                       |
|                     | 1-3           | 35.98     | 70                  | <b>16.10</b>                       |
|                     | 1-4           | 19.38     | 60                  | <b>7.84</b>                        |
|                     | 1-5           | 37.13     | 60                  | <b>14.60</b>                       |
|                     | 1-6           | 21.75     | 70                  | <b>9.88</b>                        |
|                     | 1-7           | 20.58     | 60                  | <b>8.30</b>                        |
|                     | 1-8           | 2.09      | 70                  | <b>1.03</b>                        |
|                     | 1-9           | 2.02      | 70                  | <b>0.99</b>                        |
|                     | 1-10          | 2.19      | 70                  | <b>1.07</b>                        |
|                     | 1-11          | 1.79      | 70                  | <b>0.89</b>                        |
| <b>2 (12.07ha)</b>  | 2-1           | 1.38      | 70                  | <b>0.69</b>                        |
|                     | 2-2           | 2.39      | 70                  | <b>1.17</b>                        |
|                     | 2-3           | 1.82      | 70                  | <b>0.90</b>                        |
|                     | 2-4           | 3.15      | 70                  | <b>1.52</b>                        |
|                     | 2-5           | 3.33      | 70                  | <b>1.61</b>                        |

With the input of the routing lengths, the following 2% AEP overland flow peak discharges were produced:

- Total catchment = 52.10m<sup>3</sup>/s
- Inflow-1: Sub-catchments 1-1 to 1-7 = 51.99m<sup>3</sup>/s
- Inflow-2: Sub-catchments 1-8 to 1-11 = 3.89m<sup>3</sup>/s
- Inflow-2: Sub-catchments 2-1 to 2-5 = 5.60m<sup>3</sup>/s

### 3.4 Rational Method

Rational Method Calculations were performed for the 2% AEP overland flow event using parameters as per QUDM requirements and guidelines. Site-specific IFD rainfall data was used for the calculations. The results are shown in Table 3-2 below.

Table 3-2 – Catchment Properties and 2% AEP Peak Discharges (Rational Method)

| Catchments       | Sheet Flow Length (m) | Sheet Flow Slope (%) | Pipe Flow Length (m) | Pipe Flow Slope (%) | Total TOC (Minutes) | Peak Discharge (m <sup>3</sup> /s) |
|------------------|-----------------------|----------------------|----------------------|---------------------|---------------------|------------------------------------|
| <b>1 &amp; 2</b> | 2530                  | 1.34                 | 1220                 | 0.49                | 62.0                | <b>61.97</b>                       |



A percentage difference calculation between the 2% AEP Rational Method and DRAINS peak discharges was undertaken. The results shown in Table 3-3 demonstrate no more than a 20% percentage difference for the catchment. The DRAINS peak discharges are therefore considered to be well calibrated and appropriate for use in the hydraulic modelling.

Table 3-3 – 2% AEP Peak Discharges Comparison

| Catchment | Peak Discharge<br>(2% AEP) –<br>Rational Method | Peak Discharge<br>(2% AEP) –<br>DRAINS | Percentage Difference<br>(%) |
|-----------|-------------------------------------------------|----------------------------------------|------------------------------|
| 1         | 61.97                                           | 52.10                                  | 17                           |

## 4. Hydraulics

### 4.1 Methodology

A TUFLOW 2d model was setup to simulate and analyse the 2% AEP overland flow flood event and to provide flood levels, depths, velocities and velocity-depths. The results were used to undertake an impact assessment analysis and determine flood immunity levels.

### 4.2 Existing Model Setup

The TUFLOW model was based on a 1m grid size with elevation data (2019 LiDAR data) sourced from the Queensland State Government. Unsteady flows were used (obtained from DRAINS) with changing relationships between discharge and time to produce the 2% AEP hydrographs (Inflow-1 = 51.99m<sup>3</sup>/s, Inflow-2 = 3.89m<sup>3</sup>/s, Inflow-3 = 5.60m<sup>3</sup>/s). The hydrographs were input into QT (discharge to time relationship) inflow boundary conditions (Inflow-1 = 1d\_bc layer, Inflow-2 = 2d\_sa\_pit layer, Inflow-3 = 2d\_sa\_pit layer). A HQ (height to discharge relationship) outflow boundary condition was utilised to allow for flows to exit the model (2d\_bc layer).

Stormwater pits and inlet structures were input in the model as 1D elements. Hydrographs for the stormwater pits were produced to represent open lintels and an 80% blockage factor for the grate. The 1d\_bc and 2d\_sa\_pit layers were located on stormwater pits and inlet structures to represent flow capture by the network before reaching capacity and causing overland flow.

Dwellings and structures blocking the flow path were input into the model as raised elevation polygons. The Manning's roughness coefficients adopted in the model are summarised below in Table 4-1 and presented in Figure 3, Appendix A. The existing TUFLOW model setup is presented in Figures 4 and 5, Appendix A.

Table 4-1 – Manning's Roughness Coefficients

| Surface Type       | Manning's n Value |
|--------------------|-------------------|
| Roads              | 0.020             |
| Private Properties | 0.100             |

---

### 4.3 Developed Model Setup

The existing TUFLOW model setup was modified to represent the proposed development works. A raised elevation polygon was input to represent the proposed building footprint and all areas above the flood level. The developed TUFLOW model setup is presented in Figure 6, Appendix A.



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## 5. Model Results

### 5.1 Existing Model

The existing scenario 2% AEP overland flow flood levels and depths are presented in Figure 7, Appendix A. The velocity and velocity-depth product plots are presented in Figures 8 and 9 Appendix A, respectively. The results show that approximately half of the site would be inundated. The upstream flood level of the site is RL20.20m AHD. Flood depths reach up to approximately 0.50 at the north-western corner of the site.

### 5.2 Developed Model

The developed scenario 2% AEP overland flow flood levels and depths are presented in Figure 10, Appendix A. The velocity and velocity-depth product plots are presented in Figures 11 and 12 Appendix A, respectively. The upstream flood level and flood depths across the site are mostly similar to that of the existing scenario.

### 5.3 Flood Impact Assessment

The flood level increases as a result of the proposed development works are presented in Figure 13, Appendix A. The results show that flood level increases would occur external to the site boundaries but still within close vicinity. The external flood level increases are located in open vegetated areas, not affecting any neighbouring dwellings or structures during the 2% AEP overland flow event. The proposed development is therefore considered to not cause an adverse impact to neighbouring properties or the surrounding area.

## 6. Overlay Code Assessments

### 6.1 Flood Immunity Level Requirements

Section A of the Flood Overlay Code (Table 8.2.11.3.D) nominates the minimum flood immunity requirements for Class 2 buildings affected by overland flow flooding. The 2% AEP overland flow flood level affecting the development is RL20.20m AHD and the only source of inundation affecting the site. The resulting minimum flood immunity levels are shown below in Table 6-1.

Table 6-1 – Minimum Flood Immunity Levels (Flood Overlay Code)

| Design Levels                 | Flood Immunity Requirement | Flood Immunity Level (m AHD) |
|-------------------------------|----------------------------|------------------------------|
| Habitable areas               | 2% AEP flood level + 0.5m  | RL20.70m AHD                 |
| Non-habitable areas           | 2% AEP flood level + 0.3m  | RL20.50m AHD                 |
| Vehicle manoeuvring areas     | 2% AEP flood level         | RL20.20m AHD                 |
| Essential electrical services | 2% AEP flood level + 0.5m  | RL20.70m AHD                 |
| Basement parking entry        | 2% AEP flood level + 0.3m  | RL20.50m AHD                 |

The proposed development meets all minimum flood immunity levels.

The proposed development is to be structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with the 2% AEP overland flow flood event (flood depths up to 0.30m and flood velocities up to 0.45m/s).

The Flood Overlay Code has been addressed in Appendix C.



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## 7. Conclusions

The objective of this report is to assess the proposed development works with relation to Brisbane City Council's Flood Overlay Code. Detailed hydrologic and hydraulic assessment has been undertaken for this assessment.

The proposed development involves the following:

- Multi-level residential apartment building.
- Ground level to contain entry area, a single driveway crossover, internal driveway, ramps and vehicle manoeuvring areas, and an open vegetated area.
- Levels 1 and 2 to contain internal driveway, ramps and carparking.
- Levels 3 to 11 to contain residential living spaces.
- Roof level to contain non-habitable and recreational areas.

Development plans are presented in Appendix B.

The flood level increases as a result of the proposed development works are presented in Figure 13, Appendix A. The results show that flood level increases would occur external to the site boundaries but still within close vicinity. The external flood level increases are located in open vegetated areas, not affecting any neighbouring dwellings or structures during the 2% AEP overland flow event. The proposed development is therefore considered to not cause an adverse impact to neighbouring properties or the surrounding area.

The proposed development meets all minimum flood immunity levels. The proposed development is to be structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with the 2% AEP overland flow flood event (flood depths up to 0.30m and flood velocities up to 0.45m/s. The Flood Overlay Code has been addressed in Appendix C.

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## Appendix A – Flood Figures





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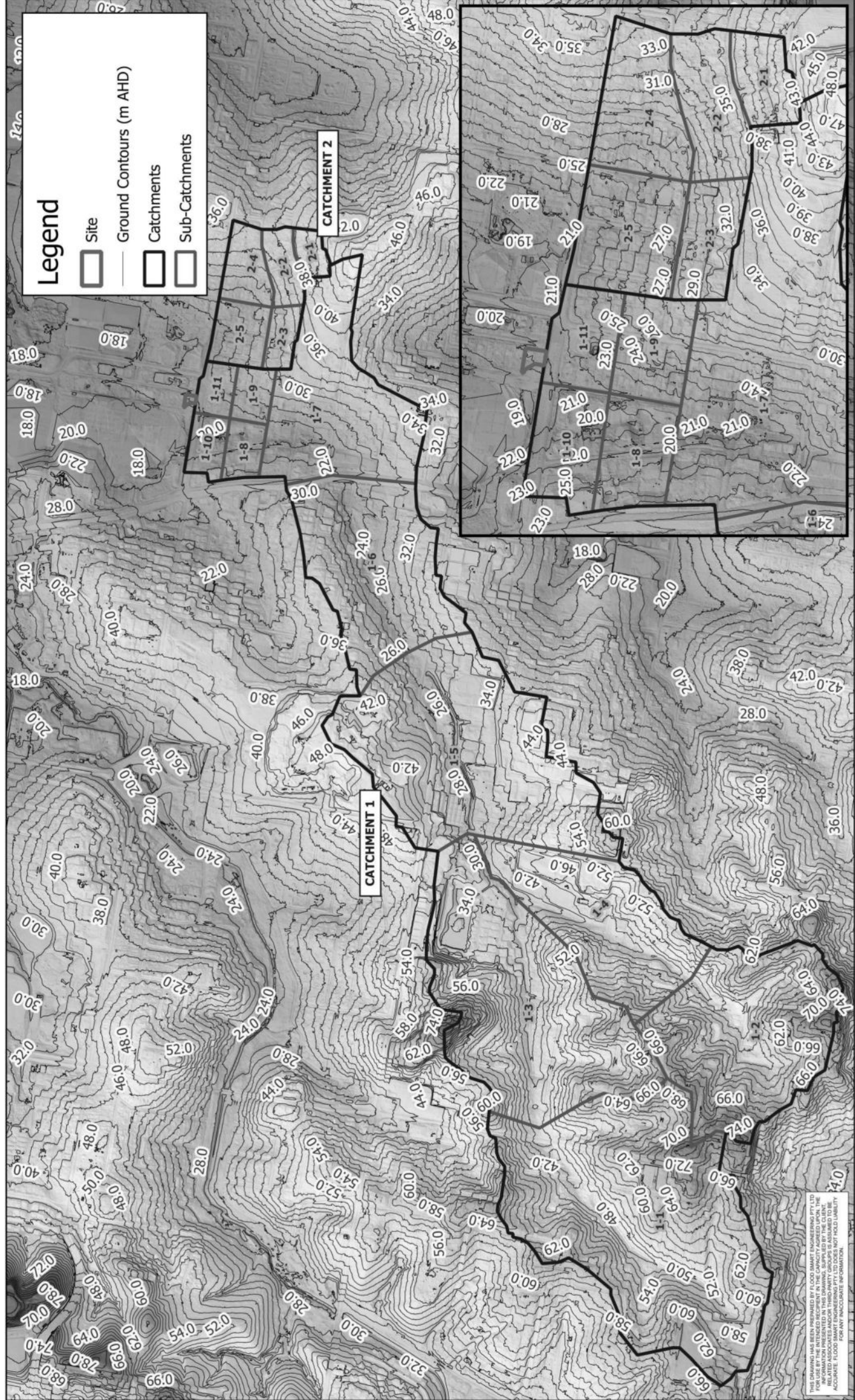
FLOOD SMART ENGINEERING PTY LTD  
11/11/2025  
P: +61 (0)23 265 188  
E: admin@floodsmarteng.com.au

**FIGURE 1**  
**TITLE**  
**EXISTING SITE PLAN**  
**ADDRESS**  
**4 & 6 PLAYFIELD STREET, CHERMERSIDE**

|             |            |
|-------------|------------|
| DRAWN       | KC         |
| REVIEW      | HM         |
| DATE        | 10/12/2025 |
| PROJECT NO. | 24-122     |



SCALE 1 : 750 REV. 001





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**FIGURE 3**

**TITLE**  
**MANNING'S N SURFACES**  
**ADDRESS**  
**4 & 6 PLAYFIELD STREET, CHERMSIDE**

|             |            |
|-------------|------------|
| DRAWN       | KC         |
| REVIEW      | HM         |
| DATE        | 10/12/2025 |
| PROJECT NO. | 24-122     |

060120180240

0

60

120

180

240 m

N

SCALE

1 : 3000

REV.

001





**FIGURE 5**

**TITLE**  
EXISTING TUFLOW MODEL SETUP

**ADDRESS**  
4 & 6 PLAYFIELD STREET, CHERMSIDE

|             |            |
|-------------|------------|
| DRAWN       | KC         |
| REVIEW      | HM         |
| DATE        | 10/12/2025 |
| PROJECT NO. | 24-122     |









## Legend



Site

Flood Velocity-Depth Product (m2/s)

0.0 - 0.2

0.2 - 0.4

0.4 - 0.6

0.6 - 0.8

0.8 - 1.0

> 1.0

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**FIGURE 9**

**TITLE**  
EXISTING SCENARIO 2% AEP FLOOD VELOCITY-DEPTH PRODUCT

**ADDRESS**  
4 & 6 PLAYFIELD STREET, CHERMSIDE



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|-------------|------------|
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| REVIEW      | HM         |
| DATE        | 10/12/2025 |
| PROJECT NO. | 24-122     |



SCALE 1 : 750 REV. 001





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**FIGURE 11**

**TITLE**  
DEVELOPED SCENARIO 2% AEP FLOOD VELOCITIES

**ADDRESS**  
4 & 6 PLAYFIELD STREET, CHERMSIDE

|             |            |
|-------------|------------|
| DRAWN       | KC         |
| REVIEW      | HM         |
| DATE        | 19/02/2026 |
| PROJECT NO. | 24-122     |

01530

0

15

30

45

60 m

N

↑

SCALE

1 : 750

REV.

001



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**FIGURE 12**

**TITLE**  
DEVELOPED SCENARIO 2% AEP FLOOD VELOCITY-DEPTH PRODUCT

**ADDRESS**  
4 & 6 PLAYFIELD STREET, CHERMSIDE

|             |            |
|-------------|------------|
| DRAWN       | KC         |
| REVIEW      | HM         |
| DATE        | 19/02/2026 |
| PROJECT NO. | 24-122     |

0 15 30 45 60 m

N

SCALE 1 : 750

REV.

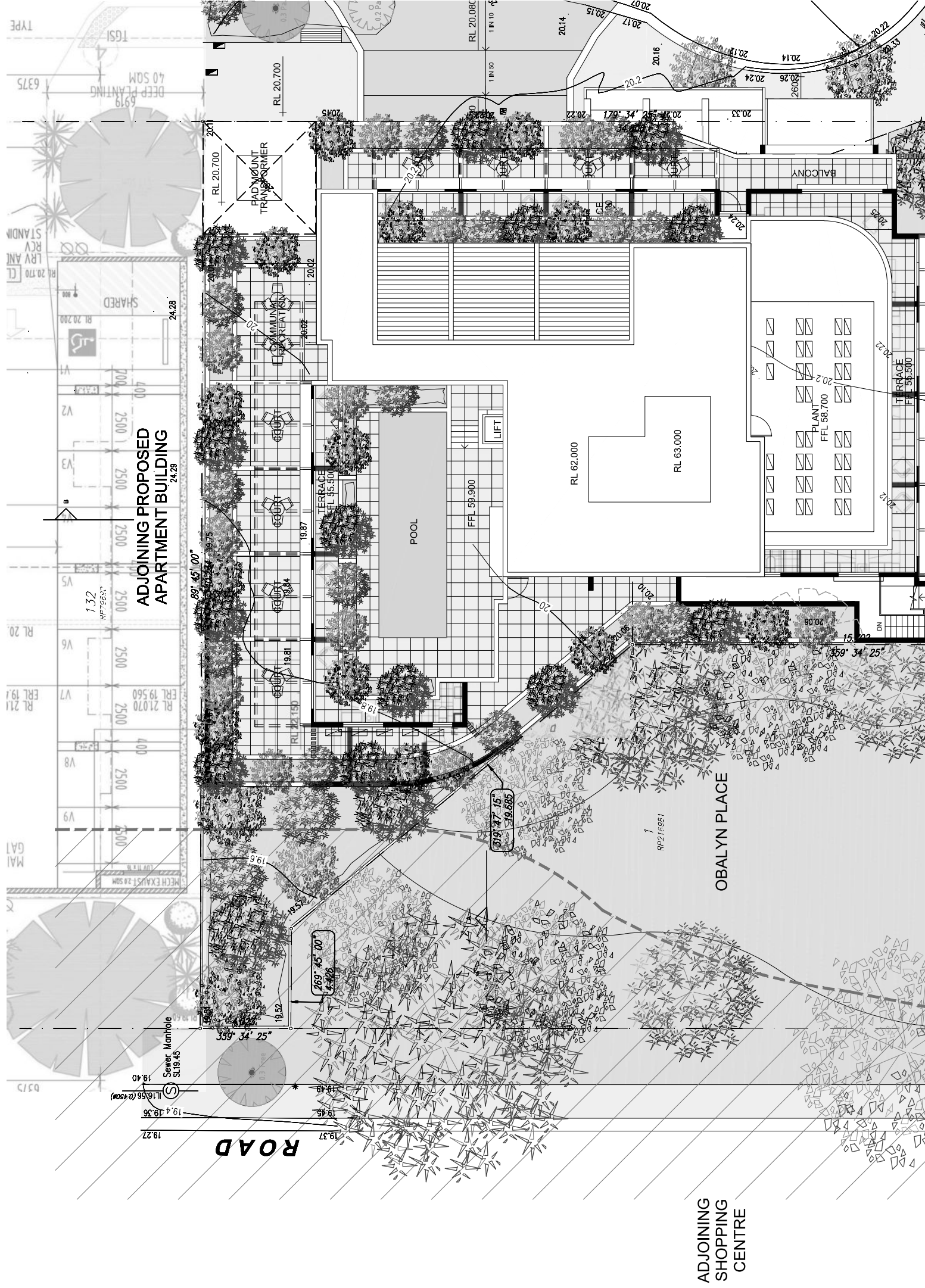
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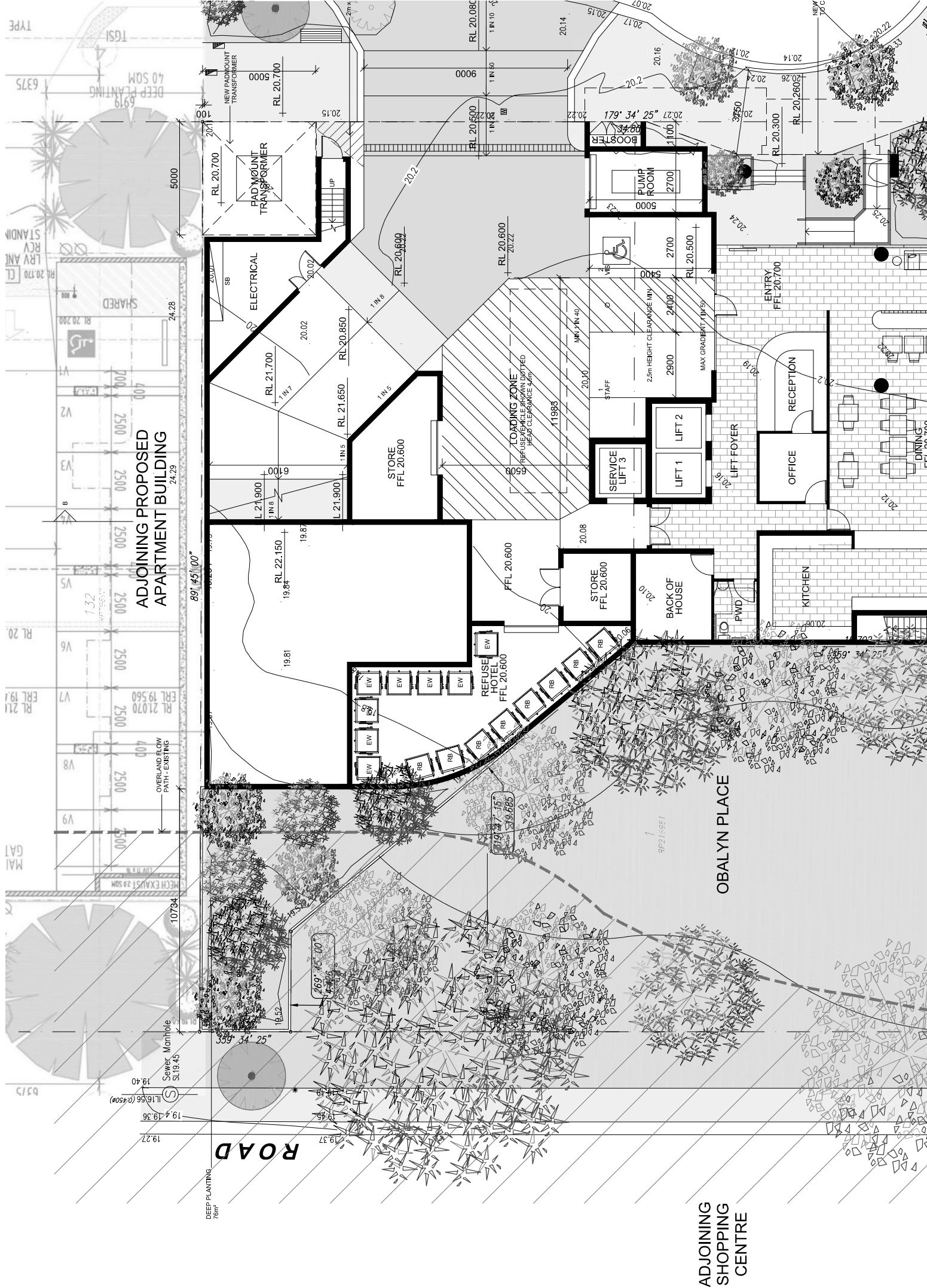


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## Appendix B – Development Plans







ADJOINING PROPOSED  
APARTMENT BUILDING

ADJOINING  
SHOPPING  
CENTRE

OBALYN PLACE

ROAD

Sewer Manhole  
S19.45

116.56 (0.450m)

19.27

19.4

19.45

19.45

19.45

19.45

19.45

19.45

19.45

19.45

19.45

19.45

19.45

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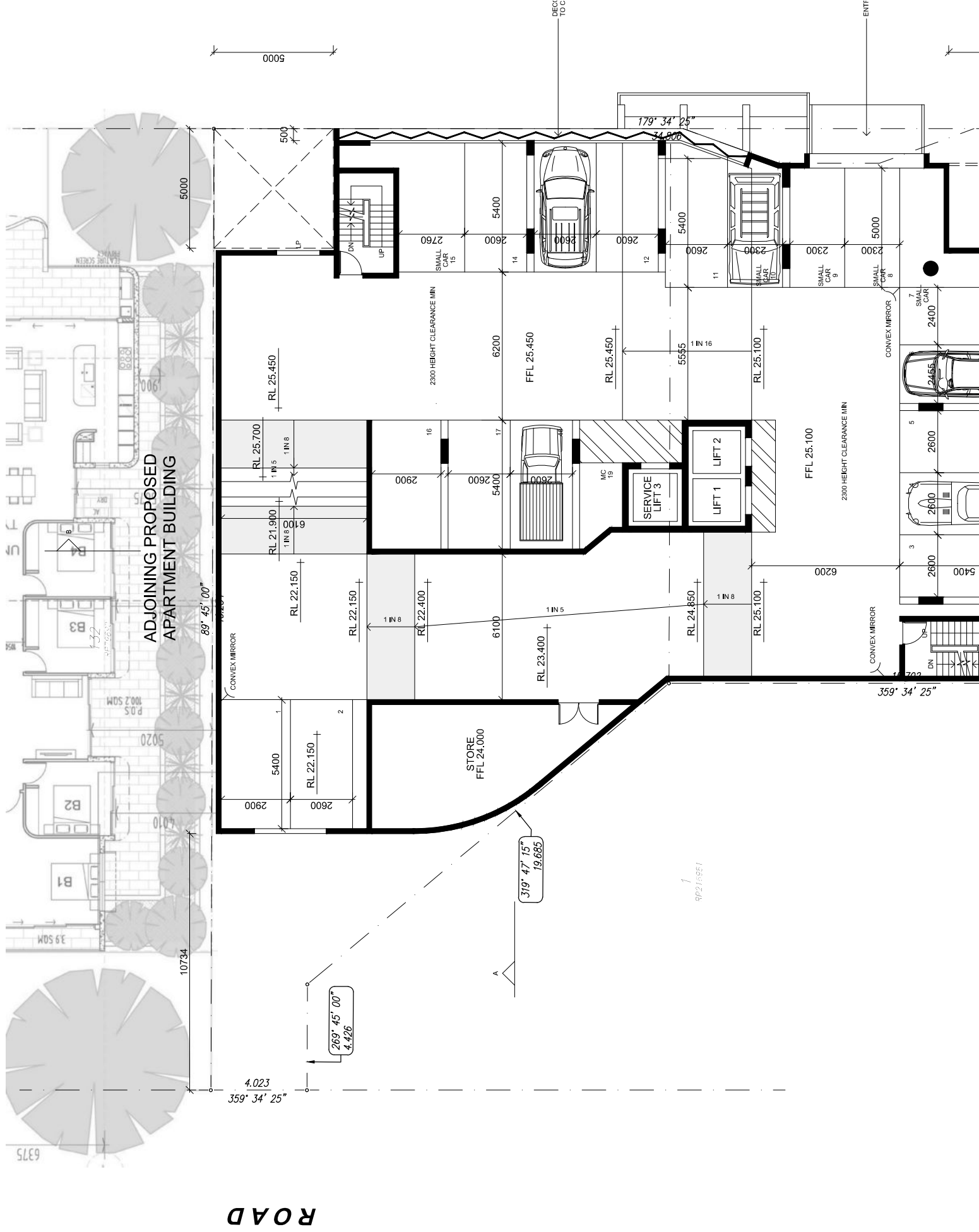
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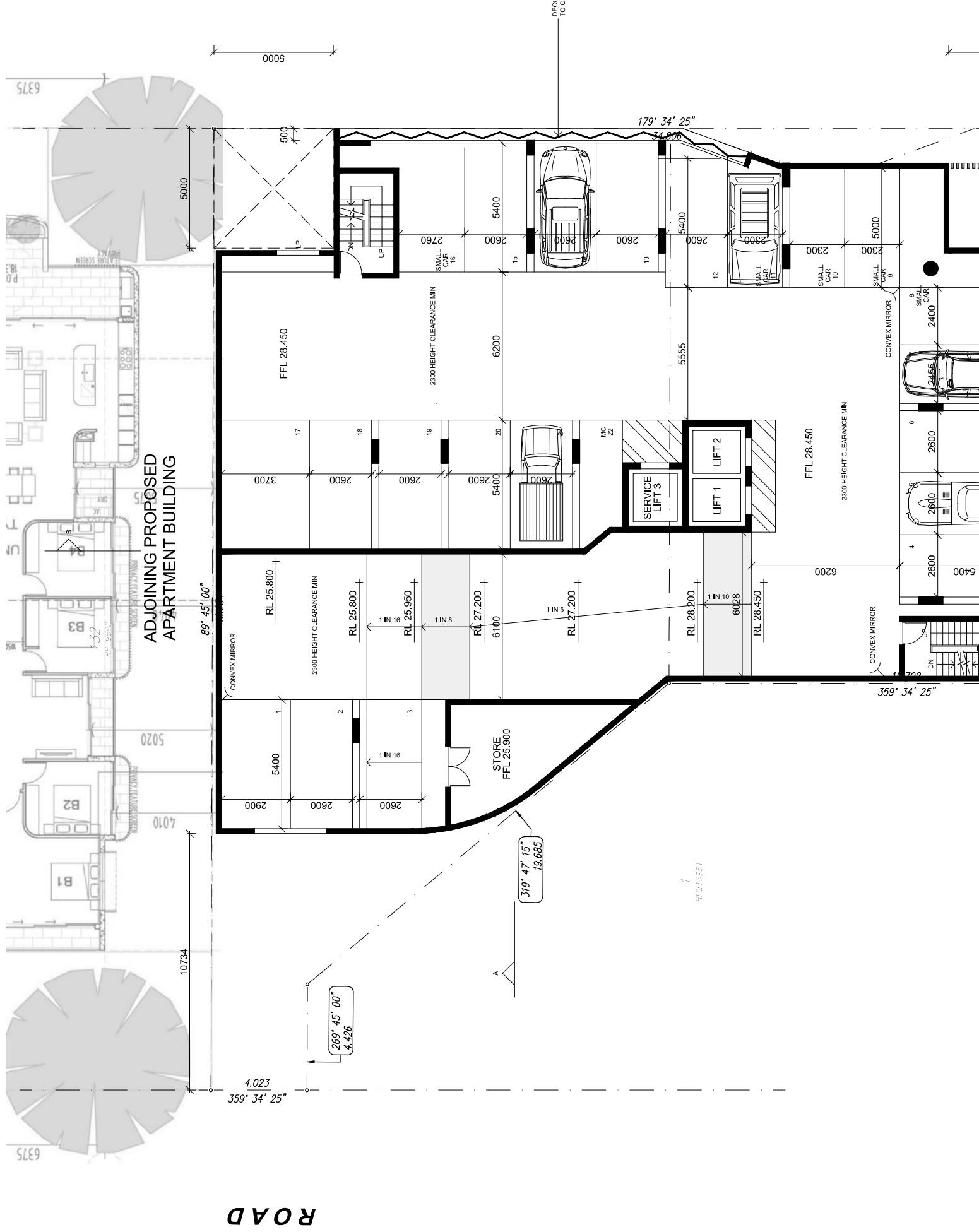
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19.45

19.45

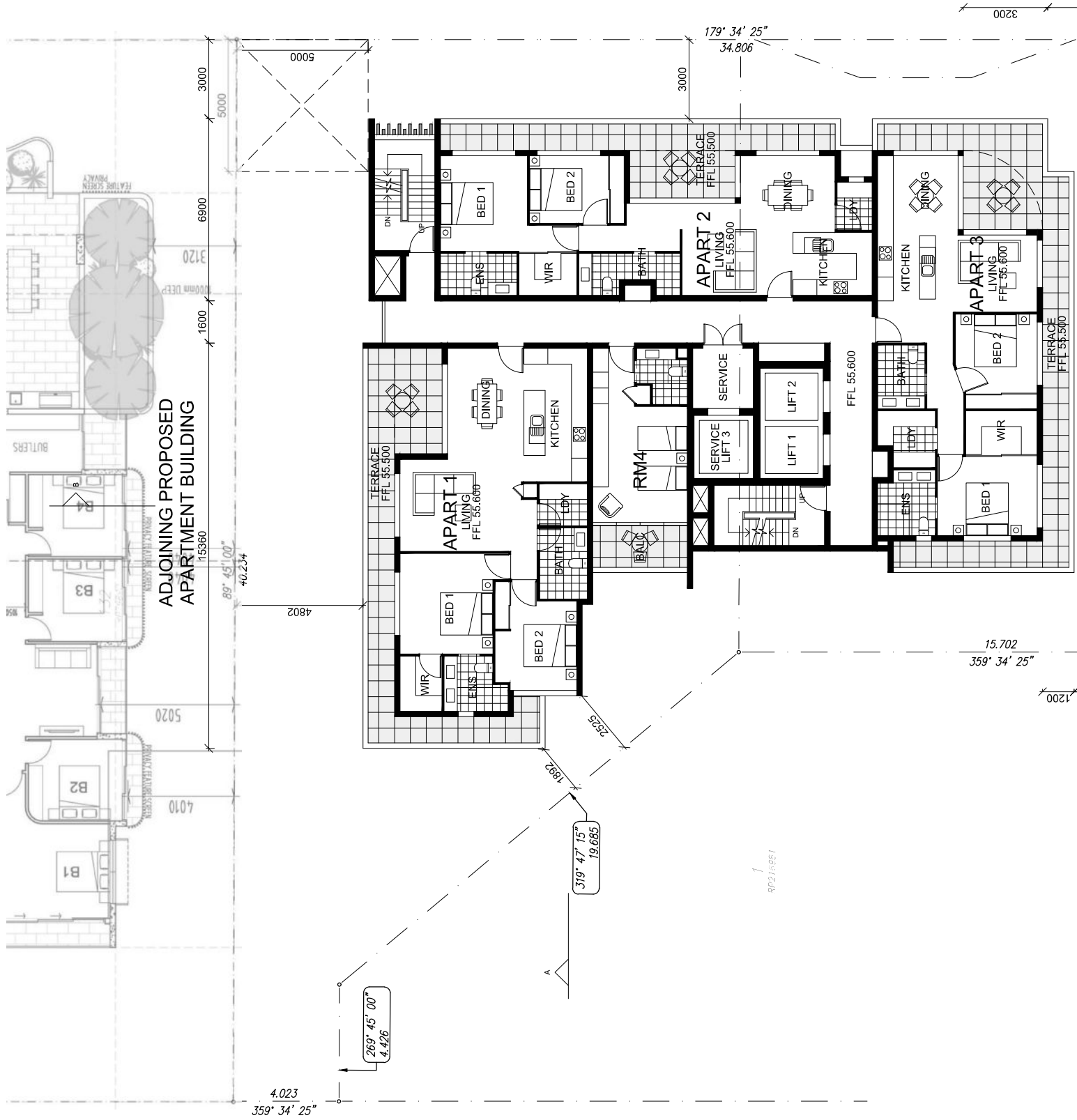
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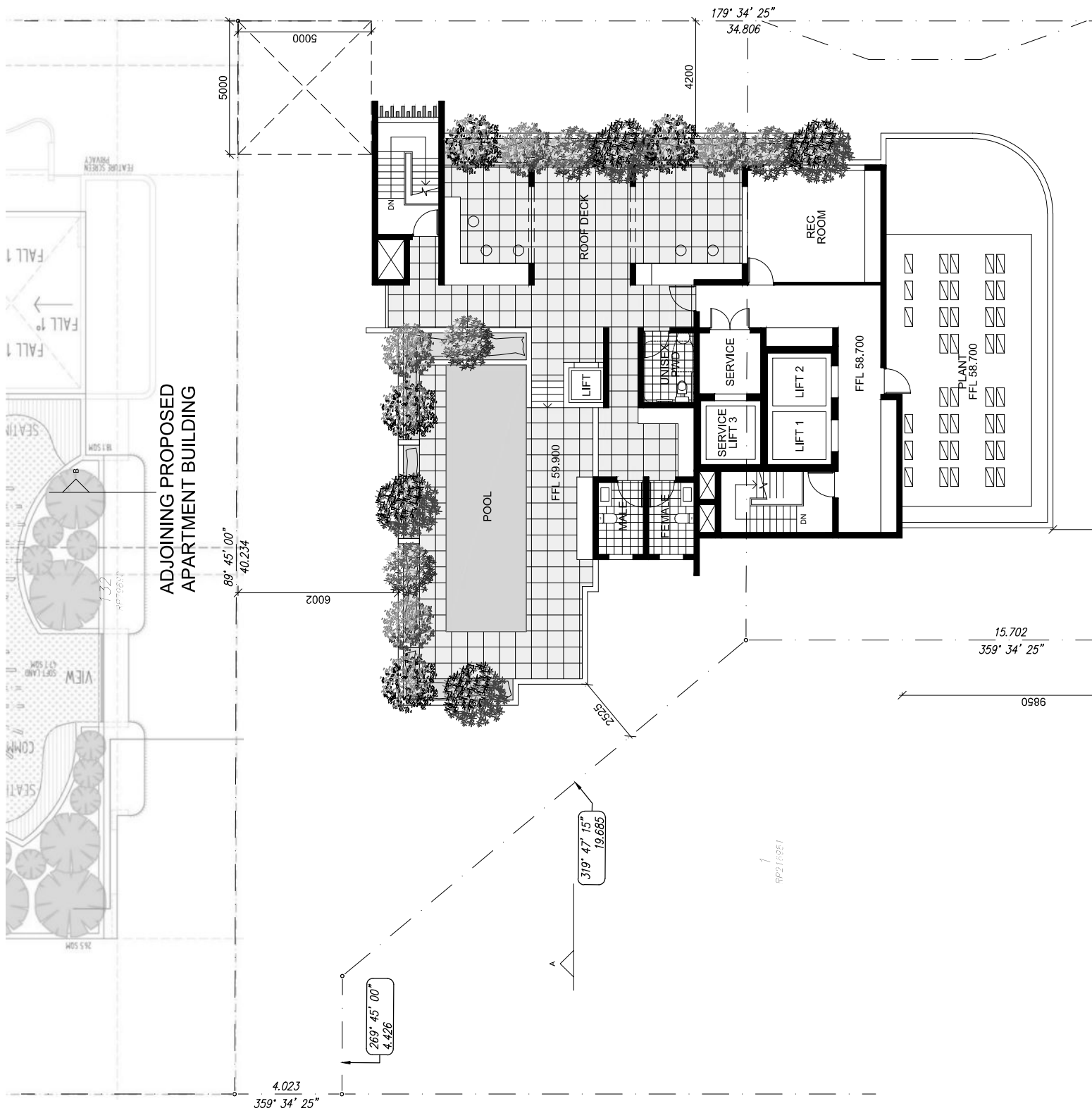


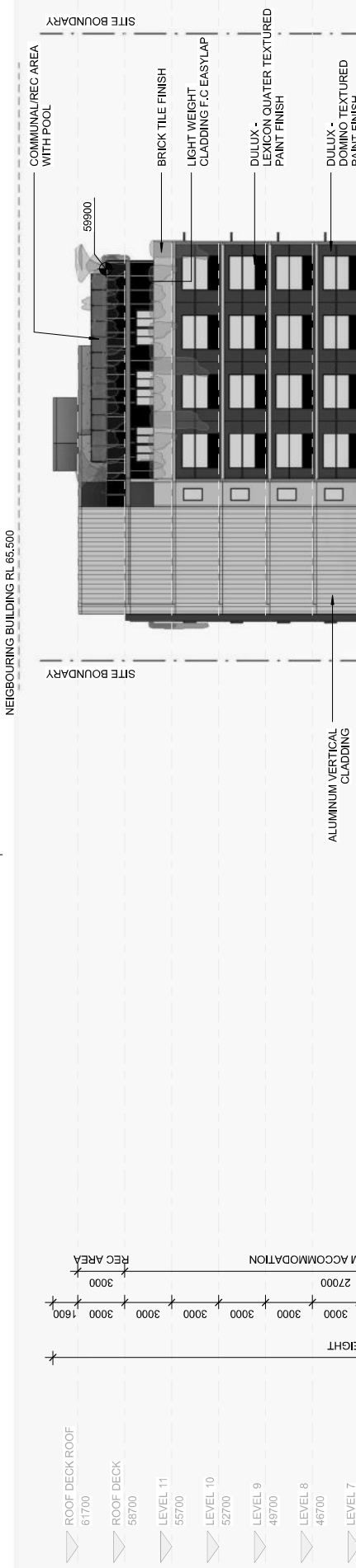
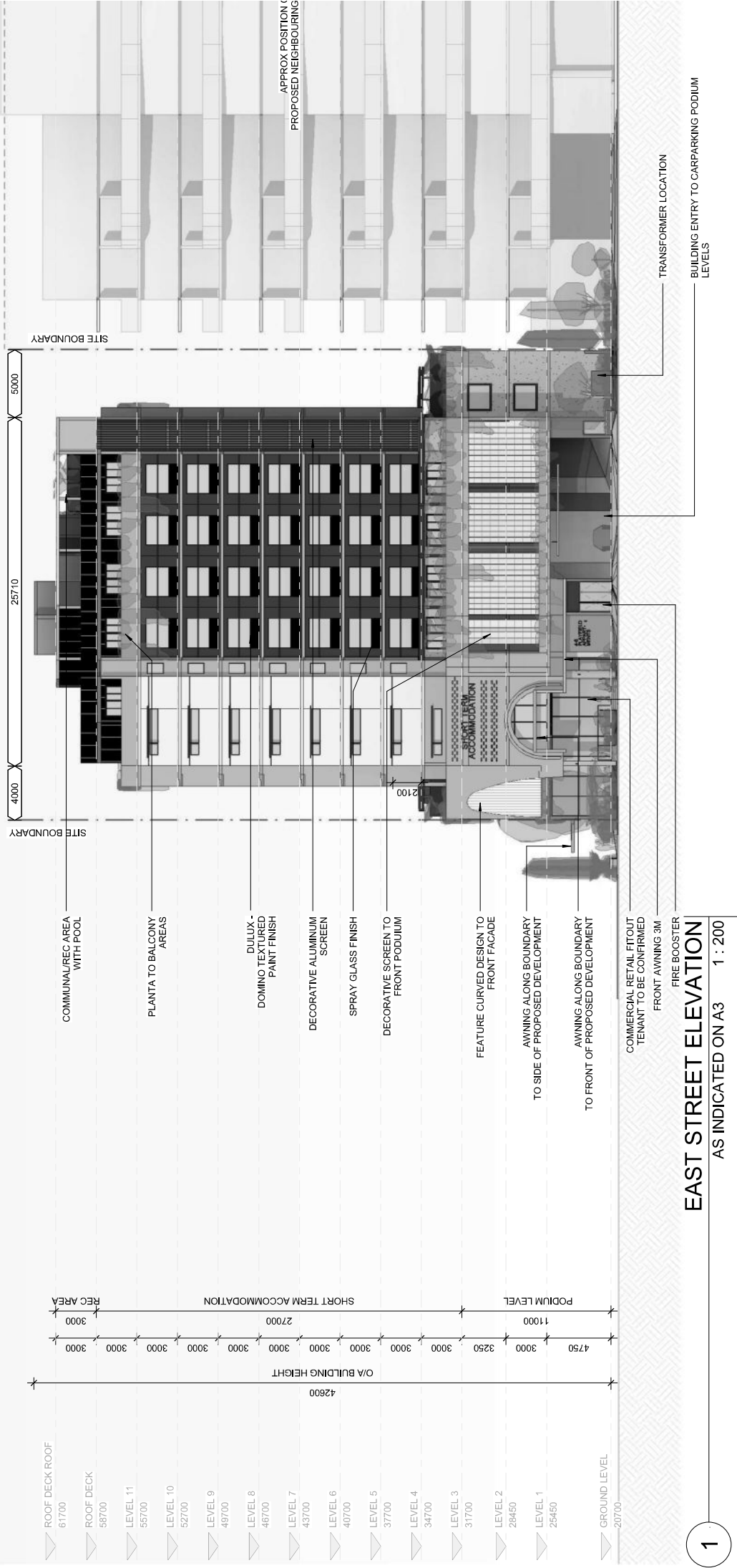




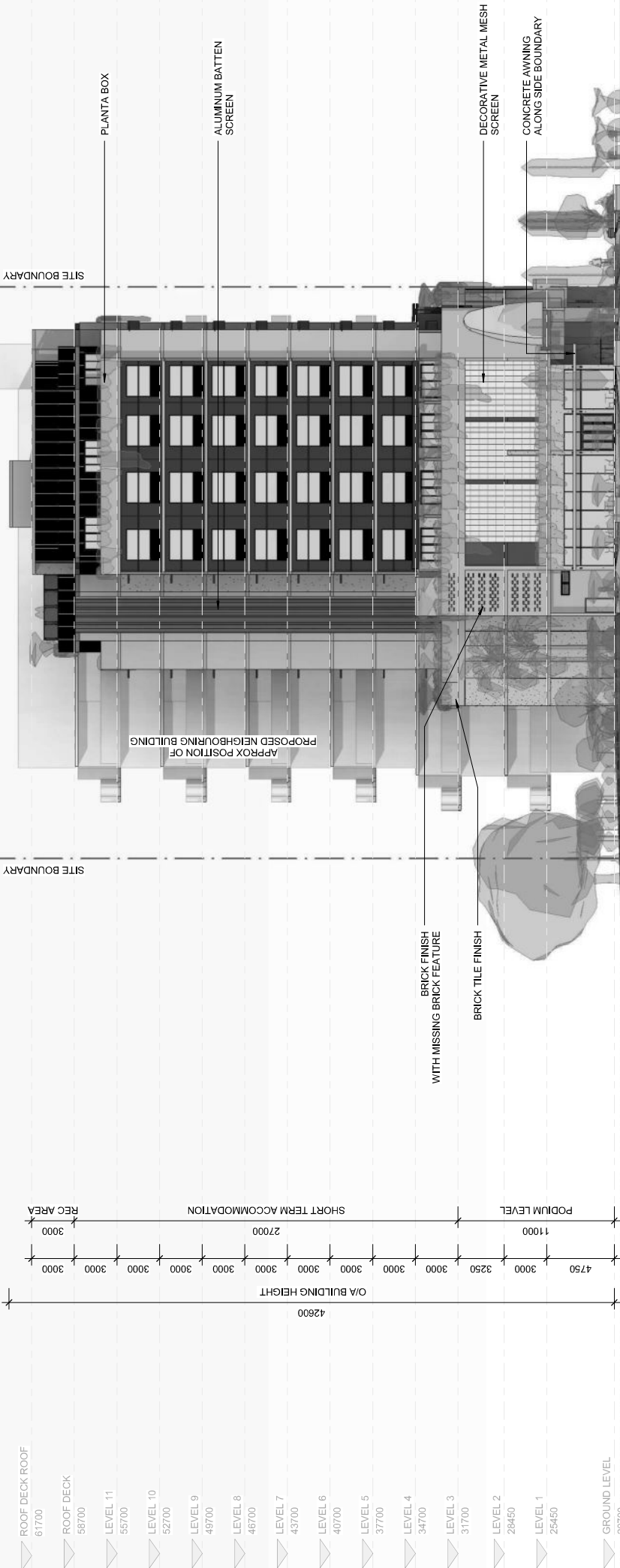


ROAD

**ROAD**



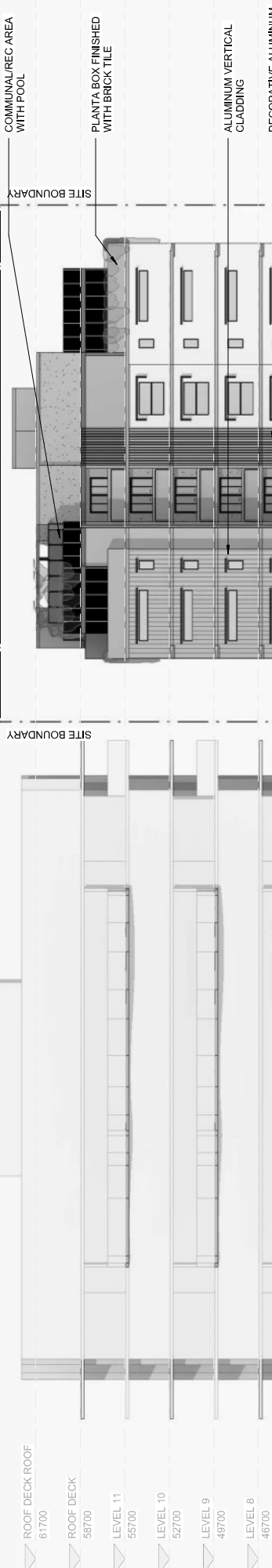
NEIGHBOURING BUILDING RL 65.500



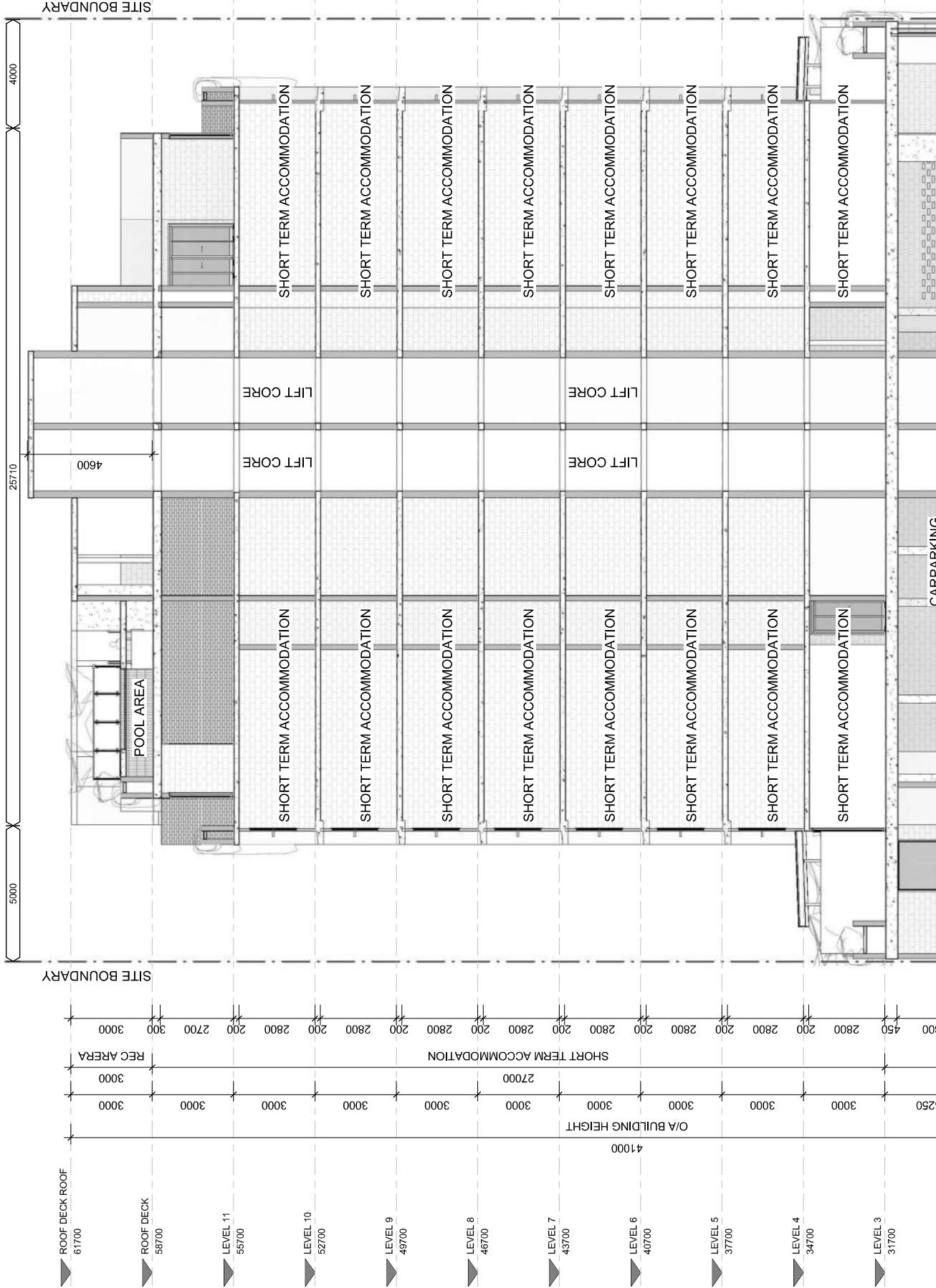
# SOUTH ELEVATION AS INDICATED ON A3

1 : 200

NEIGHBOURING BUILDING RL 65.500











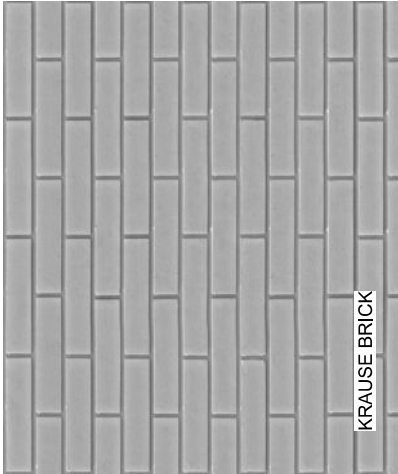




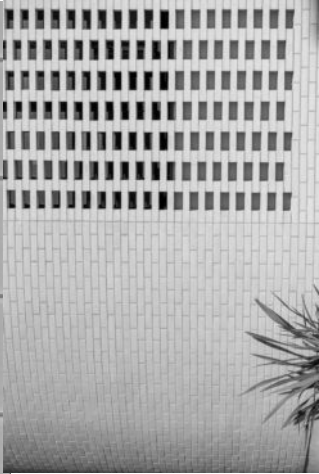




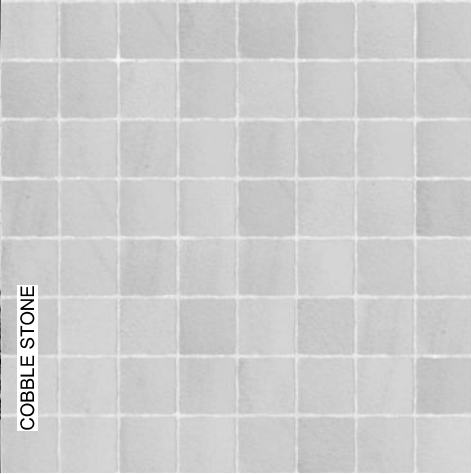
MATERIAL FINISHES



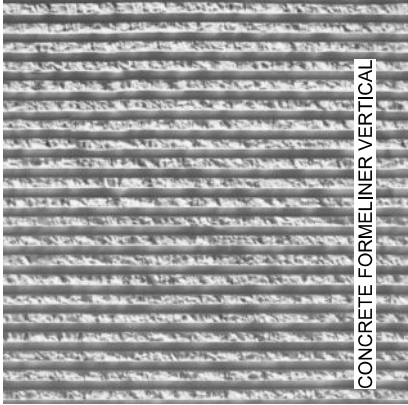
KRAUSE BRICK



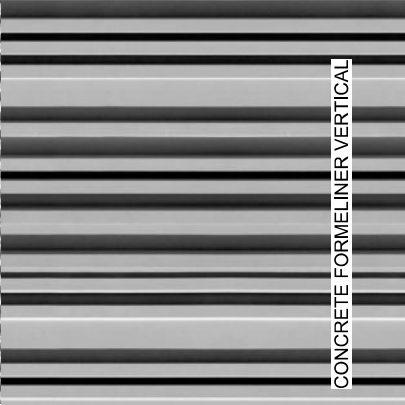
COBBLE STONE



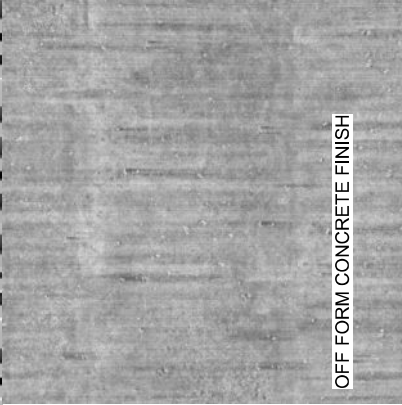
LIMESTONE TILE



CONCRETE FORMLINER VERTICAL



CONCRETE FORMLINER VERTICAL



OFF FORM CONCRETE FINISH



PAINT FINISHES



MATERIAL

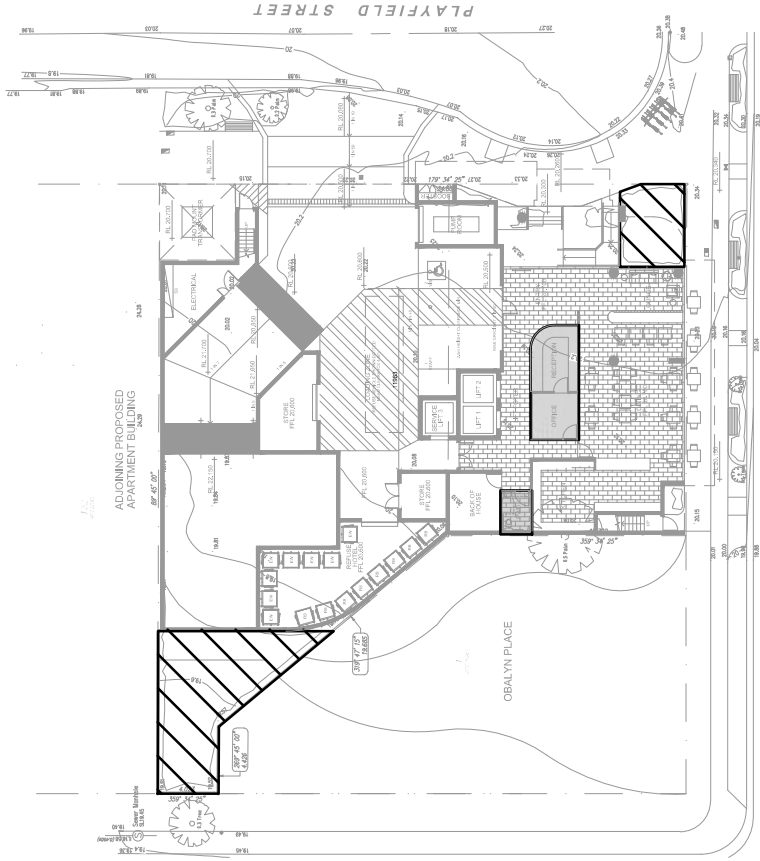


PERFORATE

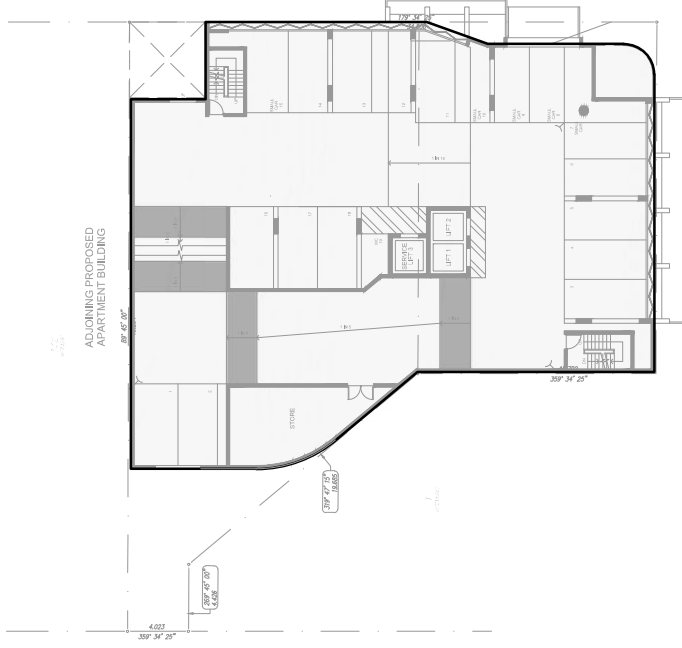
KNOTWOOD ALUMINUM



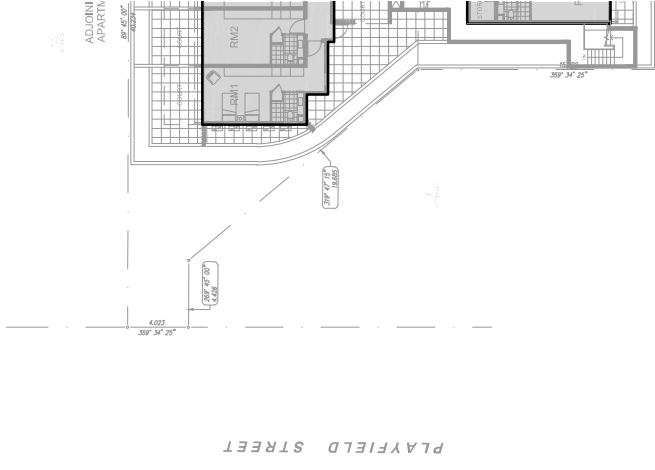
BLACK SPR



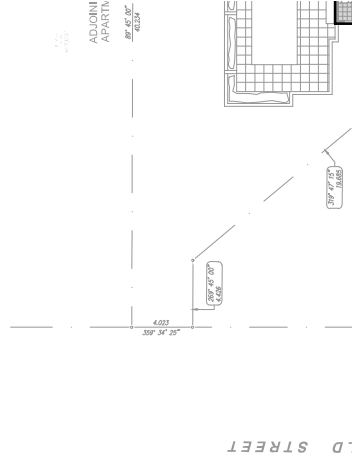
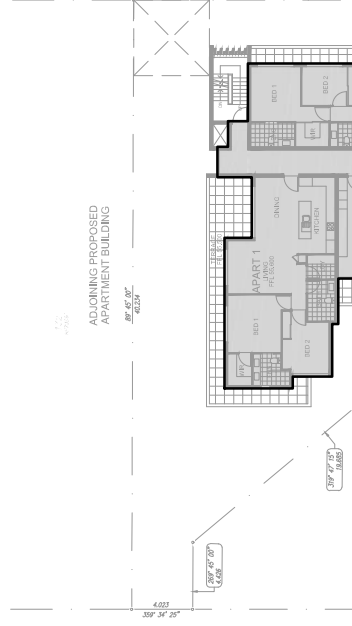
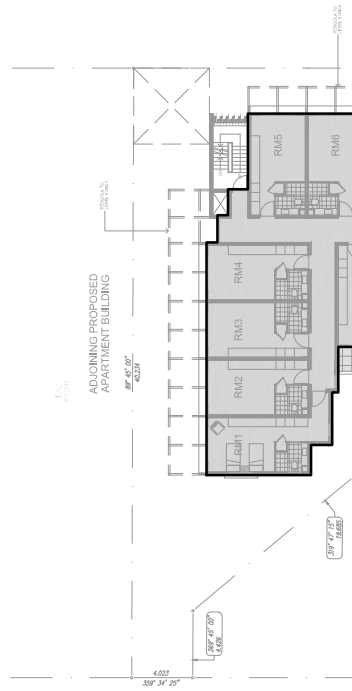
GROUND LEVEL



LEVEL 1-2  
SITE COVER



LEVEL 3



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## Appendix C – Flood Overlay Code



Table 8.2.11.3.A—Performance outcomes and acceptable outcomes

| Performance outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                   | Acceptable outcomes                                                                                               | Comments |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------|
| <b>Section B—If accepted development subject to compliance with identified requirements (acceptable outcomes only) or assessable development other than for a dwelling house or reconfiguring a lot</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                   |                                                                                                                   |          |
| <b>PO3</b><br>Development: <ol style="list-style-type: none"> <li>is compatible with flood hazard in a defined flood event;</li> <li>minimises the risk to people from flood hazard;</li> <li>does not reduce the ability of evacuation resources including emergency services to access and evacuate the site in a flood emergency, with consideration to the scale of the development;</li> <li>minimises impacts on property from flooding;</li> <li>minimises disruption to residents, business or site operations and recovery time due to flooding;</li> <li>minimises the need to rebuild structures after a flood event greater than the defined flood event.</li> </ol> Note—Where Table 8.2.11.3.C identifies that a flood risk assessment is required, compliance with this performance outcome can be achieved by submitting a flood risk assessment, which may be included within a flood study, addressing the criteria within this performance solution. Preparing flood risk assessments and flood studies is required to be in accordance with the Flood planning scheme policy. | <b>AO3</b><br>Development for a material change of use is identified in Table 8.2.11.3.C as compatible with the flood hazard in the relevant flood planning area. | <b>AO3</b><br>The development is defined as compatible with the flood hazard in the relevant flood planning area. |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                   |          |
| <b>PO4</b><br>Development for a park ensures that the design of a park and location of structures and facilities responds to the flood hazard and balances the safety of intended users with: <ol style="list-style-type: none"> <li>maintaining continuity of operations;</li> <li>impacts of flooding on asset life and ongoing maintenance costs;</li> </ol> Note—An emergency management plan prepared in accordance with the Flood planning scheme policy, which sets out procedures for evacuation due to flooding may be used to demonstrate compliance with this performance outcome.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>AO4.1</b><br>Development involving a building or structure in a park complies with the flood planning levels specified in Table 8.2.11.3.D.                    | <b>NA</b>                                                                                                         |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                   |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>AO4.2</b><br>Development involving a building or structure in a park where Table 8.2.11.3.D does not apply:                                                    | <b>NA</b>                                                                                                         |          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>c. efficient recovery after flood events;<br/>d. recreational benefits to the city;<br/>e. availability of suitable land within the park.</p>                                                                                                                                                                                                                                                                                                                                      | <p>a. is not located within the 20% AEP flood extent of any creek/waterway or overland flow path; or<br/>b. is located above the 20% AEP flood level of any creek/waterway or overland flow path.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>Section C—If accepted development subject to compliance with identified requirements (acceptable outcomes only) for a <u>park</u> or assessable development other than for a <u>dwelling house</u></b></p>                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>PO5</b><br/>Development is located and designed to:</p> <ol style="list-style-type: none"> <li>minimise the risk to people from flood hazard on the site;</li> <li>minimise flood damage to the development and contents of buildings up to the defined flood event;</li> <li>provide suitable amenity;</li> <li>minimise disruption to residents, recovery time and the need to rebuild structures after a flood event up to and including the defined flood event.</li> </ol> | <p><b>AO5.1</b><br/>Development complies with the flood planning levels specified in Table 8.2.11.3.D.<br/>Note—If located in an area with no Council-derived flood levels such as an overland flow path, a Registered Professional Engineer Queensland with expertise in undertaking flood studies is to derive the applicable flood level and certify that the development meets the required flood planning levels in Table 8.2.11.3.D. The study is to demonstrate that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.</p> <p><b>AO5.2</b><br/>Development is:</p> <ol style="list-style-type: none"> <li>not located in the: <ol style="list-style-type: none"> <li>Brisbane River flood planning area 1, 2a, or 2b sub-categories;</li> <li>Creek/waterway flood planning area 1 or 2 sub-categories;</li> <li>Overland flow flood planning area sub-category; or</li> </ol> </li> <li>only located in these sub-categories if a Registered Professional Engineer Queensland with expertise in undertaking flood studies certifies that: <ol style="list-style-type: none"> <li>the development design, siting and any mitigation measures will ensure the development is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the defined flood event; and</li> <li>the risk to people is managed to an acceptable level.</li> </ol> </li> </ol> | <p><b>AO5.1</b><br/>The development complies with the flood planning levels specified in Table 8.2.11.3.D.</p> <p><b>AO5.2</b><br/>b. The development should be designed to ensure that it is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the defined flood event and the risk to people is managed to an acceptable level.</p> |

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| <p><b>PO6</b><br/>Development involving essential electrical services or a basement storage area is suitably located and designed to ensure public safety and minimise flood recovery and economic consequences of damage during a flood.</p> | <p><b>AO6.1</b><br/>Development ensures that:<br/>a. all areas containing essential electrical services comply with the flood planning levels in Table 8.2.11.3.D; or<br/>b. if a basement contains essential electrical services or a private basement storage area, the basement is a waterproof structure with walls and floors impermeable to the passage of water with all entry points and services located at or above the relevant flood planning level in Table 8.2.11.3.D.<br/><small>Note—A basement storage area does not include a bike storage room, change room, building maintenance storage and non-critical electrical services.</small></p> <p><b>AO6.2</b><br/>Development involving a basement that relies on a pumping solution to manage floodwater ingress or for dewatering after a flood provides a secondary pump system with a backup power source for the pump.</p>                          | <p><b>AO6.1</b><br/>Essential electrical services comply with the flood planning levels in Table 8.2.11.3.D.</p> <p><b>AO6.2 - NA</b></p>                                                                                                           |
| <p><b>PO7</b><br/>Development does not directly or indirectly create a material adverse impact on flood behaviour or drainage on properties that are upstream, downstream or adjacent to the development.</p>                                 | <p><b>AO7.1</b><br/>Development:<br/>a. does not block, or divert floodwaters for any area affected by creek/waterway or overland flow flooding, excluding storm-tide flooding and Brisbane River flooding sources; or<br/>b. does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties.<br/><small>Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.</small></p> <p><b>AO7.2</b><br/>Development retains existing overland flow paths and does not rely wholly on piped solutions to manage major flows.</p> | <p><b>AO7.1</b><br/>a. The development is not considered to cause adverse impacts to the surrounding area or neighbouring properties.</p> <p><b>AO7.2</b><br/>The development retains the existing overland flow path.</p> <p><b>AO7.3 - NA</b></p> |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>AO7.3</b><br/>Development which creates a new overland flow path or significantly modifies an existing overland flow path via earthworks does not materially worsen hydraulic hazard on the site from existing conditions.</p> <p>Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.</p>                                                                                                                  |    |
| <p><b>PO8</b><br/>Development for filling or excavation in an area affected by creek/waterway flooding does not directly, indirectly or cumulatively cause any material increase in flooding or hydraulic hazard or involve significant redistribution of flood storage from high to lower areas in the floodplain.</p> <p>Note—This can be demonstrated by undertaking earthworks in compliance with the Compensatory earthworks planning scheme policy.</p> <p>Note—This part of the code applies to all development other than a dwelling house and any secondary dwelling which involves filling or excavation, whether or not the development application comprises a separate development application for operational work involving filling or excavation.</p>                                                   | <p><b>AO8</b><br/>Development ensures that no filling or excavation greater than 100mm is located in the Creek/waterway flood planning area 1, 2 or 3 sub-categories if contained in the 5% AEP flood extent of any Creek/waterway flood planning area sub-category for which no waterway corridor has been mapped in the Waterway corridors overlay.</p>                                                                                                                                                                                                                                                                                                                                                                                                   | NA |
| <p><b>PO9</b><br/>Development ensures that the building and site design:</p> <ol style="list-style-type: none"> <li>maintains the conveyance capacity of existing overland flow paths and creek/waterways;</li> <li>ensures floodwaters and flood debris can pass predominantly unimpeded under a structure or building to minimise property or building damage, including for a flood larger than the defined flood event;</li> <li>mitigates flood impacts by ensuring that filling, excavation and location of services are designed to allow for the conveyance of floodwater across the site.</li> </ol> <p>Note—The Flood planning scheme policy provides guidance on relevant considerations in determining minimum undercroft clearances and treatment of ground level in undercroft areas where floodwater</p> | <p><b>AO9.1</b><br/>Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub-category:</p> <ol style="list-style-type: none"> <li>complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E;</li> <li>not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.</li> </ol> <p><b>AO9.2</b><br/>Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub category:</p> <ol style="list-style-type: none"> <li>has a ground level within the undercroft area that is free draining;</li> </ol> | NA |

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| conveyance is required underneath development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | b. does not involve excavation below ground level of more than 300mm within the undercroft area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                |
| <p><b>PO10</b></p> <p>Development for vulnerable uses, difficult to evacuate uses or assembly uses optimises vehicular access and efficient evacuation from the development to parts of the road network unaffected by flood hazard, in order to:</p> <ol style="list-style-type: none"> <li>protect safety of users and emergency services personnel;</li> <li>support efficient emergency services access and site evacuation with consideration to the scale of development.</li> </ol> <p>Note—A flood risk assessment may be required to address the performance outcomes or acceptable solutions which deal with evacuation and isolation arrangements, and the ability to take refuge. The Flood planning scheme policy provides information for undertaking flood risk assessments.</p> | <p><b>AO10</b></p> <p>Development for vulnerable uses, difficult to evacuate uses or assembly uses:</p> <ol style="list-style-type: none"> <li>is not isolated in any event up to the relevant flood planning level specified in Table 8.2.11.3.L and Table 8.2.11.3.D; or</li> <li>has direct vehicle access to a critical route or interim critical route in the Critical infrastructure and movement network overlay for evacuation in a flood; or</li> <li>can achieve vehicular evacuation to a suitable flood-free location.</li> </ol> <p>Note—A suitable flood-free location is of a size and nature sufficient to provide for the size and characteristics of the population likely to need evacuation to that area.</p>                                      | NA                                                                                                                             |
| <p><b>PO11</b></p> <p>Development has access which, having regard to hydraulic hazard, provides for safe vehicular and pedestrian movement and emergency services access to adjoining roads.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>AO11.1</b></p> <p>Development provides an access or driveway into the site which is:</p> <ol style="list-style-type: none"> <li>trafficable during the defined flood event;</li> <li>not located in the Creek/waterway flood planning area 1 sub-category;</li> <li>not located in the Overland flow flood planning area sub-category if the hydraulic hazard is unsafe in the defined flood event;</li> <li>the access or driveway is not inundated by a 10% AEP flood.</li> </ol> <p><b>AO11.2</b></p> <p>Development located in the Creek/waterway flood planning area 1, 2, 3 or 4 sub-categories locates any disabled access in the highest part of the site.</p> <p>Note—explanation of hydraulic hazard provided in the Flood planning scheme policy.</p> | <p><b>PO11</b></p> <p>The development provides flood free access during the defined flood event.</p> <p><b>AO11.2 - NA</b></p> |
| <p><b>PO12</b></p> <p>Development involving a new road, a bridge or culvert is designed to minimise impacts to flood behaviour,</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>AO12</b></p> <p>Development involving a new road complies with the flood planning levels in Table 8.2.11.3.F.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NA                                                                                                                             |

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| <p>minimise disruption to traffic during a flood and allow for emergency access.</p>                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| <p><b>PO13</b><br/>Development for pedestrian and cyclist paths:<br/> a. provides a suitable level of trafficability;<br/> b. manages the impacts of flooding on asset life and ongoing maintenance costs;<br/> c. balances route availability with recreational and transport connectivity benefits to the city.</p> | <p><b>AO13.1</b><br/>Development for cyclist and pedestrian facilities other than on public roads, including those traversing through a park and adjacent to a watercourse and overland flow path, are located above the 39% AEP (2 year ARI) flood immunity from all flooding sources.<br/> Note—If the site is subject to more than one type of flooding, the requirement that affords the greatest level of protection will apply.</p> <p><b>AO13.2</b><br/>All new on-road cyclist and pedestrian facilities comply with the flood planning levels and trafficability standards for the applicable category of road in Table 8.2.11.3.F or Table 8.2.11.3.K.</p> | <p>NA</p> |
| <p><b>PO14</b><br/>Development which increases the residential population within the Brisbane River flood planning area sub-categories minimises the risk to people in all flood events with consideration to flood hazard, including warning time.</p>                                                               | <p><b>AO14</b><br/>Development in the Brisbane River flood planning area sub-categories in areas where the 1% AEP flood level is greater than 12.8m AHD involving:<br/> a. an increase in the number of residential dwellings;<br/> or<br/> b. additional residential lots<br/> is not subject to an unsafe hydraulic hazard in the 0.2% AEP flood event.<br/> Note—Explanation of a hydraulic hazard is provided in the Flood planning scheme policy.</p>                                                                                                                                                                                                           | <p>NA</p> |