

# FLOOD ASSESSMENT REPORT

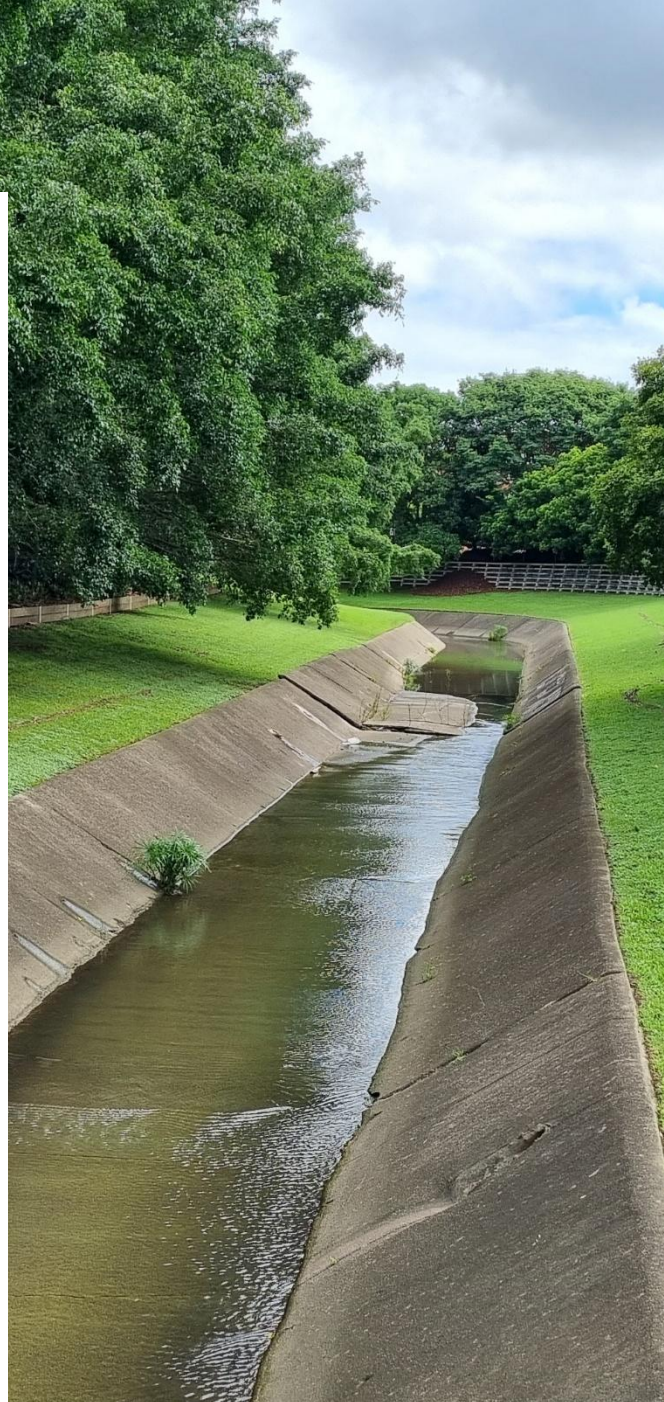
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487 Ellison Road, Aspley

AUGUST 25 2025

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FLOOD SMART ENGINEERING PTY LTD



**BCC DS  
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20/11/2025

**APPLICATION REF**

A006908306

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**Report Title:** Flood Assessment Report  
**Project Address:** 487 Ellison Road, Aspley  
**Project No:** 24-104

**Client:** Affordable Modular Buildings

Revision No.	Report Date	Prepared By	Distributed To
001	25/08/2025	K. Charan	Affordable Modular Buildings



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RPEQ # 22518

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## 1. Introduction

Flood Smart Engineering Pty Ltd has been commissioned by Affordable Modular Buildings to prepare a Flood Assessment Report for the proposed development works at 487 Ellison Road, Aspley.

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 Affordable Modular Buildings 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

Address	487 Ellison Road, Aspley
Title	Lot 1 on RP164545
Area	2,478m <sup>2</sup>

### 2.1 Location

The subject site is located in Aspley, bound by residential properties to the north and west, Eustace Street to the east and Ellison Road to the south. The subject site is classed as Low Density Residential 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 RL22.0m AHD at the southern end to approximately RL21.0m AHD at the northern end. The site is located within a local depression, receiving flows from the open channel located upstream in Marchant Park, and discharging downstream into Eustace Steet. Other properties in the surrounding area generally grade towards the local depression as shown in Figure 2 below.

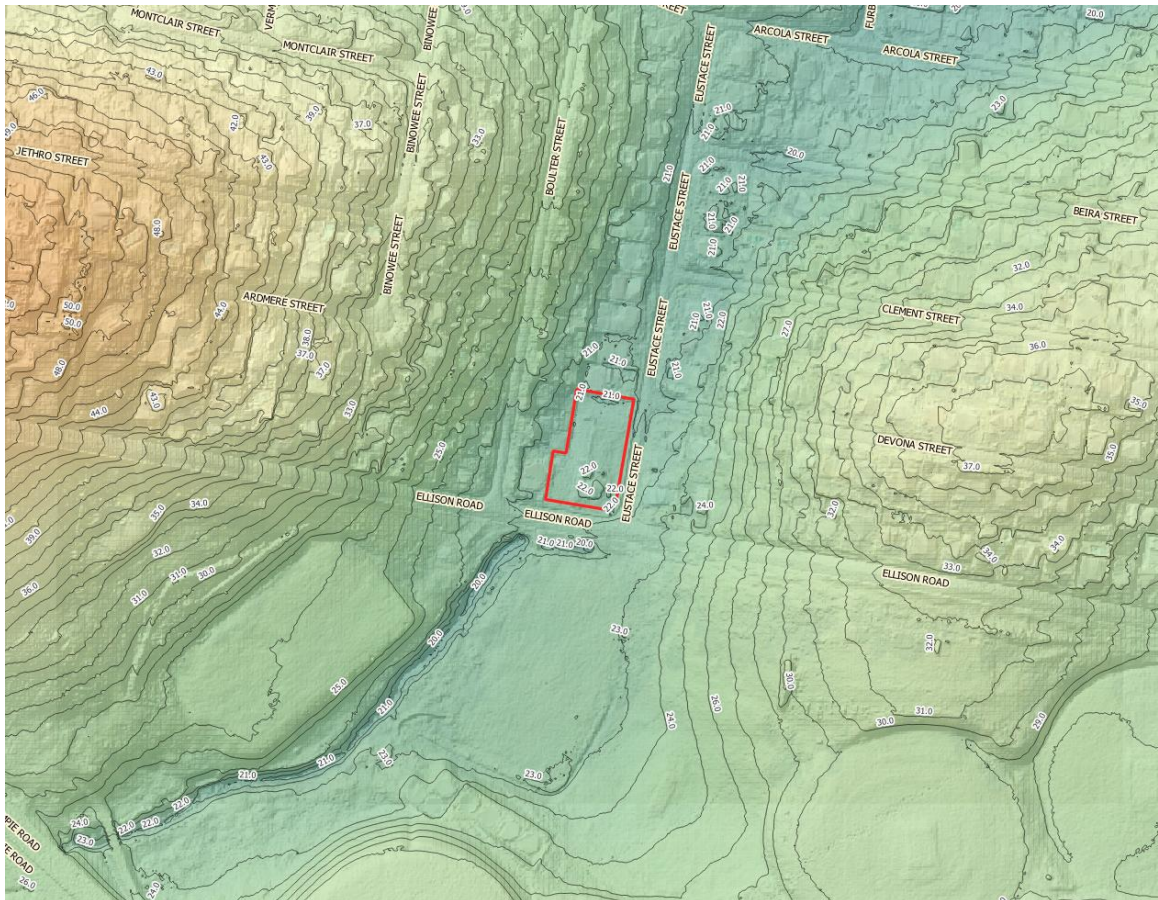


Figure 2 – Local Area Topography: LiDAR Data (m AHD)

The open channel located upstream in Marchant Park discharges into 2/1500mm diameter stormwater pipes which run underneath Ellison Road and further north underneath the site. The open channel also discharges to an 1800mm diameter stormwater pipe which runs underneath Ellison Road and further north underneath Eustace Street as shown in Figure 3 below.



Figure 3 – Existing Stormwater Infrastructure

## 2.3 Existing Use

The site currently contains an on-slab building at the south-eastern corner which is utilised for business purposes. The western and northern ends of the site are occupied by carparking and internal bitumen areas. The remainder of the site is vegetated by grass and trees. Driveway crossovers are located along Ellison Road (southern boundary) and Eustace Street (eastern boundary), providing vehicular access to the site.

## 2.4 Developed Use

It is proposed to construct a suspended office building north of the existing building on the site. The office building is proposed to be utilised for business purposes. 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 – Overland Flow Flood Planning Area (BCC City Plan 2014)

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## 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 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

A single catchment (Catchment 1) was identified to contribute flows to local depression and to the site. The catchment was 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 3, 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 45-minute duration, storm pattern 4.

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 (84.46ha)</b>	1-1	8.79	70	<b>4.73</b>
	1-2	11.85	70	<b>6.28</b>
	1-3	7.56	70	<b>4.10</b>
	1-4	9.04	60	<b>4.51</b>
	1-5	13.72	70	<b>7.21</b>
	1-6	6.79	80	<b>3.95</b>
	1-7	13.82	20	<b>5.41</b>
	1-8	12.89	40	<b>5.56</b>

With the input of the routing lengths, the following 2% AEP peak discharge was produced:

- Inflow-1 = 29.48m<sup>3</sup>/s

### 3.4 Rational Method

Rational Method Calculations were performed for the 2% AEP 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)

Catchment	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</b>	285	4.91	1700	2.06	33.0	<b>32.75</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 (2% AEP) – Rational Method	Peak Discharge (2% AEP) – DRAINS	Percentage Difference (%)
<b>1</b>	32.75	29.48	<b>11</b>

## 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 hydrograph (Inflow-1 = 29.48m<sup>3</sup>/s). The hydrograph was input into QT (discharge to time relationship) inflow boundary conditions (2d\_bc layer). A HQ (height to discharge relationship) outflow boundary condition was utilised to allow for flows to exit the model (2d\_bc layer).

Stormwater infrastructure was input in the model as 1D elements with CN-SX connector lines (for conversion between 1D and 2D models). 50% blockages were utilised at the inlet locations for the stormwater infrastructure in accordance with QUDM (Queensland Urban Drainage Manual).

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 4, Appendix A. The existing TUFLOW model setup is presented in Figure 5, Appendix A.

Table 4-1 – Manning's Roughness Coefficients

Surface Type	Manning's n Value
Roads	0.020
Private Properties	0.100
Light Vegetation	0.045
Medium Vegetation	0.070
Gravel	0.025

A developed TUFLOW model setup was not required as the proposed works involves a suspended office building which would not alter the existing scenario flood characteristics.

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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 6, Appendix A. The velocity and velocity-depth product plots are presented in Figures 7 and 8 Appendix A, respectively. The results show that the entire site would be inundated. The upstream flood level of the site is RL22.55m AHD. The flood level affecting the proposed building office location is RL22.10m AHD. Flood depths reach up to approximately 1.05m at the northern end of the site.

### 5.2 Flood Impact Assessment

It is proposed to construct the office building as a suspended structure, and as such, the existing scenario flood conditions will not be altered. The proposed development is therefore not considered to 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 office buildings as shown below in Table 6-1.

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

Flooding Source	BCA Building Classification	Building Floor Level (m AHD)
Overland Flow	Class 5	2% AEP flood level

The 2% AEP overland flow flood level affecting the proposed office building is RL22.10m AHD and the only source of inundation affecting the site. The resulting minimum floor level requirement is therefore RL22.10m AHD.

The proposed development works involves construction of the office building as a suspended structure. Section A of the Flood Overlay Code (Table 8.2.11.3.E) nominates the minimum building undercroft requirements as shown below in Table 6-2.

Table 6-2 – Minimum Building Undercroft Clearances (Flood Overlay Code)

Flooding Source	Minimum Clearance Requirement
Overland Flow (Less than 0.6m <sup>2</sup> /s velocity depths and less than 0.6m depths)	1.5m above ground elevation
Overland Flow (More than 0.6m <sup>2</sup> /s velocity depths and more than 0.6m depths)	2.5m above ground elevation

The proposed suspended dwelling is to provide 2.50m building undercroft clearance to address the Acceptable Outcome, as the flood depths are in excess of 0.60m in the undercroft area of the dwelling. It is proposed to address the Performance Outcome (in accordance with the Flood Planning Scheme Policy SC6.11) and provide 0.90m of freeboard above the 2% AEP flood level (0.50m for building slab allowance and debris/underslung services + 0.40m for hydraulic clearance). The resulting minimum floor level to meet the undercroft clearance requirement is RL23.00m AHD.

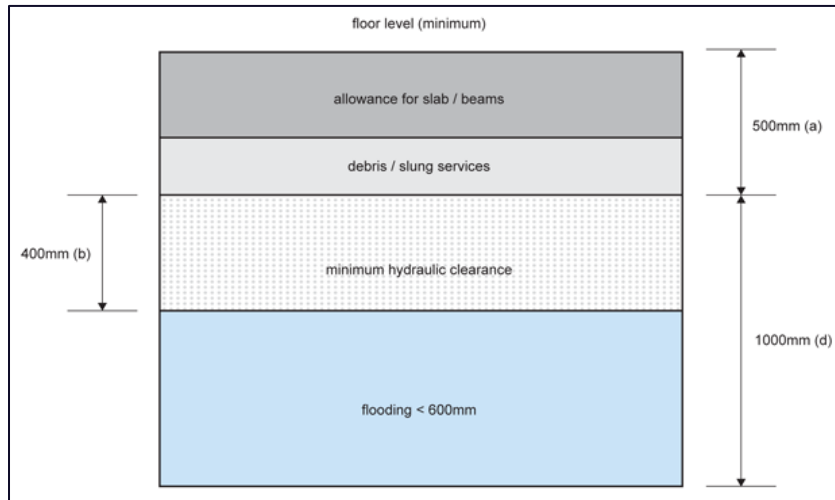


Figure 6 – BCC Minimum Undercroft Requirements

## 6.2 Flood Immunity Level Assessment

The minimum flood immunity requirements as per the Flood Overlay Code are summarised below:

- Flood Immunity: Building floor level = RL21.10m AHD
- Undercroft Clearance (PO): Building floor level = RL23.00m AHD

The minimum finished floor level (undercroft clearance) meets the flood immunity requirement requirements. The minimum floor level for the office building is therefore **RL23.00m AHD** (providing up to 1.8m of undercroft clearance).

Essential electrical services are to be located at minimum of **RL22.60m AHD**.

The proposed office building is to be structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the 2% AEP overland flow event (flood depths up to 800mm and flood velocities up to 0.60m/s). The undercroft area of the office building is to contain battens with 75% openings to prevent debris blockages. The Flood Overlay Code is 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.

It is proposed to construct a suspended office building north of the existing building on the site. The office building is proposed to be utilised for business purposes. Development plans are presented in Appendix B.

It is proposed to construct the office building as a suspended structure, and as such, the existing scenario flood conditions will not be altered. The proposed development is therefore not considered to cause an adverse impact to neighbouring properties or the surrounding area.

The minimum finished floor level (undercroft clearance) meets the flood immunity requirement requirements. The minimum floor level for the office building is therefore **RL23.00m AHD** (providing up to 1.8m of undercroft clearance).

Essential electrical services are to be located at minimum of **RL22.60m AHD**.

The proposed office building is to be structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the 2% AEP overland flow event (flood depths up to 800mm and flood velocities up to 0.60m/s). The undercroft area of the office building is to contain battens with 75% openings to prevent debris blockages. The Flood Overlay Code is addressed in Appendix C.

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## Appendix A – Flood Figures



**Legend**

- Site
- Ground Contours (m AHD)

THIS DRAWING HAS BEEN PREPARED BY FLOOD SMART ENGINEERING PTY LTD FOR USE BY THE INTENDED RECIPIENT IN THE CAPACITY AGREED UPON. THE INFORMATION PRESENTED IN THIS DRAWING, SUPPLIED BY THE CLIENT, RELATED ASSOCIATES AND/OR THIRD-PARTY GROUPS IS ASSUMED TO BE ACCURATE. FLOOD SMART ENGINEERING PTY LTD DOES NOT HOLD LIABILITY FOR ANY INACCURATE INFORMATION.

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**FIGURE 1**  
 TITLE  
**EXISTING SITE PLAN**  
 ADDRESS  
**487 ELLISON ROAD, ASPLEY**

DRAWN	KC
REVIEW	HM
DATE	25/08/2025
PROJECT NO.	24-104

0      20      40      60      80 m

N

SCALE	1 : 1000	REV.	001
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### Legend

- Site
- Proposed Building Location (Suspended)
- Existing Building Location (On-Slab)

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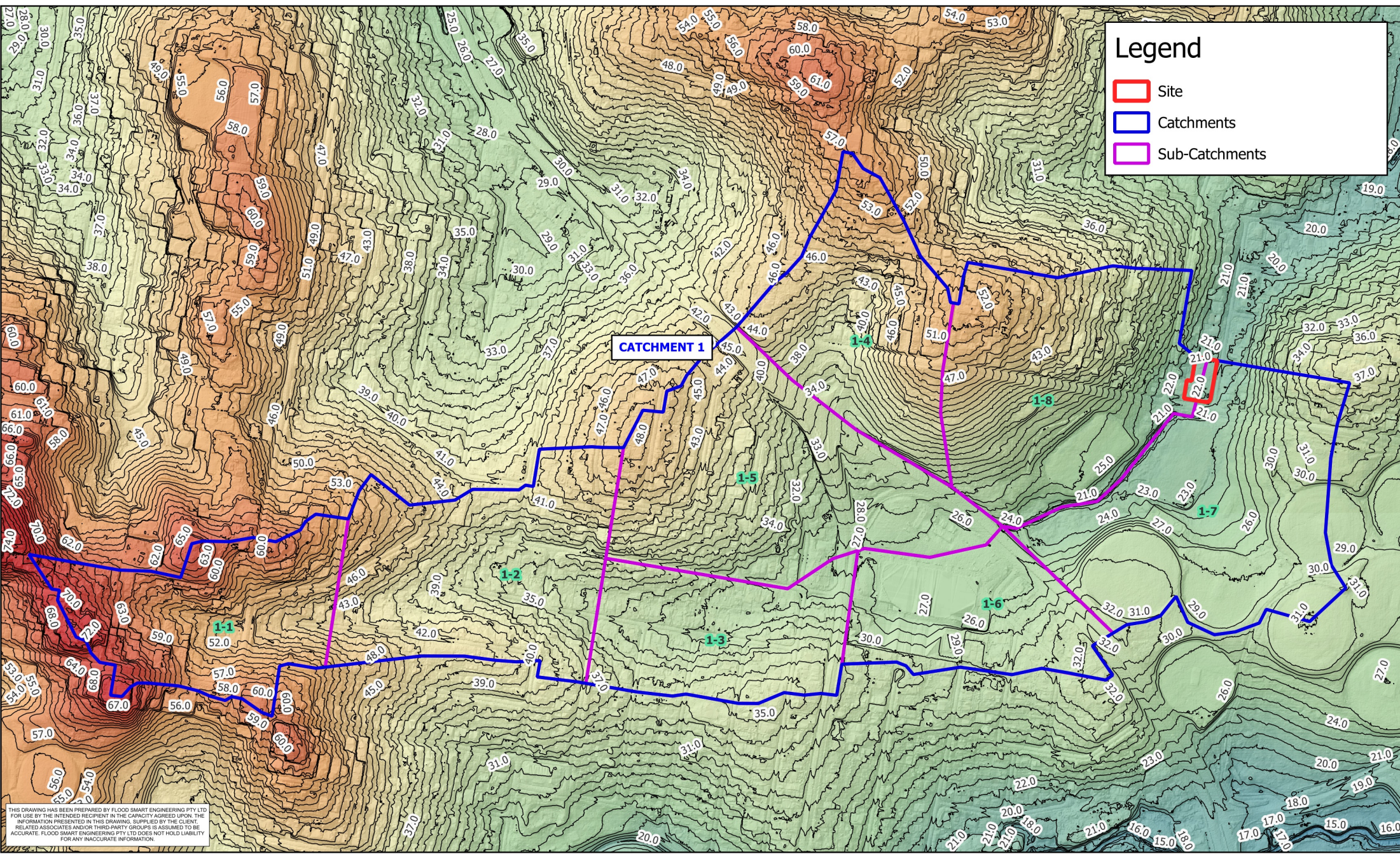
**FIGURE 2**  
 TITLE  
**DEVELOPED SITE PLAN**  
 ADDRESS  
**487 ELLISON ROAD, ASPLEY**

DRAWN	KC
REVIEW	HM
DATE	25/08/2025
PROJECT NO.	24-104

0      20      40      60      80 m

N

SCALE	1 : 1000	REV.	001
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**FIGURE 3**

TITLE  
**CATCHMENT PLAN**  
 ADDRESS  
 487 ELLISON ROAD, ASPLEY



DRAWN	KC
REVIEW	HM
DATE	25/08/2025
PROJECT NO.	24-104

0 150 300 450 600 m

SCALE 1 : 7500 REV. 001



### Legend

- Site
- Model Extent

Manning's n Surfaces

- n = 0.020 - Roads
- n = 0.100 - Private Property
- n = 0.045 - Light Vegetation
- n = 0.070 - Medium Vegetation
- n = 0.025 - Gravel

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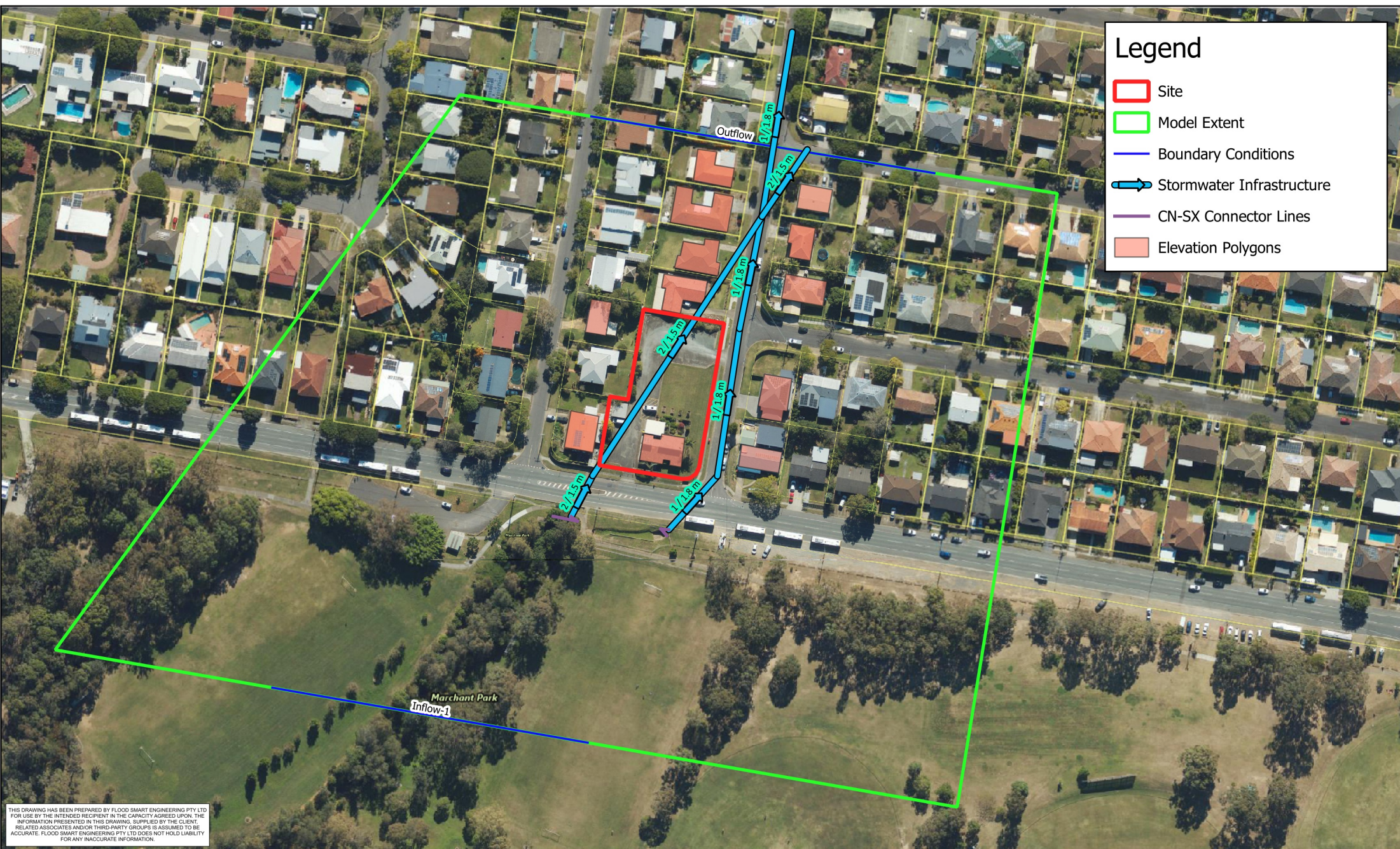
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**FIGURE 4**  
 TITLE  
**MANNING'S N SURFACES**  
 ADDRESS  
**487 ELLISON ROAD, ASPLEY**

DRAWN	KC
REVIEW	HM
DATE	25/08/2025
PROJECT NO.	24-104



SCALE	1 : 2000	REV.	001
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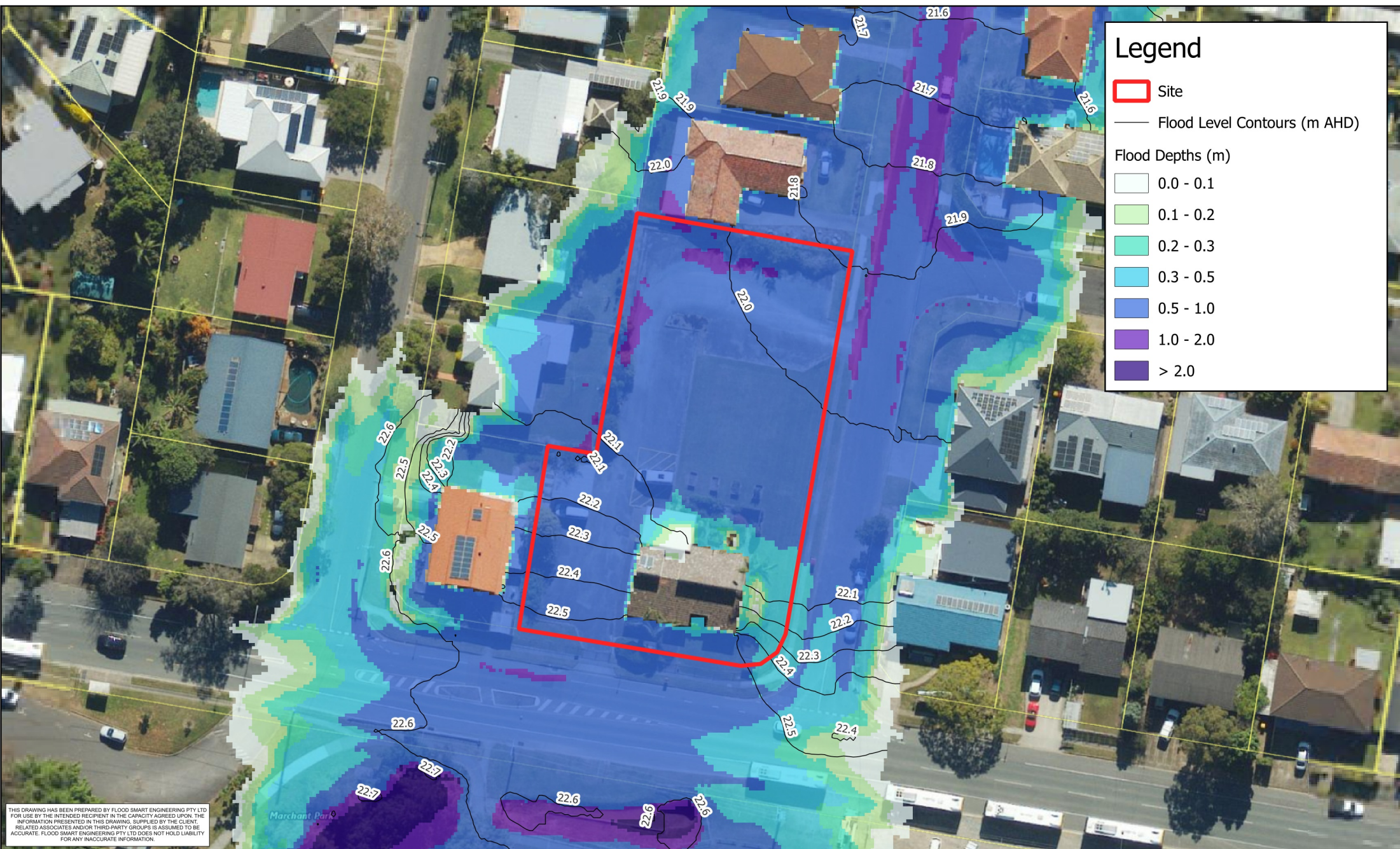
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**FIGURE 5**  
 TITLE  
**EXISTING TUFLOW MODEL SETUP**  
 ADDRESS  
**487 ELLISON ROAD, ASPLEY**

DRAWN	KC
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DATE	25/08/2025
PROJECT NO.	24-104

0		40		80		120		160 m		N ↑
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**FIGURE 6**

TITLE  
**EXISTING SCENARIO 2% AEP FLOOD LEVELS & DEPTHS**

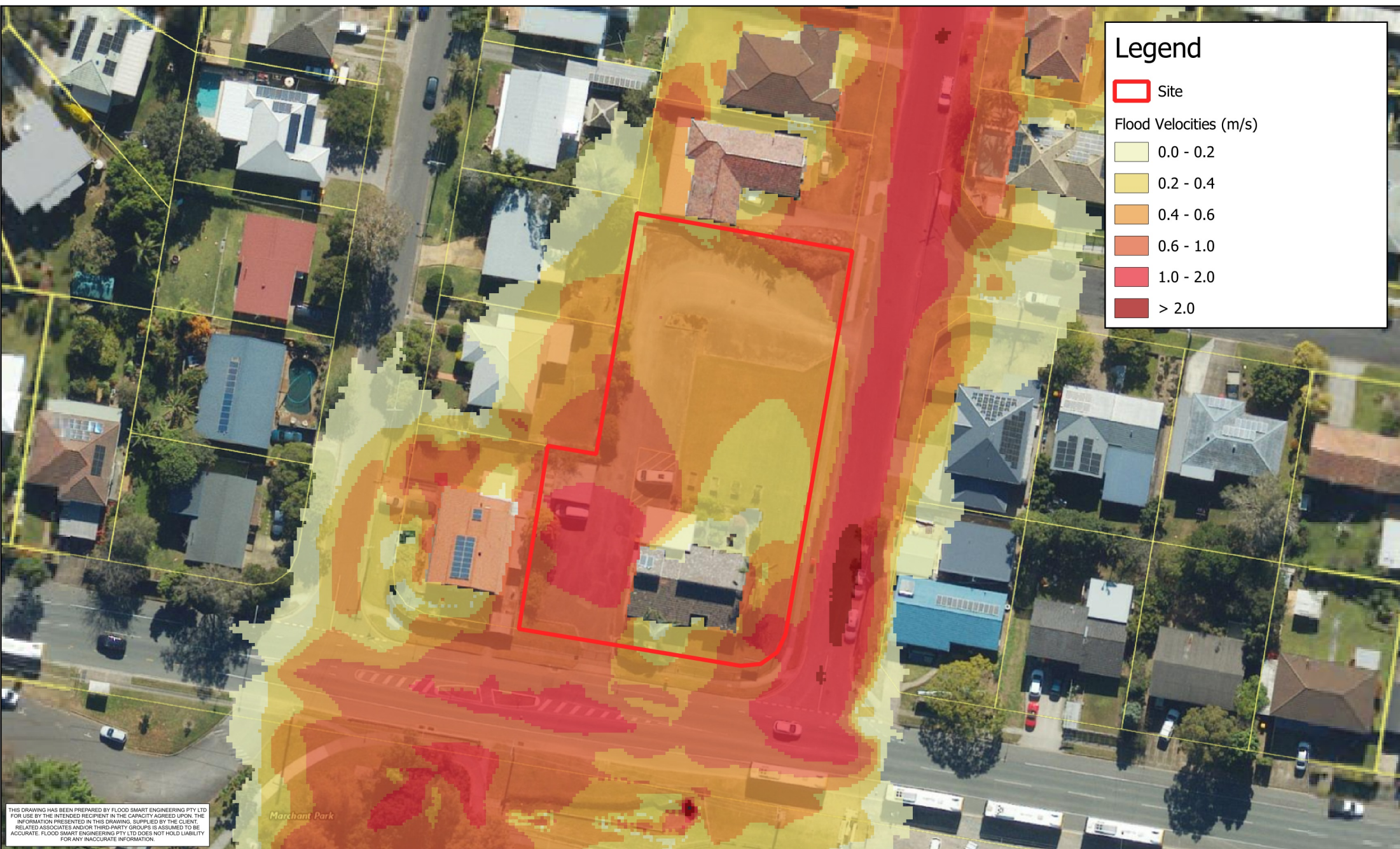
ADDRESS  
 487 ELLISON ROAD, ASPLEY



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PROJECT NO.	24-104



SCALE	1 : 750	REV.	001
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**Legend**

Site

Flood Velocities (m/s)

- 0.0 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 1.0
- 1.0 - 2.0
- > 2.0

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**FIGURE 7**  
 TITLE  
**EXISTING SCENARIO 2% AEP FLOOD VELOCITIES**  
 ADDRESS  
**487 ELLISON ROAD, ASPLEY**



DRAWN	KC
REVIEW	HM
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PROJECT NO.	24-104



SCALE	1 : 750	REV.	001
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**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 8**

TITLE  
EXISTING SCENARIO 2% AEP FLOOD VELOCITY-DEPTH PRODUCT


ADDRESS  
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REVIEW	HM
DATE	25/08/2025
PROJECT NO.	24-104

0      15      30      45      60 m



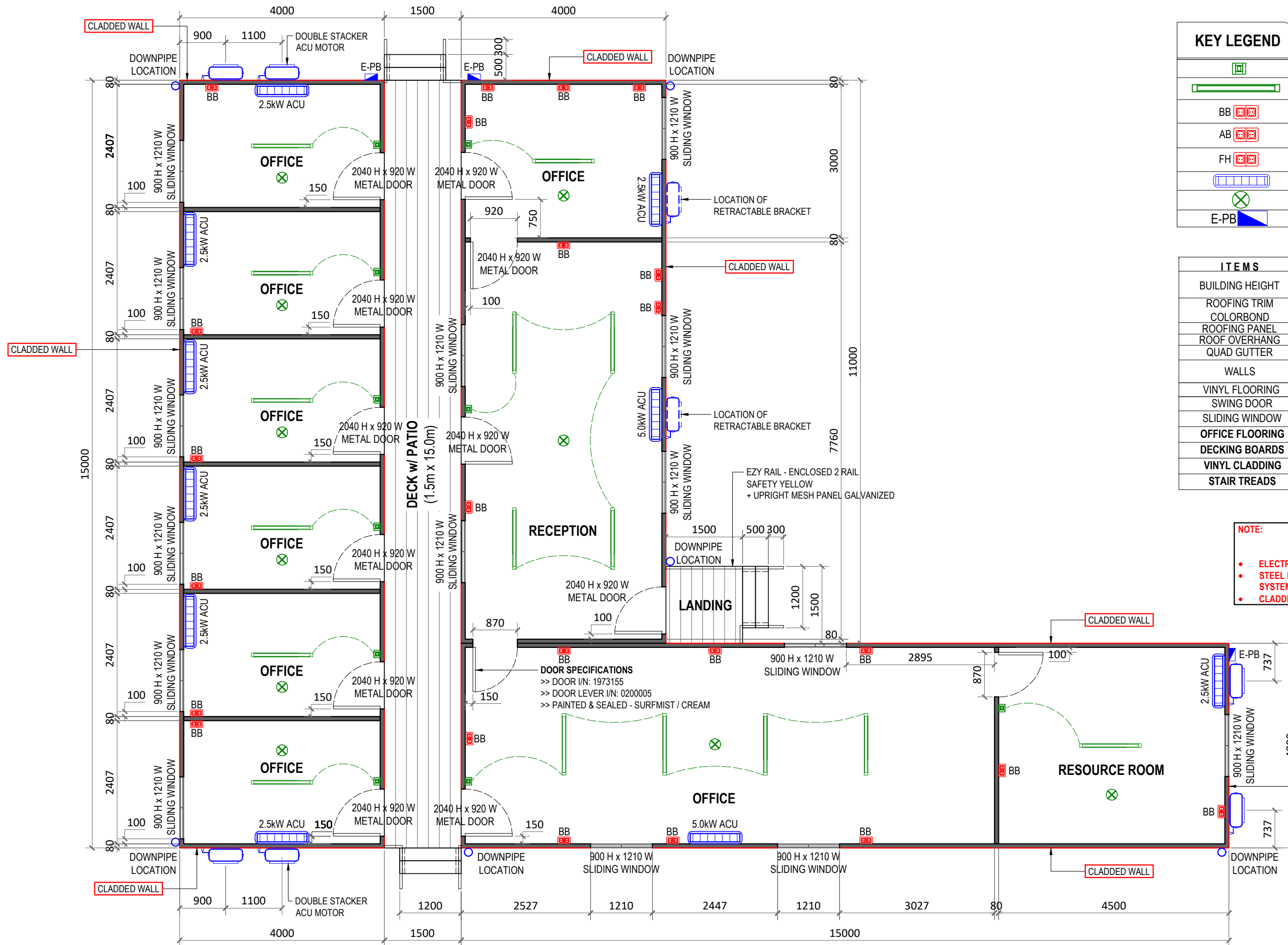
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SCALE	1 : 750	REV.	001
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## Appendix B – Development Plans





KEY LEGEND	
	LIGHT SWITCH
	LED THINLINE BATTEN CEILING LIGHT
	DOUBLE POWER POINT BELOW BENCH (BB) - 300mm
	DOUBLE POWER POINT ABOVE BENCH (AB) - 1050mm
	DOUBLE POWER POINT FRIDGE HEIGHT (FH) - 1850mm
	2.5 kW SPLIT SYSTEM ACU
	5.0 kW SPLIT SYSTEM ACU
	SMOKE DETECTOR HARD WIRED
	EXTERNAL POWER BOARD

ITEMS	COLOUR / SIZES
BUILDING HEIGHT	3.0m
ROOFING TRIM	DEEP OCEAN
COLORBOND ROOFING PANEL	WHITE
ROOF OVERHANG	
QUAD GUTTER	150mm INSTALLED
WALLS	WALLS SURFMIST / WHITE INTERNAL WALLS SURFMIST / WHITE EXTERNAL
VINYL FLOORING	GIRRAWEEEN
SWING DOOR	BLACK
SLIDING WINDOW	BLACK
OFFICE FLOORING	GIRRAWEEEN
DECKING BOARDS	BACKBEACH
VINYL CLADDING	SLATE GREY
STAIR TREADS	MERBAU TIMBER

**NOTE:**

- ELECTRICAL - ONSITE CONNECTION
- STEEL POSTS - 75x75x4mm RAIL SYSTEM
- CLADED ALL SIDES

**FLOOR PLAN**  
 SCALE 1 : 75

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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>		
<p><b>PO3</b> Development:</p> <ul style="list-style-type: none"> <li>a. is compatible with flood hazard in a defined flood event;</li> <li>b. minimises the risk to people from flood hazard;</li> <li>c. 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>d. minimises impacts on property from flooding;</li> <li>e. minimises disruption to residents, business or site operations and recovery time due to flooding;</li> <li>f. minimises the need to rebuild structures after a flood event greater than the defined flood event.</li> </ul> <p>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.</p> <p>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.</p>	<p><b>AO3</b> 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.</p>	<p><b>AO3</b> The developed is defined as compatible with the flood hazard in the relevant flood planning area.</p>
<p><b>PO4</b> 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:</p> <ul style="list-style-type: none"> <li>a. maintaining continuity of operations;</li> <li>b. impacts of flooding on asset life and ongoing maintenance costs;</li> </ul>	<p><b>AO4.1</b> Development involving a building or structure in a park complies with the flood planning levels specified in Table 8.2.11.3.D.</p>	<p><b>NA</b></p>
	<p><b>AO4.2</b> Development involving a building or structure in a park where Table 8.2.11.3.D does not apply:</p>	<p><b>NA</b></p>

- c. efficient recovery after flood events;
- d. recreational benefits to the city;
- e. availability of suitable land within the park.

- a. is not located within the 20% AEP flood extent of any creek/waterway or overland flow path; or
- b. is located above the 20% AEP flood level of any creek/waterway or overland flow path.

**Section C—If accepted development subject to compliance with identified requirements (acceptable outcomes only) for a [park](#) or assessable development other than for a [dwelling house](#)**

**PO5**

Development is located and designed to:

- a. minimise the risk to people from flood hazard on the site;
- b. minimise flood damage to the development and contents of buildings up to the defined flood event;
- c. provide suitable amenity;
- d. minimise disruption to residents, recovery time and the need to rebuild structures after a flood event up to and including the defined flood event.

**AO5.1**

Development complies with the flood planning levels specified in Table 8.2.11.3.D.

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.

**AO5.2**

Development is:

- a. not located in the:
  - i. Brisbane River flood planning area 1, 2a, or 2b sub-categories;
  - ii. Creek/waterway flood planning area 1 or 2 sub-categories;
  - iii. Overland flow flood planning area sub-category; or
- b. only located in these sub-categories if a Registered Professional Engineer Queensland with expertise in undertaking flood studies certifies that:
  - i. 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
  - ii. the risk to people is managed to an acceptable level.

**AO5.1**

The development complies with the flood planning levels specified in Table 8.2.11.3.D.

**AO5.2**

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><b>PO6</b> 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> Development ensures that:</p> <ul style="list-style-type: none"> <li>a. all areas containing essential electrical services comply with the flood planning levels in Table 8.2.11.3.D; or</li> <li>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.</li> </ul> <p>Note—A basement storage area does not include a bike storage room, change room, building maintenance storage and non-critical electrical services.</p> <p><b>AO6.2</b> 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> 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> 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> Development:</p> <ul style="list-style-type: none"> <li>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</li> <li>b. does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties.</li> </ul> <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>AO7.2</b> Development retains existing overland flow paths and does not rely wholly on piped solutions to manage major flows.</p>	<p><b>AO7.1</b> a. The developed 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</p> <p><b>AO7.2</b> The development retains the existing overland flow path.</p> <p><b>AO7.3 - NA</b></p>

	<p><b>AO7.3</b> 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. 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> 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. Note—This can be demonstrated by undertaking earthworks in compliance with the Compensatory earthworks planning scheme policy. 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> 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>	<p><b>NA</b></p>
<p><b>PO9</b> Development ensures that the building and site design:</p> <ol style="list-style-type: none"> <li>a. maintains the conveyance capacity of existing overland flow paths and creek/waterways;</li> <li>b. 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>c. 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> 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>a. complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E;</li> <li>b. not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.</li> </ol> <p><b>AO9.2</b> 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>a. has a ground level within the undercroft area that is free draining;</li> </ol>	<p><b>AO9.1</b></p> <ol style="list-style-type: none"> <li>a. The development complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E.</li> <li>b. The developed is not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.</li> </ol> <p><b>AO9.2</b></p> <ol style="list-style-type: none"> <li>a. The development has a ground level within the undercroft area that is free draining.</li> <li>b. The development does not involve excavation below ground level of more than 300mm within the undercroft area.</li> </ol>

<p>conveyance is required underneath development.</p>	<p>b. does not involve excavation below ground level of more than 300mm within the undercroft area.</p>	
<p><b>PO10</b> 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>a. protect safety of users and emergency services personnel;</li> <li>b. 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> Development for vulnerable uses, difficult to evacuate uses or assembly uses:</p> <ol style="list-style-type: none"> <li>a. 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>b. 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>c. 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>	<p><b>NA</b></p>
<p><b>PO11</b> 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> Development provides an access or driveway into the site which is:</p> <ol style="list-style-type: none"> <li>a. trafficable during the defined flood event;</li> <li>b. not located in the Creek/waterway flood planning area 1 sub-category;</li> <li>c. not located in the Overland flow flood planning area sub-category if the hydraulic hazard is unsafe in the defined flood event;</li> <li>d. the access or driveway is not inundated by a 10% AEP flood.</li> </ol> <p><b>AO11.2</b> 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> The development involves an additional office building on the site. The new office building will be utilised by existing staff on the site, and as such, no additional persons will be exposed to flood hazard across the site, maintaining the existing conditions risk to flood hazard.</p> <p><b>AO11.2 - NA</b></p>
<p><b>PO12</b> Development involving a new road, a bridge or culvert is designed to minimise impacts to flood behaviour,</p>	<p><b>AO12</b> Development involving a new road complies with the flood planning levels in Table 8.2.11.3.F.</p>	<p><b>NA</b></p>

<p>minimise disruption to traffic during a flood and allow for emergency access.</p>		
<p><b>PO13</b> Development for pedestrian and cyclist paths:</p> <ul style="list-style-type: none"> <li>a. provides a suitable level of trafficability;</li> <li>b. manages the impacts of flooding on asset life and ongoing maintenance costs;</li> <li>c. balances route availability with recreational and transport connectivity benefits to the city.</li> </ul>	<p><b>AO13.1</b> 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. 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> 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><b>NA</b></p>
<p><b>PO14</b> 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> 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:</p> <ul style="list-style-type: none"> <li>a. an increase in the number of residential dwellings;</li> <li>or</li> <li>b. additional residential lots</li> </ul> <p>is not subject to an unsafe hydraulic hazard in the 0.2% AEP flood event. Note—Explanation of a hydraulic hazard is provided in the Flood planning scheme policy.</p>	<p><b>NA</b></p>