COSTIN ROE CONSULTING

OPERATIONAL FLOOD MANAGEMENT PLAN INCORPORATING FLOOD EMERGENCY

INDUSTRIAL FACILITY 42 BOOREA STREET, LIDCOMBE, NSW

Prepared for:

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1 INTRODUCTION

Costin Roe Consulting Pty Ltd has been commissioned by Hale Capital Development Management Pty Ltd (Hale) to prepare this *Operational Flood Management Plan (OFMP)* for the industrial development located at 42 Boorea Street, Lidcombe, NSW.

This *Operational Flood Management Plan (OFMP)* addressed the flooding present on the development site and incorporates an *Operational Flood Emergency Response Plan (OFERP)* for the 42 Boorea Street, Lidcombe, NSW.

This plan details the site responses to flooding including predicted flood levels, flood warnings and flood notifications, evacuation and refuge protocols and awareness training for employees and contractors.

The requirements outlined in this report are consistent with the provisions of the *NSW Flood Risk Management Manual (2023)*.

The subject area of this FMP/FERP comprises emergency responses for the operational phase of the development.

This plan addresses the requirements of the Department of Planning, Industry and Environment Development Approval SSD-36464788 dated 12 December 2023, as included in **Table 1.1** below.

The Flood Emergency Response Plan has been prepared in consultation with the NSW State Emergency Services (SES) from the SSDA stage through to the construction and now the operation phase and incorporates principles of early evacuation, reliance on official warning systems, and avoidance of evacuation through high hazard flood areas, consistent with current NSW flood emergency management guidance. Please refer to **Appendix F** for correspondence with the SES.

This Operational Flood Emergency Response Plan (OFERP) is issued as a standalone document with its own reference and revision history. Notwithstanding this, the OFERP has been directly developed from the previously approved Construction Flood Emergency Response Plan (CFERP), with updates made to reflect operational requirements in accordance with Condition B20.

The OFERP establishes a framework for flood risk management during operation of the development.

This document is intended to be a dynamic management plan that will be refined and updated over time to reflect operational experience, tenant-specific requirements, and observed site conditions.

The appointed property manager shall be responsible for implementing this OFERP at the time of occupation, including coordinating tenant inductions and ensuring key personnel required under this plan are appointed. See below names and contact details of the currently appointed property managers, which could change from time to time:

Point of contact: Jones Lang LaSalle NSW Pty Ltd

Postal address: Level 27, 180 George Street, Sydney NSW 2000

Phone number: +61 0 9228 9111

Email: ashley.apoleski@jll.com

Table 1.1 SSDA Conditions

SSD-48411467	CC Condition	How It Is Addressed
B20	Prior to the commencement of operation of the development, the Applicant must update the CFERP for the purposes of operation of the development in an Operational Flood Emergency Response Plan (OFERP) to the satisfaction of the Planning Secretary. The OFERP must: a) be prepared by a suitably qualified and experienced person(s); b) be prepared in consultation with the NSW State Emergency Services; c) address the provisions of the Floodplain Development Manual (2023) and associated guidance in the Department's 'Flood risk management toolkit'; and d) include details of:	Refer to this report for the Flood Emergency Response Plan. c) refer to **Section 3** of this report for guidelines adopted for the FERP
	i) the flood emergency responses for operation of the development;	i) refer to **Section 7** for the flood emergency responses.
	ii) predicted flood levels;	ii) refer to **Section 4** for a discussion on flood behaviour.
	iii) flood warning time, flood notification, signs and depth indicators;	iii) Refer to **Section 6** & **Section 7** for Flood Safety, evacuation and response.
	iv) assembly points and evacuation routes;	iv) Refer to **Section 6** & **Section 7** for Flood Safety, evacuation and response.
	v) evacuation and refuge protocols; and	v) Refer to **Section 6** for Flood Safety, evacuation and response.
	vi) awareness training for employees and contractors.	vi) refer to **Section 6** of this report for the flood education, awareness and preparedness program.

2 DEVELOPMENT SITE

2.1 Site Description

The development is located at 42 Boorea Street, Lidcombe, as Lot 1/DP740385, in the suburb of Lidcombe, as shown in **Figure 2.1**. The development site is a battle-axe shape, with a driveway entry on the eastern side of the property adjacent to no. 44 Boorea Street. The facility contains a two-storey warehouse and distribution centre comprising 28,962 m2 GFA including ancillary office space, landscaping, bicycle, and car parking, on a 4.1 Ha parcel of land.



Figure 2.1 - Site Location and Aerial Imagery [42 Boorea Street, Lidcombe, NSW] (Source: Nearmap December 2025)

2.2 Topography & Description

The site has been graded with crests and sags for the carpark/loading dock area and is generally graded to overflow into Haslams Creek Channel to the west of the site.

To the north of the site is Toohey's Brewery site, east of the site is two warehouse sites and opposite these across Nyrang Street are residential dwellings, to the south is 44 Boorea Street which accommodates two warehouse buildings as well as the access to the site from Boorea Street, across which are more residential dwellings, and to the

west of the site is Haslams Creek concrete lined channel with more industrial developments further west of the creek.

2.3 Development Description

The development is a two-storey warehouse and distribution centre comprising 28,962 m2 GFA including ancillary office space, landscaping, bicycle, and car parking, on a 4.1 Ha parcel of land.

A summary of the works provided at operation stage includes:

- Site preparation works and servicing (water, sewer, communication, electrical);
- Retaining walls, both in cut and in fill;
- Two-Storey Warehouse;
- External hardstand construction, parking and access road and landscaping;
- Stormwater management infrastructure;

The site layout prepared by SBA Architects has been included in Figure 2.2 and Figure 2.3

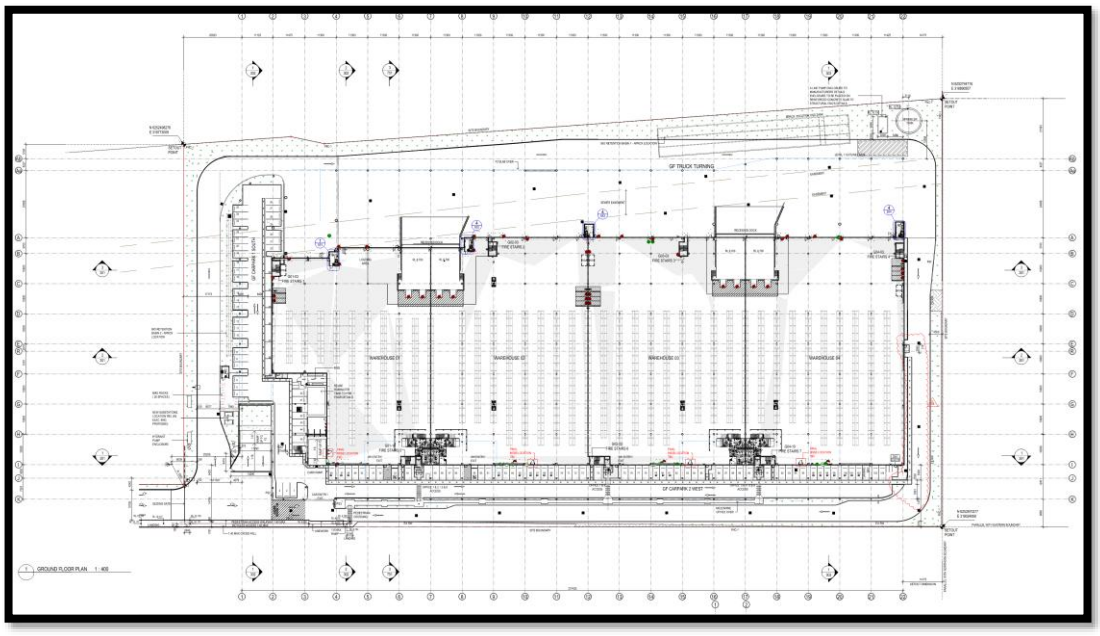


Figure 2.2 - Development Site Plan (Ground Level)

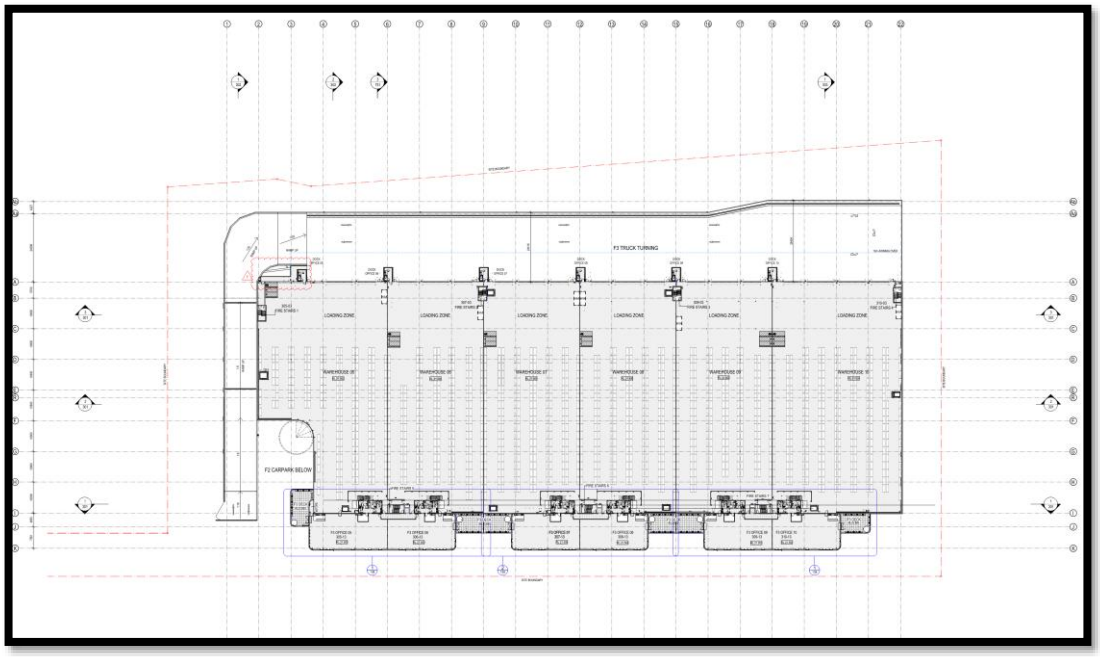


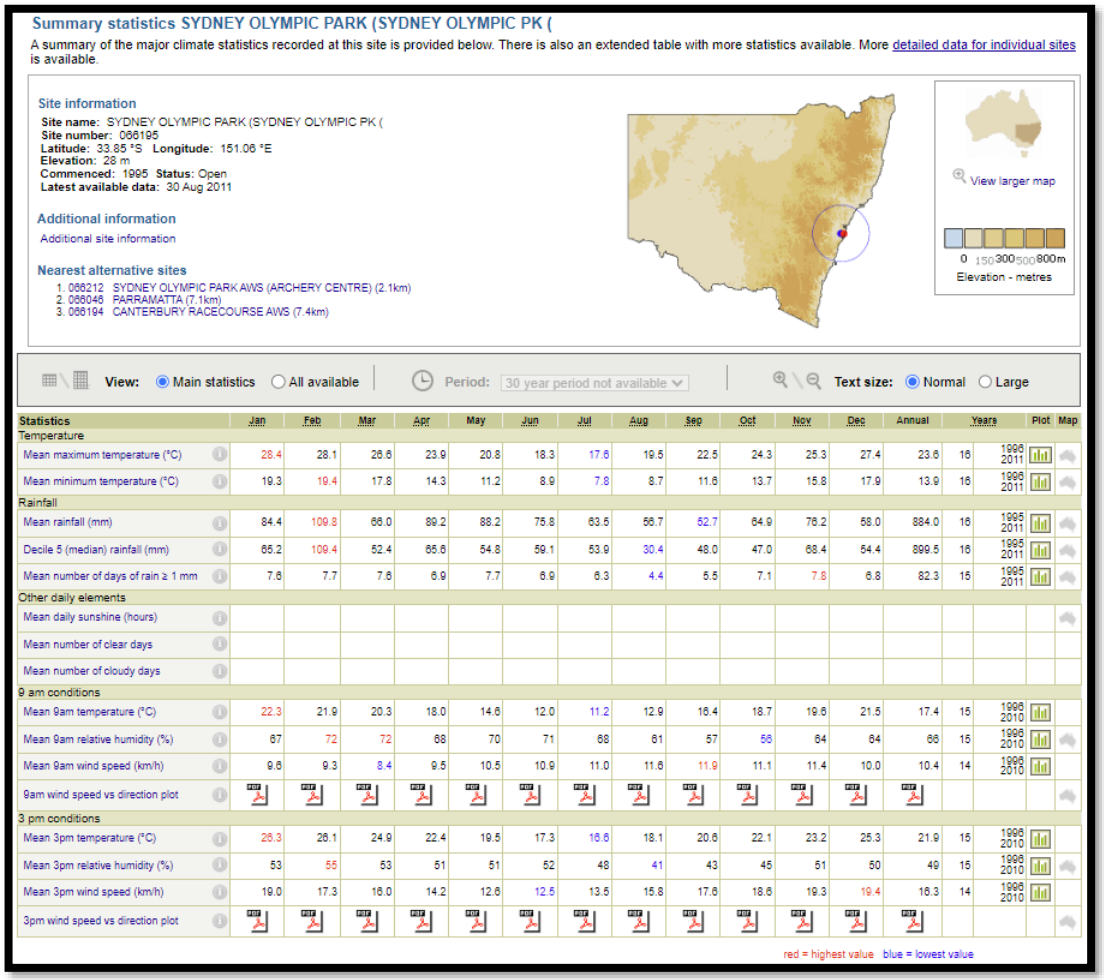
Figure 2.3 - Development Level 1 Plan

2.4 Climate and Meteorology

The Lidcombe area experiences relatively mild temperatures and moderate rainfall, with a mean annual rainfall of about 884mm-1087mm, based on records from two weather stations; Sydney Olympic Park Weather Station (Station 066195 since 1995 up to 2011) and Sydney Olympic Park AWS - Archery Centre (Station 066212 since 2011 till present date). These weather stations are approximately 5-6km to the north-east of the development site.



Figure 2.4 - Sydney Area Weather Observation Stations (WOS) (Nearest WOS to 42 Boorea Street, Lidcombe is Sydney Olympic Park WOS. Ref: http://www.bom.gov.au/nsw/observations/sydneymap.shtml)



Summary statistics SYDNEY OLYMPIC PARK (SYDNEY OLYMPIC PK (

A summary of the major climate statistics recorded at this site is provided below. There is also an extended table with more statistics available. More detailed data for individual sites is available.

Site information

Site name: SYDNEY OLYMPIC PARK (SYDNEY OLYMPIC PK (
Site number: 066195
Latitude: 33.85 °S **Longitude:** 151.06 °E
Elevation: 28 m
Commenced: 1995 **Status:** Open
Latest available data: 30 Aug 2011

Additional information

Additional site information

Nearest alternative sites

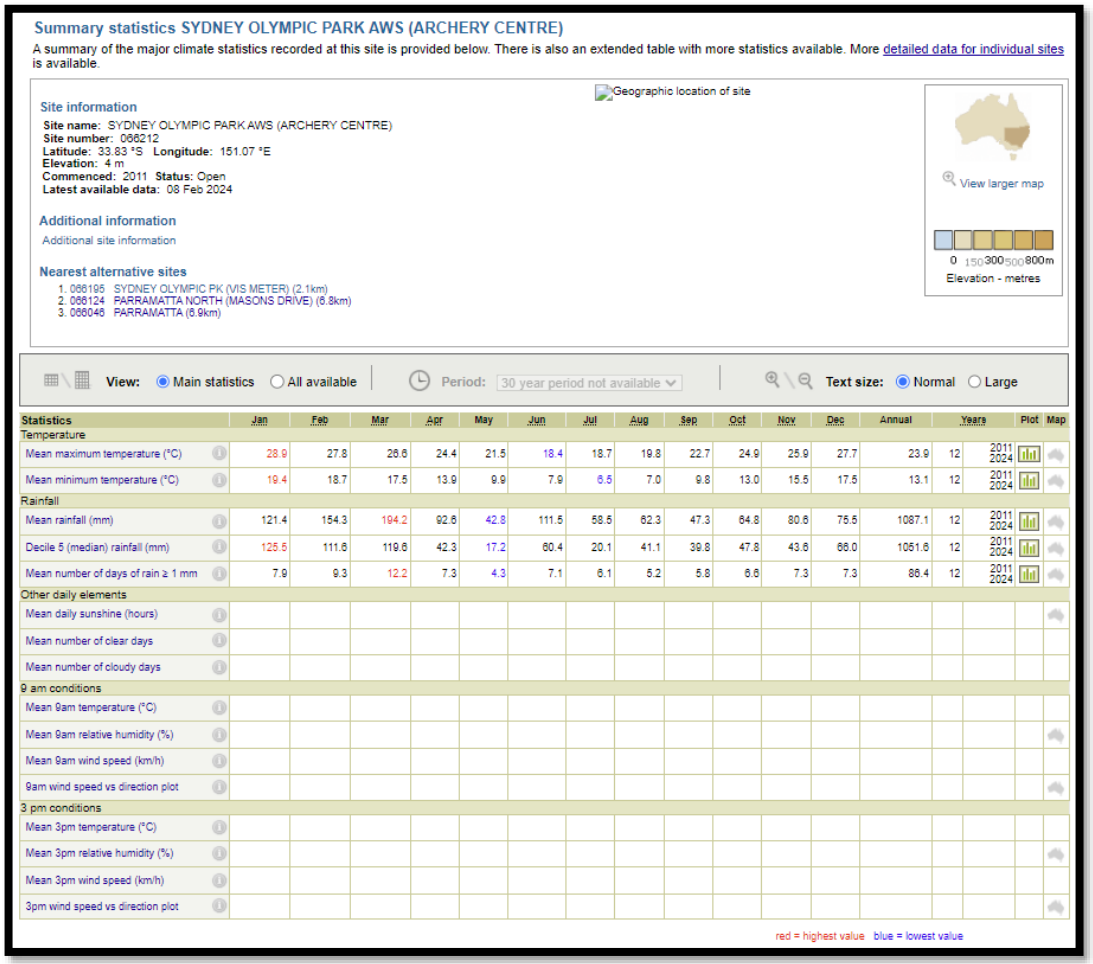
1. 066212 SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE) (2.1km)
2. 066046 PARRAMATTA (7.1km)
3. 066194 CANTERBURY RACECOURSE AWS (7.4km)

View: Main statistics / All available | Period: 30 year period not available | Text size: Normal / Large

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	Plot	Map
Temperature																
Mean maximum temperature (°C)	28.4	28.1	26.6	23.9	20.8	18.3	17.6	19.5	22.5	24.3	25.3	27.4	23.6	16 1996 2011		
Mean minimum temperature (°C)	19.3	19.4	17.8	14.3	11.2	8.9	7.8	8.7	11.6	13.7	15.8	17.9	13.9	16 1996 2011		
Rainfall																
Mean rainfall (mm)	84.4	109.8	66.0	89.2	88.2	75.8	63.5	55.7	52.7	64.9	76.2	58.0	884.0	16 1995 2011		
Decile 5 (median) rainfall (mm)	65.2	109.4	52.4	65.6	54.8	59.1	53.9	30.4	48.0	47.0	68.4	54.4	899.5	16 1995 2011		
Mean number of days of rain ≥ 1 mm	7.6	7.7	7.6	6.9	7.7	6.9	6.3	4.4	5.5	7.1	7.8	6.8	82.3	15 1995 2011		
Other daily elements																
Mean daily sunshine (hours)																
Mean number of clear days																
Mean number of cloudy days																
9 am conditions																
Mean 9am temperature (°C)	22.3	21.9	20.3	18.0	14.6	12.0	11.2	12.9	16.4	18.7	19.6	21.5	17.4	15 1996 2010		
Mean 9am relative humidity (%)	67	72	72	68	70	71	68	61	57	56	64	64	66	15 1996 2010		
Mean 9am wind speed (km/h)	9.6	9.3	8.4	9.5	10.5	10.9	11.0	11.6	11.9	11.1	11.4	10.0	10.4	14 1996 2010		
9am wind speed vs direction plot																
3 pm conditions																
Mean 3pm temperature (°C)	28.3	28.1	24.9	22.4	19.5	17.3	16.6	18.1	20.6	22.1	23.2	25.3	21.9	15 1996 2010		
Mean 3pm relative humidity (%)	53	55	53	51	51	52	48	41	43	45	51	50	49	15 1996 2010		
Mean 3pm wind speed (km/h)	19.0	17.3	16.0	14.2	12.6	12.5	13.5	15.8	17.6	18.6	19.3	19.4	16.3	14 1996 2010		
3pm wind speed vs direction plot																

red = highest value blue = lowest value

Figure 2.5 - Summary statistics for SYDNEY OLYMPIC PARK WOS (Reference: http://www.bom.gov.au/climate/averages/tables/cw_066195.shtml)



Summary statistics SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE)

A summary of the major climate statistics recorded at this site is provided below. There is also an extended table with more statistics available. More detailed data for individual sites is available.

Geographic location of site

Site information

Site name: SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE)
Site number: 066212
Latitude: 33.83 °S **Longitude:** 151.07 °E
Elevation: 4 m
Commenced: 2011 **Status:** Open
Latest available data: 08 Feb 2024

View larger map

0 150 300 500 800m
Elevation - metres

Additional information

Additional site information

Nearest alternative sites

1. 066195 SYDNEY OLYMPIC PK (VIS METER) (2.1km)
2. 066124 PARRAMATTA NORTH (MASONS DRIVE) (6.8km)
3. 066046 PARRAMATTA (6.9km)

View: Main statistics / All available | Period: 30 year period not available | Text size: Normal / Large

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years		Plot	Map
Temperature																	
Mean maximum temperature (°C)	28.9	27.8	26.6	24.4	21.5	18.4	18.7	19.8	22.7	24.9	25.9	27.7	23.9	12	2011 2024		
Mean minimum temperature (°C)	19.4	18.7	17.5	13.9	9.9	7.9	6.5	7.0	9.8	13.0	15.5	17.5	13.1	12	2011 2024		
Rainfall																	
Mean rainfall (mm)	121.4	154.3	194.2	92.6	42.8	111.5	58.5	62.3	47.3	64.8	80.6	75.5	1087.1	12	2011 2024		
Decile 5 (median) rainfall (mm)	125.5	111.6	119.6	42.3	17.2	60.4	20.1	41.1	39.8	47.8	43.6	66.0	1051.6	12	2011 2024		
Mean number of days of rain ≥ 1 mm	7.9	9.3	12.2	7.3	4.3	7.1	6.1	5.2	5.8	6.6	7.3	7.3	86.4	12	2011 2024		
Other daily elements																	
Mean daily sunshine (hours)																	
Mean number of clear days																	
Mean number of cloudy days																	
9 am conditions																	
Mean 9am temperature (°C)																	
Mean 9am relative humidity (%)																	
Mean 9am wind speed (km/h)																	
9am wind speed vs direction plot																	
3 pm conditions																	
Mean 3pm temperature (°C)																	
Mean 3pm relative humidity (%)																	
Mean 3pm wind speed (km/h)																	
3pm wind speed vs direction plot																	

red = highest value blue = lowest value

Figure 2.6 - Summary statistics for SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE) (Reference: http://www.bom.gov.au/climate/averages/tables/cw_066212.shtml)

Typically, the wettest months (mean rainfall) is February/March, and driest usually September.

Based on the weather station at the archer centre's results, the annual mean minimum temperature is 13.1°C and the mean maximum temperature is 23.9°C. The hottest month is usually January (mean maximum of 28.9°C) and the coldest month is usually July (mean minimum of 6.5°C).

Climate statistics and average annual rainfall data and rainfall patterns relevant to this site (as sourced from Australian Bureau of Meteorology (BOM)) are included for reference in **Appendix B** of this **FMP**.

3 GENERAL REQUIREMENTS

3.1 General Requirements Introduction

This FMP has been prepared with the purpose of providing an understanding of flood behaviour to the facility owners and operation management during operation of the development.

This document has been completed with consideration to the following (Referenced Documents – Development Owners and Management need to ensure latest revisions of referenced documents is consulted in between periodic review of FERP):

- Flood Risk Management Manual (2023);
- Cumberland Council Flood Risk Management Policy (Nov 2021);
- Cumberland Council Stormwater and Flood Maps 1 to 8 (October 2021);
- Part G4 of the Cumberland Council DCP 2021;
- Cumberland Council Flood Letters (EC2021/0528);
- NSW Government (2023). Flood Impact and Risk Assessment. Flood Risk management guideline LU01;
- Provision and Requirements for Flood Warning in New South Wales – SES (Nov 2019);
- Cumberland LGA Flood Emergency Sub-Plan – SES (Nov 2021)
- Bureau of Meteorology (2013). Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0;
- Costin Roe Consulting (2023), Civil Engineering Report (Co14411.01-03.rpt)

Table 3.1 provides a targeted summary of how the requirements and principles of the NSW Flood Risk Management Manual (2023) and associated Flood Risk Management Toolkit have been addressed within this OFERP.

Table 3.1 – How the OFEPR addresses the NSW Flood Risk Management Manual (2023) guidelines

Requirement (Manual / Toolkit / B20)	Relevant Manual Section	OFERP Section	How Requirement is Addressed
Alignment with Flood Risk Management Manual and toolkit	Manual Sections 1–4	Entire document	The OFERP adopts a risk-based framework incorporating flood behaviour assessment, emergency response planning, and ongoing review.
Understanding flood behaviour and constraints	Principle 5	Section 4	Flood levels, extent, hazard and access constraints are defined to inform

			response triggers and evacuation planning.
Understanding flood risk	Principle 6	Sections 4 & 5	Hazard categorisation and mapping define site-specific flood risk and inform emergency response procedures.
Consideration of variability and uncertainty	Principle 7	Sections 4 & 7	Conservative assumptions and staged trigger-based responses account for uncertainty in flood behaviour and timing.
Effective flood risk management	Principle 9	Sections 6 & 7	Defined evacuation procedures and response triggers ensure clear and enforceable flood response actions.
Continuous improvement of flood risk management	Principle 10	Section 3.4	Periodic review (every 3–5 years) and post-event updates ensure the OFERP remains current and effective.
Flood risk management framework integration	Section 4.3	Sections 3, 6 & 7	The OFERP integrates planning, emergency management and operational response into a single coordinated framework.
Flood risk management process (understand, plan, implement, review)	Section 4.4	Sections 3, 4, 6 & 7	Flood behaviour is defined (Section 4), response measures implemented (Sections 6–7), and review procedures established (Section 3.4).
Roles and responsibilities	Section 5	Section 3.2 (Table 3.2)	Key roles defined including Flood Warden / Site Incident Commander, Facilities Manager and Tenant/Floor Wardens.

Emergency management integration (SES, BoM, warnings)	Manual + Toolkit (AG01, SES guidance)	Sections 6 & 7; Appendix F	OFERP incorporates BoM warning systems, SES consultation and a defined trigger-based response framework consistent with NSW emergency management practices.
B20(d)(i) – Flood emergency response procedures	Manual + EM integration	Section 7	Defined response triggers and site-specific actions.
B20(d)(ii) – Predicted flood levels	Section 3 (Flood Risk)	Section 4	Flood modelling outputs define levels, extent and behaviour influencing site access and response timing.
B20(d)(iii) – Flood warning time	Toolkit (BoM / SES guidance)	Sections 6.3, 6.5, 7.2	Lead time informed by BoM forecasts, rainfall monitoring and defined early warning triggers.
Flood notification and signage	Toolkit (SES guidance)	Section 6.3	Evacuation signage provided. Additional flood signage not required as the site is not subject to flooding.
Flood depth indicators	Toolkit	Sections 6 & 7	Not required as the site is not flood affected; flood levels within Haslams Creek channel are visually monitored by the Flood Warden.
B20(d)(iv) – Assembly points	Toolkit / EM planning	Section 6.4	Assembly point identified (south-east carpark).
Evacuation routes	Toolkit / EM planning	Sections 4.2, 6 & 7	Evacuation routes defined based on flood behaviour, access constraints and supporting figures.
Refuge locations	Toolkit / EM planning	Sections 6 & 7	Upper level refuge identified as contingency only;

			primary response is early evacuation.
Evacuation and refuge clarity	Manual (risk management principles)	Section 7	Evacuation is the primary response. Refuge is only to be used if evacuation is not possible or safe.
B20(d)(v) – Evacuation and refuge protocols	Manual + EM integration	Section 6	Defined procedures supported by flood behaviour, evacuation planning and response triggers.
B20(d)(vi) – Awareness training	Principle 1 / EM guidance	Section 6.3	Training provided at induction for all employees, with ongoing awareness and annual refresher training.
Emergency drills and testing	Toolkit / EM guidance	Section 6.3	Flood emergency exercises undertaken a minimum of twice per year, with updates implemented following outcomes.
Responsibility for training delivery	EM framework	Sections 3 & 6	Training delivered by the Operations Manager (Flood Warden) and site management team.
Operational readiness and personnel	Manual governance principles	Sections 3 & 6	Framework established within OFERP
Document accessibility	EM best practice	Section 6	Copies of the OFERP retained at key on-site locations including the Operations Manager's office and office front desks.
Monitoring and adaptive management	FRM framework	Sections 3.4 & 7	Ongoing monitoring of flood triggers and post-event review used to refine procedures and improve outcomes.

This OFERP has been prepared in accordance with the NSW Flood Risk Management Manual (2023) and associated Flood Risk Management Toolkit, including relevant SES guidance, BoM warning systems and Flood Risk Management Guideline LU01. The

plan adopts a risk-based framework incorporating flood behaviour assessment, emergency response planning, and ongoing review and improvement.

The following sections of this FMP provide confirmation of roles and responsibilities, statutory requirements, measures to monitor and report on impacts and performance of the measures implemented, contingency planning and protocols for review and improvement.

3.2 Roles and Responsibilities

The appointed property manager shall be responsible for implementing this OFERP at the time of occupation, including coordinating tenant inductions and facilitating the appointment of key personnel required under this plan. Once the key personnel have been appointed, they shall be responsible for the implementation of this FMP and have the responsibility to action measures if there is potential for a safety or environmental incident to occur.

The key roles (as a minimum) and responsibilities for the responsible personnel in relation to flood risk management are outlined below in **Table 3.2.**

Table 3.2 - Roles and Responsibilities*

Role	Responsibilities
Appointed Flood Warden & Site Incident Commander	Provide for training in stormwater management for personnel directly involved with the implementation of this plan, as required. Identify and allocate Project resources to implement the requirements of this plan. Oversee the implementation and maintenance of this plan. Ensure all measures are performing adequately throughout the operation of the centre in perpetuity. Ensure flood behaviour local to the development is understood. Ensure personnel are educated in the overall **FERP**.
Appointed Facilities/Maintenance Manager (or a dedicated Engineering/Operations Department)	Ensure maintenance and monitoring of the stormwater management measures are undertaken in accordance with **Section 7.**
Tenant/Floor Wardens	Responsible for conducting searches of specific areas, ensuring all personnel have evacuated, and guiding people to designated safe assembly areas.

**The OFERP appropriately outlines the minimum required roles, responsibilities, and response measures. These roles and procedures will be implemented and refined during operation to reflect site-specific conditions and operational requirements.*

The roles defined in this section establish the minimum operational framework required to implement this OFERP. These roles are aligned with the flood risk management

framework and emergency management principles outlined in the NSW Flood Risk Management Manual (2023).

3.3 General FMP/FERP Requirements

This document and associated drawings are subject to further periodic review throughout the operational period to ensure the requirements and measures set out in this FMP/FERP are fit for purpose and allow for any changes which might occur not envisaged during the initial preparation of the FMP/FERP.

All flood management and response measures will conform to the standards and information contained in:

i) This FMP/FERP;

ii) Conditions of Consent;

iii) The latest version of the SES Cumberland LGA's flood emergency sub-plans;

iv) The latest version of the SES Provision and Requirements for Flood Warning in NSW;

v) The latest version of Cumberland City Council's Flood Risk Management Policy;

3.4 Review and Improvement

During operation, effectiveness of the flood emergency response management measures will be confirmed through regular review of the FERP. It is recommended that this **FERP** be reviewed every 3 to 5 years once operations commence. Further additional reviews are to be undertaken following major flood event to confirm real life conditions against baseline conditions and make any necessary adjustments.

Adjustments as required will be made based on confirmed site conditions and effectiveness of the implemented measures. These will need to be made in conjunction with a suitably qualified engineer, or other professional, who specialises in stormwater management and flood management.

A copy of the updated plan and changes shall be distributed to all relevant stakeholders, including the land owner, the appointed Operations Manager, the appointed Maintenance Manager and the assigned Tenant/Floor/Area Wardens.

This review process is consistent with the continuous improvement principles of the NSW Flood Risk Management Manual (2023), ensuring that flood risk management measures remain effective, current, and responsive to observed site conditions and operational requirements.

Flood emergency procedures shall be regularly exercised through scheduled drills, similar to fire evacuation exercises, to ensure operational readiness.

The OFERP shall be reviewed and updated following drills, flood events, or where new information becomes available, to ensure continuous improvement and alignment with current best practice.

4 FLOOD BEHAVIOUR

The flood behaviour assessment presented in this section forms the basis of the site-specific flood risk understanding and informs the development of response triggers, evacuation planning and emergency procedures in accordance with the NSW Flood Risk Management Manual (2023).

4.1 Flood Behaviour Introduction

The site is located to the north of Boorea Street. The site access point is located approximately 125m East of the Haslam Creek and Haslam Creek Culverts at their crossing of the Olympic Drive and Boorea Street intersection.

The flood behaviour discussion will inform the users of the site of the potential risks and time associated with inundation of Boorea Street due to flood waters.

This information informs access in- and out of the site during periods of inundation and how this access can be managed within the risk-based framework included in the NSW Flood Risk Manual – The Policy and manual for the management of flood liable land (DPE 2023).

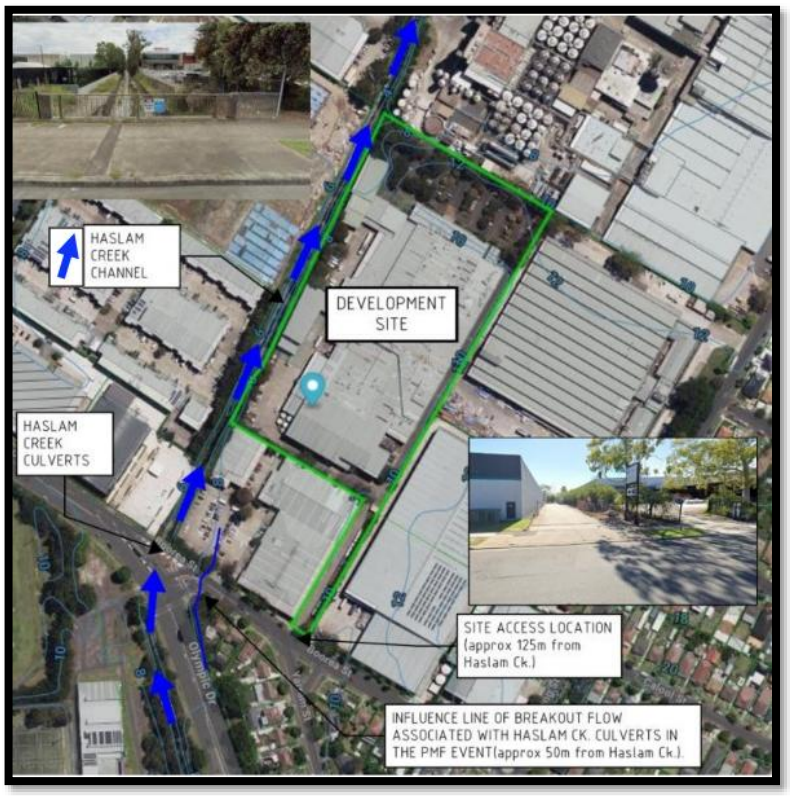


Figure 4.1 - Site location and features along access to site

The level of Boorea Street at the site access point is noted to be approximately 2m higher than the level of Boorea Street at the Haslam Creek culverts. A direct,

unobstructed, line of sight is available for persons leaving the subject property to the Haslam Creek culverts.

The Haslam Creek culverts are noted to be a triple cell 2.6m x 1.9m box culverts.

The in-ground street drainage system design ARI (per Council and TfNSW design requirements) is the 1:10 ARI (10% AEP), with allowance for overland flow to the 1:100 ARI (1% AEP).

A TUFLOW hydrodynamic flood model has been completed and the pre and post development flood events assessed for flooding as a result of a 1% AEP rainfall event within the catchment.

The assessment of the 1% AEP event confirms that Haslem's Creek Channel along the north-western side of the estate development is unaffected by the development. There is negligible effect on flood water local to the development. The TUFLOW Modelling completed by Costin Roe Consulting confirms there is no affectation of upstream, downstream or adjoining properties.

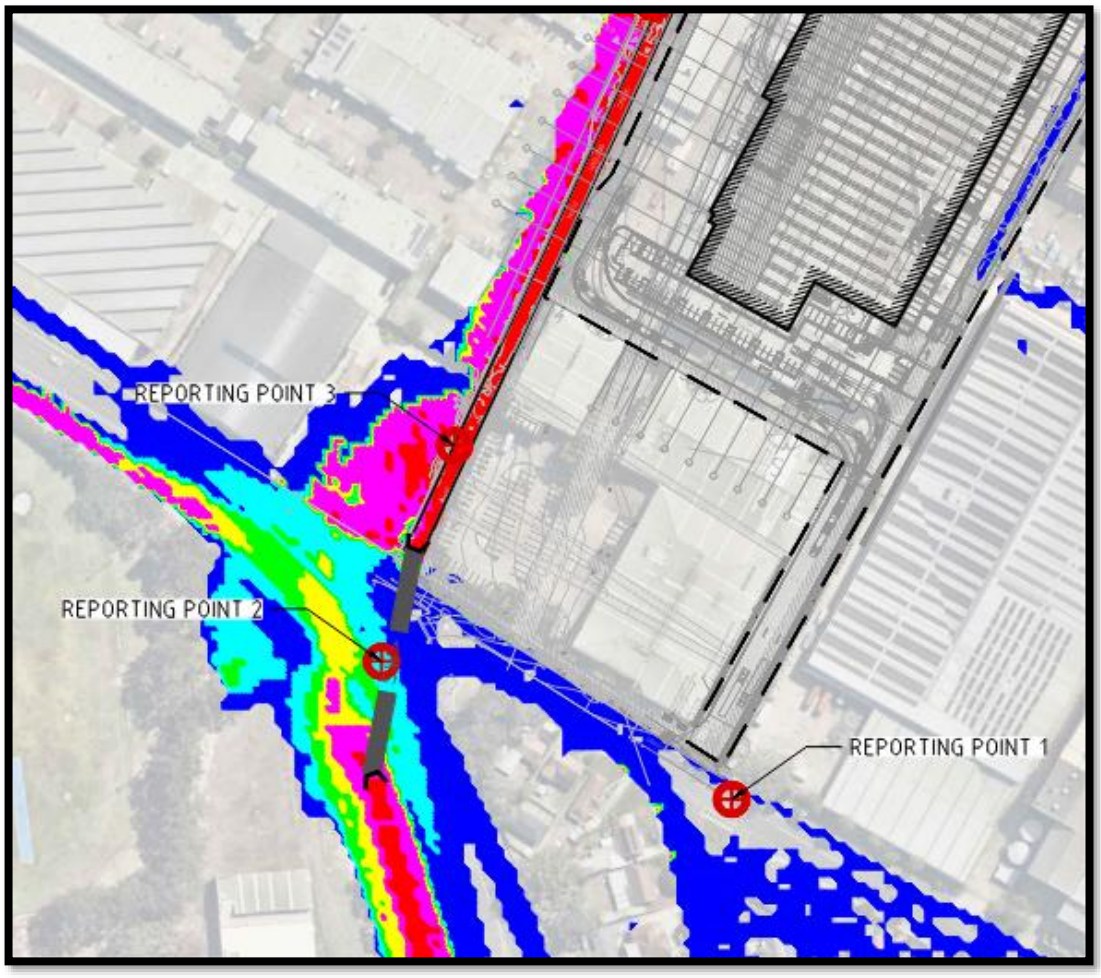


Figure 4.2 - Hazard Categorisation at access to site at 1% AEP (Post-Development) (Hazard H1)

Review of the available information, including Councils adopted flood study, shows the site is classified as a low flood hazard site during the 1% AEP Flood Event.

The operational site is confirmed to be free of mainstream flooding associated with the adjacent Haslams Creek (up to the PMF event), however has a minor overland flow path (less than 100mm depth) which conveys runoff from 25-27 Nyrang Street to the Haslams Creek channel.

The flooding behaviour identified in Boorea Street is associated with runoff within the local road network (namely flow with the kerb and gutter) generated from the road network and residential areas, coupled with breakout flows associated with overtopping water from Haslam Creek at the hydraulic constraint formed by the Boorea street culverts.

The modelling shows that runoff immediately in front of the site access point is a function of the runoff from the local catchment only (in both 1% AEP and PMF events) and that the influence of breakout flows from the Haslam Creek culverts extend 50m from the Culverts (refer Figure 4.1). The flood influence associated with Haslam Creek, as such, is 75m from the site access point. The site access point is noted to be 75m clear of the influence of the breakout flows associated with Haslam Creek and culvert crossing of Boorea Street/ Olympic Drive. The site has safe, reliable, access to the east in all events to the PMF event.

The contributing catchment to Boorea Street, and Haslam Creek, is relatively small. As such, the catchment has a short response time meaning the area is sensitive to short duration intense storm events and flash flooding. Flooding and overland flow will typically be coupled with intense heavy rainfall which dissipates quickly as the rainfall intensity reduces. The critical storm duration for the 1% AEP event in Haslams Creek is noted to be 12hours and the PMF to be 6hrs.

Modelling of the system has been completed based on a 50% blockage scenario (as per Council blockage policy) and an unblocked (0%) scenario. Noting the size of the culverts are triple cell 2.6m wide x 1.9m high, a 50% blockage during an actual flood event is considered unlikely. This being said, it would also be unlikely there would be no blockage.

Other councils (e.g. Blacktown LGA) adopt a sliding scale for blockage factors when assessing flooding, depending on the size of the culvert. For these culverts a value of 25% blockage would be more commensurate to the size of the system. Noting all of these items, for the purpose of these assessments and consideration to risk and hydraulic hazards, we consider the upper and low bound flood range and the appropriate access and hazard categorisation will be between the 0% and 50% blockage scenarios modelled.

We note that the blockage factors do not affect the flood depth or velocity at the property access point, however significantly affect the depth of flow and inundation of Boorea Street at the Haslam Creek culverts.

The periods of inundation are also noted to be coupled with extremely intense rainfall and climatic conditions. As the rainfall rate reduces so too does the inundation of the road.

The existing overland flow path between 25 Nyrang Street and Haslams Creek channel has been maintained (for events >1% AEP) and provisions for a H1 hazard categorisation (generally safe for vehicles, people and buildings).

The 1% AEP and PMF output are shown in **Figure 4.3** and **Figure 4.4** below.

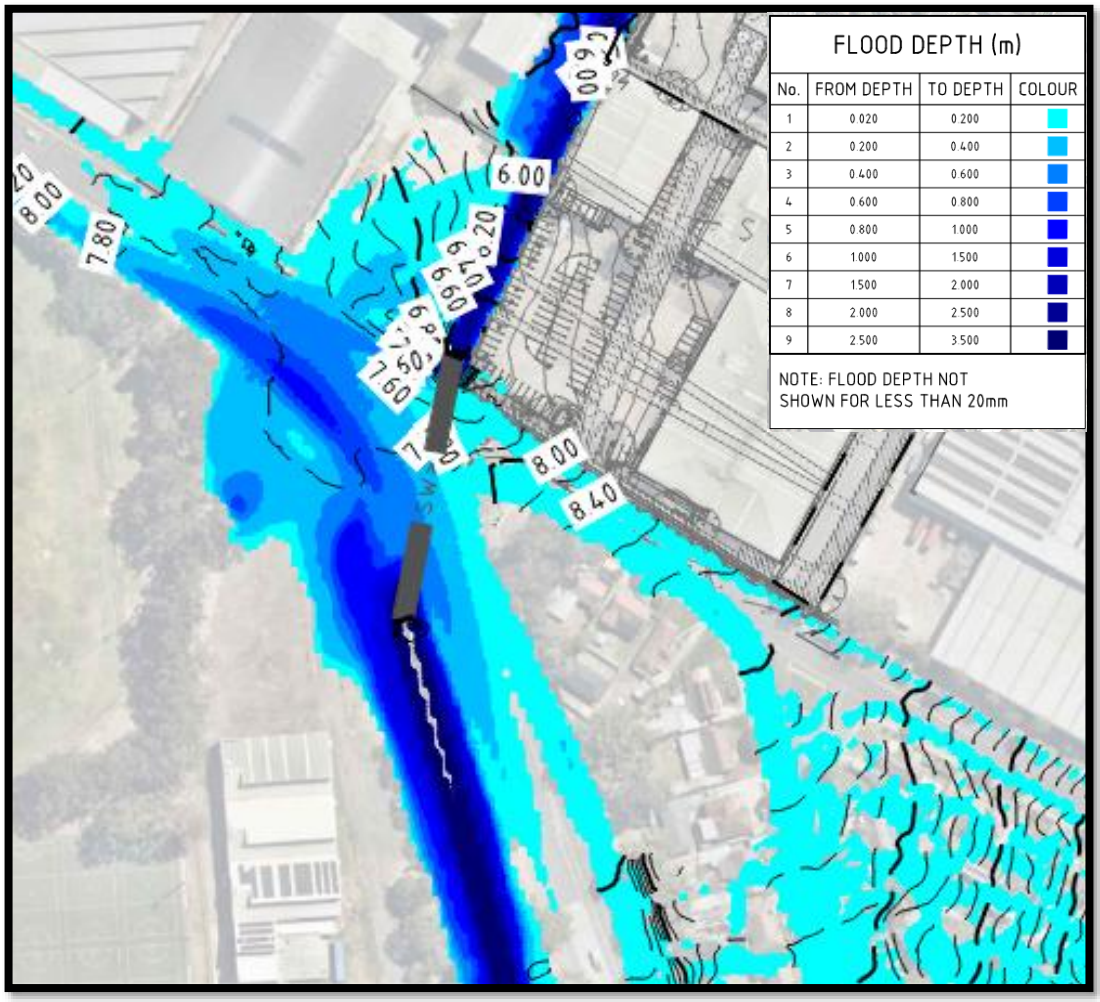


Figure 4.3 - 1% AEP Flood Extent (50% blocked)

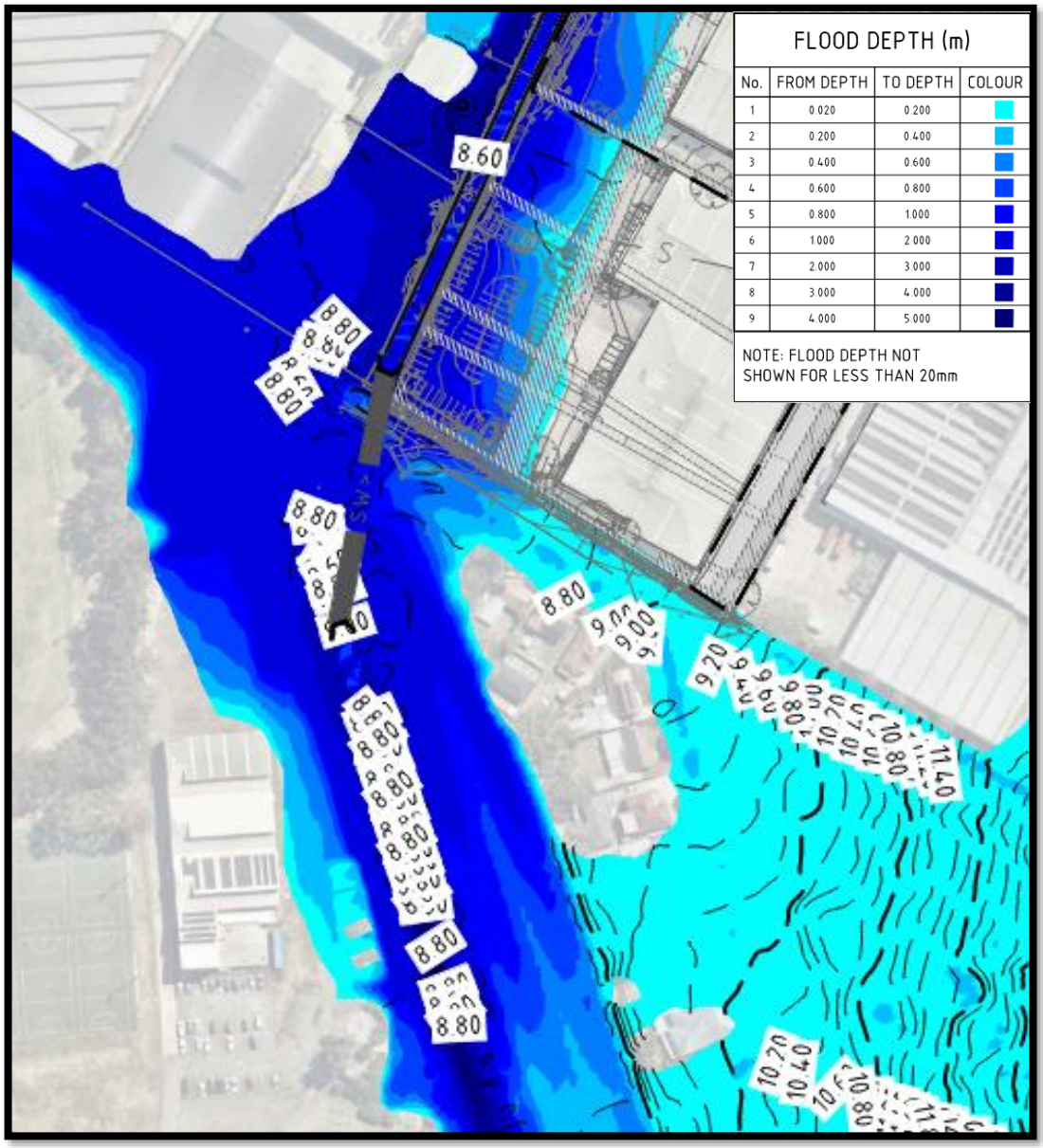


Figure 4.4 - PMF Flood Extent (50% blocked)

4.2 Time associated with inundation and Hazard categorization at entrance to site

Review of **Figure 4.5** & **Figure 4.6**, and **Table 4.1** and **Table 4.2**, in conjunction with earlier figures and discussion shows that access from the site to Boorea Street can be achieved safely (Hazard <H1) in both the 1% AEP and PMF events.

Access north along Boorea Street toward Olympic Drive would be impacted by breakout flows of >H1, from Haslam Creek, for short periods of time (1hour) in the 1% AEP event, however longer periods (7Hrs >H3 and 8.5hrs >H1) of restricted access, beginning at a point 75m north of the site access drive, would be present during a PMF event.

Blockage factors applied to the culverts have little influence on the timing or depth of the inundation of Boorea Street at Haslam Creek.

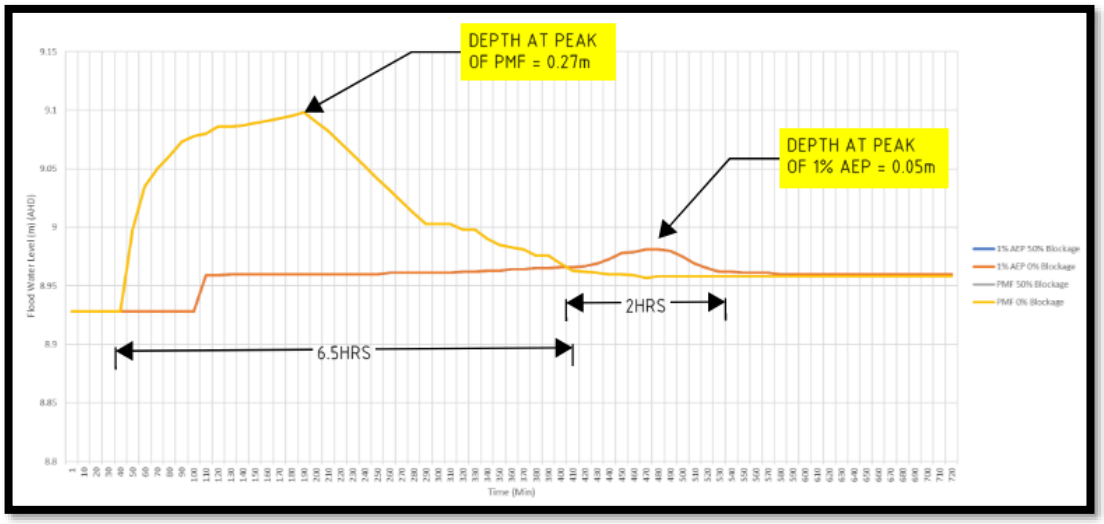


Figure 4.5 - Stage Height Graph at Property Driveway

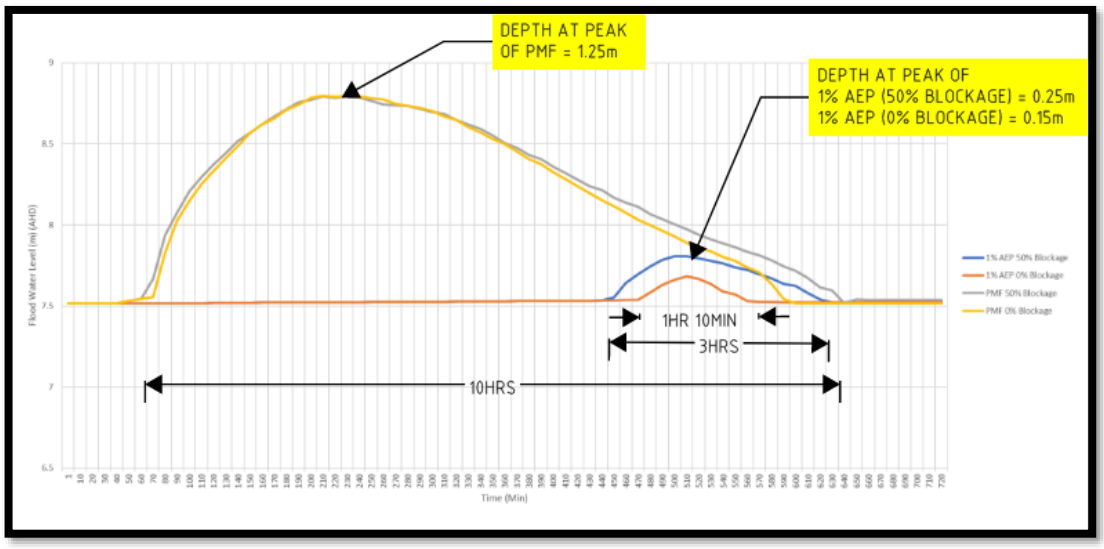


Figure 4.6 - Stage Height Graph at Haslam Creek Culverts

Table 4.1 - Duration of Inundation of Boorea Street 1% AEP (50% Blocked)

Location	Duration of Inundation (Hrs)	Duration of Inundation >H1 (Hrs)	Duration of Inundation >H3
Property Access	2	0	0
Haslam Ck.	3	1	0

Table 4.2 - Duration of Inundation of Boorea Street PMF (50% Blocked)

Location	Duration of Inundation (Hrs)	Duration of Inundation >H1 (Hrs)	Duration of Inundation >H3
Property Access	6.5	0	0
Haslam Ck.	10	8.5	7

Safe access can be established from the property to Boorea Street in the east and southeast directions (primary) during both the 1% AEP and PMF events, with potential safe evacuation routes available to either the Lidcombe Shopping Centre or Lidcombe Train Station. Evacuation towards Haslams Creek (west) shall be avoided.

In addition to the information above, it's worth noting that the primary strategy employed by the NSW SES for managing populations at risk of flooding is evacuation. Please refer to **Figure 4.7** below, which illustrates the potential safe evacuation routes to either the Lidcombe Shopping Centre or the Lidcombe Train Station.

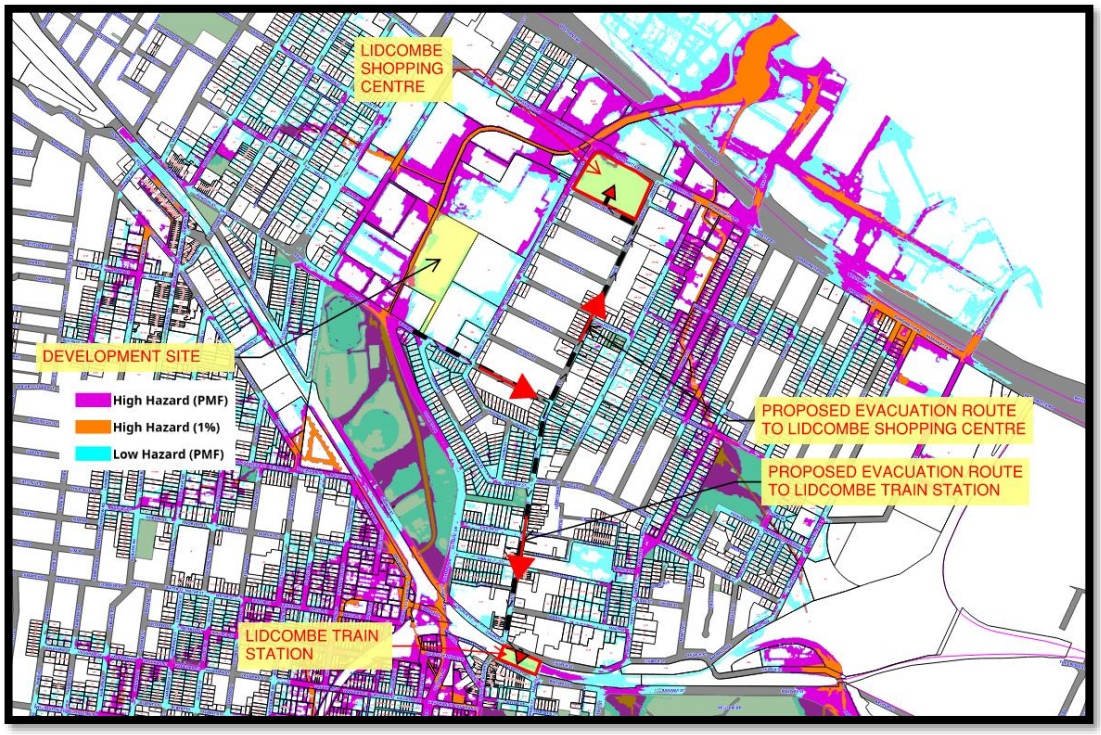


Figure 4.7 - Potential flood evacuation routes to Lidcombe Shopping Centre or Lidcombe Train Station (Shown on an excerpt from Cumberland Council's MAP 3)

4.3 Flood Extent

Flood modelling has been completed by Costin Roe Consulting to determine the exact extent of flood affectation on and around the site as a result of the 1% AEP storm.

Refer to **Figure 4.3** & **Figure 4.4** below for flood mapping showing the flood levels and depths in the 1% AEP storm for pre- and post-developed conditions.

As mentioned in Section 4.1 above, the operational site is confirmed to be free of mainstream flooding associated with the adjacent Haslams Creek (up to the PMF event), however has a minor overland flow path (less than 100mm depth) which conveys runoff from 25-27 Hyrang Street to the haslams Creek channel.

The post-development flood extent (Shown in **Figure 4.4**) and -level for the 1% AEP storm event can be seen to be around RL9.00m AHD at Boorea Street frontage, with a flow depth of only 0.04m.

Reference to **Figure 4.3** & **Figure 4.4** as well as **Table 4.1** below should be made for the post-development flood levels and depths for the 1% AEP event.

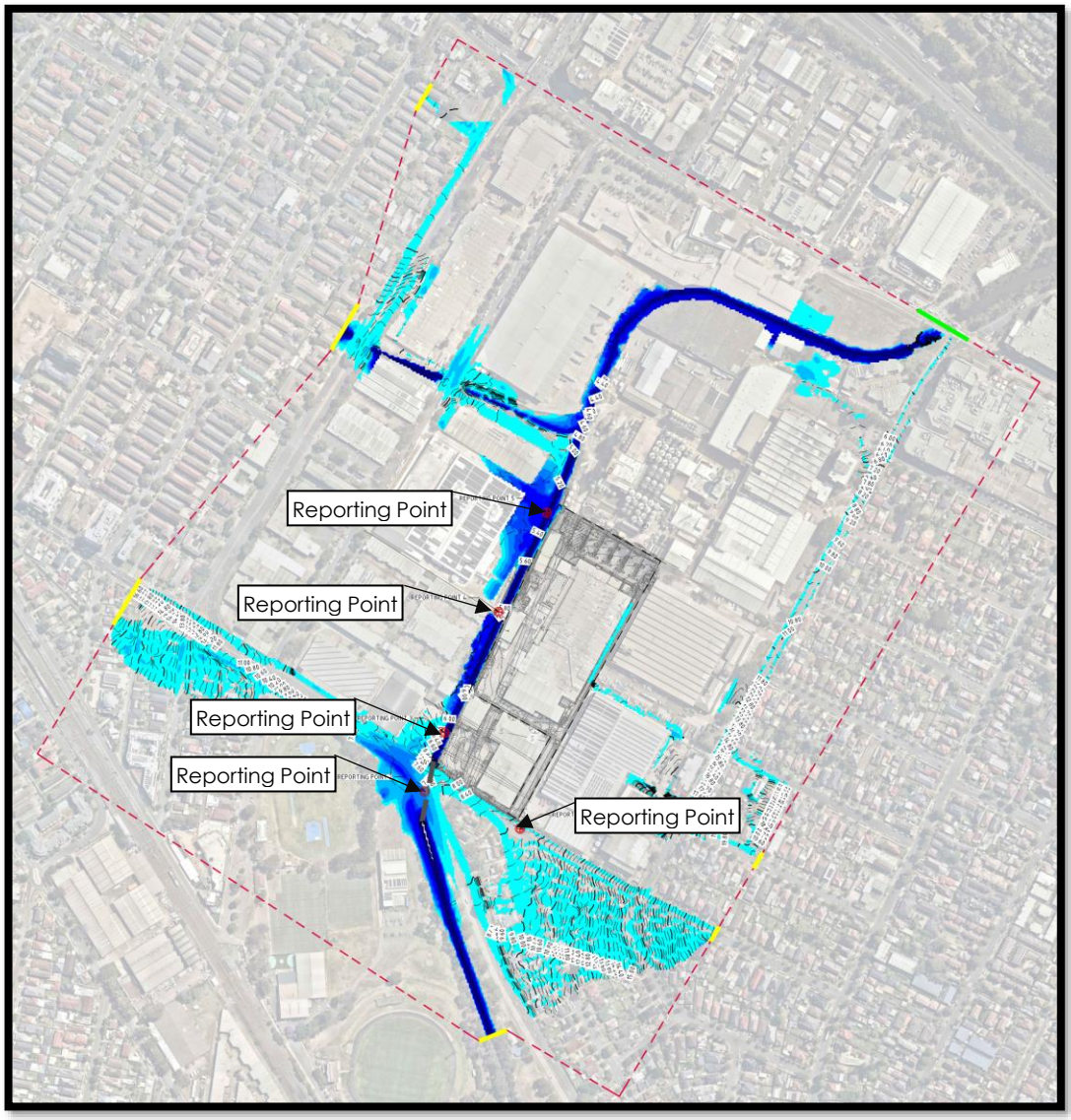


Figure 4.8 - 1% AEP Pre-Development Flood Levels & Depths

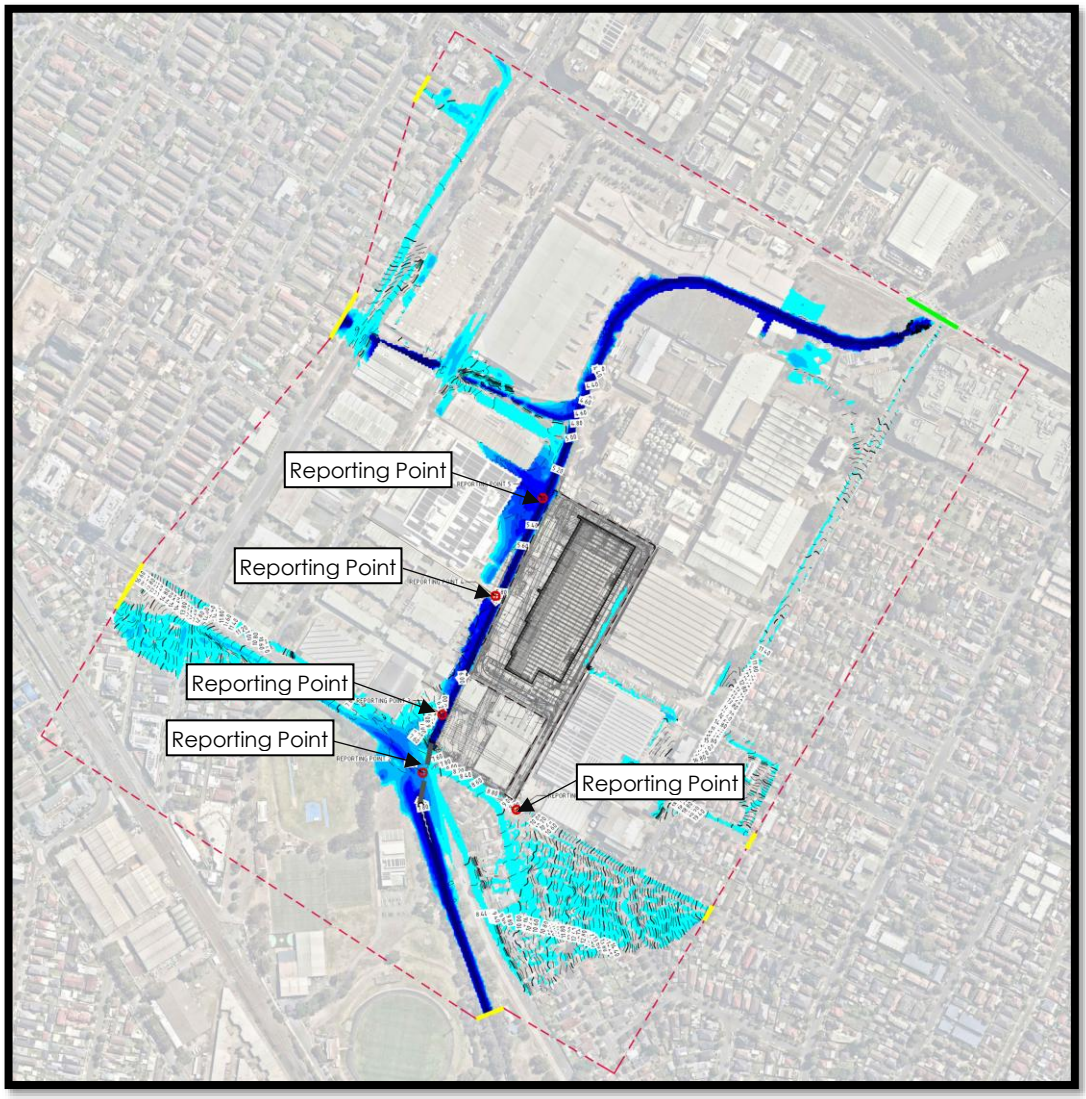


Figure 4.9 - 1% AEP Post-Development Flood Levels & Depths

Table 4.3 - 1% AEP Post-Development Flood Levels & Depths

Reporting Location	Water Level (mAHD)			Depth (m)	
	1% AEP			1% AEP	
	Existing	Developed	Difference	Existing	Developed
1	9.00	9.00	0.00	0.04	0.04
2	7.81	7.81	0.00	0.28	0.28
3	5.82	5.82	0.00	2.13	2.13
4	5.80	5.80	0.00	2.71	2.71
5	5.29	5.29	0.00	2.71	2.71

5 HAZARD CATEGORIES & MAPPING

5.1 Introduction

The hazard categorisation and mapping presented in this section provide a basis for assessing flood risk to people, vehicles and access routes, and directly inform the emergency response and evacuation measures outlined in Sections 6 and 7.

Flood hazard categories are broken down into high and low hazard (H1 to H6 categories depending on depth and velocity, and their interaction with each other as set out in **Figure 5.1** and **Figure 5.2**) for each hydraulic category. High hazard areas are defined as those where there is a possible danger to personal safety and the potential for significant structural damage. Able-bodied adults would have difficulty in wading to safety. With low hazard areas, should it be necessary, a truck could evacuate people and their possessions, and able-bodied adults would have little difficulty in wading to safety.

Flood hazard criteria and mapping has been completed for the 1% AEP and PMF post development conditions as per criteria set out in *the Australian Rainfall and Runoff (2019), A Guide to Flood Estimation – Book 6 – Flood Hydraulics and Figure 6.7.9* as included as **Figure 5.1** below.

Refer **Section 5.2** for hazard mapping.

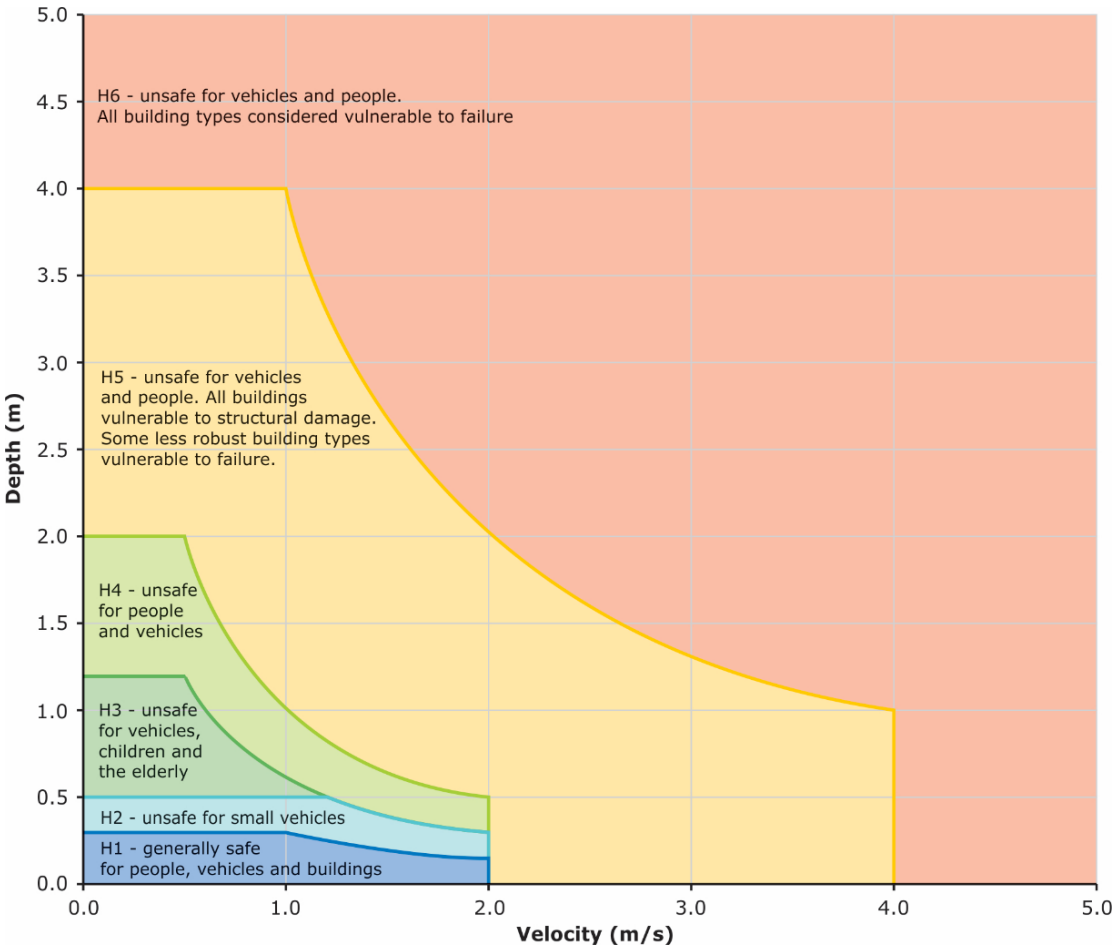


Figure 5.1 - Provisional Flood Hazard Chart (AR&R 2019)

Table 6.7.3. Combined Hazard Curves - Vulnerability Thresholds (Smith et al., 2014)

Hazard Vulnerability Classification	Description
H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles. children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Table 6.7.4. Combined Hazard Curves - Vulnerability Thresholds Classification Limits (Smith et al., 2014)

Hazard Vulnerability Classification	Classification Limit (D and V in combination)	Limiting Still Water Depth (D)	Limiting Velocity (V)
H1	D*V ≤ 0.3	0.3	2.0
H2	D*V ≤ 0.6	0.5	2.0
H3	D*V ≤ 0.6	1.2	2.0
H4	D*V ≤ 1.0	2.0	2.0
H5	D*V ≤ 4.0	4.0	4.0
H6	D*V > 4.0	-	-

Figure 5.2 - Adopted Hazard Criteria (AR&R 2019)

5.2 Hazard Mapping

Flood hazard categorisation for the site and its surrounds has been assessed as part of the flood study undertaken for the development application. Refer to **Figure 5.3** & Figure 5.3 below for flood mapping showing the flood hazard in the 1% AEP storm for pre and post developed conditions. Hazard categorisation during the 1% AEP and PMF storms at the entrance/exit of the development site is shown in **Figure 5.5** & **Figure 5.6.**

The operational site is confirmed to be free of mainstream flooding associated with the adjacent Haslams Creek (up to the PMF event).

The minor overland flow path (less than 100mm depth) which conveys runoff from 25-27 Nyrang Street to the haslams Creek channel, past the entrance to the development site is discussed in **Section 4.2** above.

The flooding, during both the 1% AEP and the PMF storm event, noted within Boorea Street at the site access point is noted to have a hazard category of H1 at the crossover point, which is considered "generally safe for people, vehicles and buildings" with a low-risk evacuation route deemed available from the site (to the east/south-east of the development site) and it is considered that the Emergency Management (EM) strategy is compatible with the relevant NSW SES requirements. Evacuation towards Haslams Creek (west) shall be avoided.

NSW SES's primary strategy for managing populations at risk of flooding is evacuation (Refer to Section 5.8 of NSW SES's Cumberland LGA Flood Emergency Sub Plan), which is possible from the development site. Refer to our **Figure 4.7**, showing the potential safe evacuation routes to either the Lidcombe Shopping Centre or the Lidcombe Train Station.

Site Accessibility summarised below:

- Safe access (Hazard Categorisation H1) for pedestrian and vehicles is available for the 1% AEP and PMF events at the property access point onto Boorea Street.
- Safe egress east along Boorea Street is available in the PMF and 1% AEP events.
- Safe egress west along Boorea Street is **limited** at the Haslam Creek culverts for a period of 1hr in the 1% AEP, and 7-8hours in the PMF.
- The time between overtopping of the Haslam Creek culverts and access from the site being above the H1 threshold is less than 1 hour.
- At the peak of the 1% AEP flood event at the property access point, the hazard categorisation is H1.
- At the peak of the PMF flood event at the property access point, the hazard categorisation is H1.

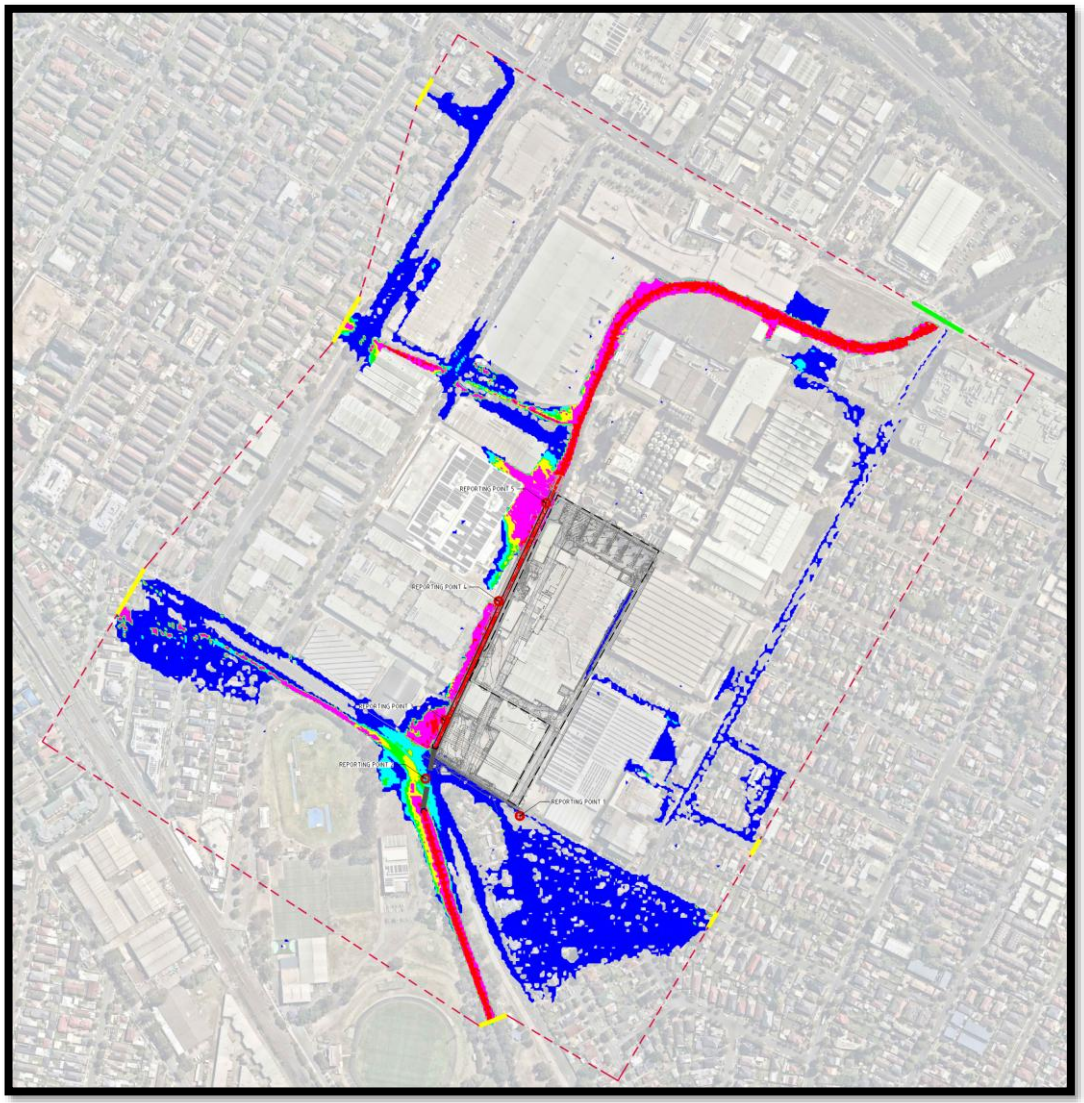


Figure 5.3 - 1% AEP Pre-developed Flood Hazard Categorisation

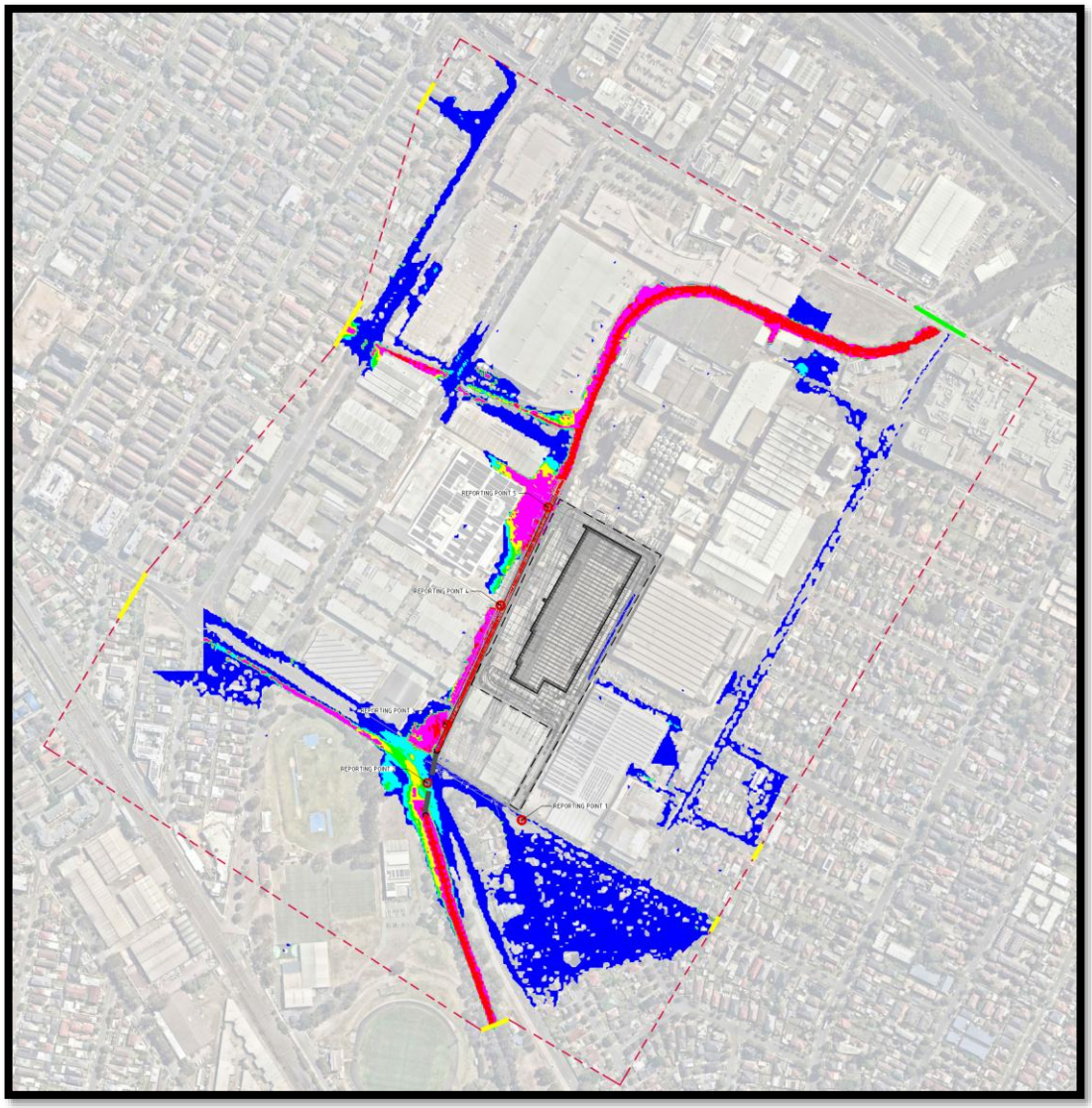


Figure 5.4 - 1% Post-development Flood Hazard Categorisation

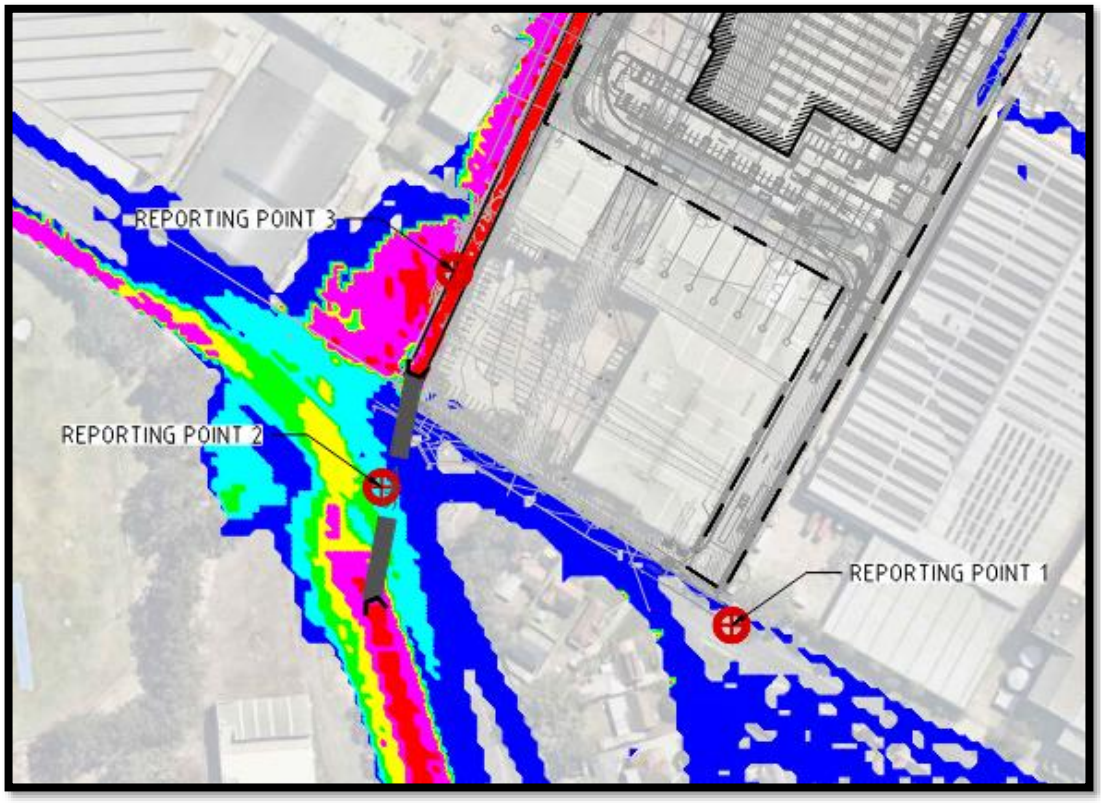


Figure 5.5 - Hazard Categorisation at access to site at 1% AEP (Post-Development) (Hazard H1)

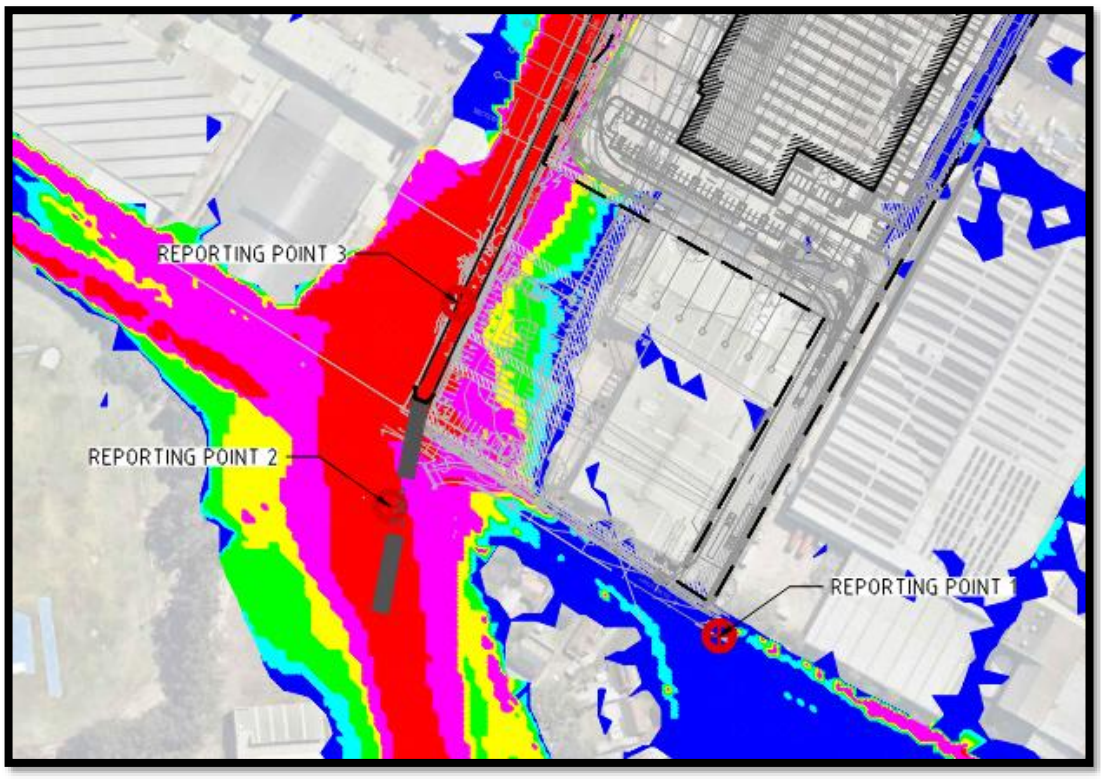


Figure 5.6 - Hazard Categorisation at access to site at PMF (Hazard H1)

6 FLOOD SAFETY AND EVACUATION

6.1 Introduction

This section of the report presents the relevant information in relation to egress and evacuation during the approach of a significant flood event. The information in this report can be used as a framework for the overall precinct and for more detailed emergency response plans for individual tenants. While the development site itself is not subject to direct flood inundation, flooding within the surrounding road network and Haslams Creek may impact site access and egress, necessitating the implementation of this OFERP.

This framework has been completed with consideration to the State Emergency and Rescue Management Act 1989 (NSW), the State Emergency Service Act 1989 (NSW), and the *SES Cumberland LGA Flood Emergency Sub Plan*.

This section establishes the preparedness, warning and evacuation framework for the site, consistent with NSW SES emergency management practices and the NSW Flood Risk Management Manual (2023).

6.2 Flood Extent

The flood behaviour, including flood levels and extents (refer **Figure 4.3** and **Figure 4.4**), during the 1% AEP storm events are included in Section 4 of this plan.

As outlined in Section 4, the development site is not subject to mainstream flooding up to the PMF event. Minor overland flow (<100mm depth) may occur along the identified flow path, however this does not impact the safe operation of the site.

Flooding within Boorea Street may temporarily affect access to the west near the Haslams Creek culverts. Safe egress from the site is available to the east and south-east during all events up to the PMF.

Further discussion on effective warning measures and triggers is included in the following sections.

6.3 Preparedness

6.3.1 Education, awareness, and preparedness program:

The FRM plan provide the opportunity to develop engagement and education materials to support flood awareness activities. These activities shall also be part of any major FRM measure that alters flood behaviour, flood warning or how the community needs to respond to the flood threat.

The development's operational management team need to be responsible for ongoing awareness and education including informing the community on how to prepare for, and how and when to act in response a flood threat. As a minimum, training shall be provided at induction of any new employee.

Training shall be conducted by the appointed Operations Manager (acting as the Flood Warden) and/or the development's operational management team.

Education shall seek to provide information to raise awareness of flooding so as to enable individuals to understand how to manage themselves and their property in response to flood warnings.

It is recommended that flood emergency response plans are regularly tested through scheduled exercises. As a minimum, such exercises shall be undertaken twice per year. Should the exercise drills highlight particulars that need to be updated in the flood emergency plan, it is recommended that the plan is updated and circulated to all parties affected.

In response to forecast severe weather or flood-producing rainfall, the site shall adopt a proactive management approach. This includes consideration of pre-emptive site closure prior to the commencement of operations or shift start times, where warnings indicate a credible flood risk.

This approach is necessary given the flash flooding characteristics of the catchment and the limited warning time associated with intense storm events.

6.3.2 Development of Warning Systems:

The appointed flood warden shall coordinate with each tenant (if applicable) and set out floor/tenant/area wardens, evacuation zones and responsible persons. The Flood Warden shall:

- Provide an overview / summary of the flood risk on site;
- Explain and demonstrate emergency evacuation procedures;
- Outline that the site shall not be evacuated by foot or vehicle once Baker Street is flooded.

This flood awareness program shall be incorporated into the induction process for new and existing staff members of tenants on the development site and is to be repeated annually as part of any "refresher" training. The program is to be reviewed when new tenants move into the building.

Visitors are to be briefed on the basics of the flood evacuation procedure upon arrival to the site. This training may include identification of the Flood Warden on site during the duration of their stay and showing visitors the designated refuge areas and evacuation pathways.

As noted, this document is intended to be a dynamic management plan that will be refined and updated over time to reflect operational experience, tenant-specific requirements, and observed site conditions. This plan is to be utilised as a framework to continuously improve the flood plan.

The Bureau of Meteorology (BoM) will issue flood alerts as part of their responsibility for the issue of warnings of weather conditions likely to give rise to Floods and for the provision of forecasting and warning services for Extreme Weather and Hazard Impact Events. Severe Weather Warnings, Severe Thunderstorm Warnings & Flood warnings are issued by the Bureau of Meteorology to alert communities to the threat of severe weather at (http://www.bom.gov.au/nsw/warnings/ & http://www.bom.gov.au/nsw/flood/sydney.shtml).

Development Owners and Management shall appoint personnel (person or committee) involved with the implementation of this plan. As part of an early warning system, the appointed person or committee shall be aware of the weekly weather forecast to identify heavy forecasted rainfall to prepare according. It is

recommended that, if possible, the committee/Flood warden, bookmark the BoM warning pages for quick access.

The appointed person or committee shall, during periods of heavy or forecast heavy rainfall, diligently observe the Severe Weather Warnings, rainfalls and road closures from the BoM. The appointed person or committee shall track conditions during high rainfall events by reviewing official Bureau of Meteorology (BoM) and NSW SES warning products, including the Australian Warning System[1], HazardWatch[2], and the Hazards Near Me app.

Evacuation is the primary response to flood events. Refuge on site is identified as a contingency measure only and is to be adopted where evacuation cannot be safely completed due to prevailing conditions.

*1 (https://www.australianwarningsystem.com.au/#)

*2 (https://www.hazardwatch.gov.au/)

As described in **Section 6.5** below, the BoM warning system is based on predicted rainfall and gauges in the Sydney region. This includes identification of potential flooding areas, estimated impacts of flooding at different heights and action time.

The BOM warning system will provide good initial guidance for triggering of flood measures. A suitable response/trigger methodology has been outlined in **Section 6.5** which can be utilised to inform users of the site to prepare their own site-specific flood management response plans.

Flood warning and emergency response for the development site will be based on the rainfall within the adjoining catchments.

Real-time data (updated at 15-minute intervals) for these sites can be accessed through the BoM website via the following hyperlink: http://www.bom.gov.au/nsw/flood/sydney.shtml (refer **Figure 6.1** for an indication of the relevant site-specific station):

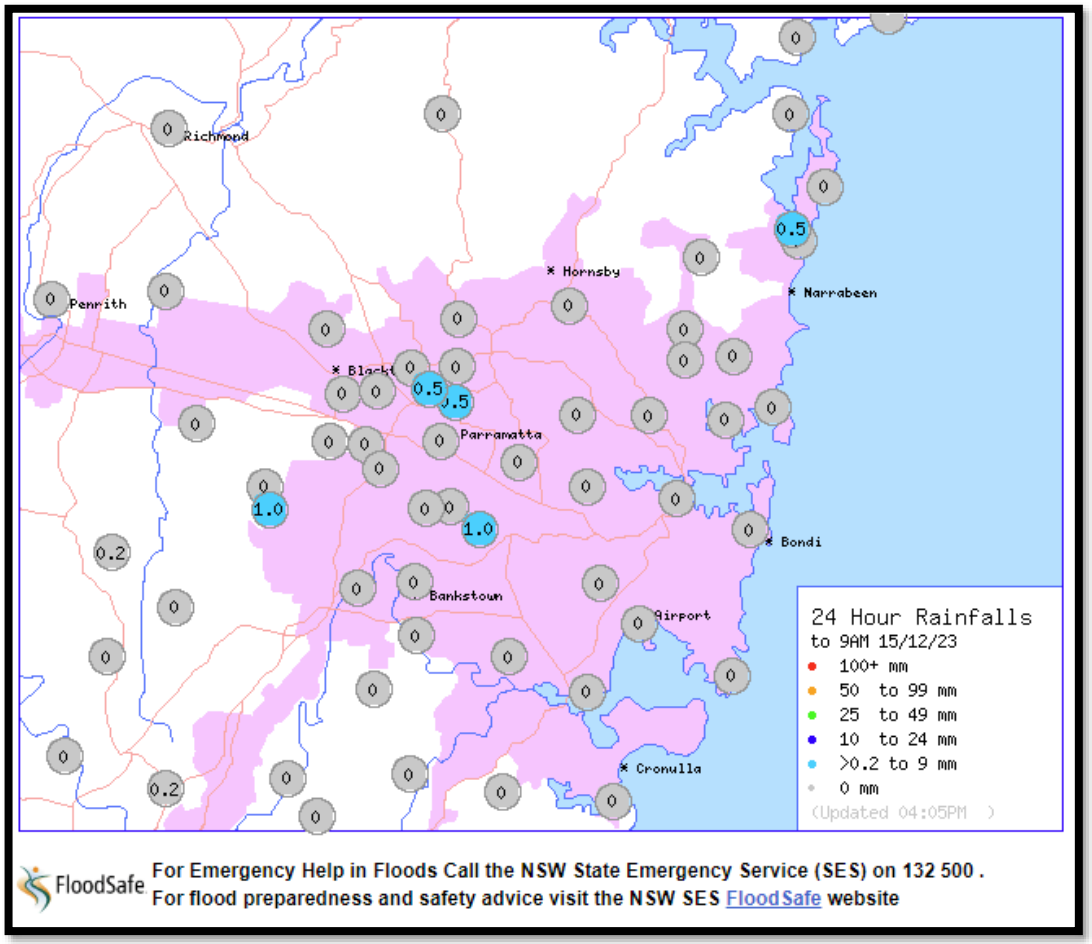


Figure 6.1 - Site specific station (http://www.bom.gov.au/nsw/flood/sydney.shtml)

6.3.3 Flood Warning, Notification and Monitoring

Flood warning and notification for this site is based on a combination of external forecasting and on-site observation, as follows:

Flood Warning Time:

Flood warning time is primarily informed by Bureau of Meteorology (BoM) forecasts and rainfall monitoring. Typical lead times are provided through:

Section 6.3 – Monitoring of weather forecasts (up to 7 days in advance)

Section 6.5 – Identification of significant rainfall events and escalation triggers

Section 7.2 – Trigger-based response framework, including early warning and escalation

Flood Notification:

Flood notification is communicated internally via the site's emergency management procedures, including:
- Verbal direction from the Flood Warden
- Internal communication systems (PA systems, messaging or equivalent)
- Emergency evacuation procedures outlined in Sections 6 and 7

Official Bureau of Meteorology (BoM) and NSW SES warning products shall be adopted as the primary source of truth for flood response decision-making. These warnings, issued under the Australian Warning System (Advice, Watch and Act, Emergency Warning), shall take precedence over any site-based observations or internal assessments.

Site-based monitoring, including visual observations of Haslams Creek, is to be used only as a supplementary input and shall not override official warnings.

Signage:

Evacuation signage will be installed throughout the site in accordance with standard emergency planning requirements. No additional flood-specific signage is required, as the development site itself is not subject to flooding. The Flood Warden in coordination with the assigned key persons shall install signage in and around the site which outlines the flood evacuation procedure at key locations. As a minimum, signage shall be installed at all exits from the warehouse and offices, in stair cases and externally at key locations.

Depth Indicators:

Flood depth indicators are not required within the site as no on-site inundation occurs. Flood levels within Haslams Creek are visually monitored by the Flood Warden as part of the trigger-based response system. The creek is outside the ownership and control of the development, and therefore installation of physical depth gauges is not applicable.

These preparedness and training measures ensure that all personnel are aware of flood risks, warning systems and required response actions, and are consistent with the awareness and preparedness principles of the NSW Flood Risk Management Manual (2023).

6.4 Emergency Response Planning

Flood Emergency Management planning refers to the preparation of a formal community-based plan of action to deal with the threat, onset, and aftermath of flooding. It involves planning for an event equal to, or greater than the event used to derive the FPL.

The plan of action shall include an on-site response plan that addresses what measures shall be undertaken once the threat of a flood is determined to be imminent. A flood evacuation strategy shall also be included so that all persons within the precinct are familiar with the processes required if a flood occurs. This plan is to be utilised as a framework to continuously improve the flood plan.

Assembly Points:

Based on the flood assessment, the site is not expected to be subject to flood inundation. Accordingly, flooding does not impose any constraints on the location of assembly points.

The ground floor carpark located to the south-east of the warehouse is nominated as the indicative assembly point (see **Figure 6.2** below), until the appointed flood warden decides to progress the plan as part of the review process

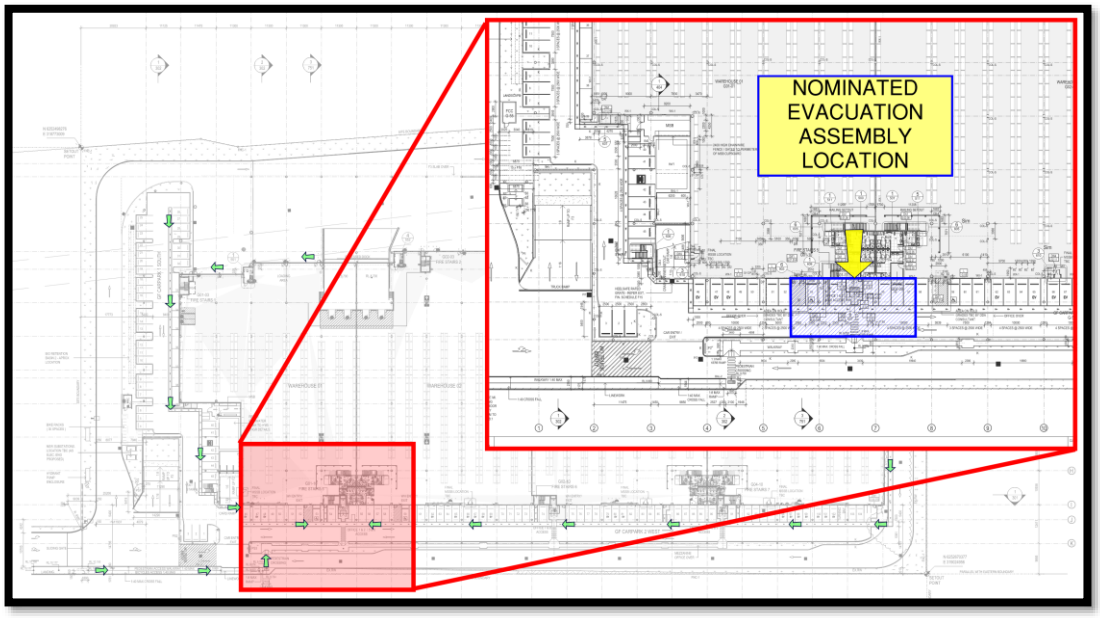


Figure 6.2 – Nominated Assembly Point

Evacuation Routes:

Evacuation routes are defined based on the site layout and surrounding flood behaviour, with all evacuation directed towards the eastern access to Boorea Street, away from Haslams Creek. These routes are supported by flood behaviour mapping provided in Section 4 and relevant figures.

In summary, the review shows, during both the 1% AEP and the PMF storm event, a hazard category of H1 at the crossover point, which is considered "generally safe for people, vehicles and buildings" with a low-risk evacuation route deemed available from the site to the east/south-east of the development site, as shown in **Figure 6.3** below, as well as **Figure 5.5** & **Figure 5.6**.

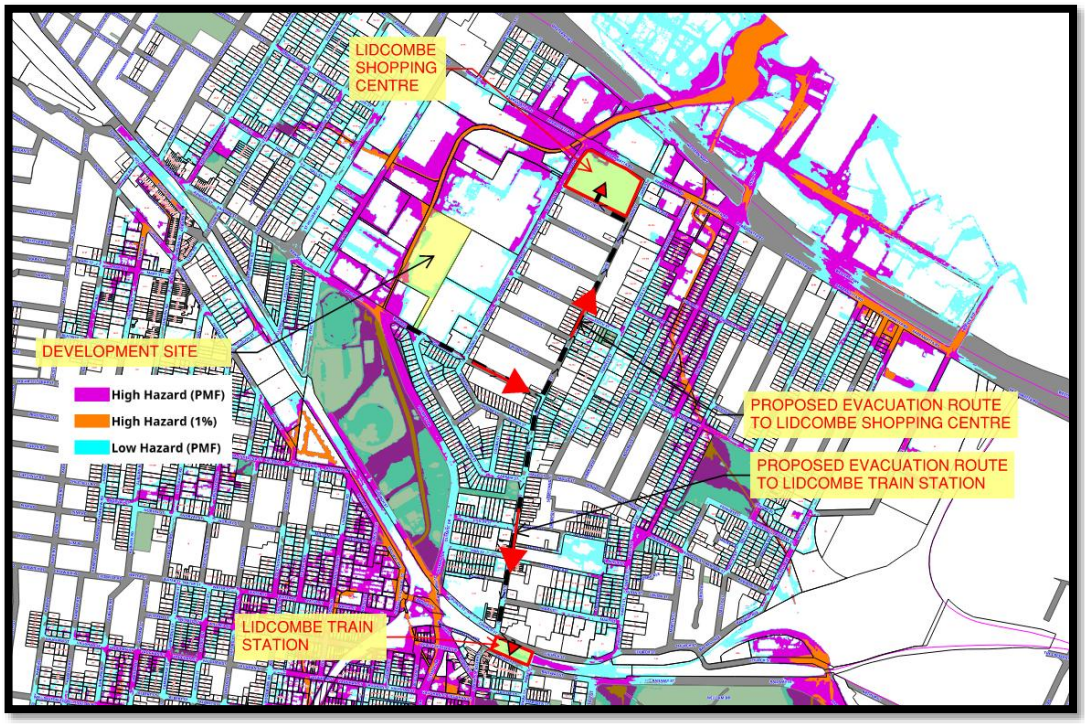


Figure 6.3 - Flood evacuation routes to Lidcombe Shopping Centre or Lidcombe Train Station (Shown on an excerpt from Cumberland Council's MAP 3)

Evacuation from the site shall be undertaken early, prior to the onset of hazardous flood conditions affecting surrounding access roads. Evacuation shall be undertaken in an easterly and south-easterly direction only, away from Haslams Creek and known flood-prone areas. Under no circumstances shall evacuation be directed towards areas identified as having elevated flood hazard, including the Haslams Creek culvert crossing along Boorea Street.

Refuge Locations:

An upper-level refuge area within the warehouse is identified as a contingency only. Refuge is not a primary response and is only to be used where evacuation is not possible or is unsafe due to prevailing conditions.

Assembly points, evacuation routes and refuge provisions are defined at a site wide level within this OFERP and are to be further refined within tenant-specific emergency response plans to reflect operational arrangements and personnel on site.

6.5 Preparation Steps

It is the responsibility of Management to understand the risks and dangers of flooding relating to the development site, and the need to restrict access to the flood management zone (overland flow path) (subject to flooding) in such an event.

It is recommended that key persons within Management are registered to be able to receive flood warning messages from the BoM. This shall include the appointed Flood Warden, as well as upper management personnel.

Lastly, the evacuation framework contained in this report must be understood and adapted, as necessary. It is recommended that copies of this report are retained at key locations on site, including the Operations Manager's office and the front desks

of all office areas. A thorough understanding of *Councils Local Flood Plan* shall also be made.

The plan of action includes an on-site response plan that addresses what measures shall be undertaken once the threat of a flood is determined to be imminent and the occupants shall be inducted so that all persons within the precinct are familiar with the processes and the flood evacuation strategy required if a flood occurs.

It is noted that significant lead warning time would be required to enable effective flood response plans to be initiated for this site to address safety of persons. Refer to **Section 7.1** below for early warning systems.

Flood warning and preparedness are based on Bureau of Meteorology forecasts, rainfall monitoring and visual assessment of local conditions, providing sufficient lead time to implement evacuation prior to access constraints being affected.

Warning information may be disseminated through multiple channels and is not limited to SMS notifications. Authoritative sources include the Bureau of Meteorology website, HazardWatch, the Hazards Near Me application, and other official NSW SES communication channels.

Site management shall ensure access to, and familiarity with, these platforms as part of operational preparedness.

The site is not subject to flooding and therefore does not require flood depth indicators. Flood conditions within Haslams Creek are monitored visually by the Flood Warden as part of the early warning and response process.

7 FLOOD RESPONSE

7.1 Flood Response Introduction

The following sub-sections of the report provide information on potential flood triggers that could be utilised by site management to be able to prepare their own flood response plans.

The operational site management may visually gauge conditions (flow depth and velocity) within the Haslams Creek channel as an early warning system during heavy rainfall.

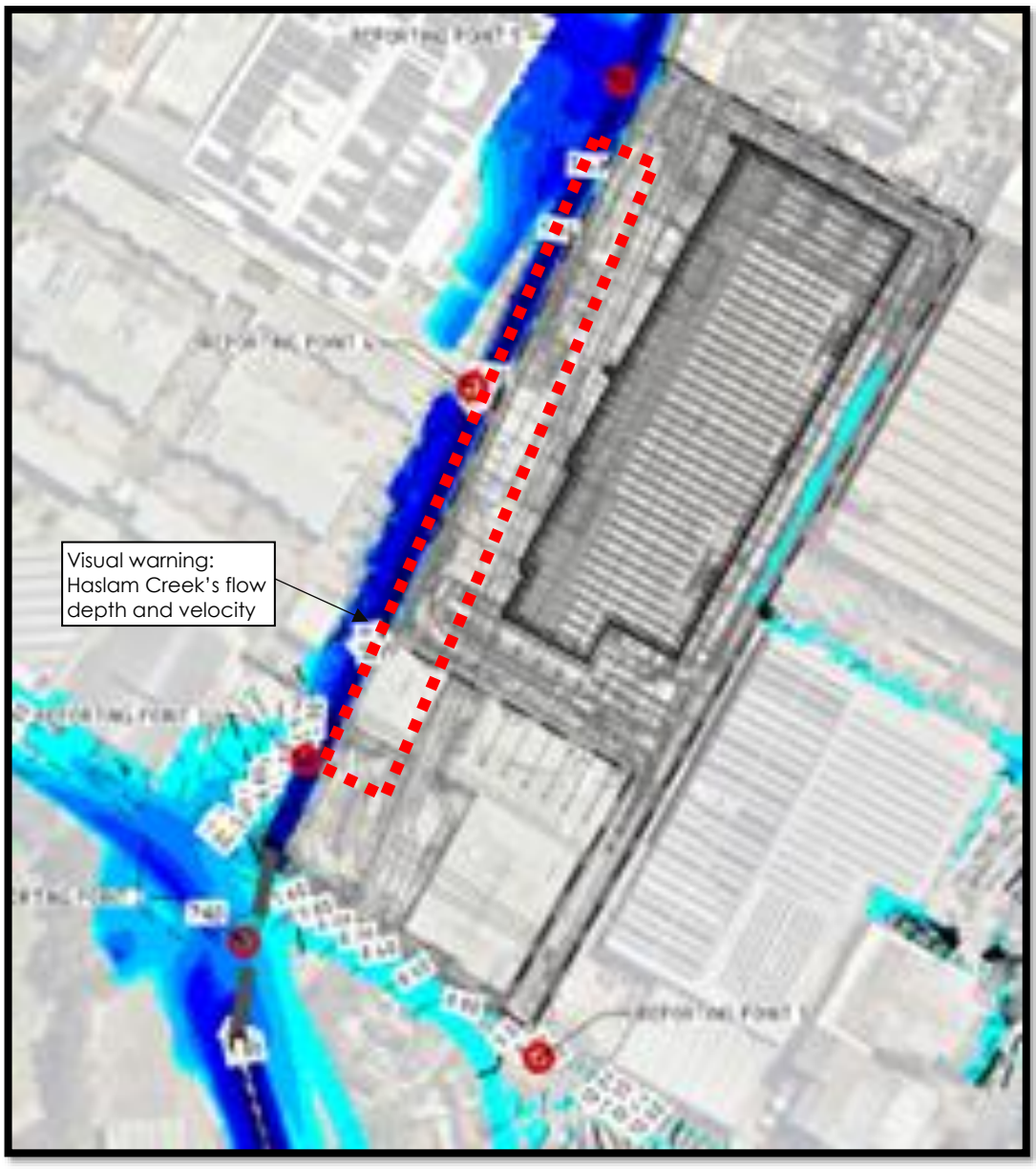


Figure 7.1 - 1% AEP Post-Development Flood Levels & Depths

The response framework adopts a trigger based approach aligned with the NSW Flood Risk Management Manual (2023) and NSW SES guidance, with clearly defined actions to ensure a consistent and effective response to flood conditions.

7.2 Response Triggers & Site-Specific Measures

The following trigger levels define mandatory response actions to be implemented by site management and occupants. These triggers are based on a combination of Bureau of Meteorology warnings and observed conditions within Haslams Creek and shall be strictly followed to ensure a safe and coordinated response.

7.2.1 Trigger 1 - A flood alert/watch/advice is issued by the BOM.

The BOM alert will be issued if flood producing rain is predicted. This provides an early warning that flooding may occur, however is not confirmation that flooding will occur. If this alert is issued then the Flood Warden shall be on alert for further BOM, SES or site-specific Triggers.

7.2.2 Trigger 2 – General flood alert issued by the BOM.

A generalised flood warning would be issued when flooding is expected to occur in a given area. These would generally be provided by the BOM with three hours warning time is expected from issue of warning to peak flood level as per the "Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0" (Bureau of Meteorology, 2013).

Maintenance workers, or other persons, who might need to access the landscaped area west of the new retaining wall along the Haslams Creek Channel boundary shall be notified prior to entering the lower areas on the embankment of the potentially flood affected areas.

It is noted that Trigger 3 may occur prior to Trigger 2 and the Flood Warden is required to consider this eventuality.

7.2.3 Trigger 3 – Guage flood levels within Haslams Creek channel - flood depth of 0.5m below top of channel.

Flood Warden at this point shall put Warehouse occupants on alert to evacuate the site. Flood warden to contact SES for additional updates, if required.

7.2.4 Trigger 4 - Guage flood levels within Haslams Creek channel - flood depth at top of channel walls.

At this trigger level, when flood levels within the Haslams Creek channel reach the top of the channel walls (or the walls are no longer visible), the Flood Warden shall direct immediate evacuation of the site.

Evacuation is the primary and mandatory response at this stage and shall be undertaken in an easterly direction via the site access to Boorea Street. No evacuation towards Haslams Creek shall occur.

Refuge on site is not a preferred response and is only to be used in circumstances where evacuation is not possible or where occupants determine that it is unsafe to

evacuate due to extreme weather conditions. In such circumstances, occupants shall move to the designated upper-level refuge area and await further instruction.

End of Response Operations

Once flood levels have receded below the defined trigger thresholds and the immediate flood hazard has passed, the Flood Warden shall confirm current conditions by reviewing official Bureau of Meteorology (BoM) and NSW SES warning products, including the Australian Warning System[1], HazardWatch[2], and the Hazards Near Me app. Based on these official sources, and where no active warnings or hazards remain, site occupiers may safely exit the premises if refuge was undertaken, or return to the site if previously evacuated.

Evacuation is the primary response to flood events. Refuge on site is identified as a contingency measure only and is to be adopted where evacuation cannot be safely completed due to prevailing conditions.

*1 (https://www.australianwarningsystem.com.au/#)

*2 (https://www.hazardwatch.gov.au/)

8 CONCLUSION

Costin Roe Consulting Pty Ltd has been commissioned to develop this **FMP/FERP** for the industrial development at 42 Boorea Street, Lidcombe, NSW.

The report provides a summary of flood behaviour of local flooding which affects the site, and the different conditions which cause flooding on the site.

Flood preparedness and response techniques have been clarified, including warning triggers and distribution of the flood response procedures. During flooding events, evacuation shall take place to the east of the site while conditions allow.

Further the report provides the framework for the preparation of the flood egress plans as required throughout the operational phase of the development.

This OFERP provides a clear, enforceable and site-specific framework for flood emergency response during operation of the development. The plan adopts a conservative, risk-based approach with defined trigger levels and mandatory response actions to ensure the safety of all occupants.

The effectiveness of this plan is dependent on proper implementation, including training, regular review, and integration into tenant-specific emergency management procedures following occupation.

This OFERP is intended to be a dynamic management plan that will be refined and updated over time to reflect operational experience, tenant-specific requirements, and observed site conditions.

The appointed property manager shall be responsible for implementing this OFERP upon occupation of the site, including coordinating tenant inductions and facilitating the appointment of key personnel required under this plan.

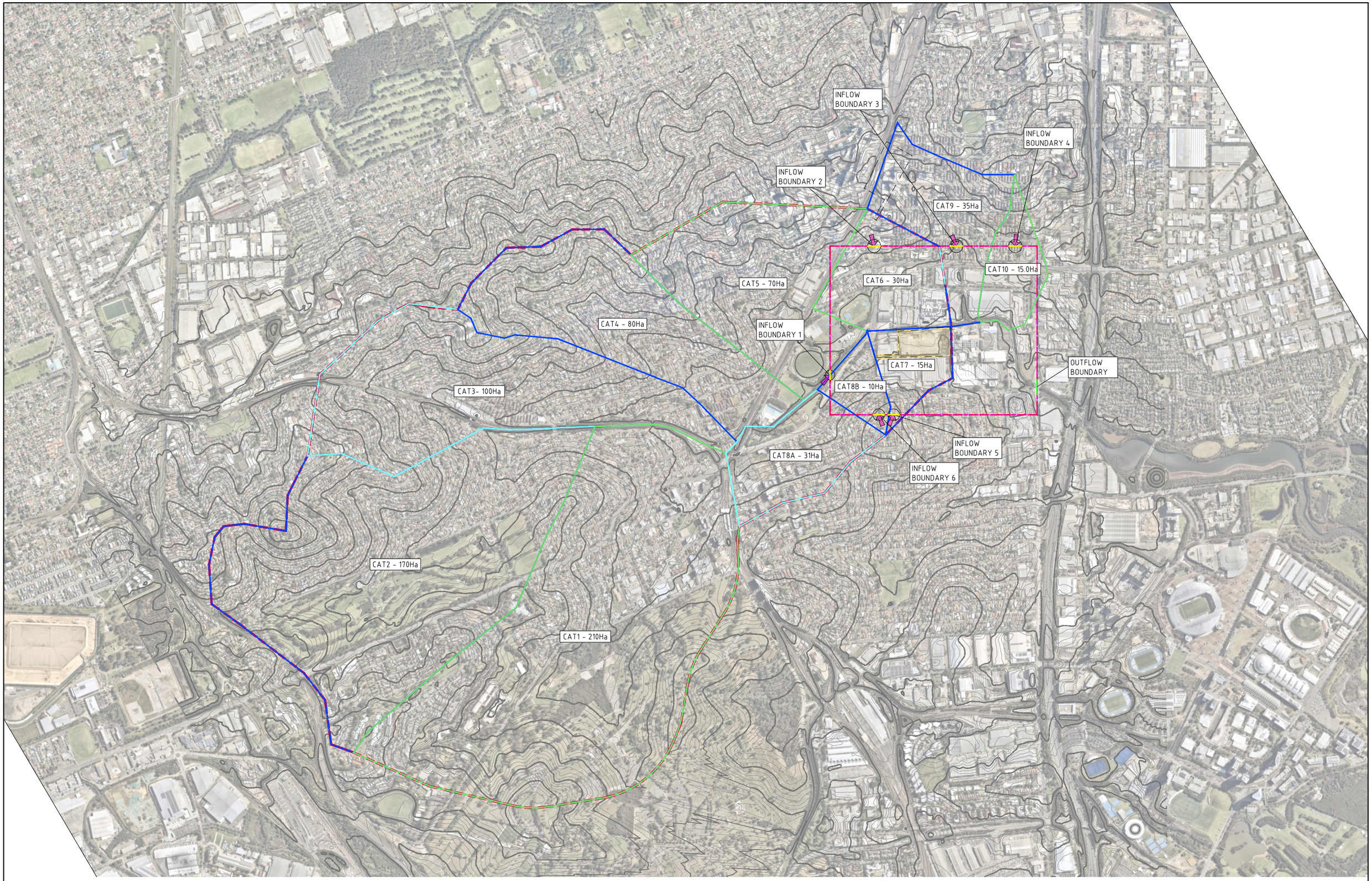
9 REFERENCES

- Flood Risk Management Manual (2023);
- Cumberland Council Flood Risk Management Policy (Nov 2021);
- Cumberland Council Stormwater and Flood Maps 1 to 8 (October 2021);
- Part G4 of the Cumberland Council DCP 2021;
- Cumberland Council Flood Letters (EC2021/0528);
- NSW Government (2023). Flood Impact and Risk Assessment. Flood Risk management guideline LU01;
- Provision and Requirements for Flood Warning in New South Wales – SES (Nov 2019);
- Cumberland LGA Flood Emergency Sub-Plan – SES (Nov 2021)
- Bureau of Meteorology (2013). Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0;
- Costin Roe Consulting (2023), Civil Engineering Report (Co14411.01-03.rpt)

10 APPENDICES

COSTIN ROE CONSULTING

APPENDIX A
COSTIN ROE CONSULTING FLOOD MODELLING DRAWINGS



FLOOD MODEL EXTENT AND CATCHMENT PLAN
SCALE 1:7500

50m 0 100 200 300 400 500m
SCALE 1:7500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	27.10.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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CRC COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
CATCHMENT PLAN

DRAWING No C014411.01-F 00
ISSUE A

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 1
REPORTING POINT 2
REPORTING POINT 3
REPORTING POINT 4
REPORTING POINT 5

1.0% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

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DRAWING TITLE: 1.0% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 10

ISSUE: D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
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- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

1.0% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

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DRAWING TITLE: 1.0% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C01411.01-F 11 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

FLOOD AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.050	-0.020	
2	0.020	0.030	
3	0.030	0.040	
4	0.040	0.050	
5	0.050	0.100	
6	0.100	0.200	
7	0.200	0.300	
8	0.300	0.400	

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPED SCENARIO VS THE POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - PRE-DEVELOPMENT Q100 ARI FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q100 ARI FLOOD LEVEL
FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

1.0% AEP FLOOD LEVEL AFFLUX
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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DRAWING TITLE
1.0% AEP FLOOD LEVEL AFFLUX PLAN

DRAWING No: C014411.01-F 12
ISSUE: D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

1.0% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

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1% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C014411.01-F 13
ISSUE: D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
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6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

1.0% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

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DRAWING TITLE
1.0% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 14 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY AFFLUX (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-5.000	-1.000	
2	-1.000	-0.750	
3	-0.750	-0.500	
4	-0.500	-0.250	
5	-0.250	0.000	
6	0.000	0.250	
7	0.250	0.500	
8	0.500	0.750	
9	0.750	1.000	
10	1.000	1.250	
11	1.250	1.500	
12	1.500	1.750	
13	1.750	2.000	
14	2.000	2.250	
15	2.250	2.500	
16	2.500	3.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

1.0% AEP FLOOD VELOCITY AFFLUX PLAN
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	11.06.23	D
ISSUED FOR INFORMATION	27.10.23	C
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ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

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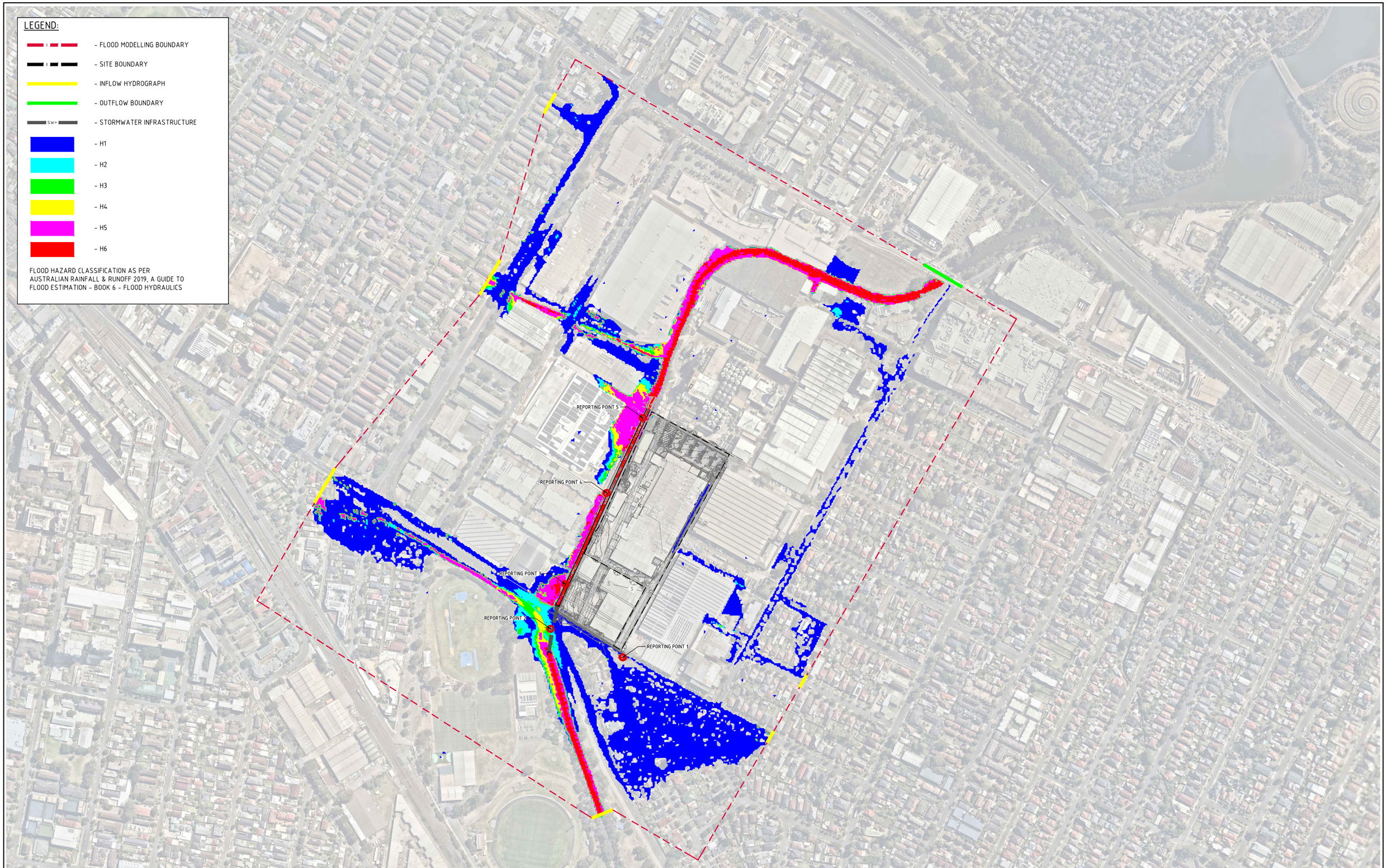
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1.0% AEP FLOOD VELOCITY AFFLUX PLAN

DRAWING No C014411.01-F 15 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS



1.0% AEP PRE-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

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ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

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DRAWING TITLE
1% AEP PRE-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 16 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5

REPORTING POINT 4

REPORTING POINT 3

REPORTING POINT 2

REPORTING POINT 1

1.0% AEP POST-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F17

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
1.0% AEP POST-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 17 ISSUE D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	2.000	
7	2.000	3.000	
8	3.000	4.000	
9	4.000	5.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

PMF PRE-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F20

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DRAWING TITLE: PMF PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 20 ISSUE: D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	2.000	
7	2.000	3.000	
8	3.000	4.000	
9	4.000	5.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

PMF POST-DEVELOPMENT LEVELS AND DEPTHS
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F21

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DRAWING TITLE
PMF POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014411.01-F 21 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.100	
2	0.100	0.200	
3	0.200	0.300	
4	0.300	0.400	
5	0.400	0.500	
6	0.500	1.000	
7	1.000	1.500	
8	1.500	2.000	
9	2.000	2.500	
10	2.500	3.000	
11	3.000	3.500	
12	3.500	4.000	
13	4.000	4.500	
14	4.500	5.000	
15	5.000	6.000	
16	6.000	8.000	
17	8.000	10.000	
18	10.000	15.000	
19	15.000	20.000	
20	20.000	25.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

PMF PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F22

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DRAWING TITLE
PMF PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 22 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.100	
2	0.100	0.200	
3	0.200	0.300	
4	0.300	0.400	
5	0.400	0.500	
6	0.500	1.000	
7	1.000	1.500	
8	1.500	2.000	
9	2.000	2.500	
10	2.500	3.000	
11	3.000	3.500	
12	3.500	4.000	
13	4.000	4.500	
14	4.500	5.000	
15	5.000	6.000	
16	6.000	8.000	
17	8.000	10.000	
18	10.000	15.000	
19	15.000	20.000	
20	20.000	25.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

PMF PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
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ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F23

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DRAWING TITLE
PMF POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 23 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

PMF PRE-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F24

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DRAWING TITLE: PMF PRE-DEVELOPMENT HAZARD

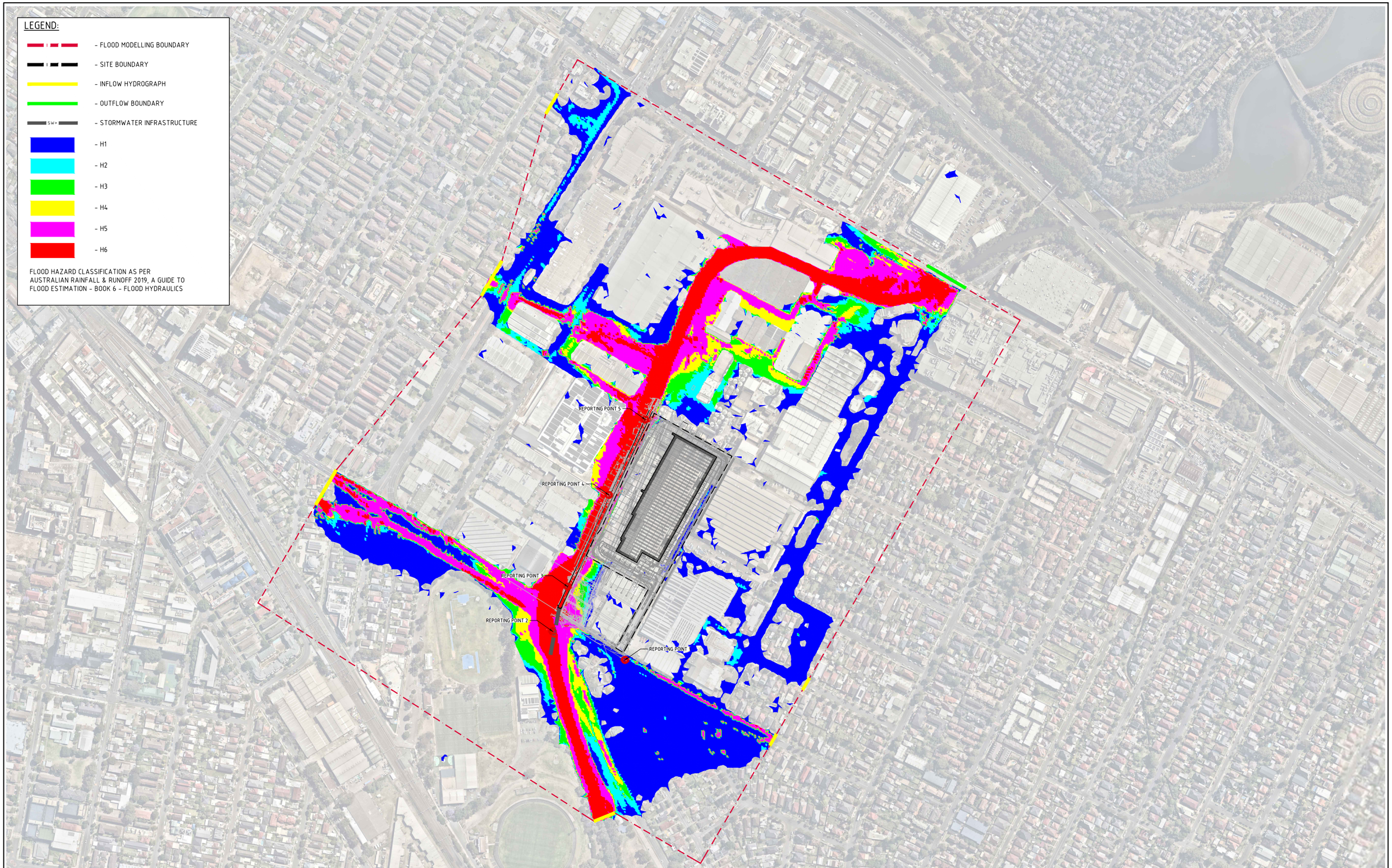
DRAWING No: C014411.01-F 24

ISSUE: D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS



PMF POST-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	06.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F25

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DRAWING TITLE: PMF POST-DEVELOPMENT HAZARD

DRAWING No: C014411.01-F 25

ISSUE: D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F30

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: 0.5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 30 ISSUE: D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:500

5m 0 10 20 30 40 50m

SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F 31

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No C014411.01-F 31 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C01411.01-F32

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C01411.01-F 32 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F33

CONSULT AUSTRALIA

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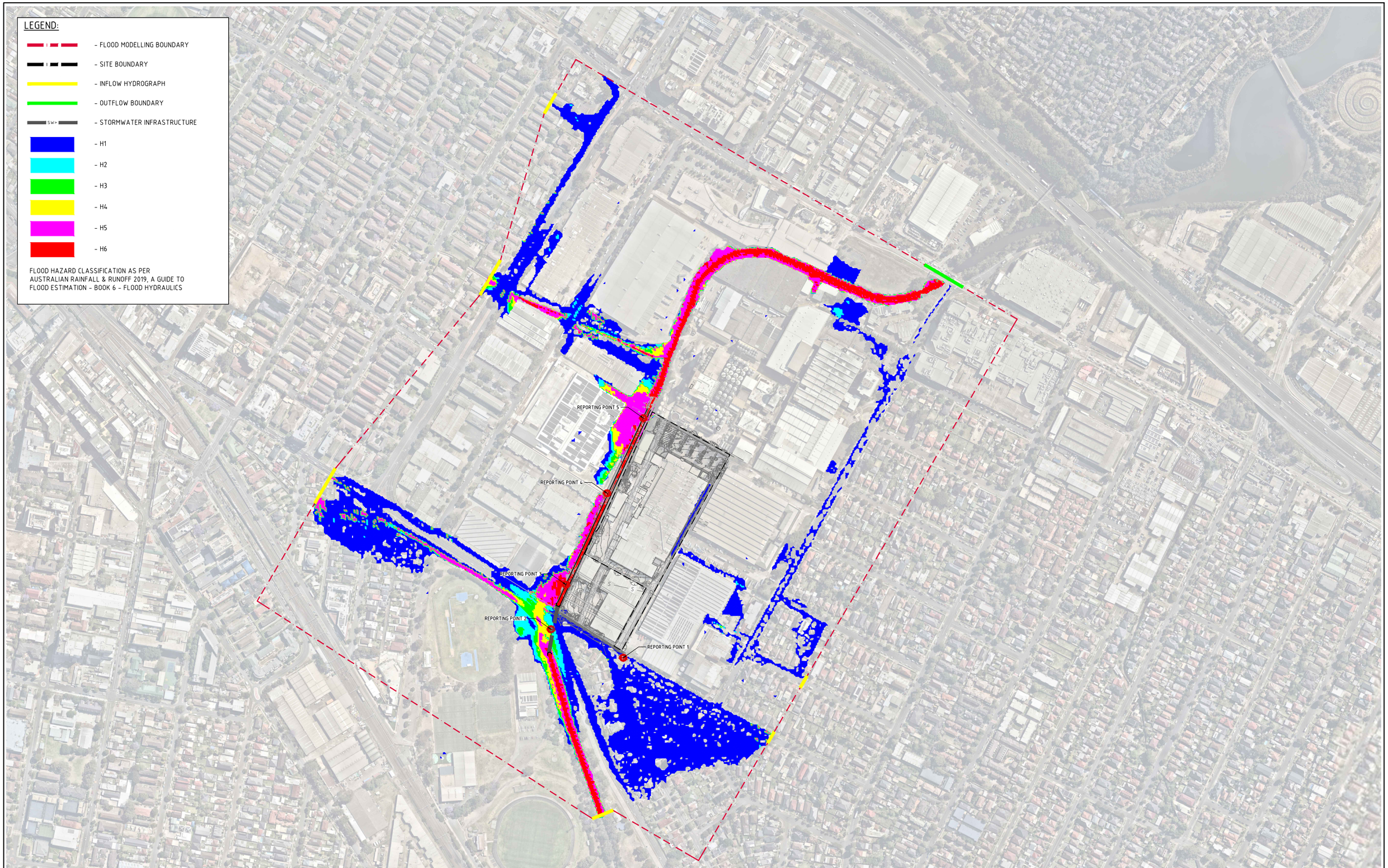
DRAWING TITLE
0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 33 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS



0.5% AEP PRE-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C01411.01-F10

CONSULT AUSTRALIA

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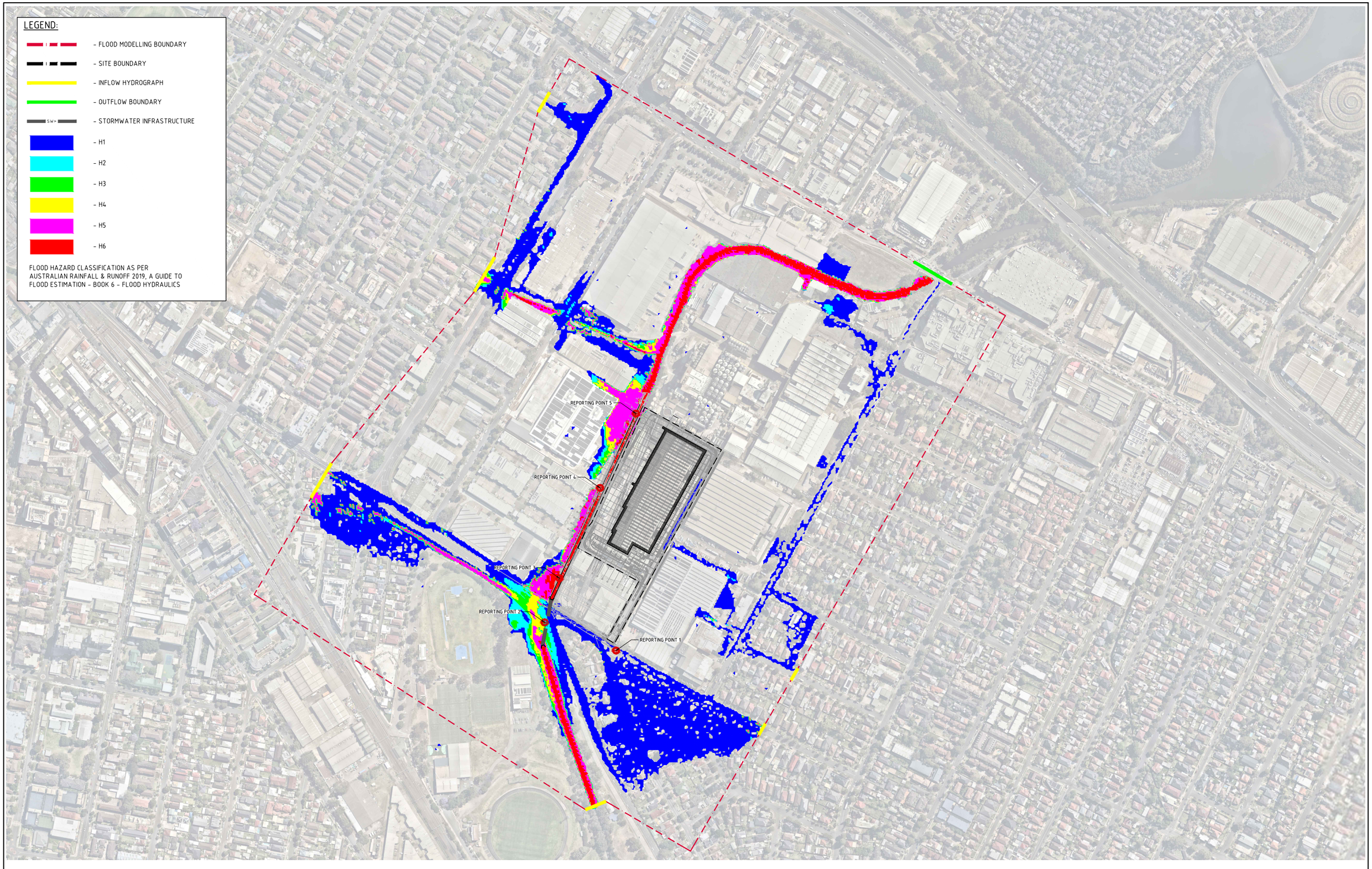
DRAWING TITLE
0.5% AEP PRE-DEVELOPMENT HAZARD

DRAWING No C01411.01-F 34 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS



0.5% AEP POST-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F35

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DRAWING TITLE
0.5% AEP POST-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 35 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.010	
2	0.010	0.020	
3	0.020	0.030	
4	0.030	0.040	
5	0.040	0.050	
6	0.050	0.100	
7	0.100	0.200	
8	0.200	0.300	
9	0.300	0.400	
10	0.400	0.500	
11	0.500	1.000	

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE 0.5% POST-DEVELOPED SCENARIO
VS THE 1.0% POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE - POST-DEVELOPMENT Q100 ARI FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q200 ARI FLOOD LEVEL

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP FLOOD LEVEL INCREASE
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F36

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DRAWING TITLE
0.5% AEP FLOOD LEVEL AFFLUX PLAN COMPARED TO 1% AEP

DRAWING No C014411.01-F 36
ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.050	-0.020	
2	0.020	0.030	
3	0.030	0.040	
4	0.040	0.050	
5	0.050	0.100	
6	0.200	0.300	
7	0.300	0.400	
8	0.400	0.500	

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE 0.5% POST-DEVELOPED SCENARIO
VS THE 0.5% PRE-DEVELOPMENT SCENARIO.
ORIGINAL SURFACE - PRE-DEVELOPMENT Q200 ARI FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q200 ARI FLOOD LEVEL
FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.5% AEP FLOOD LEVELS AFFLUX PLAN
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	21.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F37

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DRAWING TITLE
0.5% AEP FLOOD LEVEL AFFLUX PLAN
(PRE- COMPARED TO POST DEVELOPMENT)

DRAWING No C014411.01-F 37

ISSUE C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F40

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DRAWING TITLE: 0.2% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 40 ISSUE: D

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F41

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DRAWING TITLE: 0.2% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 41 ISSUE: D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F42

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DRAWING TITLE
0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 42 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F43

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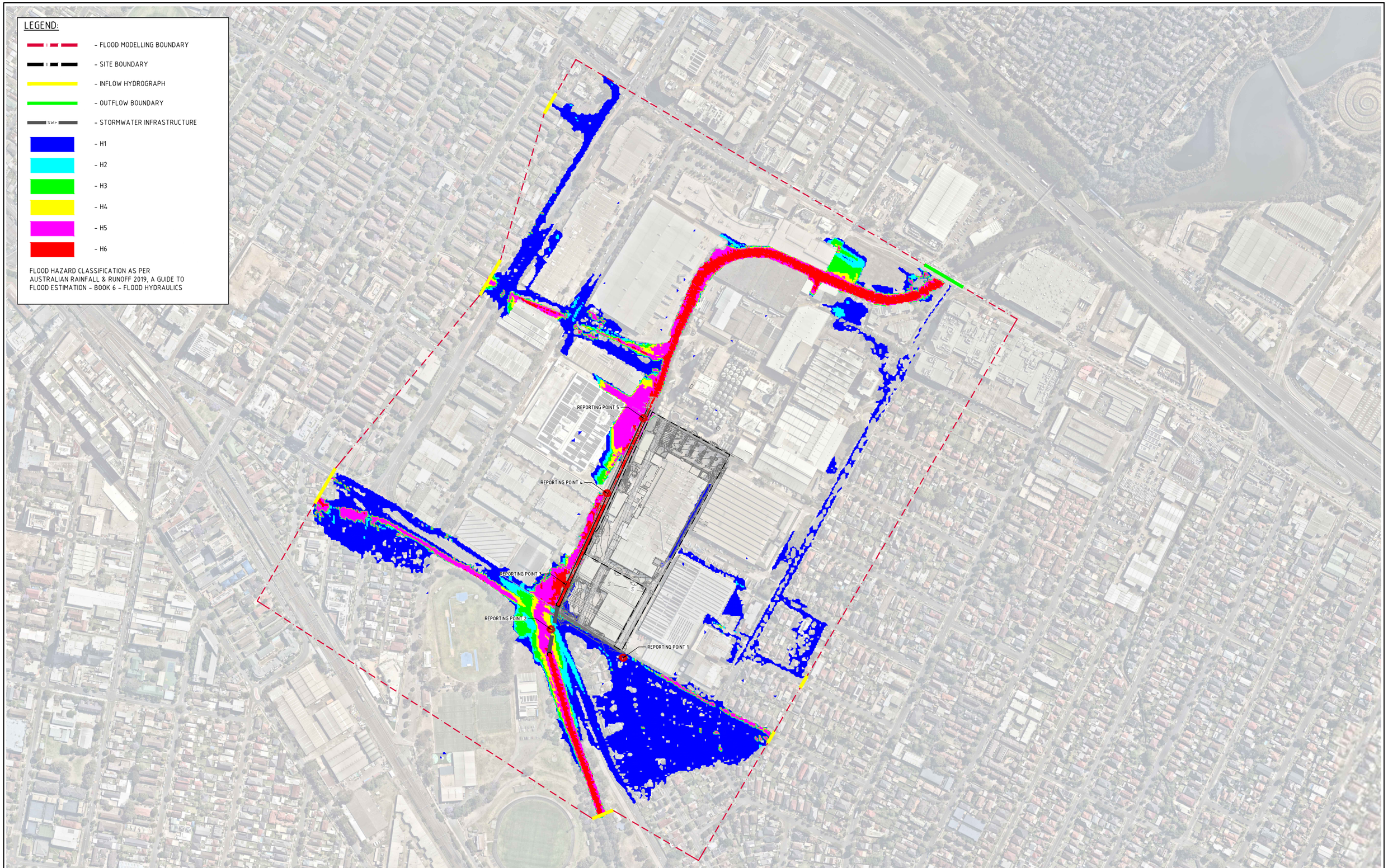
DRAWING TITLE
0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 43 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS



0.2% AEP PRE-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F44

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DRAWING TITLE
0.2% AEP PRE-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 44 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP POST-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F45

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DRAWING TITLE: 0.2% AEP POST-DEVELOPMENT HAZARD

DRAWING No: C014411.01-F 45

ISSUE: D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

FLOOD LEVEL
AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.010	0.020	
2	0.020	0.030	
3	0.030	0.040	
4	0.040	0.050	
5	0.050	0.100	
6	0.100	0.200	
7	0.200	0.300	
8	0.300	0.400	
9	0.400	0.500	
10	0.500	1.000	
11	1.000	2.000	
12	2.000	3.000	

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE 0.5% POST-DEVELOPED SCENARIO
VS THE 1.0% POST-DEVELOPMENT SCENARIO
ORIGINAL SURFACE -
POST-DEVELOPMENT Q100 ARI FLOOD LEVEL
COMPARISON SURFACE -
POST-DEVELOPMENT SCENARIO Q500 ARI FLOOD LEVEL

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP FLOOD LEVEL AFFLUX PLAN COMPARED TO 1% AEP
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	D
ISSUED FOR INFORMATION	27.10.23	C
ISSUED FOR INFORMATION	04.08.23	B
ISSUED FOR INFORMATION	08.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F46

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DRAWING TITLE
0.2% AEP FLOOD LEVEL AFFLUX PLAN COMPARED TO 1% AEP

DRAWING No C014411.01-F 46 ISSUE D

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

FLOOD LEVEL AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-0.050	-0.020	
2	0.020	0.030	
3	0.030	0.040	
4	0.040	0.050	
5	0.050	0.100	
6	0.100	0.200	
7	0.200	0.300	
8	0.300	0.400	

NOTE:
FLOOD LEVEL DIFFERENCE PROVIDED FOR THE 0.5% POST-DEVELOPED SCENARIO
VS THE 0.5% PRE-DEVELOPMENT SCENARIO.
ORIGINAL SURFACE - PRE-DEVELOPMENT Q200 ARI FLOOD LEVEL
COMPARISON SURFACE - POST-DEVELOPMENT SCENARIO Q200 ARI FLOOD LEVEL
FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

0.2% AEP FLOOD LEVEL AFFLUX PLAN
(PRE-COMPARED TO POST DEVELOPMENT)
SCALE 1:2500

FOR INFORMATION

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
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ISSUED FOR INFORMATION	21.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F47

CONSULT AUSTRALIA

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
0.2% AEP FLOOD LEVEL AFFLUX PLAN
(PRE- COMPARED TO POST DEVELOPMENT)

DRAWING No C014411.01-F 47 ISSUE C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

50% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

ARCHITECT: SBA ARCHITECTS
CLIENT: Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C0144 11.01-F50

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DRAWING TITLE
50% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C0144 11.01-F 50
ISSUE: C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

50% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F51

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DRAWING TITLE: 50% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 51

ISSUE: C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

50% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F52

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CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
50% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 52

ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

50% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT
SBA ARCHITECTS

CLIENT
Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F53

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DRAWING TITLE
50% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 53 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5

REPORTING POINT 4

REPORTING POINT 3

REPORTING POINT 2

REPORTING POINT 1

50% AEP PRE-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C01411.01-F54

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DRAWING TITLE
50% AEP PRE-DEVELOPMENT HAZARD

DRAWING No C01411.01-F 54

ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

50% AEP POST-DEVELOPMENT HAZARD
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F55

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DRAWING TITLE
50% AEP POST-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 55

ISSUE C

LEGEND:

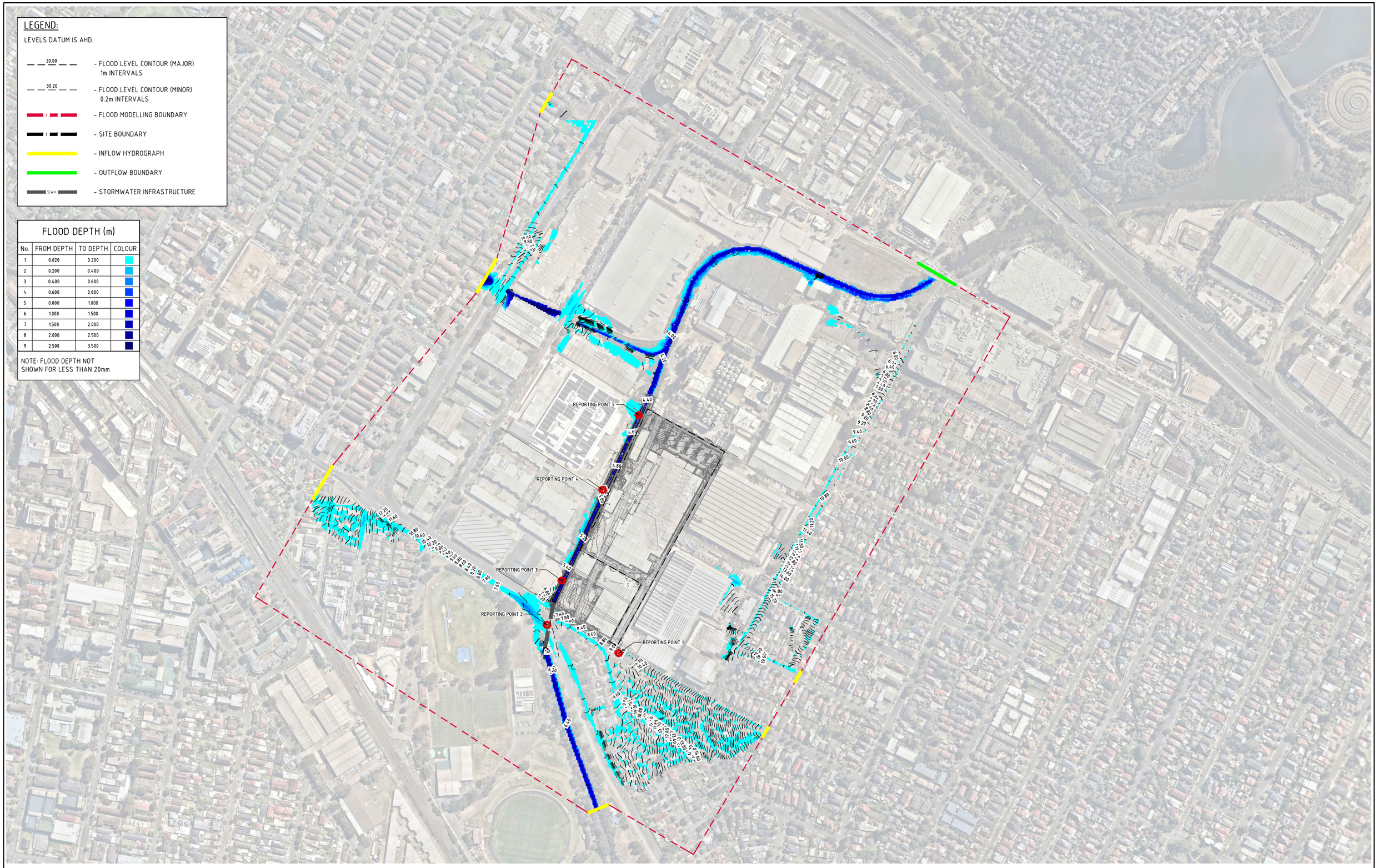
LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm



20% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C0144 11.01-F60

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DRAWING TITLE: 20% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C0144 11.01-F 60

ISSUE: C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

20% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F61

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DRAWING TITLE: 20% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 61 ISSUE: C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

20% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT
SBA ARCHITECTS

CLIENT
Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C01441.01-F62

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
20% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C01441.01-F 62
ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

20% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT
SBA ARCHITECTS

CLIENT
Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F63

CONSULT AUSTRALIA

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DRAWING TITLE
20% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 63 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

20% AEP PRE-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C01411.01-F64

CONSULT AUSTRALIA

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DRAWING TITLE: 20% AEP PRE-DEVELOPMENT HAZARD

DRAWING No: C01411.01-F 64

ISSUE: C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

20% AEP PRE-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	10.11.23	C
ISSUED FOR INFORMATION	27.10.23	B
ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F65

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DRAWING TITLE
20% AEP POST-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 65 ISSUE C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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AMENDMENTS DATE ISSUE

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C0144 11.01-F70

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DRAWING TITLE: 5% AEP PRE-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C0144 11.01-F 70

ISSUE: C

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- – FLOOD MODELLING BOUNDARY
- – SITE BOUNDARY
- – INFLOW HYDROGRAPH
- – OUTFLOW BOUNDARY
- SW – STORMWATER INFRASTRUCTURE

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

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ISSUED FOR INFORMATION	04.08.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F71

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DRAWING TITLE: 5% AEP POST-DEVELOPMENT LEVELS AND DEPTHS

DRAWING No: C014411.01-F 71 ISSUE: C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5.0% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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ISSUED FOR INFORMATION	04.08.23	A

ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F72

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DRAWING TITLE
5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 72 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE

VELOCITY (m/s)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	2.250	
10	2.250	2.500	
11	2.500	3.000	
12	3.000	3.500	
13	3.500	4.000	
14	4.000	4.500	
15	4.500	5.000	
16	5.000	6.000	
17	6.000	7.000	
18	7.000	8.000	
19	8.000	9.000	
20	9.000	10.000	

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:2500

20m 0 50 100 150 200 250m
SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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ISSUED FOR INFORMATION	04.08.23	A

AMENDMENTS DATE ISSUE

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CLIENT Hale

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INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F73

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DRAWING TITLE
5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No C014411.01-F 73 ISSUE C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5.0% AEP PRE-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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ARCHITECT: SBA ARCHITECTS

CLIENT: Hale

PROJECT: INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F74

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DRAWING TITLE: 5% AEP PRE-DEVELOPMENT HAZARD

DRAWING No: C014411.01-F 74

ISSUE: C

LEGEND:

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- INFLOW HYDROGRAPH
- OUTFLOW BOUNDARY
- STORMWATER INFRASTRUCTURE
- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

REPORTING POINT 5
REPORTING POINT 4
REPORTING POINT 3
REPORTING POINT 2
REPORTING POINT 1

5% AEP PRE-DEVELOPMENT HAZARD

SCALE 1:2500

20m 0 50 100 150 200 250m

SCALE 1:2500 AT B1 SIZE SHEET

FOR INFORMATION

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AMENDMENTS DATE ISSUE

ARCHITECT SBA ARCHITECTS

CLIENT Hale

PROJECT
INDUSTRIAL DEVELOPMENT
42 BOOREA STREET, LIDCOMBE
NSW, 2141

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LdV	LdV	JUN'23	DS	B1	AS SHOWN	C014411.01-F75

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DRAWING TITLE
5% AEP POST-DEVELOPMENT HAZARD

DRAWING No C014411.01-F 75 ISSUE C

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APPENDIX B
MONTHLY RAINFALL DATA & CLIMATE STATISTICS



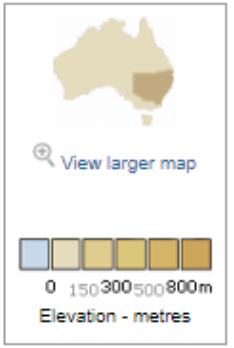
Summary statistics SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE)

A summary of the major climate statistics recorded at this site is provided below. There is also an extended table with more statistics available. More detailed data for individual sites is available.

Site information

Site name: SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE)
Site number: 066212
Latitude: 33.83 °S **Longitude:** 151.07 °E
Elevation: 4 m
Commenced: 2011 **Status:** Open
Latest available data: 08 Feb 2024

Geographic location of site



Additional information

Additional site information

Nearest alternative sites

1. 066195 SYDNEY OLYMPIC PK (VIS METER) (2.1km)
2. 066124 PARRAMATTA NORTH (MASONS DRIVE) (6.8km)
3. 066046 PARRAMATTA (6.9km)

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years		Plot	Map
Temperature																	
Mean maximum temperature (°C)	28.9	27.8	26.6	24.4	21.5	18.4	18.7	19.8	22.7	24.9	25.9	27.7	23.9	12	2011 2024		
Mean minimum temperature (°C)	19.4	18.7	17.5	13.9	9.9	7.9	6.5	7.0	9.8	13.0	15.5	17.5	13.1	12	2011 2024		
Rainfall																	
Mean rainfall (mm)	121.4	154.3	194.2	92.6	42.8	111.5	58.5	62.3	47.3	64.8	80.6	75.5	1087.1	12	2011 2024		
Decile 5 (median) rainfall (mm)	125.5	111.6	119.6	42.3	17.2	60.4	20.1	41.1	39.8	47.8	43.6	66.0	1051.6	12	2011 2024		
Mean number of days of rain ≥ 1 mm	7.9	9.3	12.2	7.3	4.3	7.1	6.1	5.2	5.8	6.6	7.3	7.3	86.4	12	2011 2024		

COSTIN ROE CONSULTING CRC

SYDNEY OLYMPIC PARK AWS (ARCHERY CENTRE)

Mean rainfall (mm)

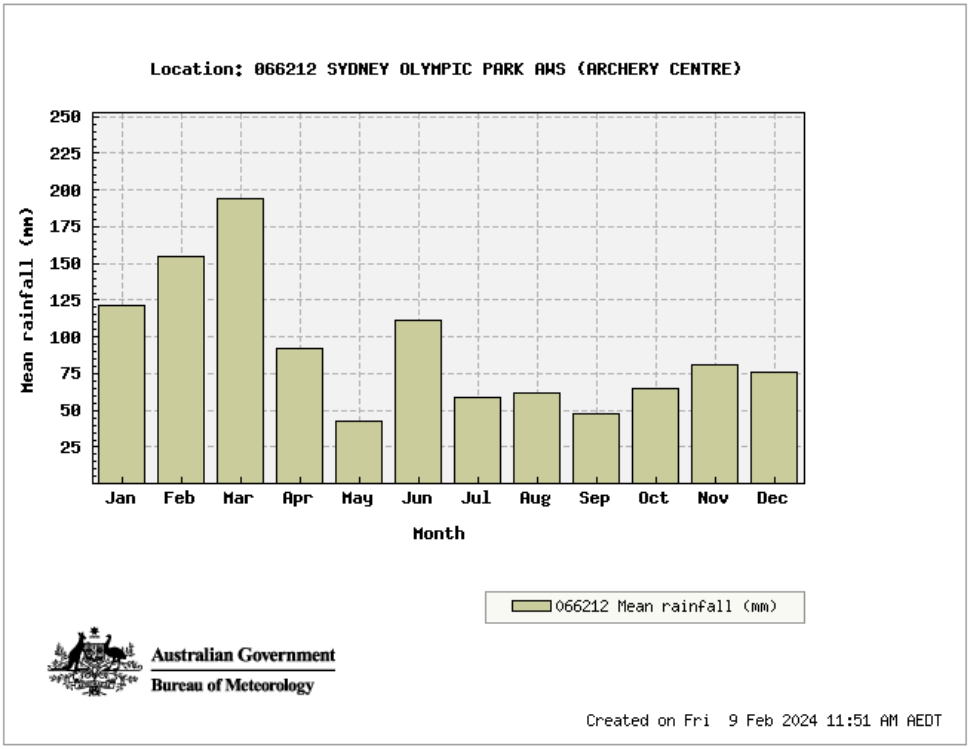
Site details

Site name: SYDNEY OLYMPIC PARK AWS (ARCHERY | **Site number:** 066212 | **Commenced:** 2011
Latitude: 33.83 °S | **Longitude:** 151.07 °E | **Elevation:** 4 m | **Operational status:** Still Open

Yearly data | 30 year statistics | Comparison site | First statistic | Second statistic

Note: Only one option can be redrawn at a time

Include data for the year: 2024 Redraw



Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Mean rainfall (mm) for years 2011 to 2024	121.4	154.3	194.2	92.6	42.8	111.5	58.5	62.3	47.3	64.8	80.6	75.5	1087.1	12

12.3 = Not quality controlled

APPENDIX C
CUMBERLAND COUNCIL FLOOD RISK MANAGEMENT POLICY (NOV 2021)

https://www.cumberland.nsw.gov.au/sites/default/files/inline-files/flood-risk-management-policy-november-2021.pdf

CUMBERLAND
CITY COUNCIL

Flood Risk Management Policy

AUTHORISATION & VERSION CONTROL

Policy Number	POL-061
Policy Owner	Director Environment & Planning
Date Adopted	5 November 2021
Version No	1
Document ID	9112211
Review Date	November 2023

FLOOD RISK MANAGEMENT POLICY

BACKGROUND / INTRODUCTION

Council's Flood Risk Management Policy establishes Council's approach to flood risk management for Cumberland City through the local application of the NSW government's flood risk management principles. There are three floodplains within Cumberland City: Haslams Creek floodplain; Duck River floodplain; and Cooks River floodplain.

PURPOSE

The policy sets out Cumberland City Council's requirements and approach to flood risk management. The purpose of the policy is to reduce the impact of flooding and flood liability.

SCOPE

This policy applies to land within Cumberland City. It should be read in conjunction with the *Cumberland DCP 2021* and other relevant legislation and plans.

DEFINITIONS

ARI – average recurrence interval
DCP - *Cumberland Development Control Plan 2021*
Flood prone land - being synonymous with 'flood liable land' and 'floodplain' is the area of land which is subject to inundation by floods up to and including an extreme flood such as a probable maximum flood (PMF).
FRMP - Flood Risk Management Plan or study
FRP - Flood Risk Precinct
LEP - *Cumberland Local Environmental Plan 2021*
Probable Maximum Flood (PMF) - the largest flood that could conceivably occur at a particular location.

PRINCIPLES

1. To minimise risk to life and damage to property arising from flooding.
2. To manage and facilitate the appropriate development of flood prone land in an economically, environmentally and socially sustainable manner.
3. To ensure the appropriate assessment of proposed development on flood prone land.
4. To ensure that new development does not expose existing development to increased flood risks.
5. Measures to increase resilience across the city are encouraged to reduce the effects of flooding and flood risk.

REQUIREMENTS

1. Development applications lodged in accordance with the *Environmental Planning and Assessment Act 1979* on land affected by potential floods are to be assessed in accordance with the controls in the *Cumberland LEP 2021* and *Cumberland DCP 2021*, as well as the requirements of this policy, as applicable.

2. When assessing flood risk, both mainstream and overland flooding are to be considered.

3. Blockage needs to be included when analysing overland flow paths, pipes, etc. This analysis should be carried out on the basis that all bridges, culverts, pipes, etc. are at least 50% blocked.

4. A number of major land use categories have been identified for the purpose of floodplain management control. Table 1 (in the Appendix) shows these major categories together with the specific uses under each category (as defined by *Cumberland LEP 2021*), and the relevant requirements for each category.

5. Where flood compatible materials are required, refer to Table 2 in the Appendix:

6. Development is to comply with the controls applicable to the proposed land use category and FRPs within which the site is located:

    - Haslams Creek floodplain as specified in Table 3 in the Appendix;
    - Duck River floodplain; and
    - Cooks river floodplain.

    Maps for these catchment areas can be found in the appendix.

Note:

1. Council will prepare FRP Maps to identify flood hazards associated with main channels, creeks and rivers only. Other areas potentially affected by local overland flooding will require further study by the applicant, to determine the applicable FRP.
2. There may be areas beyond those mapped by Council, subject to potential flooding. These areas will require further study if identified, to determine an appropriate FRP.
3. Where the applicant is required to undertake further study to determine the applicable FRP, this will need to be undertaken by using an appropriate hydraulic analysis methodology by a suitably qualified hydraulic engineer with experience in urban flood studies.
4. Each of the floodplains within Cumberland City can be divided into flood risk precincts based on different levels of potential flood risk. These flood risk precincts are as follows:

    Haslams Creek floodplain:
    - *High flood risk:* the area within the envelope of land subject to a high hydraulic hazard (in accordance with the provisional criteria outlined in the Floodplain Management Manual) in a 100 year flood or potentially subject to evacuation difficulties.
    - *Medium flood risk:* as land below the 100 year flood level (plus freeboard) subject to low hydraulic hazard (in accordance with the provisional criteria outlined by the NSW Floodplain Management Manual).
    - *Low flood risk:* all other land within the floodplain (i.e. within the extent of the probable maximum flood) but not identified as either a high flood risk or medium flood risk FRP, where risk of damages are low for most land uses.

    Duck River floodplain:
    FRMPs are yet to be finalised for this floodplain. In the interim, the controls applicable to the Haslams Creek floodplain will be applied. No FRP maps apply and appropriate FRPs must be determined on an individual site basis.

    Cooks River floodplain:
    FRMPs are yet to be finalised for this floodplain. In the interim, the controls applicable to the Haslams Creek floodplain will be applied. No FRP maps apply, and appropriate FRPs must be determined on an individual site basis.

RELATED LEGISLATION

Conveyancing Act 1919
Floodplain Development Manual 2005 (NSW Government)
Australian Standards
Cumberland Local Environmental Plan 2021

RELATED DOCUMENTS AND COUNCIL POLICY

Cumberland City Council Development Control Plan 2021
Any applicable flood risk management plans (FRMP)
Managing Urban Stormwater: Soils and Construction (NSW Department of Housing)
Sydney Water Standards

APPENDIX

Table 1: Floodplain Management Controls – Land Use Categories

Essential community facilities	Critical utilities	Subdivision	Residential	Commercial or industrial	Non-urban activities or open space	Concessional development
Place of public entertainment or public administration buildings which may provide an important contribution to the notification and evacuation of the community during flood events. Hospitals and educational establishments.	Telecommunication facilities; fill; electricity generating works or infrastructure land uses which may cause pollution of waterways during flooding. are essential to evacuation during periods of flood or if affected during flood events would unreasonably affect the ability of the community to return to normal activities after flood events.	Subdivision of land which involves the creation of new allotments for any particular purpose.	Bed & Breakfast accommodation; boarding houses; dwelling houses; home industry; infrastructure land uses (other than critical infrastructure); multi dwelling housing; neighbourhood shops; permanent group homes; residential flat buildings; seniors housing; serviced apartments; transitional group homes.	Amusement centres; bulky goods premises; car parks; child care centres; business premises; community facilities; depots; educational establishments; food and drink premises (excluding pubs); function centre; hazardous industries; hazardous storage establishments; health consulting rooms; health service facilities;	Cemetery; depot; extractive industries; helipad; marinas; mining; recreation areas and recreation facilities (outdoor); stock and sale yard.	(a) In the case of residential development: (i) an addition to an existing dwelling house of not more than 10% or 35m² (whichever is the lesser) of the habitable floor area which existed at the date of commencement of this Plan; (ii) the construction of an outbuilding with a maximum floor area of 20m² or

Essential community facilities	Critical utilities	Subdivision	Residential	Commercial or industrial	Non-urban activities or open space	Concessional development
				hotel or motel accommodation; industries; light industries; liquid fuel depot; medical centres; offensive industries; offensive storage establishments; office premises; passenger transport facilities; place of public entertainment; places of public worship; public administration building; recreation facilities (indoor); recreation facilities (major); registered clubs; resource recovery facility; service stations; sex service premises; shops; storage premises; vehicle body repair workshops; vehicle repair stations; vehicle sales or hire premises; warehouse or distribution centres; wholesale supply.		(iii) re-development for the purposes of substantially reducing the extent of flood affectation to the existing building. (b) In the case of other development: (i) an addition to existing premises of not more than 10% of the floor area which existed at the date of commencement of this Plan; or (ii) re-development for the purposes of substantially reducing the extent of flood affectation to the existing building. (c) In the case of all development: (i) earthworks or filling operations covering 100m² or more than 0.3m deep, which do not raise ground levels above the 20-year ARI flood level, and is not located within the foreshore building line.

APPENDIX (CONTINUED)

Table 2: Flood Compatible Materials

Building component	Flood compatible material	Building component	Flood compatible material
Flooring and sub-floor structure	• Concrete slab-on-ground monolith construction • Suspension reinforced concrete slab	**Doors**	▪ Solid panel with water proof adhesives ▪ Flush door with marine ply filled with closed cell foam ▪ Painted metal construction ▪ Aluminium or galvanised steel frame
Floor covering	• Clay tiles • Concrete, precast or in situ • Concrete tiles • Epoxy, formed-in-place • Mastic flooring, formed-in-place • Rubber sheets or tiles with chemical-set adhesives • Silicone floors formed-in-place • Vinyl sheets or tiles with chemical-set adhesive • Ceramic tiles, fixed with mortar or chemical-set adhesive • Asphalt tiles, fixed with water resistant adhesive	**Wall and ceiling linings**	▪ Fibro-cement board ▪ Brick, face or glazed ▪ Clay tile glazed in waterproof mortar ▪ Concrete ▪ Concrete block ▪ Steel with waterproof applications ▪ Stone, natural solid or veneer, waterproof grout ▪ Glass blocks ▪ Glass ▪ Plastic sheeting or wall with waterproof adhesive
Wall structure	• Solid brickwork, blockwork, reinforced, concrete or mass concrete	**Insulation windows**	▪ Foam (closed cell types) ▪ Aluminium frame with stainless steel rollers or similar corrosion and water resistant material
Roofing structure (for situations where the relevant flood level is above the ceiling)	• Reinforced concrete construction • Galvanized metal construction	**Nails, bolts, hinges and fittings**	▪ Brass, nylon or stainless steel ▪ Removable pin hinges ▪ Hot dipped galvanized steel wire nails or similar
Electrical and mechanical equipment For dwellings constructed on land to which this Part applies, the electrical and mechanical materials, equipment and installation should conform to the following requirements.		**Heating and air conditioning systems** Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the house above the relevant flood level. When this is not feasible, every precaution should be taken to minimize the damage caused by submersion according to the following guidelines.	
Main power supply Subject to the approval of the relevant authority, the incoming main commercial power service equipment, including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the dwelling from the main power supply.		**Fuel** Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.	
Wiring All wiring, power outlets, switches, etc. should, to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conduits located below the relevant designated flood level should be so installed that they will be self-draining if subjected to flooding.		**Installation** The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to an elevation of 600 millimetres above the relevant flood level.	
Equipment All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.		**Ducting** All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.	
Reconnection Should any electrical device and/or part of the wiring be flooded, it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.			

APPENDIX (CONTINUED)

Haslams Creek Floodplain

(Also applies to Duck River and Cooks River Floodplain in interim - subject to review)

Planning Consideration	Flood Risk Precincts (FRP's)																		
	Low Flood Risk							Medium Flood Risk						High Flood Risk					
	Essential Community Facilities	Critical Utilities	Subdivision	Residential	Commercial & Industrial	Recreation & Non-Urban	Concessional Development	Essential Community Facilities	Critical Utilities	Subdivision	Residential	Commercial & Industrial	Recreation & Non-Urban	Concessional Development	Essential Community Facilities	Critical Utilities	Subdivision	Residential	Commercial & Industrial	Recreation & Non-Urban	Concessional Development
Floor Level		5									2,3,4	2,3	1	6						1	2,6
Building Components		2									1	1	1	1						1	1
Structural Soundness		3									2	2	2	2						1	1
Flood Affectation		2								1	2	2	2	2						1	1
Evacuation		2,4	*	3,4	4					*	3,4	3,4	1	3						1	3
Management & Design		1,2,3	1							1	2,3,5	2,3,5	2,3,5	2,3,5						2,3,5	2,3,5

Not Relevant

Unsuitable Land Use

* Refer to 'Management & Design' planning consideration for subdivision

Note: *Filling of the site, where acceptable to Council, may change the FRP considered to determine the controls applied in the circumstances of individual applications.*

Floor level

1	All floor levels to be equal to or greater than the 5 year ARI flood level plus freeboard unless justified by site specific assessment.
2	Floor levels of open car parking areas to be equal to or greater than the 20 year ARI flood plus freeboard. This may be achieved with a suspended floor which allows the continued passage of flood waters or filling if justified by a site specific assessment, as required with reference to flood affectation and other controls below. Enclosed car parking (e.g. garages or basement car parking) must be protected from the 100 year ARI flood.
3	Habitable floor levels to be equal to or greater than the 100 year ARI flood plus freeboard.
4	Below ground swimming pools should be free from inundation from storms up to the 5 year ARI. Where required, the private open space of a dwelling should be a usable outdoor recreation area which, during storm events equal to less than the 5 year ARI, is free from inundation by overland flows exceeding 50mm.
5	All floor levels to be equal to or greater than the probable maximum flood plus freeboard.
6	Floor levels to be as close to the design floor level (the level nominated above that would apply if not concessional development) as practical and no lower than the existing floor level when undertaking alterations or additions.

Note: The freeboard height in the Haslams Creek floodplain is variable primarily, due to the implications of sub-critical and super-critical flows caused by obstructions to the flowpath of flood waters, and can be determined by reference to a map and tables produced as part of the Haslams Creek FRMP and held in the offices of Council. The freeboard height for the Duck River and Cooks River floodplains is 0.5m.

Building components and method (Also see Table 7)

1	All structures to have flood compatible building components below or at the 100 year ARI flood level.
2	All structures to have flood compatible building components below or at the PMF level.

Structural soundness

1	Engineers report to certify that any structure can withstand the forces of floodwater, debris and buoyancy up to and including a 100 year flood.
2	Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including a 100 year flood.

3	Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including a PMF flood.

Flood affectation

1	Engineers report required to certify that the development will not increase flood affectation elsewhere.
2	The impact of the development on flooding elsewhere to be considered.

Note: When assessing flood affectation the following must be considered:

1. Loss of storage area in the floodplain (except for filling occurring up to the 20 year ARI.
2. Changes in flood levels caused by alteration of conveyance of flood waters.
3. Filling between the 20 year and 100 year ARI flood levels will not be permitted.

Evacuation

1	Reliable access for pedestrians required during a 5 year ARI flood.
2	Reliable access for pedestrians and vehicles required during a PMF flood.
3	Reliable access for pedestrians or vehicles is required from the dwelling, commencing at a minimum flood level equal to the lowest habitable floor level to an area of refuge above the PMF level, either on-site of off-site.
4	Applicant to demonstrate that the development is to be consistent with any relevant DISPLAN or flood evacuation strategy.

Management and design

1	Applicant to demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this Part.
2	Site Emergency Response Flood plan required (except for single-dwelling houses) where floor levels are below the design floor level.
3	Applicant to demonstrate that area is available to store goods above the 100 year flood plus 0/5m (freeboard).
4	Applicant to demonstrate that area is available to store goods above the PMF flood plus 0.5m (freeboard).
5	No external storage of materials below design floor level which may cause pollution or be potentially hazardous during any flood.

APPENDIX (CONTINUED)

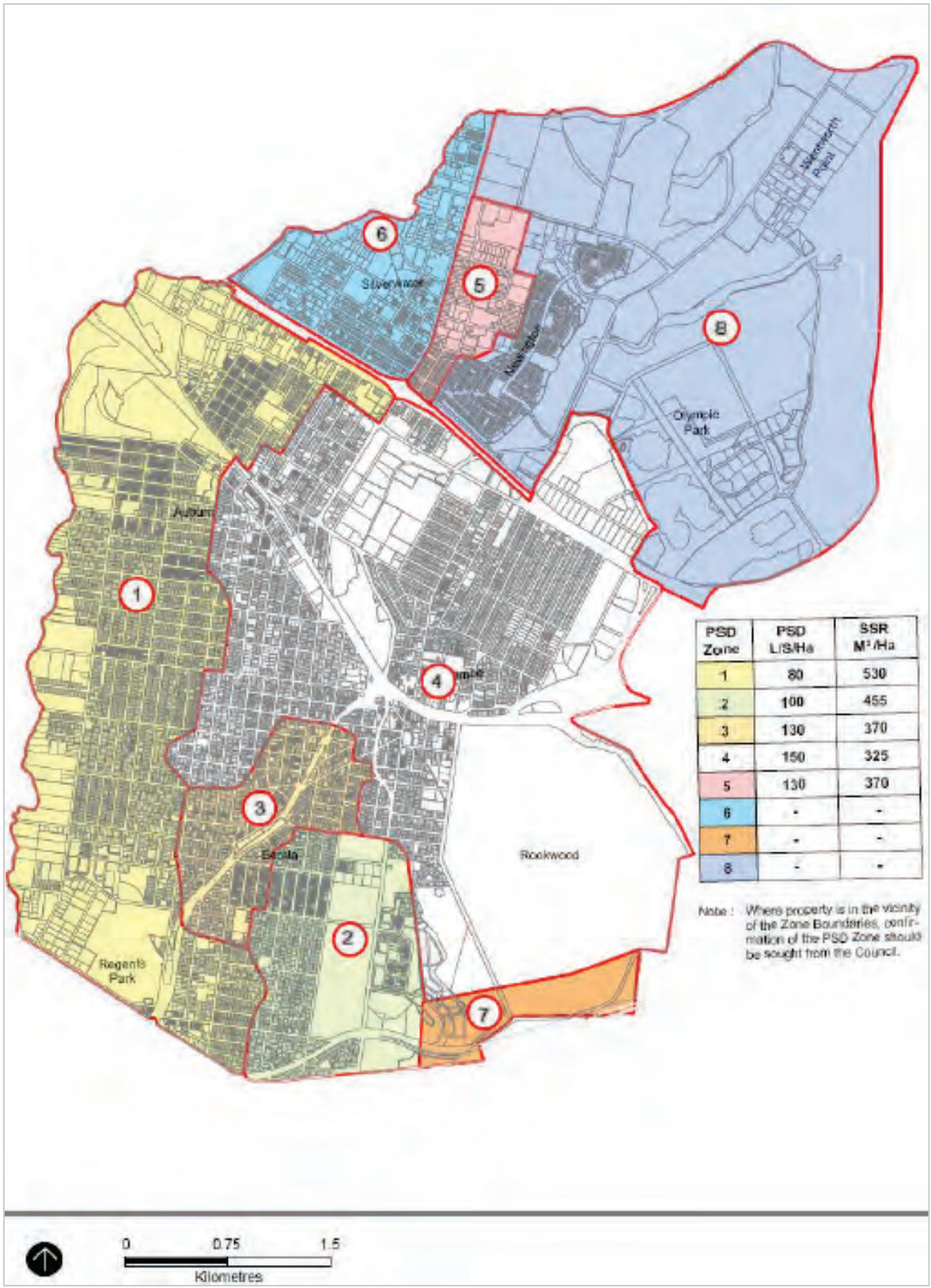


Figure 1: Haslams Creek catchment area

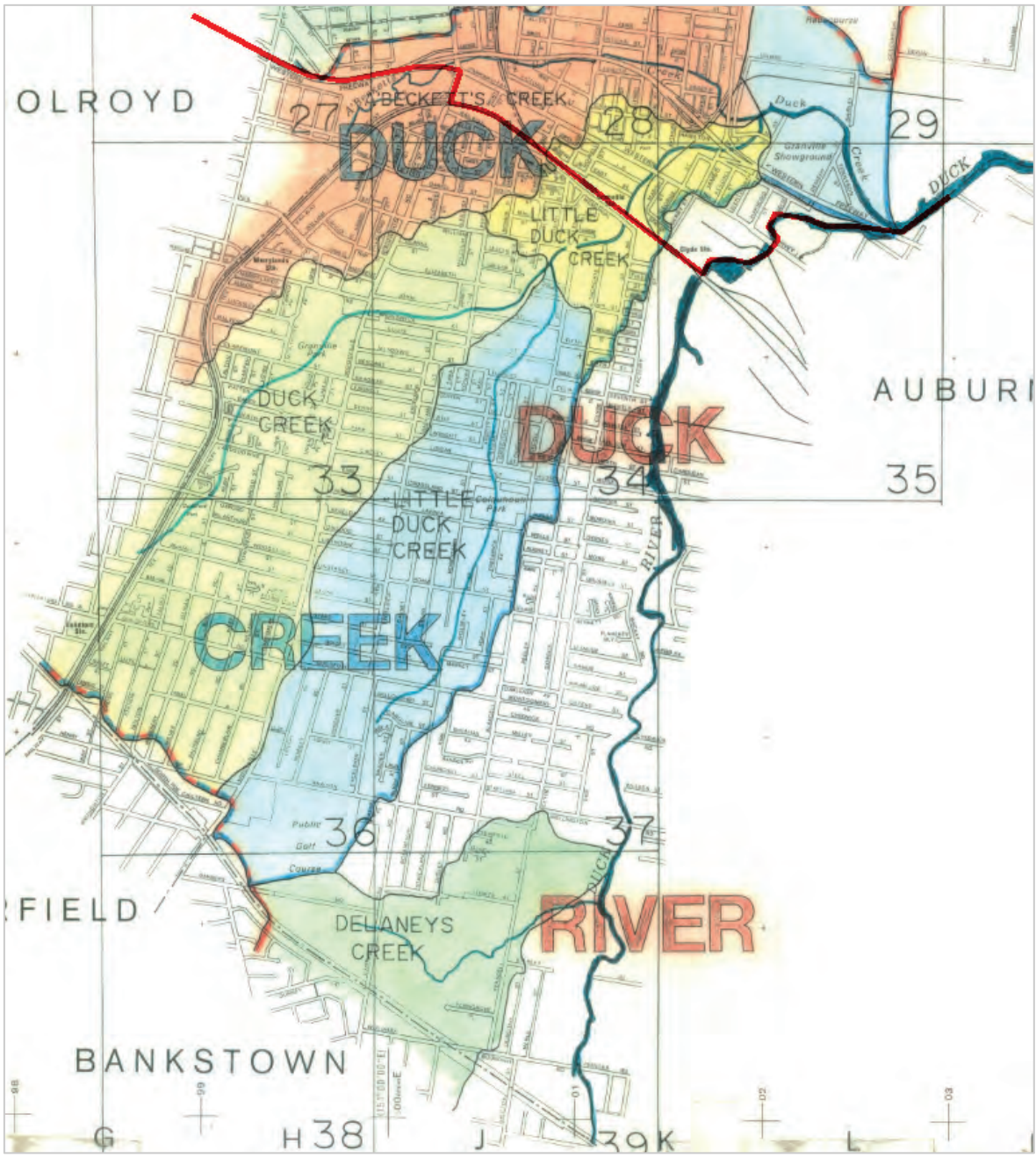


Figure 2: Duck River catchment area

COSTIN ROE CONSULTING

APPENDIX D
CUMBERLAND COUNCIL FLOOD RISK MANAGEMENT POLICY (NOV 2021)

https://www.ses.nsw.gov.au/media/5363/cumberland-vol-1-lfp-endorsed-nov-2021.pdf

CUMBERLAND CITY COUNCIL

SES
NSW STATE EMERGENCY SERVICE

CUMBERLAND LGA FLOOD EMERGENCY SUB PLAN

A Sub Plan of the Local Emergency Management Plan (EMPLAN)

Volume 1 of the Cumberland LGA Local Flood Plan

Endorsed by the Emergency Management Committee

24 November 2021

AUTHORISATION

The Cumberland LGA Flood Emergency Sub Plan is a sub plan of the Cumberland Local Emergency Management Plan (EMPLAN). It has been prepared in accordance with the provisions of the ***State Emergency Service Act 1989*** **(NSW)** and is endorsed by the Local Emergency Management Committee in accordance with the provisions of the ***State Emergency and Rescue Management Act 1989*** **(NSW)**.

Authorised

Kathy Garancsi

NSW SES Central Cluster Local Commander

Date: 18/11/2021

Endorsed

Chair, Local Emergency Management Committee

Date: 16/02/2022.

VERSION HISTORY

Version Number	Description	Date

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

Community Planning and Engagement
NSW State Emergency Service
PO Box 6126, Wollongong NSW 2500
nswses.communityplanning@ses.nsw.gov.au

Amendments in the list below have been entered in this plan.

Amendment Number	Description	Updated by	Date

DISTRIBUTION LIST

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1 OUTLINE AND SCOPE

1.1 PURPOSE

1.1.1 The purpose of this plan is to set out the multi-agency arrangements for the emergency management of flooding in the Cumberland Local Government Area (LGA).

1.2 AUTHORITY

1.2.1 This plan is written and issued under the authority of the *State Emergency and Rescue Management Act 1989* (NSW) ('SERM Act'), the *State Emergency Service Act 1989* (NSW) ('SES Act') and the NSW State Emergency Management Plan (EMPLAN).

1.2.2 This plan is a sub plan to the Cumberland Local Emergency Management Plan (EMPLAN) and is endorsed by the Emergency Management Committee (LEMC).

1.3 ACTIVATION

1.3.1 This plan does not require activation. The arrangements set out in this plan are always active.

1.3.2 The Cumberland Emergency Management Plan (EMPLAN) is active at all times in anticipation of the need to coordinate support and resources requested by combat agencies, including the NSW State Emergency Service (NSW SES).

1.4 SCOPE

1.4.1 The area covered by this plan is the Cumberland LGA. The Cumberland LGA and its principal towns, villages, rivers and creeks are shown in Appendix A.

1.4.2 The council area is in the NSW SES Metro Zone and for emergency management purposes is part of the South West Metro Emergency Management Region.

1.4.3 The plan sets out the Cumberland Council level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Cumberland LGA.

1.4.4 In this plan a flood is defined as a relatively high water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves (including tsunami) overtopping coastline defences.

1.4.5 This plan outlines the local level arrangements for the management of downstream consequences of dam failure,

1.5 GOALS

1.5.1 The primary goals for flood emergency management in NSW are:

a. Protection and preservation of life.

b. Establishment and operation of flood warning systems.

c. Issuing of community information and community warnings.

d. Coordination of evacuation and welfare of affected communities.

e. Protection of critical infrastructure and community assets essential to community survival during and emergency incident.

f. Protection of residential property.

g. Protection of assets and infrastructure that support individual and community financial sustainability and aid assisting a community to recover from an incident; and

h. Protection of the environment and conservation values considering the cultural, biodiversity and social values of the environment.

1.6 KEY PRINCIPLES

1.6.1 The protection and preservation of human life (including the lives of responders and the community) is the highest priority.

1.6.2 Evacuation is the primary response strategy for people impacted by flooding.

1.7 ROLES AND RESPONSIBILITIES

1.7.1 General responsibilities of emergency service organisations and functional areas are set out in the NSW State EMPLAN and NSW State Flood Plan.

1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within the Cumberland LGA are detailed within this plan, Appendix B and Appendix C.

1.7.3 Any agency with agreed responsibilities in this plan that are temporarily, or no longer able to fulfil their responsibilities must as soon as possible notify the:

a. NSW SES Incident Controller (for local or zone level responsibilities during response operations).

b. NSW SES Zone Duty Commander (for regional level responsibilities outside of response operations).

1.8 PLAN MAINTENANCE AND REVIEW

1.8.1 The NSW SES will maintain the currency of this plan by:

a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities.

b. Conducting exercises to test arrangements.

c. Reviewing the contents of the plan:

- When there are changes which alter agreed plan arrangements.
- When changes to land use strategic plans and policies increase the population at risk.
- After a flood including from after action reviews, reports, or inquiries; and

- As determined by the NSW SES Commissioner.

d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

1.9 SUPPLEMENTARY DOCUMENTS

1.9.1 Supplementary material published in previous versions of the Local Flood Plan is now maintained on the NSW SES website at: https://www.ses.nsw.gov.au/about-us/flood-storm-and-tsunami-plans/ including:

a. Flood Plan Glossary.

b. NSW SES Dam Failure Notification Flowchart.

c. NSW SES Resupply Flowchart.

2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

2.1 THE FLOOD THREAT

2.1.1 The NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Cumberland Council LGA.

2.1.2 Declared dams in or upstream of the Cumberland Local Government Area.

Dam Name	Owner	High Risk Dam
Windemere Detention Basin	Boral Recycling P/L	
CSIRO Retarding Basin	Cumberland City Council	
Lidcombe Basin NO. 6	Cumberland City Council	
Potts Hill Reservoir WS455 & WS456	Sydney Water	
Prospect Reservoir	Water NSW	
Fox Hills Retarding Basin	Blacktown Council	

3 PREVENTION/ MITIGATION

3.1 INTRODUCTION

3.1.1 The Floodplain Development Manual outlines the NSW Government's Flood Prone Lands Policy which details the framework for managing flood prone land in New South Wales. Incorporation of floodplain risk management into land use planning is one of the key means to limit the exposure to flood risks to our communities and help build long term resilience to future flood events.

3.2 LAND USE PLANNING

3.2.1 **Strategy:** Work with landuse planning and consent authorities to advocate that the risks arising from floods are considered so as to prevent the creation of intolerable impacts of these hazards on the community.

Actions:

a. NSW SES will provide strategic input about land use planning matters which have or will create significant flood risk.

b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk.

3.3 FLOODPLAIN RISK MANAGEMENT

3.3.1 **Strategy**: NSW SES advocates for the recognition of emergency management considerations through participation in the floodplain risk management program.

Actions:

a. NSW SES will provide coordinated and consistent emergency management advice to councils and other agencies in relation to the management of land that is subject to flooding or coastal inundation; and

b. NSW SES will provide advice, support and technical resources for NSW SES representatives to contribute effectively to local Floodplain Management Committees.

4 PREPARATION

4.1 INTRODUCTION

4.1.1 Preparation includes arrangements or plans to deal with an emergency or the effects of an emergency.

4.2 FLOOD EMERGENCY PLANNING

4.2.1 **Strategy**: NSW SES develop, review and maintain Flood Sub Plans

4.2.2 **Actions**:

a. Develop and review this NSW SES Local Flood Plan as required. Local Flood Plans outline the specific arrangements for management of flood events within an LGA, and may include cross boundary arrangements; and

b. Review plans as per Section 1.8.

4.2.3 Local EMPLAN Consequence Management Guides for flood are not required for communities covered by NSW SES Local Flood Plans.

4.3 FLOOD INTELLIGENCE SYSTEMS

4.3.1 **Strategy**: NSW SES develop and maintain a flood intelligence system to identify flood behaviour, its impact on the community and required response actions.

Actions:

a. Gather and assess flood information for the full range of flood types and severities.

b. Collect, collate, and assess information on the characteristics of communities at risk and the potential effects of flooding on communities at risk; and

c. Share flood intelligence information with supporting agencies.

4.4 DEVELOPMENT OF WARNING SYSTEMS

4.4.1 **Strategy**: Develop, maintain and prepare systems for the provision of flood warnings and associated warning services.

Actions:

a. All levels of government work in partnership to develop and maintain flood warning infrastructure.

b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9).

c. The NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW Flood Warning Consultative Committee.

d. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments where required.

e. Dam Owners will provide Dam Failure Warning Systems (where required) and consult NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Emergency Plans.

f. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.

g. NSW SES develops and maintains warning and flood information products by:

- Utilising flood intelligence data.
- Developing pre-written warning and flood information products.
- Continuously reviewing warning and flood information products; and
- Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW Flood Warning Consultative Committee; and maintain Operational Readiness.

4.5 BRIEFING, TRAINING AND EXERCISING

4.5.1 **Strategy**: Ensure NSW SES, supporting agencies, functional areas and the community are prepared and familiar with the strategies and arrangements within the Flood Sub Plan and supporting documents.

Actions:

a. NSW SES will consult stakeholders throughout the development of plans.

b. NSW SES will inform stakeholders of content changes after revisions.

c. NSW SES will ensure their facilities and resources are maintained and operationally ready.

d. NSW SES will train personnel for their expected flood operation roles; and

e. NSW SES will regularly brief stakeholders on the exercise arrangements contained in the NSW Flood Sub Plan.

4.6 COMMUNITY RESILIENCE TO FLOODING

4.6.1 **Strategy**: NSW SES provides and maintains a flexible volunteer workforce to support community resilience.

Actions:

a. Ensure ongoing recruitment and training of a diverse range of volunteers.

b. Ensure pre-planning to facilitate the management of spontaneous volunteers and community members during a flood.

4.6.2 **Strategy**: NSW SES works with individuals, communities, businesses and government agencies to build flood resilience.

Actions:

a. Work with communities to understand and manage the risks associated with floods, including providing business continuity guidance (NSW SES Business Floodsafe), family preparedness (NSW SES Home Floodsafe) and other engagement strategies.

b. NSW SES will collate, assess and disseminate flood information to the community.

c. Collaborate with individuals, businesses, government agencies and communities when developing flood intelligence, preparedness and response information.

d. Plan for floods collaboratively with communities through community and stakeholder participation and engagement.

5 RESPONSE

5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

a. On receipt of a Bureau of Meteorology (BoM) Severe Weather Warning or Thunderstorm Warning that includes heavy rain or storm surge; or

b. On the receipt of a BoM Flood Watch or Flood Warning; or

c. On receipt warnings for flash flood; or

d. On receipt of a dam failure alert; or

e. When other evidence leads to an expectation of flooding.

5.2 INCIDENT MANAGEMENT ARRANGEMENTS

5.2.1 **Strategy**: Maintain effective control of flood operations across New South Wales.

Actions:

a. The NSW SES uses the Australasian Inter-service Incident Management System (AIIMS) to manage the flood response.

b. Control of flood response will be at the lowest effective level and may be scaled to suit the incident.

c. The NSW SES State Duty Commander will appoint Incident Controllers and establish Incident Control Centres (see NSW SES headquarters on map in Appendix A).

d. The Incident Controller, in consultation with participating supporting emergency services and Functional Areas will determine the appropriate breakdown of an incident area into Divisions and/or Sectors in accordance with the principles of AIIMS as well as the predefined Divisions and Sectors outlined within the NSW SES Intelligence System

5.2.2 **Strategy**: Maintain Incident Control Centre(s).

Actions:

a. NSW SES will operate Incident Control Centre(s) as required.

b. The NSW SES Incident Control Centre(s) will:

- Control resources from NSW SES and coordinate resources of supporting emergency services and functional areas.
- Manage Request for Assistance (RFA) tasking and ensure they are actioned in a timely manner.
- Undertake response planning and determine future resourcing requirements; and
- Coordinate information flow, including warnings, public information and social media.

5.2.3 **Strategy**: Provide effective liaison between the NSW SES and supporting agencies or functional areas in accordance with Local EMPLAN.

Actions:

a. Supporting emergency services and Functional Areas should provide Liaison Officers to NSW SES Incident Control Centre(s) and/or Emergency Operation Centres as required; and

b. NSW SES will provide Liaison Officer(s) to Emergency Operations Centres as required.

5.2.4 **Strategy**: Coordinate resources and logistics support to ensure operational effectiveness.

Actions:

a. The NSW SES Incident Controller will notify agencies of potential access issues between locations, for the consideration of pre-deploying of resources.

b. The NSW SES may request resources and logistics support directly from a supporting emergency service or Functional Area.

c. Wherever possible, supporting organisations are to provide their own logistic support in consultation with NSW SES where appropriate.

d. The NSW SES Incident Controller will control air support operations and may utilise supporting agencies in the management of aircraft.

5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE

5.3.1 **Strategy**: Ensure flood information is effectively communicated and collected during a flood.

Actions:

a. Information relating to the consequences of flooding, response strategies, situational awareness and operational updates will be distributed by NSW SES to supporting emergency services and Functional Areas listed under this Plan.

b. All supporting emergency services and Functional Areas will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established.

c. The NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information; and

d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.

5.3.2 **Strategy**: Ensure flood intelligence is incorporated into operational decision-making.

Action: The NSW SES will use flood intelligence and official forecasts and warnings, to undertake an assessment of the predicted impact of a flood and to inform operational decision-making.

5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY

5.4.1 **Strategy**: Timely and effective warnings are distributed to the community.

Actions:

a. The BoM issues public weather and flood warning products before and during a flood. These may include:

- Severe Thunderstorm Warnings with reference to heavy rainfall
- Regional Severe Thunderstorm Warnings with reference to heavy rainfall
- Detailed Severe Thunderstorm Warnings (for Sydney / Newcastle / Wollongong) with reference to heavy rainfall,
- Severe Weather Warnings with reference to heavy rainfall and/or storm surge,
- Flood Watches, and

- Flood Warnings.

b. Dam Owners will utilise Dam Failure Warning Systems to provide warnings and information to NSW SES and communities (where appropriate).

c. NSW SES Incident Controllers will issue the following NSW SES flood information products incorporating warnings from the above, expected consequences and safety messages:

- Local Flood Advices
- Flood Bulletins
- NSW SES Evacuation Warning
- NSW SES Evacuation Order
- NSW SES All Clear

d. NSW SES liaises with the Bureau of Meteorology to discuss the development of flood warnings as required.

e. NSW SES provides alerts and deliver flood information to affected communities using a combination of the following methods:

- Mobile and fixed public address systems.
- Two-way radio.
- Emergency Alert (SMS and voice message alerting system).
- Telecommunications (including Auto dial systems).
- Facsimile
- Standard Emergency Warning Signal.
- Doorknocking.
- Variable message signs.
- Community notices in identified hubs.
- Distribution through established community liaison networks, partnerships and relationships; and
- NSW SES social media and website.

f. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.

g. Road closure information will be provided to the community through the following agencies/methods:

- Local Government Council websites; and
- My Road Info
- Transport for NSW 'Live Traffic' website: www.livetraffic.com or 'Transport InfoLine': 131 500. VMS messaging on roadways may also be used to advise motorists.

h. The Public Information and Inquiry Centre will be established by the NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.

i. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

5.5 PROTECTION OF PROPERTY

5.5.1 **Strategy**: Coordinate the protection of property from destruction or damage arising from floods.

Action: NSW SES, supporting agencies, and community volunteers will assist the community (where resources are available, feasible and safe to do so) in:

a. The protection of properties through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings; and

b. The raising or moving of household furniture and commercial stock/equipment.

5.6 ROAD AND TRAFFIC CONTROL

5.6.1 **Strategy**: Coordinate the closing and re-opening of flood affected roads.

Actions:

a. Cumberland City Council will coordinate the closure and reopening of council managed roads once inspections have been carried out by the relevant authority.

b. Transport for NSW will coordinate the closure and reopening of the state road network.

c. The NSW Police Force may close and re-open roads but will normally only do so (if the Cumberland City Council or Transport for NSW have not already acted and if public safety requires such action;

d. NSW SES will assist with erecting road closure signs and barriers when time and resources permit.

5.6.2 **Strategy**: Coordinate traffic control measures in flood affected areas.

a. The NSW SES Incident Controller may direct the imposition of traffic control measures into flood affected areas in accordance with the provisions of the *State Emergency Service Act, 1989* and the *State Emergency Rescue Management Act, 1989.*

b. The NSW SES Incident Controller may request the Local Emergency Operations Controller provide suitable personnel to assist with traffic coordination.

5.7 PROTECTION OF ESSENTIAL SERVICES

5.7.1 Local and Region EMPLAN's contain infrastructure inventories.

5.7.2 **Strategy**: Minimise disruption to the community by ensuring protection of infrastructure and supply of essential energy and utility services.

Actions:

a. Transport Services Functional Area will keep the NSW SES informed of the status of transport network infrastructure.

b. The Energy and Utility Services Functional Area is to coordinate the assessment and restoration of essential energy and utility services (not including telecommunications).

c. The Telecommunications Services Functional Area is to coordinate the assessment and restoration of telecommunications and the Government Radio Network.

d. The Engineering Services Functional Area is to coordinate the assessment and restoration of critical public buildings for example hospitals; and

e. Functional Areas will keep the NSW SES informed of the status of utilities and infrastructure.

5.8 EVACUATION

5.8.1 Evacuation is the NSW SES's primary response strategy for managing the population at risk of flooding.

5.8.2 **Strategy**: Conduct planning to ensure all evacuation constraints are considered.

Actions:

a. Evacuations will take place when there is a risk to public safety. Circumstances may include:

- Evacuation of people when their homes or businesses are likely to flood.
- Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access; and
- Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable; and

b. The NSW SES will consider the following in evacuation decisions:

- Duration of evacuation.
- Characteristics of the community.
- Numbers requiring evacuation.
- Availability of evacuation routes and transport.
- Time available for evacuation.
- Evacuee management requirements; and
- Resources and delivery of evacuation information.

c. NSW SES Incident Controllers, and flood planners will carefully consider the risks involved in conducting evacuations.

d. All evacuation decisions will be made as per the current NSW SES policies and procedures, and consistent with the NSW Evacuation Management Guidelines.

e. Potential Evacuation Centres are located in the Local EMPLAN; and

f. The NSW Police Force will coordinate the provision of overall security for evacuated areas.

5.8.3 **Strategy**: Evacuate people pre-emptively from dangerous or potentially dangerous places and or locations created by the flood hazard to safe locations away from the hazard.

a. NSW SES will control and coordinate the evacuation of affected communities.

b. The NSW SES Incident Controller will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.

c. The NSW SES Incident Controller will order any necessary evacuations and provide information to the community about when and how to evacuate.

d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans.

e. Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with the NSW SES and Welfare Services.

f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with the NSW SES and Welfare Services, if not already closed.

g. People who are reluctant or refuse to comply with any Evacuation Order will be referred to the NSW Police Force.

5.9 EVACUEE MANAGEMENT AND WELFARE

5.9.1 Research and experience in flood operations shows that most evacuees go to family, friends and commercial accommodation outside the impact area.

5.9.2 **Strategy**: Maintain the welfare of communities and individuals affected by the impact of a flood.

Actions:

a. NSW SES will provide initial welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as possible. In these cases, the NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required.

b. Welfare Services Functional Area will manage evacuation centres for affected residents and travellers in accordance with the Welfare Services Functional Area Supporting Plan.

c. Schools Administration (Government and Private) will manage the safety of students directly affected by flooding and will work with the NSW SES in the temporary closure of schools and will coordinate with NSW SES Transport and Welfare Services in the management of school evacuees.

d. Disaster Victim Registration will be controlled and coordinated by the NSW Police Force with the assistance of NSW SES and Welfare Services Functional Area.

e. NSW SES will provide details of all residents assisted in evacuations to the Welfare Services Functional Area as early as possible.

f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities; and

g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by the NSW SES and SEOCON in consultation with members of the State Emergency Management Committee.

5.9.3 **Strategy**: Coordinate available and accessible health services for flood affected communities.

Action: The provision of environmental health advice, assessment of public health risks and coordination of immediate mental health support will be provided by Health Services Functional Area.

5.9.4 **Strategy**: Coordinate maintenance of food supplies for flood affected communities.

Actions: All matters relating to the primary production, manufacturing, processing and handling of all food from primary industries to retail, inclusive of all restaurants, food services and catering businesses should be referred to the NSW Food Authority through the Agriculture and Animal Services Functional Area.

5.9.5 **Strategy**: Maintain the welfare of animals impacted by a flood.

Actions:

a. Agriculture and Animal Services Functional Area will coordinate the welfare of livestock, pets, companion animals and wildlife including support to primary producers, animal holding establishments and community members; and

b. Agriculture and Animal Services Functional Area role will assist with evacuation, emergency care of animals and assessment, humane destruction and disposal of affected animals, and supply of emergency fodder, water and aerial support where necessary.

5.10 FLOOD RESCUE

5.10.1 **Strategy**: Control and coordinate flood rescue of people and domestic animals.

Actions:

a. NSW SES will perform flood rescue, where training and equipment is suitable and where a risk assessment has indicated that the risk to rescuers is acceptable.

b. Flood rescue operations will be conducted in accordance with the State Rescue Board Land Rescue Policy and the NSW State Rescue Board Flood Rescue Policy

which sets out the framework, governance, responsibilities and requirements for the management and conduct of flood rescue in NSW.

c. NSW SES may request other supporting emergency services to undertake flood rescues on behalf of the NSW SES. Agencies must be authorised/accredited to undertake flood rescue operations in accordance with State Rescue Board requirements, as prescribed by NSW SES. Supporting emergency services must supply information regarding rescues performed to the NSW SES. Notification arrangements with NSW Police Force are outlined in the NSW State Rescue Board Flood Rescue Policy; and

d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board Land Rescue Policy (and may include Large Animal Rescue of family horses and cows at a residence or property). The rescue of livestock (which includes commercial animals found on farming and breeding enterprises) will be coordinated through Animal and Agriculture Services Functional Area.

5.11 RESUPPLY

5.11.1 **Strategy**: Coordinate resupply to towns and villages isolated by flooding to minimise disruption to the community.

Actions:

a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.

b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.

c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.

d. NSW SES will endeavour to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables.

e. NSW SES will assist hospitals with resupply of linen and other consumables where able.

f. NSW SES may request resupply assistance from supporting agencies.

5.12 ALL CLEAR AND RETURN

5.12.1 **Strategy**: Coordinate the safe return of communities to flood affected areas when the immediate danger to life and property has passed.

Actions:

a. NSW SES Incident Controller will determine when it is safe to progressively return in consultation with the relevant Emergency Operations Controller and supporting agencies, considering the impact on the following:

- Access and egress
- Communications

- Power supply
- Gas supply
- Infrastructure damage
- Hazardous materials; and
- Public health risks (including sewerage)

b. NSW SES Incident Controller will specify the level of access to affected communities as the following:

- Not suitable for access.
- Limited access by emergency services and response agencies.
- Limited access by residents and/or business operators; or
- Full access

c. NSW SES Incident Controller will issue an 'All Clear' message when the immediate danger to life and property has passed for areas assessed as safe; and

d. The NSW SES will facilitate the return of evacuees to their homes.

5.13 END OF RESPONSE OPERATIONS

5.13.1 **Strategy**: Conclude response operations.

Actions:

a. Response operations will conclude when:

- The physical impact of the flood has ceased.
- All requests for assistance related to the flood have been completed;
- The need for warning and evacuation no longer exist.
- There is no further likelihood of rescuing people.
- Resupply is no longer required (resupply operations may occur concurrently with the recovery phase).
- Response to fire and hazardous material incidents have concluded (not including subsequent clean-up of contaminated sites); and
- All affected areas have had an 'All Clear' issued.

5.14 POST IMPACT ACTIONS

5.14.1 **Strategy**: Learnings from the event are used to inform recovery and future events.

Actions:

a. NSW SES will continue to engage with communities after significant floods through convening one or more community forums, workshops or other opportunities to provide communities a chance to provide feedback, address any concerns and provide input into the recovery process. These will typically

include other agencies such as the Bureau of Meteorology, Welfare Services and Cumberland CIty Council representatives.

b. NSW SES will ensure that damage assessment information is provided to the relevant Emergency Operations Controller to inform the recovery impact assessment.

c. NSW SES will conduct After Action Reviews, wherever possible, within three weeks of the end of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.

d. NSW SES will undertake/coordinate a comprehensive review of intelligence and plans following significant flood events.

5.14.2 **Strategy:** Participate in post flood data collection analysis.

Actions: NSW SES will work with the NSW Department of Planning, Industry and Environment (DPIE) and Cumberland City Council on post flood data collection analysis including review of flood intelligence where necessary.

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

6.1.1 Recovery is the process of returning an affected community to its proper level of functioning after an emergency. It will generally commence simultaneously with the Response phase.

6.1.2 Recovery operations will be initiated and conducted as outlined in the NSW State EMPLAN and as further detailed in the NSW Recovery Supporting Plan.

6.2 NSW SES RECOVERY ROLE

6.2.1 **Strategy**: NSW SES will support recovery operations and established Recovery Committees.

6.2.2 **Actions**:

a. NSW SES will provide representation to Recovery Committees as required and may have an ongoing role in the Recovery phase.

b. NSW SES roles on Recovery Committees may include providing information about any continuing response, guidance on mitigation strategies and general advice and assistance to the committee as a subject matter specialist and or expert.

c. NSW SES will provide information to Resilience NSW to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements.

d. The NSW SES, in conjunction with a Recovery Committee, will provide a service to support the information needs of a community immediately following a flood; and

e. NSW SES and where required supporting agencies will assist with clean-up operations after floods, where possible when resources and personnel permit.

7 ABBREVIATIONS

For a full list of abbreviations refer to the NSW State Flood Plan - Abbreviations

8 GLOSSARY

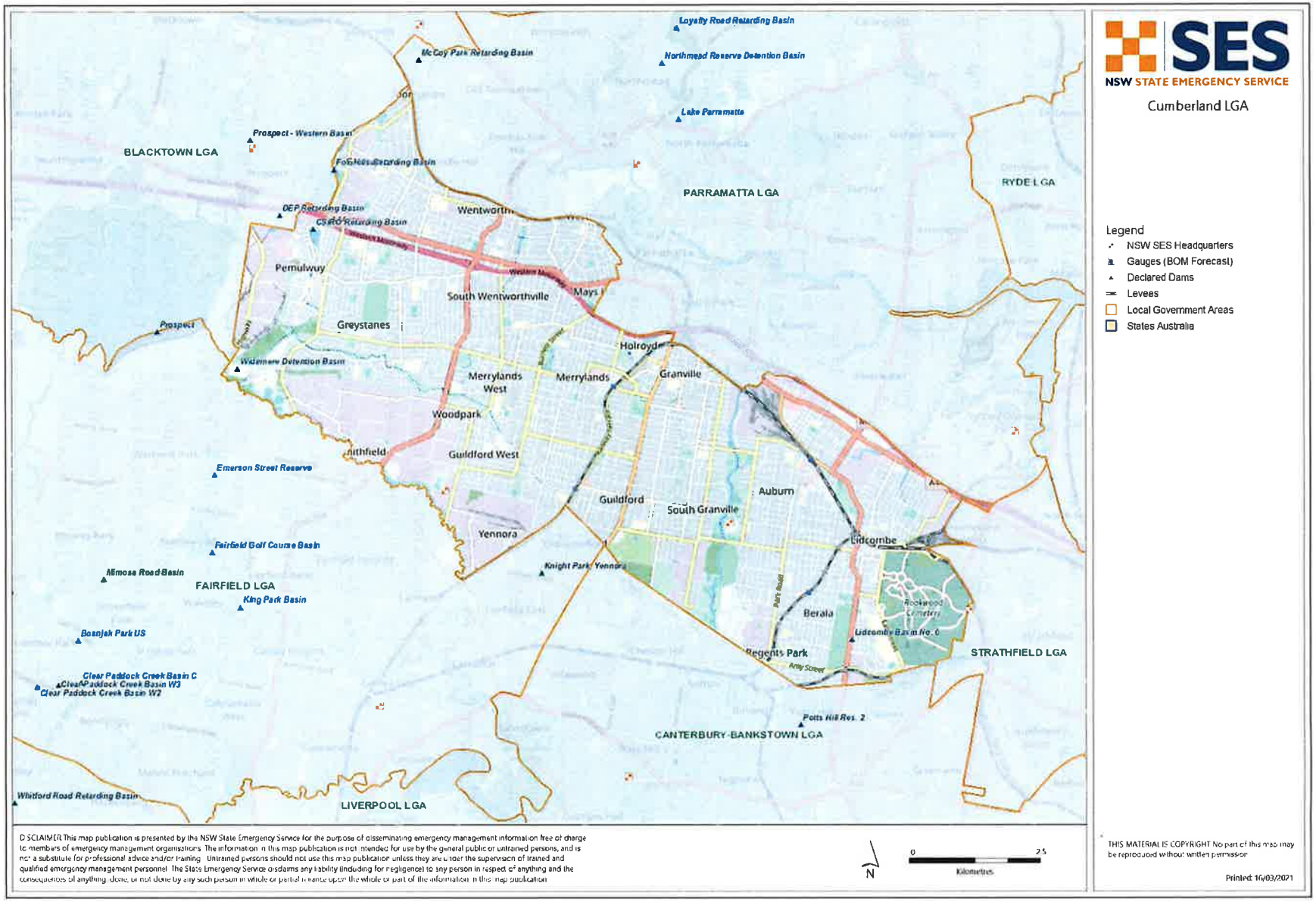
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

Readers should refer to EMPLAN Annex 9 – Definitions.

Refer to the NSW State Flood Plan for a complete glossary of terminology used throughout this plan and within NSW SES Flood Plans.

For a full list of definitions refer to the Supporting Document - State Flood Plan Glossary https://www.ses.nsw.gov.au/media/2650/glossary.pdf

9 Appendix A – Map of Cumberland Local Government Area



10 Appendix B – Roles and Responsibilities

AGENCY	RESPONSIBILITIES
NSW State Emergency Service	The NSW SES is the designated Combat Agency for floods, storms and tsunami and controls response operations. NSW SES roles and responsibilities in relation to floods are detailed within the New South Wales State Flood Plan.

AGENCY	RESPONSIBILITIES
Agriculture and Animal Services Functional Area	The roles and responsibilities for Agriculture and Animal Services are outlined in the Agriculture and Animal Services Supporting Plan Roles and responsibilities in addition to the Supporting Plan are: • Disseminate briefing information to participating agriculture and animal services and related stakeholders. • When activated the Agriculture and Animal Services will coordinate the provision of required services which may include: – Coordinate response for animal welfare including pets, livestock and wildlife. – Supply and delivery of emergency fodder. – Emergency water replacement in certain circumstances; and – Financial, welfare and damage assessment assistance to flood affected primary producers. • Support recovery arrangements including: – Administer transport subsidies to primary producers.
Australian Government Bureau of Meteorology	The roles and responsibilities of the Australian Government Bureau of Meteorology are outlined in the NSW State Flood Plan.
Cumberland City Council	**Preparedness** • Establish and maintain floodplain risk management committees and ensure that key agencies are represented. • Develop and implement floodplain risk management plans in accordance with the NSW Government's Flood Prone Land Policy and the Floodplain Development Manual. • Provide levee studies, flood studies and floodplain management studies to the NSW SES. • Maintain Dam Safety Emergency Plans for the Cumberland City Council dams and provide copies to the NSW SES. • Provide information on the consequences of dam failure to the NSW SES for incorporation into planning and flood intelligence.

AGENCY	RESPONSIBILITIES
	• Coordinate the development of warning services for catchments prone to flash flooding (small catchments), where appropriate; • Maintain council-owned flood warning networks and flood mitigation works. • Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub-Plans. • Maintain a plant and equipment resource list for the council area. • Contribute to community engagement activities. **Response** • Subject to the availability of council resources, assist the NSW SES with flood operations including: – Traffic management on council managed roads. – Provision of assistance to the NSW SES (plant, equipment and personnel where able and requested). – Property protection tasks including sandbagging. – Warning and/or evacuation of residents and other people in flood liable areas. – Provision of back-up radio communications – Resupply of isolated properties; and – Technical advice on the impacts of flooding. – Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise the NSW SES, the NSW Police Force and people who contact the council for road information. – Assist the NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • • Operate flood mitigation works including critical structures such as detention basins and levees and advise the NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • Provide advice to the NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply. • Advise the Environmental Protection Agency of any sewerage overflow caused by flooding.

AGENCY	RESPONSIBILITIES
	• Work with the NSW SES and DPIE to collect flood related data during and after flood events. **Recovery** • Provide for the management of health hazards associated with flooding including removing debris and waste. • Ensure premises are fit and safe for reoccupation and assess any need for demolition. • Provide services, assistance and advice to State Government in accordance with the State Recovery Plan.
Childcare Centres and Preschools	• When notified of possible flooding or isolation, childcare centres and preschools should. – Liaise with the NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures; and – Assist with coordinating the evacuation of preschools and childcare centres.
Dams Safety NSW	The roles and responsibilities of the Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the NSW State Flood Plan.
Department of Defence	Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448).
Department of Industry	The roles and responsibilities for the Department of Industry (Crown Lands and Water Division) are outlined in the NSW State Flood Plan.
Energy and Utilities Services Functional Area	The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN). Roles and responsibilities in addition to the Supporting Plan are: • Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available. • Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to: – Provide advice to the NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection. – Advise the NSW SES of any hazards from utility services during flooding and coastal erosion/inundation. – Advise the public with regard to electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply.

AGENCY	RESPONSIBILITIES
	– Clear or make safe any hazard caused by power lines or electricity distribution equipment. – Reconnect customers' electrical/ gas/ water/wastewater installations, when certified safe to do so and as conditions allow. – Assist the NSW SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.
Engineering Services Functional Area	The roles and responsibilities for Engineering Services are outlined in the Engineering Services Supporting Plan.
Environmental Services Functional Area	The roles and responsibilities for Environmental Services are outlined in the Environmental Services (ENVIROPLAN) Supporting Plan.
Floodplain Management Australia	The roles and responsibilities of Floodplain Management Australia are outlined in the New South Wales State Flood Plan.
Fire and Rescue NSW (as per NSW State Flood Plan)	**Preparedness** • Identify and notify the NSW SES of any locations at risk of fire (within Fire Districts (13) or hazardous materials that pose a significant threat to surrounding populations due to the impact of a flood for incorporation into NSW SES flood intelligence and planning; and **Response** • Meet the agreed arrangements described in the NSW SES and Fire and Rescue NSW Mutual Aid Agreement. • Provide Incident Management personnel and Liaison Officers to the NSW SES where required. • When requested by NSW SES, provide support to the NSW SES in response to flood emergencies across the State. • Assist the NSW SES with the warning and/or evacuation of at-risk communities. • Assist the NSW SES with the monitoring/reconnaissance of flood prone areas. • Provision of Land Based and In Water Flood Rescue Operators as required. • Provision of appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Conduct Hazmat operations including asbestos risks, rising from flood emergencies in coordination with the SES Incident Controller. • Decontamination of Flood Rescue Operators as required. • Assist the NSW SES with the resupply of isolated communities and/or properties.

AGENCY	RESPONSIBILITIES
	• Assist the NSW SES with property protection tasks including sandbagging. • Provide resources for pumping flood water out of buildings and from low-lying areas. • Assist with clean-up operations, including the hosing out of flood affected properties. • Provide trained staff to support a joint intelligence unit, if established by NSW SES, including Remotely Piloted Aircraft System (RPAS) pilots to assist with field observations. • Assist the NSW SES to undertake damage assessment including structural collapse risks. • Coordinate the pre-deployment of fire resources to communities within NSW Fire Districts if access is expected to be lost, in consultation with the NSW SES; and • Coordinate the deployment of the FRNSW High trans Pump to locations in consultation with NSW SES. **Recovery** • Participate in After Action Reviews as required.
Health Services Functional Area	The roles and responsibilities for Health Services Functional Area are outlined in the Health Services (HEALTHPLAN) Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • Ensure that appropriate business continuity plans are developed for essential health infrastructure and are activated during floods.
Local Emergency Operations Controller (LEOCON)	• Monitor flood operations. • If requested, coordinate support for the NSW SES Incident Controller.
Local Emergency Management Officer (LEMO)	• If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations.
Manly Hydraulics Laboratory (MHL)	The roles and responsibilities of Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.
Marine Rescue NSW (as per NSW State Flood Plan)	**Response** • When requested by NSW SES, assist in flood operations when training and equipment are available and suitable including assistance with: – Warning and/or evacuation of at-risk communities. – Providing communications personnel. – Property protection tasks including sandbagging; and – Flood rescue operations.

AGENCY	RESPONSIBILITIES
NSW Ambulance	The roles and responsibilities for NSW Ambulance are outlined in the Health Services (HEALTHPLAN) Supporting Plan.
NSW Department of Education	**Preparedness** • Liaise with the NSW SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures (or where required, for students to be moved to a suitable location until normal school closing time); • Ensure that evacuation plans for flood liable schools have arrangements for flooding; and • Assist NSW SES with community engagement and capacity building programs. **Response** • Assist with the coordination of the evacuation of schools and the immediate welfare of students until returned to the appropriate carer. • Pass information to school bus drivers/companies and/or school principals on expected or actual impacts of flooding; and • Provide space in schools for evacuation centres where necessary.
NSW Department of Industry, Planning and Environment (as per NSW State Flood Plan)	**Prevention** • Oversee the delivery of the NSW Flood Prone Land Policy including financial support through the Floodplain Management Program. Provide technical advice to councils and state agencies including assistance with the identification of risks, the preparation and implementation of Floodplain Risk Management Plans and associated mitigation and management actions and understanding flood mitigation schemes including levees. • Work with the NSW SES on the Flood Data Access Program to improve the provision of flood information through the NSW Flood Data Portal. • Assist the Department of Industry-Water in the preparation of rural floodplain management plans under the *Water Management Act 2000* (NSW); and **Preparedness** • Assist the NSW SES in the exercising of Flood Sub Plans. • Management of the state government's water level gauges for the flood warning network in tidal areas in NSW (Manly Hydraulic Laboratory operates this system as a service provider on behalf of DPIE.). • Advise NSW SES about conditions which may lead to coastal inundation or retarded river drainage near the coast.

AGENCY	RESPONSIBILITIES
	Response • Provide related advice on flood risks to the NSW SES on request; and • Work with the relevant local council and NSW SES to collect flood related data during and after flood events. **Recovery** Support recovery committees as required.
NSW Food Authority	The roles and responsibilities for NSW Food Authority are outlined in the Food Industry Emergency Sub Plan.
NSW Police Force (as per NSW State Flood Plan)	**Preparedness** • Participate in NSW SES briefings, training and exercises as required. **Response** • Provide a Liaison Officer to the NSW SES Operation Centre if required. • When requested by NSW SES, in flood operations when training and equipment are available and suitable. – Assist with warning and/or evacuation of at-risk communities. – Assist with monitoring / reconnaissance of flood prone areas. – Assist with flood rescue operations. • Conduct road and traffic control operations in conjunction with council and/or Transport NSW. • Coordinate searches for missing people within flood affected areas. • Coordinate security of supply lines evacuated and damaged areas. • Manage Disaster Victim Registration; and • Operate the Public Information and Inquiry Centre, if requested or otherwise needed during flood events. **Recovery** • Participate in After Action Reviews as required.
NSW Rural Fire Service (as per NSW State Flood Plan)	**Preparedness** • Participate in NSW SES briefings, training and exercises as required; and • Meet the agreed arrangements described in the NSW SES/NSW RFS Memorandum of Understanding. **Response** • Provide a Liaison Officer to the NSW SES Operation Centre or Emergency Operations Centre as required.

AGENCY	RESPONSIBILITIES
	• Provide Incident Management Personnel when requested. • Provide trained staff to support a joint intelligence unit, if established by NSW SES. • Provide aviation support, management and advice as requested through the State Air Desk. • Provide speciality aircraft and appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Assist with Damage Assessments; and • Provide Strike Teams during flood operations when requested by NSW SES. This may include assistance with: – Warning and/or evacuation of at-risk communities. – Monitoring / reconnaissance of flood prone areas. – Property protection tasks including sandbagging. – Pumping flood water out of buildings and from low-lying areas. – Back-up radio communications. – Clean-up operations, including the hosing out of flood affected properties. – Deploying resources to communities within Rural Fire Districts where access is expected to be lost in consultation with the NSW SES. – The resupply of isolated communities and/or properties; and – Decontamination of NSW SES Flood Rescue Operators as required. **Recovery** • Participate in After Action Reviews as required.
NSW Volunteer Rescue Association (as per NSW State Flood Plan)	**Response** • Where requested by the NSW SES, assist in flood operations when training and equipment are available and suitable, including assistance with: – The warning and/or evacuation of at-risk communities. – Flood rescue operations. – Monitoring / reconnaissance of flood prone areas. – Resupply of isolated communities and/or properties; and – Property protection tasks including sandbagging.
Resilience NSW	The roles and responsibilities of Resilience NSW are outlined in the NSW State Flood Plan.
Owners of Declared Dams within or upstream of the	**Preparedness** • Assist the NSW SES with community engagement programs.

AGENCY	RESPONSIBILITIES
LGA (as per NSW State Flood Plan)	• Provide NSW SES with information necessary for response planning and warning distribution. • Assist the NSW SES identify correlations between water level and/or discharges at the dam for use in flood response operations (warning and evacuation); and • Consult with the NSW SES State Headquarters in the development of Dam Emergency Plans, including the development of dam failure alerts, in accordance with the Dam Safety Committee Guidelines. **Response** • Where water level monitoring or other instrumentation allows, provide NSW SES with flood advices as per pre-agreed thresholds for use in downstream flood response operations (warnings). • Notify NSW SES of potential or actual dam failures in accordance with the Dam Emergency Plan and Dam Safety NSW Guidelines. • Close at-risk recreational areas within their managed areas. • In the case of declared dams whose risks are intolerable, assist the NSW SES in planning to warn and evacuate people at risk of dam failure and maintain and operate any special Dam Failure Warning Systems and/or automatic telemetered monitoring devices to assist with early detection of incidents which are installed until such time that the risks have been lowered to an acceptable level; and Owners of gated dams: • Provide all available information to the BoM and the NSW SES on storage levels and actual and prospective water releases and their likely impacts on downstream river levels. • Advise the downstream community of prospective and actual water releases, except in those circumstances where the BoM would issue flood warnings; and • Where possible actively work with NSW SES and the BoM to reduce the impacts of flooding on communities through management of water releases within identified safe parameters and within statutory licencing provisions under the *Water Management Act 2000* and *Water NSW Act 2014*.
Public Information Services Functional Area	The roles and responsibilities for Public Information Services are outlined in the Public Information Services Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • On receipt of advice from NSW SES of any weather event likely to result in significant multi agency operational activity, the Public Information Functional Area Coordinator PIFAC determines if a daily multi-agency teleconference is required to ensure that the

AGENCY	RESPONSIBILITIES
	information needs of each agency are being met and to address any issues. These teleconferences continue through the response phase into the recovery phase.
Transport for NSW	• Transport for NSW coordinates information on road conditions for emergency services access. • Transport for NSW coordinates the management of the road network across all modes of transport. • Transport for NSW in conjunction will assist the NSW SES with the evacuation of at-risk communities by maintaining access and egress routes. • Transport for NSW will assist the NSW SES with the communication of flood warnings and information provision to the public through Live Traffic and Social Media according to the VMS protocols and procedures. • Assist the NSW SES with identification of road infrastructure at risk of flooding.
SEOCON/SEOC	The roles and responsibilities of the SEOCON/SEOC are outlined in the New South Wales State Flood Plan.
Surf Life Saving NSW (as per NSW State Flood Plan)	**Preparedness** • Contribute to NSW SES reviews into plans, policies and procedures as required; and • Participate in NSW SES briefings, training and exercises as required. **Response** • Assist the NSW SES with the warning and/or evacuation of at-risk communities. • Provide accommodation in Surf Life Saving facilities for evacuation centres where required; and • Assist the NSW SES with flood rescue operations, where training and equipment are suitable.
Telecommunications Services Functional Area	The roles and responsibilities for Telecommunications Services are outlined in the Telecommunications Services (TELCOPLAN) Supporting Plan.
Transport Services Functional Area	The roles and responsibilities for Transport Services are outlined in the Transport Services Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • Participate in risk management studies.

AGENCY	RESPONSIBILITIES
	• Assist the NSW SES to identify transport infrastructure at risk of flood damage for incorporation into planning and intelligence; and • Coordinate the provision of traffic and transport operations as consistent with the roles of Transport organisations.
Water NSW	The roles and responsibilities for Water NSW are outlined in the New South Wales State Flood Plan.
Welfare Services Functional Area	The roles and responsibilities for Welfare Services are outlined in the Welfare Services Functional Area Supporting Plan.

11 Appendix C – Community Specific Roles and Responsibilities

Community Members	**Preparedness** • Understand the potential risk and impact of flooding. • Prepare homes and property to reduce the impact of flooding. • Understand warnings and other triggers for action and the safest actions to take in a flood. • Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours. • Have an emergency kit; and • Be involved in local emergency planning processes. **Recovery** • Assist with community clean-up if required and able to do so. Participate in After Action Reviews if required.

COSTIN ROE CONSULTING

APPENDIX E
FLOOD EVACUATION INTRODUCTION & SIGN-OFF

PROJECT POSITION	NAME	SIGNATURE	REVISIONS			
			<DATE>	<DATE>	<DATE>	<DATE>
Project Director						
Project Manager						
Site Manager / Flood Warden						
Site Supervisor						
Contract Manager						
Contract Administrator						
WHS /Environmental Manager						
Quality Co-ordinator						
Leading Hand						
Add others:						

APPENDIX F
SES consultation

Our Ref: ID 3751
Your Ref:

13 April 2026

Lourens Devilliers
Costin Roe Consulting
PO Box N419
Sydney NSW 1220

Via email

email: lourens.devilliers@costinroe.com.au
CC: shelly.stingmore@one.ses.nsw.gov.au

Dear Lourens,

Flood Emergency Response Plan for Boorea Street Warehouse and Distribution Centre

Thank you for the opportunity to provide advice on the Flood Emergency Response Plan (FERP) for the proposed development at **Boorea Street Warehouse and Distribution Centre**, 42 Boorea Street, Lidcombe.

We have reviewed the following documents provided as part of the preparation of our advice.

- Costin Roe Consulting, 2026, Operational Flood Management Plan
- Costin Roe Consulting, 10 November 2023, Response to Submissions

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami in NSW. This role includes planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

It is the preference of NSW SES that all development follows the application of sound land use planning and flood risk management in accordance with the Flood Prone Land Policy, the Flood Risk Management Manual 2023 (the Manual) and supporting guidelines including the Support for Emergency Management Planning and relevant planning circulars and directions under the *Environmental Planning and Assessment Act, 1979*, including 4.1 Flooding and PS24-001.

The NSW SES has reviewed the proposed FERP and the flood risk information available to the NSW SES, noting the modelling shows the sole vehicular evacuation route is cut by a floodway in a 1% AEP event,[1] and during a PMF event the flood velocity can reach over 4m/s, suggesting

[1] Cumberland City Council, 2021, *Stormwater and Flood Maps.* Map 2 Flood Hydraulic Categories.

the hazard level on the only vehicle access road would be high hazard (H5-H6).[2] This hazard is unsafe for all people and vehicles, and sheltering in place is not suitable for such sites per consideration 8c of the Shelter in place guideline for flash flooding.[3] In a PMF event the site entry may be isolated by at least 6.5hrs during a PMF with the assumption of 0% blockage,[4] or even up to 8.5 hours,[5] by high hazard flood waters.

The NSW SES does not have statutory authority to endorse or approve flood emergency response plans, however, provides the following advice based on the principles outlined in the Guidelines.

We reiterate our advice provided previously on 17 May 2024 and 4 September 2023. **In summary**, the key issues identified are:

- Site design should **avoid the entry or exit through high hazard areas**, such as the access/egress point onto Boorea Street, if possible, to avoid people becoming trapped on site. It is unacceptable, as the primary evacuation strategy, to expect people to escape from a flood on foot, especially with the high likelihood of ongoing poor weather conditions.
- The site is prone to flash flooding with limited warning time during intense rain events. **Severe Weather Warnings will be the most likely form of advice** about the potential for flood producing storms and rainfall in the Haslams Creek catchment. Business owners and operators must be weather aware and act early on publicly broadcast severe weather and flood warnings as the Bureau and NSW SES provide community risk based warnings, rather than individual site specific warnings. We **recommend early closure of the site prior to the start of the workday** or peoples shift start time, noting the site is proposed to operate 24 hours per day.
- The **trigger for 'End of Response Operations' is entirely incorrect. We request the removal of the following sentence** from the FERP: *"the NSW SES Cumberland Local Incident Controller will issue an "all clear" message which will be conveyed in the same format as the warning message, via SMS."*[6]
    - References to 'All Clear' should be replaced with the Australian Warning System warning levels of: Advice, Watch and Act, and Emergency Warning.

[2] Costin Roe Consulting. 2024, *Flood Management Plan Incorporating Flood Emergency - Proposed Industrial Facility, 42 Boorea Street, Lidcombe NSW*, Rev: A, pages 47-50.
[3] State of NSW, 2024, Shelter in place guideline for flash flooding
[4] Costin Roe Consulting, 2026, *Operational Flood Management Plan Incorporating Flood Emergency – Industrial Facility 42 Boorea Street, Lidcombe, NSW*, Figure 4.5, page 20.
[5] Costin Roe Consulting. 2024, *Flood Management Plan Incorporating Flood Emergency – Proposed Industrial Facility, 42 Boorea Street, Lidcombe NSW*, Rev: A, Figure 6.1, page 27.
[6] Costin Roe Consulting, 2026, *Operational Flood Management Plan Incorporating Flood Emergency – Industrial Facility 42 Boorea Street, Lidcombe, NSW*, Section 7.2.4, page 36.

- If warnings are issued, these may not necessarily be issued via SMS. Any warnings issued by NSW SES are available on the HazardWatch website or Hazards Near Me app, and may also be distributed via other means or media.

- Bureau of Meteorology (BOM) and NSW SES official warning products **are the primary source of truth** to trigger closure of the site. These official warnings will override any decision made by the site Flood Wardens based on the on-site flood level observations.
- We continue to **recommend that flooding emergency plans should be regularly exercised** (similar to building fire evacuation drills) and updated at regular intervals, and whenever additional flood information becomes available or is highlighted during exercise drills or flood events.

Please feel free to contact Claire Flashman via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

Yours sincerely,



Peter Cinque
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NSW State Emergency Service


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