

# El Consulting Engineers

## Flood Impact & Risk Assessment (FIRA)

**S10518 – 215, 229-239 Pitt Street, Merrylands NSW 2160**

OCTOBER 2025



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**Engineers.**

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## Definitions

Average Exceedance Probability (AEP): The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

Average Recurrence Interval (ARI): The average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration. It is implicit in this definition that the periods between exceedances are generally random.

Probable Maximum Flood (PMF): The largest flood that could potentially occur at a particular location, usually estimated from probable maximum precipitation. The PMF defines the maximum extent of flood-prone land, i.e., the floodplain.

Floodplain: The area of land subject to inundation by floods up to and including the probable maximum flood event, including the floodway and floodfringe areas.

Floodway: The most dangerous part of the floodplain, where water is moving in the channel of a river or stream, and the surrounding areas required to carry the regional flood discharge.

Floodfringe: The portion of the floodplain outside of the floodway that is covered by floodwater during a regional flood. This term is generally associated with standing water rather than flowing water, and local floodplain ordinance requirements apply.

Flood Storage: An area where floodwater accumulates, which, if displaced, can cause a significant redistribution of floodwaters, increase in flood levels or frequency. These areas are often aligned with floodplains and characterized by deep and slow-moving floodwater. Flood storage helps regulate the flood peak.

## 1. Introduction

EI Consulting Engineers Pty Ltd has been engaged by Anglicare Community Services to prepare Flood Impact and Risk Assessment (FIRA) to support the construction and operation of the mixed-use development located at 215, 229-239 Pitt St, Merrylands, NSW, 2160.

The purpose of this assessment is to fulfil Cumberland City Council requirements and demonstrate that the development complies with the controls for the flood risk precinct nominated in the *Council Flood Risk Management Policy (CFRMP)*, also attached in **Appendix A**.

Furthermore, this document has been prepared in accordance with the *Environmental Planning and Assessment Act 1979* on land affected by potential floods, and the assessment has been made in accordance with controls outlined in the *Cumberland LEP 2021* and *Cumberland DCP 2021*.

This report outlines the existing flood conditions present on site and presents an assessment of the anticipated impacts of the proposal. The observations and conclusions presented in this report are based on the flood information available from Council resources available to public, flood advice letter and input from previous the flood assessment undertaken for previously lodged development application.

### 1.1 Related Report and Documents

This report is to be read in conjunction with the following reports and documents:

- *Cumberland City Council Local Environment Plan (LEP), 2021;*
- *Cumberland City Council Development Control Plan (DCP), 2021;*
- *Cumberland City Council Flood Risk Management Policy (CFRMP), 2021;*
- *Cumberland City Flood Advice Letter (Ref: EC2024/0889), 2024;*
- *Cumberland City Pre-Lodgement Meeting Advice (Ref: PL2024/0078), 2024;* and
- *A'Becketts Creek Overland Flood Study, Lyall & Associates Consulting Water Engineers, 2017.*

### 1.2 Site Description

The subject site known as 215, 229-239 Pitt St, Merrylands, NSW, 2160 is formed by Lot 1 – DP 1079960, Lot J – DP 10354, Lot 1 – 537031, Lot 2 – DP 537031, and Lot 2 – DP 501597. The site is bounded by McFarlane St to the north, Short Ln to the south, Pitt St to the east, and Reyes Ln to the west. Moreover, the surrounding locality consists of an existing shopping centre to the north, a hotel

to the south, mixed use development currently being built to the north-east, and commercial and retail developments to the east, west, and south.

The existing site contains one and two storey commercial tenancies, a hardstand parking area accessed from Reyes Ln, and is approximately 2,106m<sup>2</sup> in area. Furthermore, the site does not contain any landscaping but contains existing outdoor dining areas at the site frontage along McFarlane St.

**Figure 1** below depicts the site boundaries and the surrounding locality from an aerial view.



Figure 1: Aerial photograph of site (Source: SIX Maps, Jan 2025)

### 1.3 Site Topography

The current site generally falls from south-west to the north-east, with 17.45 mAHd at the highest point and 16.44 mAHd at the lowest point. Moreover, the site consists of mostly built form and impervious pavement. Site topography is further detailed in the survey shown in **Figure 2**, and also attached in **Appendix B**.

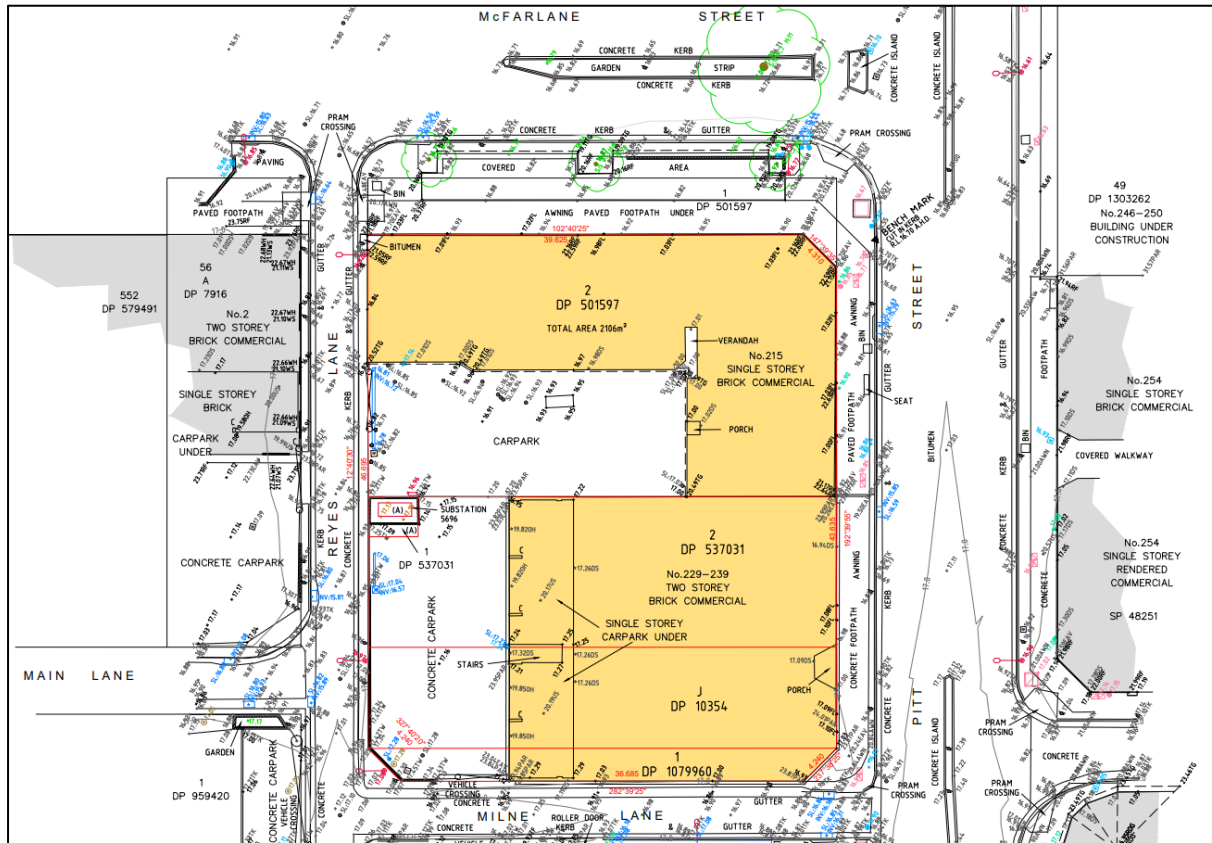


Figure 2: Detailed survey plan (Source: Beveridge Williams, 04 September 2024)

### 1.4 Proposed Development

The proposed activity, within the State Significant Development Application (SSDA), is for the construction and operation of a 35 storey shop top housing development.

Specifically, the SSDA proposal involves the following works:

- Tower with 238 affordable housing units pursuant to Chapter 2, Part 2, Division 1 of the State Environmental Planning Policy (Housing) 2021;
- Two storey podium for commercial usage;
- Ground floor retail spaces;
- 4 levels of basement parking with 185 car parking spaces; and
- Public domain works.

Moreover, the proposed site access arrangements are as follows:

- Through-site pedestrian passageway linking Reyes Ln and Pitt St.
- Residential and commercial car parking access via Reyes Ln.
- Heavy vehicle loading dock on Short Lane.

The overall development layout plan is portrayed below in **Figure 3**. Refer to the architectural package prepared by Fuse Architects.

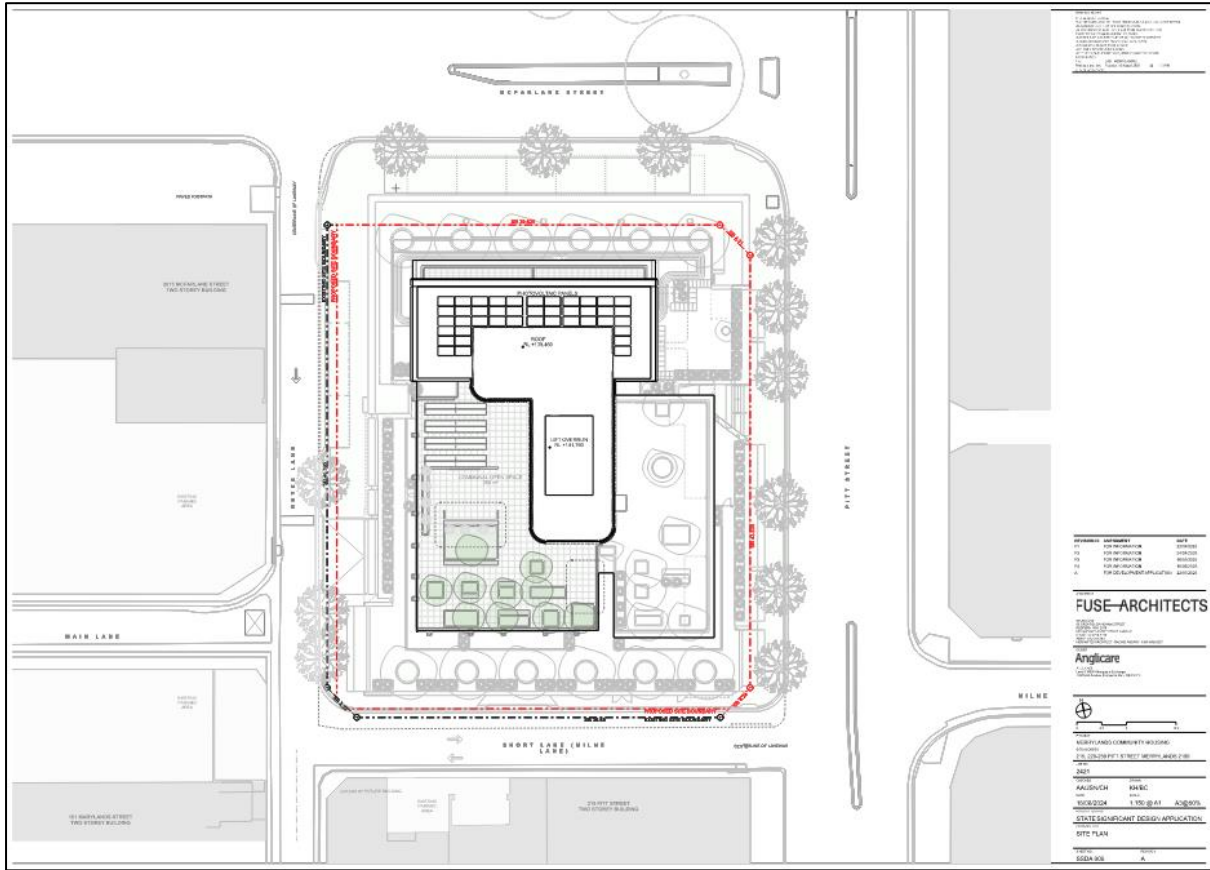


Figure 3: Proposed site plan (Source: Fuse Architects, Sheet SSSA 005, Rev. A, 22 July 2025)

## 2. Flood Assessment

The following tasks were completed as part of this flood assessment:

- Review of available topographic information for the site;
- Review of relevant flood Council studies, planning policies, and flood advice;
- Identification of on-site flood risk for design flood events, including 1% AEP and Probable Maximum Flood (PMF);
- Identification of flood mitigation measures and planning considerations.

### 2.1 Flood Catchment and Existing Studies

The mainstream floodplains and associated flood studies that are defined within the Cumberland Council local government area are as follows:

- Haslams Creek floodplain
- Duck River floodplain.
- Cooks River floodplain.

Proximity of the site to A'Becketts Creek, which is a tributary of Duck River, means that the development lies in the Duck River floodplain with a total catchment area of approximately 42km<sup>2</sup>. Therefore, the proposed development is subject to the Duck River Floodplain Risk Management Plan.

As per Cumberland Council's *Flood Advice Letter (Appendix C)*, dated 03 September 2024 (ref: EC2024/0889), the property is affected by the 1% AEP and PMF flood events. Council documents their findings through information available from *A'Becketts Creek Overland Flood Study* prepared by Lyall & Associates Consulting Water Engineers in 2017.

However, as per *Cumberland Council Flood Risk Management Policy (2021)*, the flood risk management policy for the Duck River floodplain is yet to be finalized, the Haslams Creek floodplain controls apply to the subject site in the interim. The sub-catchments areas are further detailed in **Figure 4** with the subject site marked in blue.

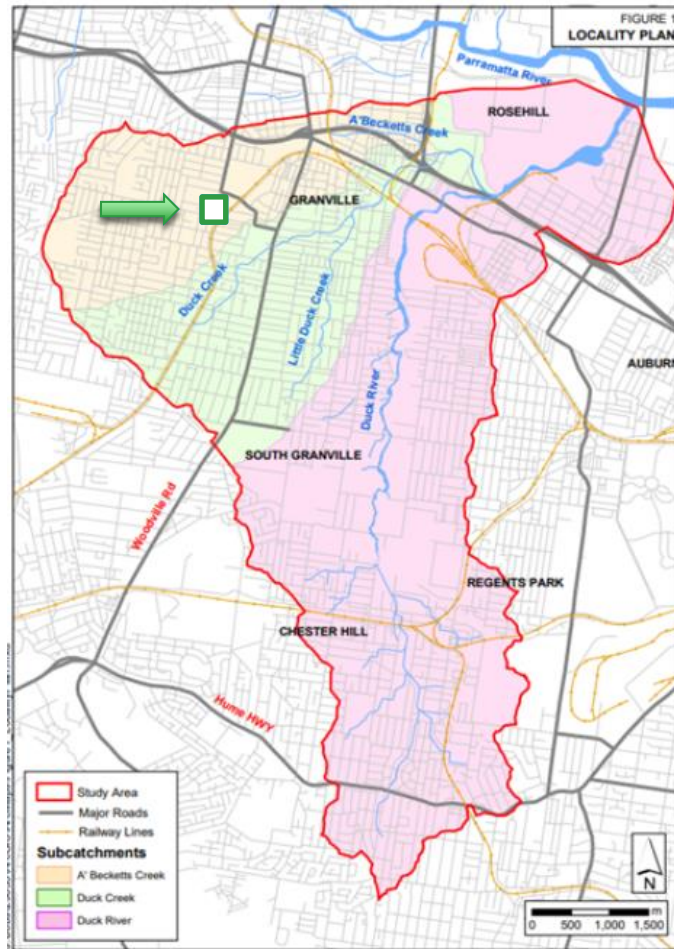


Figure 4: Sub-catchment plan (Source: Cumberland City Council website, 2024)

### 3. Existing Flood Information

#### 3.1 Cumberland Council Flood Map

Flood hydraulic categories available on Cumberland City Council’s website, specifically Map 2 in the Stormwater and Flood Maps section, indicates that the site is partially located in the flood fringe zone as shown in **Figure 5**. The flood storage and floodway zones are also only found external to the site on the adjoining McFarlane St and Pitt St in the 1% AEP flood event.

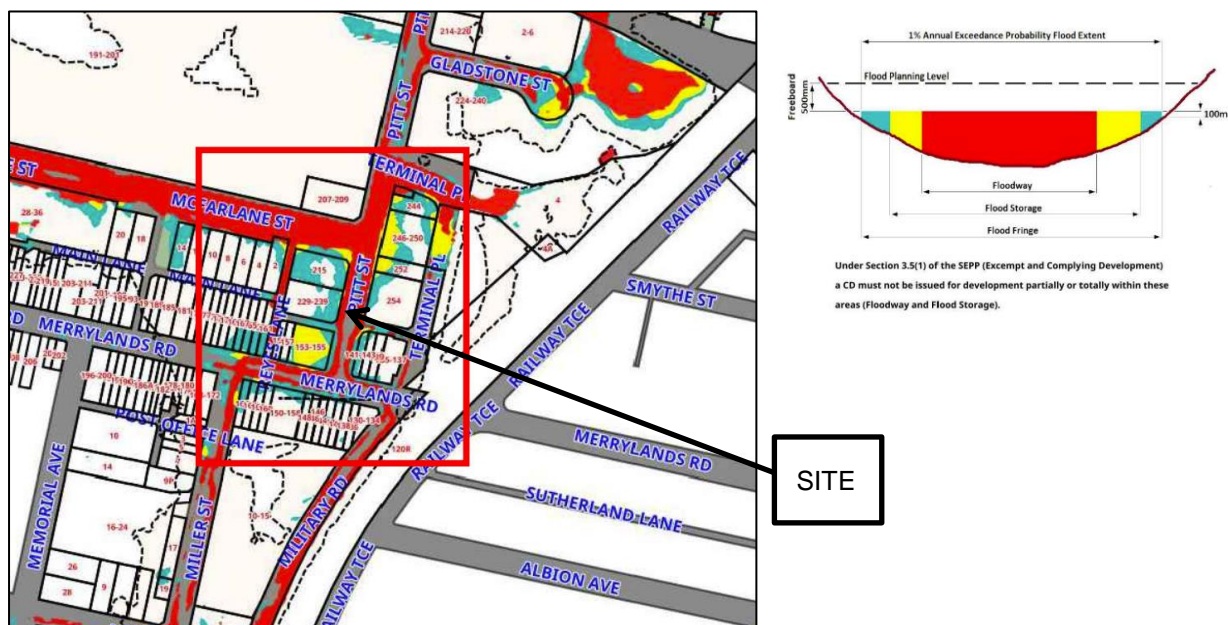


Figure 5: 1% Flood Hydraulic Categories (Source: Cumberland City Council Flood Map 2)

This clearly demonstrates that the site does not contribute any area towards flood storage or floodway. Furthermore, since the entire footprint of the site is already impervious prior to the new development, a loss in flood storage area, or a change in flood levels or conveyance is not foreseen. Therefore, it is anticipated that the proposed development will not have any flooding affects to other properties outside of the site or elsewhere in the environment.

Moreover, according to Map 4 available on the Council website for the flood risk precincts the site can be mainly categorized under “Medium Risk” along Pitt St to the east and McFarlane St to the north, with some small areas on site being considered as “Low Risk”. **Figure 6** illustrates the flood risks precincts defined for the flood planning area.

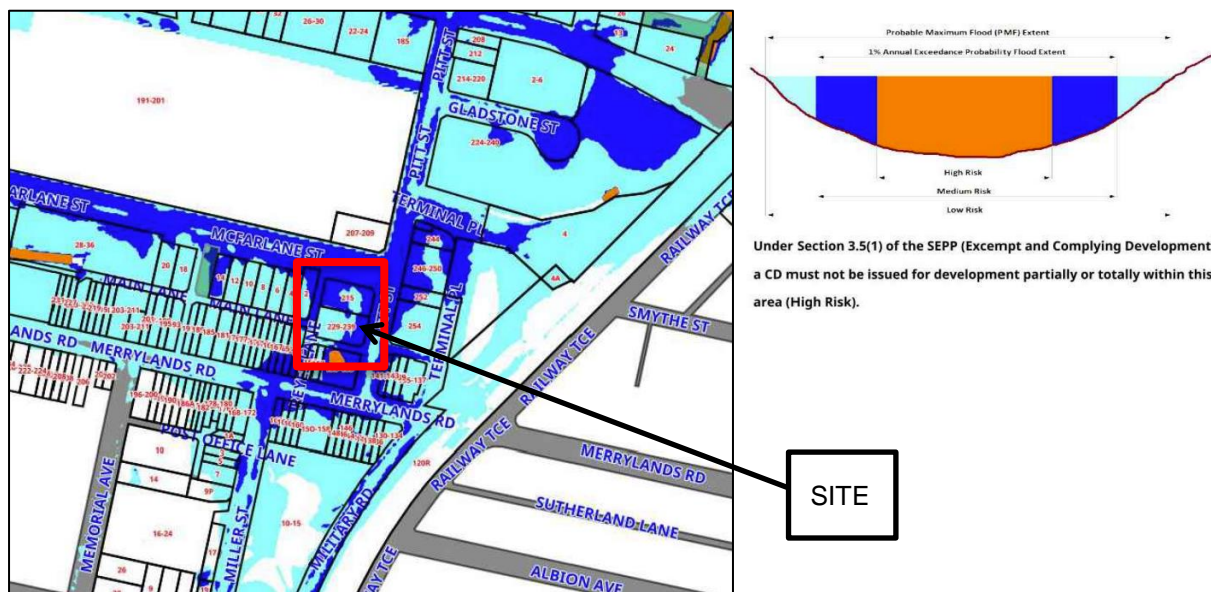


Figure 6: Flood Risk Precincts (Source: Cumberland City Council Flood Map 4)

### 3.2 Cumberland Council Flood Advice Letter

The Cumberland Council Flood Advice Letter (ref: EC2024/0889), dated 03 September 2024, provides flood level maps surrounding the subject site in the 1% AEP and PMF events under pre-development conditions. According to Council, the flood information pertinent to the site has been derived from the *A'Becketts Creek Overland Flood Study* prepared by Lyall & Associates Consulting Water Engineers in 2017, a summary of which has been provided below.

As per the Council flood advice letter, the maximum 1% AEP flood levels relevant to the subject site, portrayed in **Figure 7**, are determined to the Australian Height Datum (AHD) as follows:

1. At location A – 17.1 mAHD
2. At location B – 17.0 mAHD

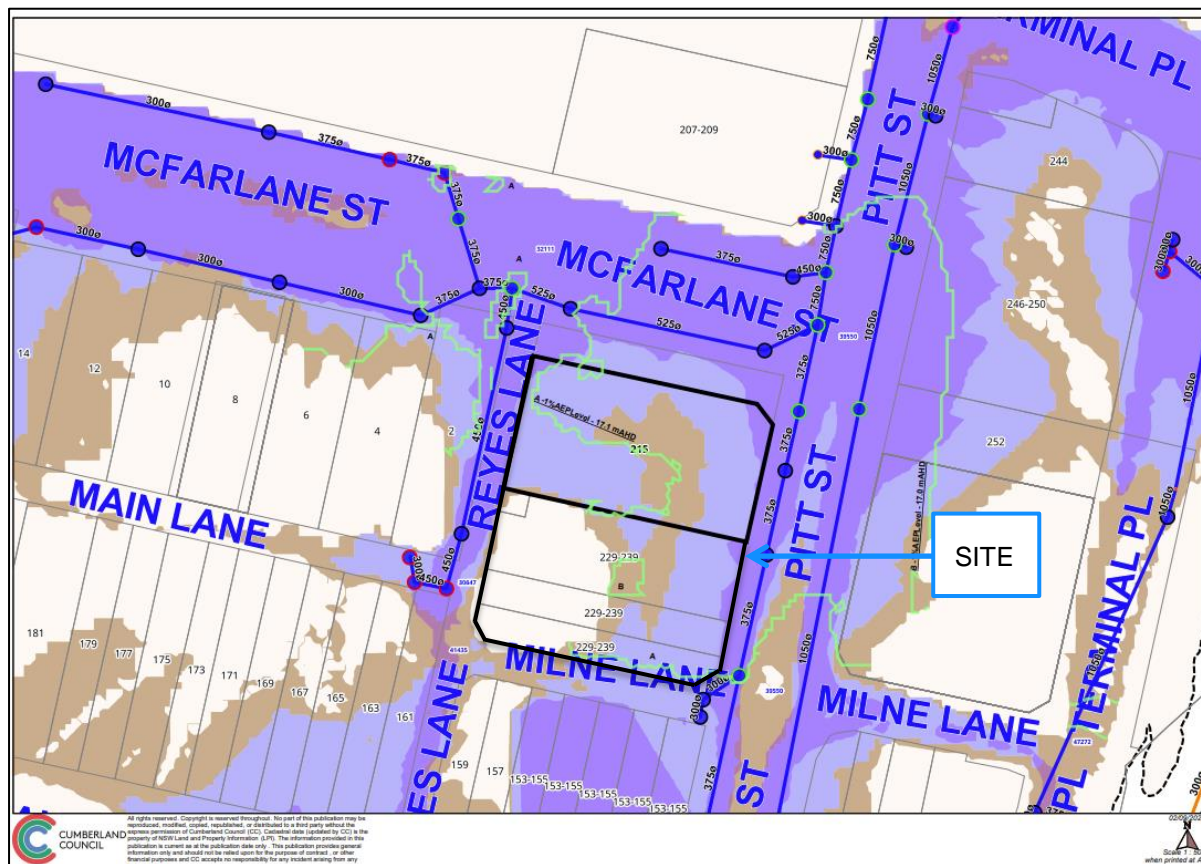


Figure 7: 1% AEP flood level map (Source: Cumberland Council Flood Advice Letter, 03 Sep 2024)

The flood map indicates that the site partially holds a medium flood risk (shown in dark purple) at the site frontage along Pitt St and McFarlane St, while the area within the site is mostly flood fringe zone (shown in light purple).

In accordance with the Council *Flood Advice Letter*, flood controls for the corresponding Medium Flood Risk Precinct are applicable to the proposed development. Note that the south-west area of the site (shown in white) is unaffected in the 1% AEP flood event.

Moreover, PMF levels relevant to the subject site, portrayed in **Figure 8**, were determined to the Australian Height Datum (AHD) as follows:

1. At location A – 19.7 mAHD
2. At location B – 19.6 mAHD

The coloured regions of the flood map indicate the flood event extent and will assist evacuation planning and routing at the Construction Certificate (CC) stage of documentation. The PMF flood covers the surrounding locality with depths exceeding 2 metres on site and in the surrounding roads.

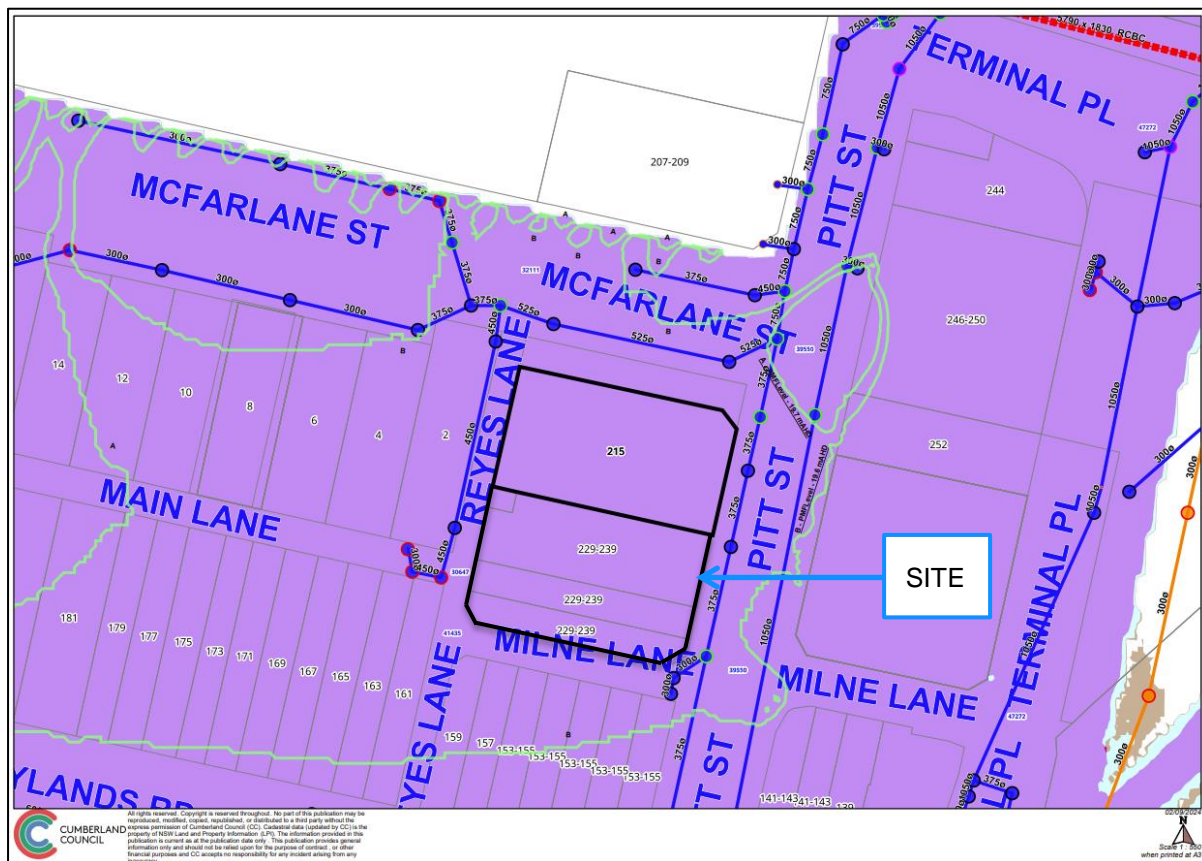


Figure 8: PMF level map (Source: Cumberland Council Flood Advice Letter, 03 Sep 2024)

In addition to that, as per our desktop review, the Holroyd City LGA Overland Flood Study prepared in 2020 by Lyall & Associates Consulting Water Engineers, presents investigation findings regarding overland flow within nine defined catchments, including A’Becketts Creek.

As per this report, the A’Becketts catchment covers a total area of 515 ha and is located primarily within the NSW suburb of Merrylands, with some smaller areas within Guildford, Guildford West, Merrylands West, Parramatta, Granville and Holroyd. The catchment generally drains from the south-west to north-east and discharges adjacent to the M4 Motorway / Western Rail Line crossing.

## 4. Compliance with Flood Management Guidelines

As per *Cumberland Council Flood Risk Management Policy (CFRMP)*, dated 5 November 2021 (reviewed November 2023), all relevant sections and associated controls which were applicable to the subject site and flooding conditions have been evaluated. While the site lies in proximity to the Duck River floodplain, the associated FRMP is yet to be finalized. Hence, the controls associated with Haslams Creek floodplain instead are applicable and evaluated for the site.

**Table 1** below shows the details of controls applied for the residential/commercial development within the Medium Flood Risk Precinct.

*Table 1: Floodplain planning consideration (Source: Cumberland CFRMP, 2021)*

Planning Consideration	Item	Development Control	Compliance
Floor Level	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 affection and other controls below. Enclosed carparking (e.g. garages or basement car parking) must be protected from 100 year ARI flood.	No open car parking areas.  Basement car parking is designed with a crest at the entrance ramp at 17.960mAHD, which is greater than the 100 year ARI flood level (17.100 mAHD) + 0.5m freeboard.
	3	Habitable floor levels to be equal to or greater than the 100 year ARI flood plus freeboard.	Ground floor habitable floor level is 17.910 mAHD, providing a freeboard greater than 0.5m above the 100-year flood level (17.100 mAHD).
	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	Not applicable.

		be a usable recreation area which, during storm events equal to less than the 5 year ARI, is free from inundation by overland flows exceeding 50mm.	
<b>Building Components</b>	<b>1</b>	All structures to have flood compatible building components below or at the 100 year ARI flood level.	All structures are advised to have flood compatible building components below 100-year flood level, i.e. 17.100 mAHD.  Proposed development shall be designed to have sufficient concrete strength and finish suitable for flooding at appropriate level. A list of flood compatible materials is attached as per Council guidelines in <b>Appendix D</b> for reference.
<b>Structural Soundness</b>	<b>2</b>	Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to and including a 100 year flood.	The Structural Engineer is advised to ensure that the structure is designed to withstand the impacts of floodwater, debris and buoyancy up to the 100 year flood level (17.100 mAHD).  Refer to <b>Section 5</b> of this report for advice and recommendations.
<b>Flood Affection</b>	<b>2</b>	The impact of the development on flooding elsewhere to be considered.  Note: When assessing flood affection the following must be considered: <ol style="list-style-type: none"> <li>1. Loss of storage area in the floodplain (except for filling occurring up to the 20 year ARI.</li> <li>2. Changes in flood levels caused by alteration of conveyance of flood waters.</li> <li>3. Filling between the 20 year and 100 year ARI flood levels will not be permitted</li> </ol>	As per <b>Figure 5</b> , the site does not lie in a flood storage area in the floodplain.  <b>Figure 5</b> also demonstrates that development is not in the flood pathway so no increase in flood levels is anticipated.  The proposed levels at the habitable floor area and crest of the main parking entrance/exit ramp are higher than the 100 year ARI flood level. Therefore, no filling of stormwater on site is anticipated for minor floods. Moreover, the stormwater drainage network is

			designed to intake any seepage of water through basement car parks to avoid any chance of ponding and inconvenience in lower car par levels.
<b>Evacuation</b>	<b>3</b>	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 or off-site.	Although the design floor level is higher than the 1% AEP flood level, we have also documented the evacuation plan for emergencies in <b>Section 5</b> .
	<b>4</b>	Applicant to demonstrate that the development is to be consistent with any relevant Disaster Plan (DISPLAN) or flood evacuation strategy.	<p>The habitable floor area has been designed higher than the 1% AEP flood level plus allowable freeboard, so it is anticipated that flood waters will not impact the residents.</p> <p>However, since the site lies in the Medium Flood Risk Precinct, evacuation plans in accordance with state emergency procedures can be documented if required by Council input and comments.</p> <p>Refer to <b>Section 5</b> for the associated details.</p>
<b>Management &amp; Design</b>	<b>2</b>	Site Emergency Response Flood plan required (except for single-dwelling houses) where floor levels are below the design floor level.	<p>All habitable floor levels are higher than the 1% AEP + 0.5m required freeboard.</p> <p>We have also documented an evacuation route in <b>Section 5</b> which can be followed in accordance with NSW SES guidelines.</p>
	<b>3</b>	Applicant to demonstrate that area is available to store goods above the 100 year flood plus 0.5m (freeboard).	The proposed levels at the habitable floor area and crest of the main parking entrance/exit ramp are higher than the 100 year ARI flood level so no ingress of

			<p>floodwater is expected into the basement for the respective flooding event. Therefore, no impact to goods storage is anticipated within the building footprint.</p>
	5	<p>No external storage of materials below design floor levels which may cause pollution or be potentially hazardous during any flood.</p>	<p>No materials are to be stored externally below the ground floor habitable areas or in the flood pathway.</p> <p>Refer to <b>Section 5</b> for associated advice provided for stakeholders.</p>

## 5. Planning Consideration

### 5.1 Mitigation Measures & Recommendations

All proposed habitable floor levels are above the 100-year flood level plus the 0.5m freeboard, hence, there are very minute chances of impacts to living beings or objects at or above the habitable floor areas. However, for non-habitable floor areas like garages, precaution shall be taken and the placement of material is to be ensured above the 100-year flood level plus the 0.15m freeboard, so that no cumulative impacts or flood-related issues arise at the subject site during flooding conditions that may then affect other properties.

Since the proposed development is to be constructed above the 100-year flood level plus the 0.5m freeboard, the Structural Engineer will be designing all of the structural components to maintain structural soundness of the structure, especially the footing and driveway.

For compliance with the council guidelines and to ensure safety, the following actions are also recommended for adoption at the construction stage of development:

- The Structural Engineer should provide a suitable support structure to cater any impact / bypass of flood water at critical areas. It is highly recommended that any support structure within the flood route be designed able to bear the impacts and forces of floodwater, debris and buoyancy up to and including a 100-year flood plus freeboard.
- The Geotechnical Engineer should advise the appropriate strength requirements according to the type of soil and the bearing capacity.
- The architect is advised to document flood associated notes/commentary in their construction stage drawings and nominate flood compatible building materials below the 100-year flood level.
- Compliance of flood items needs to be reassured by the certifying authority at the CC stage.
- The landscape design and levels should ensure there is no ponding of flood water on site.
- The building services engineer is advised to ensure that all electrical and mechanical equipment (i.e. cables, escalator and lift) is raised to ensure that they are not impacted in any flood event. Furthermore, if any hydraulic or pipe network needs to be placed in the basement and it cannot be raised due to its functionality, then it should be waterproofed and no joints shall be made in cables which are subject the flooded.

- All hydraulic and oil containing conduits shall be properly tested and periodically checked in lifts for any leakages. This is to avoid pollutants contaminating any stormwater ponding in the lift Pit area.

Furthermore, before start of construction, all drawings should be checked for compliance of the associated approved flood design levels. This is to also to be ensured at Occupation Certificate (OC) stage by a certified engineer. Evaluation should be done on the basis of a site visit and works-as-executed plans prepared by the surveyor confirming flood compliance.

## 5.2 Flood Evacuation Procedures

As the site is categorized under a Medium Flood Risk Precinct therefore evacuation may be required on site as per advised guidelines. However, it should only be considered as a last scenario to save human lives in a state declared emergency.

Evacuation from the site to another location off-site is highly risky in a flood event as the nearby local streets and roads are likely to be cut off by floodwaters. Travelling through these floodwaters can be very dangerous due to the possibility of polluter waters or obstructions hidden beneath the surface. Additionally, floodwaters present a dangerous risk of being people and vehicles being swept away or getting further stranded. Therefore, staying on site at higher grounds is the recommended as the safest option if practical. If it is necessary to leave the property, ensure this occurs at an early stage of the flood event given flood warnings from NSW State Emergency Services (SES).

If there is a need for evacuation to keep inhabitants safe, routes marked in green as presented in **Figure 9** can be considered, with routes marked as red anticipated to be no-go zones.

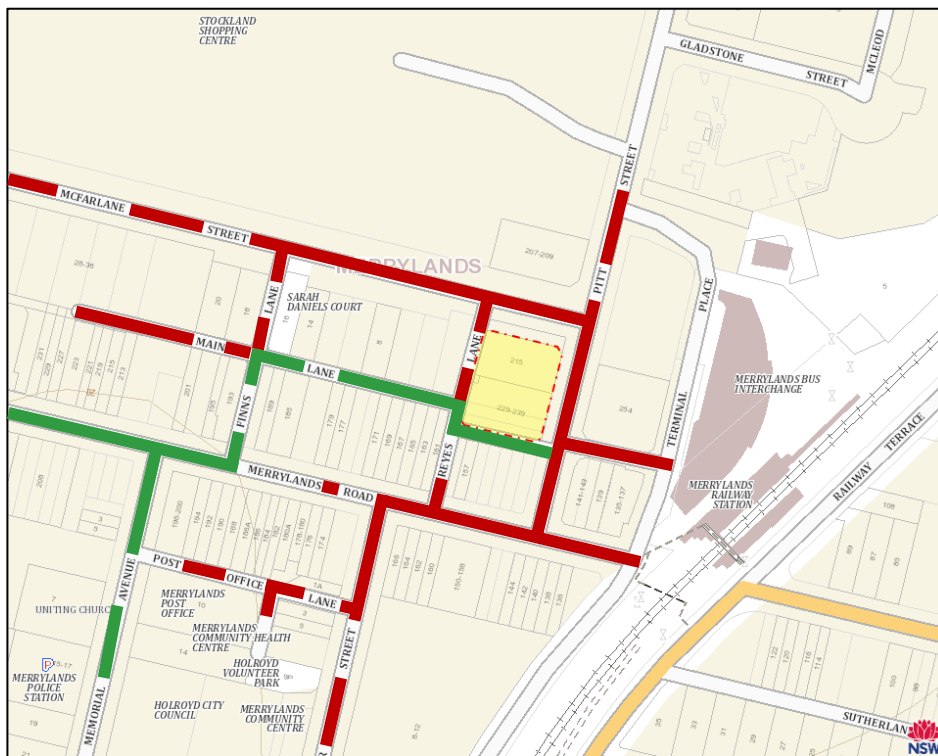


Figure 9: Flood Evacuation Plan Map

### 5.3 Self-Managed Evacuation / Relocation

This is a spontaneous type of evacuation involving the self-initiated movement of people as individuals, families or community groups. This may include circumstances where residents are advised to leave early ahead of dangerous conditions.

Self-managed evacuation or relocation can be helpful in reducing the number of people inhabiting a potential flood impact or evacuation zone. This form of evacuation may involve a level of community expectations that emergency authorities will be unable to provide immediate support.

For the subject site, any inhabitants on the ground floor or in the lower basements may self-initiate evacuation well before any flood incident or impacts occur. Further the ground floor is mainly commercial area so it won't be functional when a warning has been raised by the NSW SES. However, the NSW SES emergency management plan and procedures should still be followed prior to making any decisions. In the case of a maximum flood event, it is anticipated that the ground floor tenancies will not be operational at the time and most likely unoccupied given warnings from NSW State Emergency Services (SES). However, if any occupants are stranded on site at the ground level or below and unable to evacuate they will be advised to relocate to the upper levels of the building for safety.

Furthermore, to act upon this option, residents are instructed to develop their own family flood plan, in the potential case where flooding occurs while children are returning home from school or parents from work. To determine the safer routes for travel which are less likely to be cut off by floodwaters, discussion with Council should be made.

## 5.4 Immediate Evacuation

Immediate evacuation may be required due to hazard impacts forcing immediate action. This may mean little to no warning time will be allowed, and that preparation time may be inadequate. Incidents such as air crashes, bushfires, flash flooding, or earthquakes are examples of hazardous incidents requiring immediate action.

If this occurs, ground level occupants may be advised to relocate to upper levels on site following procedures in accordance with NSW SES guidelines.

## 5.5 Special Considerations during Flooding

In the event of flash flooding, the following steps should be considered and undertaken by occupants to avoid suffering any potential danger or damages:

1. As the flood level approaches the garage floor level relocate any items that may be damaged by water to as high a level as possible (but only if safe to do so).
2. As the flood level approaches the habitable floor levels:
  - a. Gather medicines, special requirements for babies or the elderly, mobile phones, first aid kit, special papers and any valuables at one location;
  - b. Put on resilient shoes, raise any items within the home that may be damaged by water (e.g. photo albums) to as high a level as possible, with electrical items on top;
  - c. Turn off and disconnect any large electrical items such as TV, fridge, a dishwasher that cannot be raised; and
  - d. Place wet towels across the bottom and lower sides of external doors to slow down the entry of water through the door.
3. In the very rare event that floodwaters enter the property, collect items which are necessary and move to common space on upper floors.
4. Do not evacuate unless instructed by local authorities (LGA / NSW SES) to do so.
5. Remember floodwaters are much deeper and flow much faster outside!
6. Before moving to an upper floor, or evacuating premises, switch off the main power supply to avoid chances of appliances short circuiting and electrocuting those in contact with water.

7. In the case of a medical emergency ring 000 as normal and explain the flood emergency.
8. A laminated copy of this section and associated appendix should be permanently attached (glued) on an inside cupboard door in the kitchen and laundry, along with the NSW SES FloodSafe brochure.
9. This flood management plan should be reviewed every 5 years, particularly with the potential effects of climate change and rise in sea-level and rainfall intensities.

## 5.6 SES Emergency Plan Documentation

To educate the general public on how to react in emergency conditions, the NSW State Emergency Services (SES) has prepared awareness documents with emergency response procedures. The *NSW SES Home Emergency Plan (2017)* describes these emergency response procedures and has been attached in **Appendix E** for reference.

This document, alongside the *NSW SES Home Emergency Plan (2017)*, shall be provided to the following site personnel for effective action during flooding:

- Occupants of the proposed development;
- The Strata Manager;
- The emergency evacuation management committee; and
- The SES representative for future training and actions.

## 6. Conclusion

This report documents the Flood Impact and Risk Assessment (FIRA) prepared for the construction and operation of the mixed use development at 215, 229-239 Pitt St, Merrylands NSW 2060. The assessment, conducted under Part 5 of the *Environmental Planning and Assessment Act 1979*, follows guidelines set forth by the *Cumberland Council Flood Risk Management Policy (2021)*. The report also compares the proposed activity with flood management guideline controls and outlines the relevant planning considerations.

In terms of design levels on site, the habitable finished floor levels (FFLs) on the ground floor are set at 17.910 mAHD, providing an additional 0.310 mAHD above 17.600 mAHD which is the advised 100 year flood level plus 0.5m freeboard. Design floor levels for non-habitable areas on the ground floor are also set above the 100 year ARI flood level with a 0.15m minimum freeboard provided. Driveway ramps have also been designed with elevated crests provided above the 100 year flood level plus 0.5m freeboard to ensure there is no spillage to lower levels.

The findings in this report indicate that the proposed activity is not expected to significantly alter flood behaviour or cause any adverse environmental impacts off-site. Furthermore, the subject site does not lie in any flood storage or floodway zones, so it is anticipated that any development on site will not contribute to a change in flood levels or conveyance in the area. It is important to note that modelling for the post-development conditions was not undertaken as the proposed development does not alter the floodplain or any flow characteristics for A'Becketts Creek or Duck River in events up to and including the 100 year ARI flood event.

This *Flood Impact and Risk Assessment (FIRA)* report has been prepared to support the development in flood mitigation. Considering the scale of the project, a *Flood Emergency Response Plan (FERP)* is recommended to be prepared as a flood mitigation measure at the construction stage of documentation. The purpose of the FERP will be to minimise risks associated with the safety of occupants and to ensure a timely evacuation response in an extreme event such as flooding. Hence, this FERP will outline the planning actions to be undertaken in the event of flooding and the associated evacuation. This report along with other flood associated input is subject to stakeholder and Council input and comments.

**Appendix A – Flood Risk Management Policy**

**Appendix B – Site Survey**

**Appendix C – Flood Advice Letter**

**Appendix D – Flood Compatible Material List**

**Appendix E – NSW SES Home Emergency Plan**

## Disclaimers

This report has been prepared for the exclusive use of the client who is the only intended beneficiary of EIC's work. The scope of the assessment carried out for the purpose of this report is limited to those agreed with the client.

No other party should rely on the document without the prior written consent of EIC, and EIC undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EIC's approval.

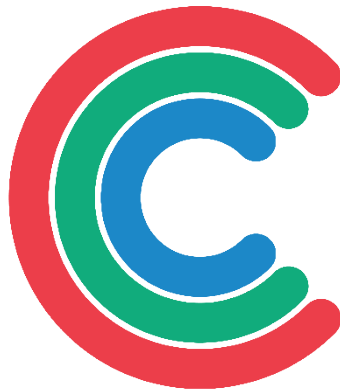
EIC has exercised a degree of care and skill ordinarily exercised in similar investigations by reputable members of the civil industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The conclusions presented in this report are based on an investigation of existing conditions and evaluation of available information as specified in this report and only representative under the given circumstances. Please be advised that any assumptions made on the basis of the provided information will be used for the outcome of your assessment with limited access to the site.

EIC's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data and similar observations. EIC may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EIC.

EIC's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during construction. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.

Should you have any queries regarding this report, please do not hesitate to contact EIC team for further clarification.



CUMBERLAND  
CITY COUNCIL

# Flood Risk Management Policy

## AUTHORISATION & VERSION CONTROL

<b>Policy Number</b>	POL-061
<b>Policy Owner</b>	Director Environment & Planning
<b>Date Adopted</b>	5 November 2021
<b>Version No</b>	1
<b>Document ID</b>	9112211
<b>Review Date</b>	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; electricity generating works or infrastructure 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 35m <sup>2</sup> (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 20m <sup>2</sup> or
				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.		(ii) 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 100m <sup>2</sup> or more than 0,3m deep, which do not raise ground levels above the 20-year AR1 flood level, and is not located within the foreshore building line.

## APPENDIX (CONTINUED)

Table 2: Flood Compatible Materials

Building component	Flood material compatible	Building component	Flood material compatible
Flooring and sub-floor structure	<ul style="list-style-type: none"> <li>▪ Concrete slab-on-ground construction</li> <li>▪ Suspension reinforced concrete slab</li> </ul>	Doors	<ul style="list-style-type: none"> <li>▪ Solid panel with water proof adhesives</li> <li>▪ Flush door with marine ply filled with closed cell foam</li> <li>▪ Painted metal construction</li> <li>▪ Aluminium or galvanised steel frame</li> </ul>
Floor covering	<ul style="list-style-type: none"> <li>▪ Clay tiles</li> <li>▪ Concrete, precast or in situ</li> <li>▪ Concrete tiles</li> <li>▪ Epoxy, formed-in-place</li> <li>▪ Mastic flooring, formed-in-place</li> <li>▪ Rubber sheets or tiles with chemical-set adhesives</li> <li>▪ Silicone floors formed-in-place</li> <li>▪ Vinyl sheets or tiles with chemical-set adhesive</li> <li>▪ Ceramic tiles, fixed with mortar or chemical-set adhesive</li> <li>▪ Asphalt tiles, fixed with water resistant adhesive</li> </ul>	Wall and ceiling linings	<ul style="list-style-type: none"> <li>▪ Fibro-cement board</li> <li>▪ Brick, face or glazed</li> <li>▪ Clay tile glazed in waterproof mortar</li> <li>▪ Concrete</li> <li>▪ Concrete block</li> <li>▪ Steel with waterproof applications</li> <li>▪ Stone, natural solid or veneer, waterproof grout</li> <li>▪ Glass blocks</li> <li>▪ Glass</li> <li>▪ Plastic sheeting or wall with waterproof adhesive</li> </ul>
Wall structure	<ul style="list-style-type: none"> <li>▪ Solid brickwork, reinforced, concrete or mass concrete</li> </ul>	Insulation windows	<ul style="list-style-type: none"> <li>▪ Foam (closed cell types)</li> <li>▪ Aluminium frame with stainless steel rollers or similar corrosion and water resistant material</li> </ul>
Roofing structure (for situations where the relevant flood level is above the ceiling)	<ul style="list-style-type: none"> <li>▪ Reinforced concrete construction</li> <li>▪ Galvanized metal construction</li> </ul>	Nails, bolts, hinges and fittings	<ul style="list-style-type: none"> <li>▪ Brass, nylon or stainless steel</li> <li>▪ Removable pin hinges</li> <li>▪ Hot dipped galvanized steel wire nails or similar</li> </ul>
<b>Electrical and mechanical equipment</b>	<b>Heating and air conditioning systems</b>		
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 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.		
<b>Main power supply</b>	<b>Fuel</b>		
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.	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.		
<b>Wiring</b>	<b>Installation</b>		
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.	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.		
<b>Equipment</b>	<b>Ducting</b>		
All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	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.		
<b>Reconnection</b>			
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 Affection	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:** Filing 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 affection 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 or 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)

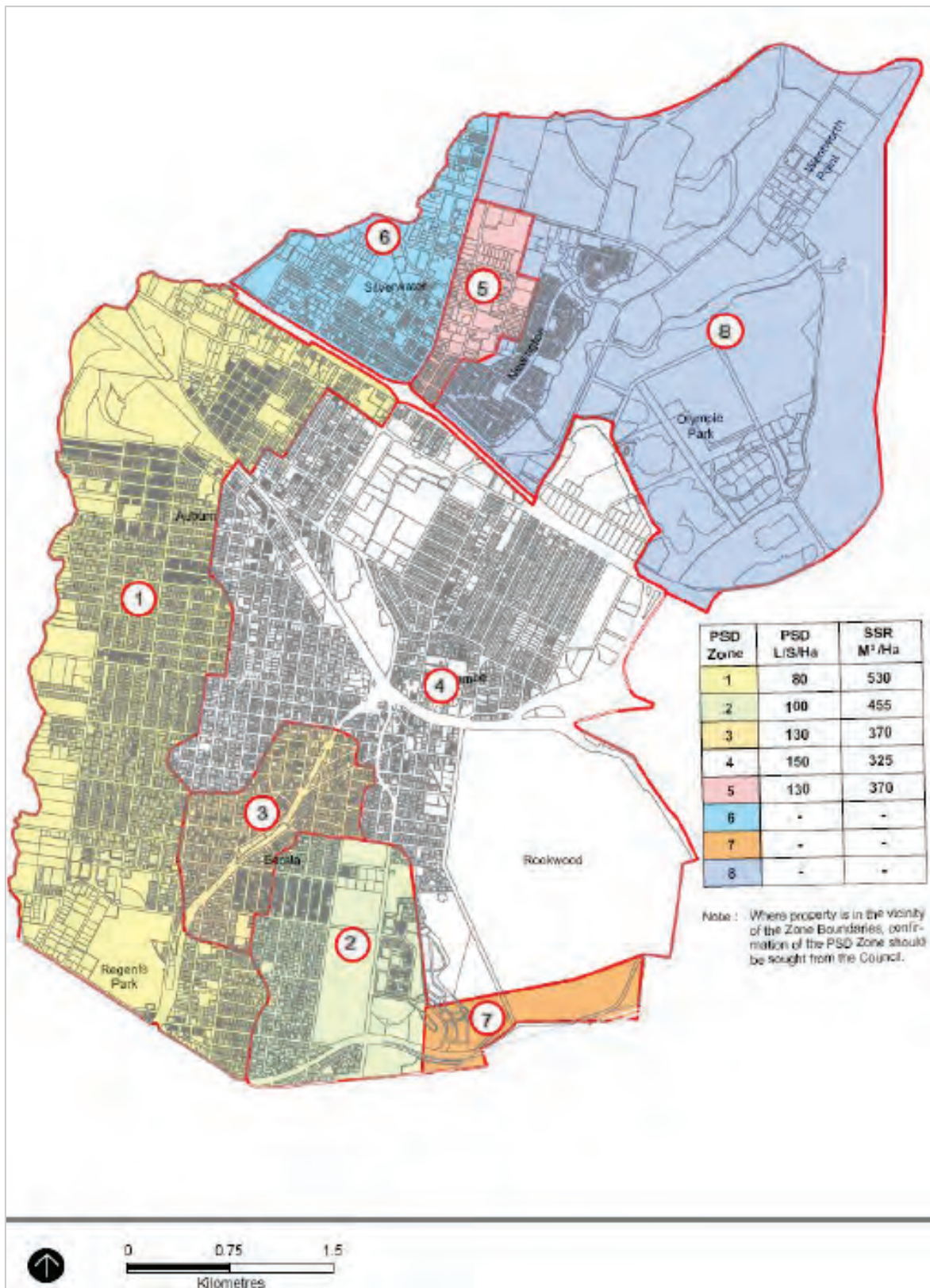


Figure 1: Haslams Creek catchment area

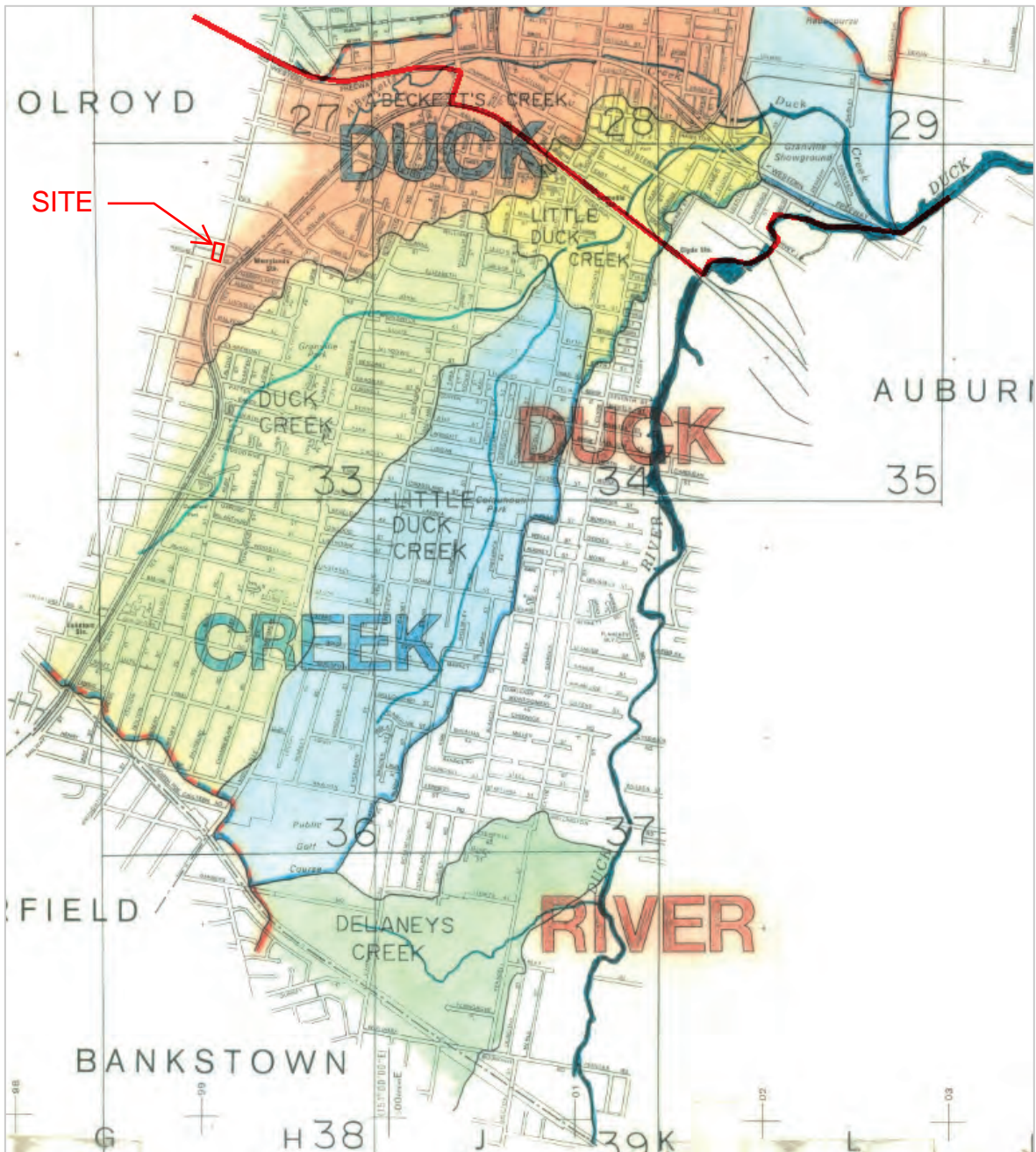


Figure 2: Duck River catchment area

- NOTES:
- THESE NOTES AND LEGEND (IF SHOWN) FORM PART OF THE PLAN AND SURVEY AND MUST REMAIN WITH THE PLAN IN ANY REPRODUCTION IN WHOLE OR PART.
  - THE CAD FILE USES METRES AS ITS BASE UNIT AND IS IN A "GROUND" COORDINATE SYSTEM. IF THE SURVEY IS STATED AS MGA, ANY POINT IN THE FILE WILL BE AN APPROXIMATE MGA COORDINATE.
  - SOME SYMBOLS REPRESENTING PHYSICAL STRUCTURES SUCH AS POWER POLES AND PITS ARE DIAGNOSTIC ONLY AND DO NOT NECESSARILY REPRESENT THE ACTUAL SIZE AND EXTENT OF THESE FEATURES.
  - THE SURVEY INFORMATION SHOWN HERE WAS PREPARED FOR A SPECIFIC PURPOSE FOR THE CLIENT SHOWN. THIS INFORMATION IS NOT INTENDED TO BE USED FOR ANY OTHER PURPOSE OR BY ANYONE NOT AUTHORIZED BY THIS CLIENT.
  - BOUNDARY DIMENSIONS AND AREAS HAVE BEEN DETERMINED BY CURRENT CADASTRAL SURVEY AND THE BOUNDARY AND EASEMENT LINES IN THE ELECTRONIC FILE HAVE BEEN INCLUDED USING THOSE SURVEYED DIMENSIONS. THE TITLE DIMENSIONS SHOWN ON THE HARD COPY PLAN TAKE PRECEDENCE OVER THE LINES IN THE ELECTRONIC FILE.
  - THE TITLE/S TO THE SUBJECT LAND HAS BEEN REVIEWED AND THE POSITION OF ALL EASEMENTS AFFECTING THE LAND ARE SHOWN. THE TERMS OF ANY EASEMENT, RESTRICTION ON THE USE OF LAND OR COVENANT AFFECTING THE LAND HAVE NOT BEEN INVESTIGATED. LEASES AND OTHER NOTATIONS MAY ALSO EXIST WHICH AFFECT THE LAND.
  - UNDERGROUND SERVICES OTHER THAN THOSE SHOWN HAVE NOT BEEN INVESTIGATED. PRIOR TO DEMOLITION, EXCAVATION OR CONSTRUCTION WORK ON THE SITE, THE RELEVANT SERVICE AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH.
  - THIS SURVEY IS LIMITED TO IMPROVEMENTS AND OTHER DETAIL WHICH WERE VISIBLE AND ACCESSIBLE AT THE TIME OF SURVEY. THE LOCATION OF DETAIL SUCH AS PRIVATE UNDERGROUND SERVICE LINES AND BUILDING FOUNDATIONS WITHIN THE SITE IS UNKNOWN.
  - THE COORDINATES WITHIN THIS DRAWING RELATE TO THE DATUM SHOWN IN THE TITLE BLOCK. REFER TO A REGISTERED LAND SURVEYOR FOR FURTHER CLARIFICATION. CAUTION SHOULD BE TAKEN WHEN IMPORTING INFORMATION OBTAINED FROM OTHER SUB-CONSULTANTS OR SOURCES TO ENSURE THAT THE DATA IS ON A MATCHING COORDINATE SYSTEM.
  - CONTOURS SHOWN HEREON DEPICT THE GENERAL TOPOGRAPHY ONLY. EXCEPT AT SPOT LEVELS SHOWN, THEY DO NOT NECESSARILY REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT.
  - CONTOUR INTERVAL 0.5m
  - ANY GUTTER, RIDGE, ROOF AND WINDOW DETAILS AND LEVELS SHOWN HAVE BEEN OBTAINED VIA INDIRECT SURVEY METHODS WHERE VISIBLE FROM GROUND LEVEL AND ARE SHOWN ON THIS PLAN IN THEIR APPROXIMATE LOCATION FOR THE PURPOSE OF GENERAL SITE ANALYSIS ONLY.
  - ANY TREE CANOPIES, TRUNK DIAMETERS AND HEIGHTS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED BY FURTHER SURVEY WORKS IF CRITICAL TO DESIGN OR SITE ANALYSIS.
  - SMALL TREES, SHRUBS, GARDEN FEATURES, PATHWAYS AND OTHER MINOR DETAIL MAY NOT BE SHOWN ON THIS PLAN, FOR THE PURPOSES OF THIS SURVEY.
  - PRIOR TO ANY CONSTRUCTION WORKS BEING UNDERTAKEN, BOUNDARIES SHOULD BE MARKED

ORIGIN OF LEVELS: SSM 156777  
E 314 109.737  
N 6 253 916.611  
R.L. 2122 (AHD)

LEGEND:

- BALC BALCONY
  - FL FLOOR LEVEL
  - CHM CHIMNEY
  - DCK DECK
  - DH DOOR HEAD
  - DS DOOR SILL
  - OH OPEN HEAD
  - OS OPEN SILL
  - PAR PARAPET
  - PP POWER POLE
  - RF ROOF
  - RDG RIDGE
  - SIC SEWER INSPECTION COVER
  - TG TOP OF GUTTER
  - TK TOP OF KERB
  - TGG TOP OF GRATE
  - TRW TOP OF WALL
  - TF TOP OF FENCE
  - VER VERANDAH
  - WH WINDOW HEAD
  - WS WINDOW SILL
  - US UNDERSIDE OF BUILDING
  - C/COL COLUMN
  - SL DRAINAGE PIT SURFACE LEVEL
  - INV DRAINAGE PIT INVERT LEVEL
- Comms Pit/Manhole
- Comms Pitar
- Drainage Manhole
- Drainage Grated Pit
- Drainage Kerb Inlet Pit
- Electrical Power Pole
- Gas Meter
- Miscellaneous Manhole
- Sewer Vent
- Sign Post
- Tree (Canopy spread, trunk diameter, Height)
- Water Meter
- Water Tap
- Water Hydrant
- Water Stop Valve
- Brick/Concrete Walls
- Stone Walls

NOTATIONS SHOWN ON CERTIFICATE OF TITLE LOT 1 D.P.537031

AFFECTING THE LAND:

(A) EASEMENT FOR PADMOUNT SUBSTATION AFFECTING THE WHOLE OF THE LAND ABOVE DESCRIBED

COVENANT (J4-96434)

THE TERMS AND LOCATIONS OF COVENANTS & RESTRICTIONS HAVE NOT BEEN INVESTIGATED.

*Daniel Williams*

DANIEL GERARD WILLIAMS  
REGISTERED SURVEYOR  
BEVERIDGE WILLIAMS  
65 - 69 KENT STREET, SYDNEY 2000

VER	BY	AMENDMENTS	DATE
A	V.M.	INITIAL ISSUE	23.09.24
B			
C			
D			
E			
F			
G			

THE POSITION OF SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM PLANS AND DRAWINGS SUPPLIED BY RELEVANT AUTHORITIES.

SERVICE AUTHORITY PITS, MANHOLES, POLES, MARKER POSTS, ETC., WHERE SIGHTED AT TIME OF SURVEY, HAVE BEEN LOCATED. THE SURVEY DOES NOT INCLUDE INVESTIGATION OR LOCATION OF UNDERGROUND INFRASTRUCTURE.

SERVICES INFORMATION SHOWN ON THIS DRAWING HAS BEEN OBTAINED THROUGH A BEFORE YOU DIG AUSTRALIA SEARCH AND IS VALID FOR THE PERIOD OF TIME FROM THE DATE OF ISSUE NOMINATED BY THE AUTHORITY.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION OR ADJACENT TO THE SITE IT IS THE RESPONSIBILITY OF THE DEVELOPER AND CONTRACTORS TO APPLY FOR AND OBTAIN UP TO DATE PLANS THROUGH A NEW BEFORE YOU DIG AUSTRALIA SEARCH AND TO CONTACT ALL THE RELEVANT AUTHORITIES TO ESTABLISH AND CONFIRM THE DETAILED LOCATION AND DEPTH OF ALL UNDERGROUND SERVICES.

CLIENT:

Anglicare  
c/o Impact Group

**BW** Beveridge Williams  
Land Development Consultants  
Registered Surveyors

Sydney (02) 9283 6677  
www.beveridgewilliams.com.au

DETAILS:

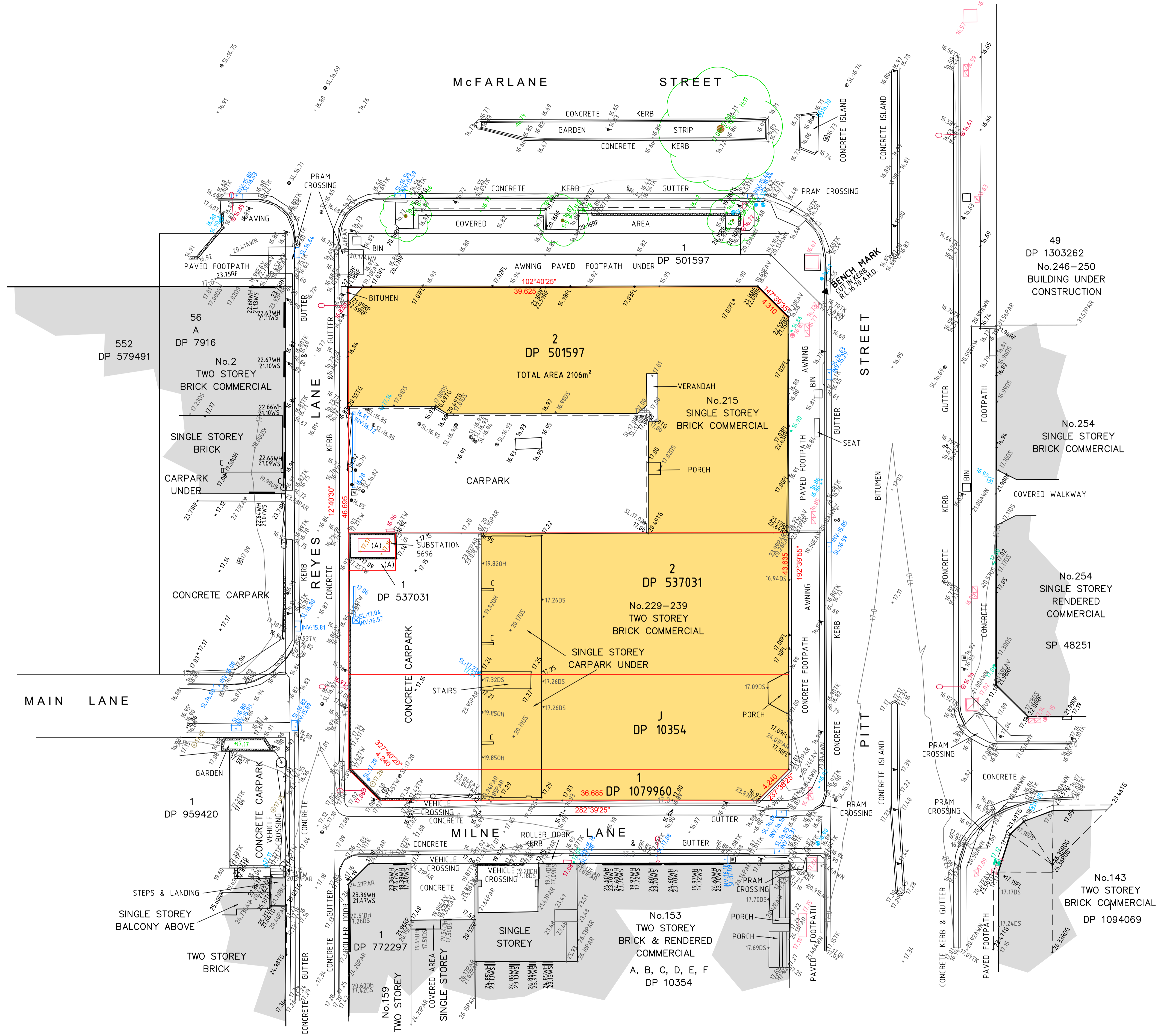
DETAIL SURVEY PLAN OF  
LOT 2 DP501597, LOTS 1 & 2 DP537031  
LOT J DP10354 & LOT 1 DP1079960  
215, 229-239 PITT ST, MERRYLANDS

ORIGINAL SCALE 1:200  
SHEET SIZE A1  
CAD REFERENCE: 2401343-DET-001-A

0 4 8 12  
SCALE ON ORIGINAL DRAWING AT 1:200

SURVEYOR: V.M.  
DRAWN: J.T.  
CHECKED: V.M.  
SURVEY DATE: 04.09.2024  
VERTICAL DATUM: AHD  
HORIZONTAL DATUM: MGA2020

PROJECT No. 2401343  
DRAWING REF. DET-001  
VERSION A  
SHEET 1 OF 1





CUMBERLAND  
CITY COUNCIL

Ref: EC2024/0889

03 September 2024

Miss P Singh  
6 Hassall Street  
PARRAMATTA NSW 2150

Dear Sir/Madam,

**Subject:** Flood Levels at 215 Pitt Street MERRYLANDS NSW 2160,  
Lot 2 DP 501597  
**Application No:** EC2024/0889  
**Property:** 215 Pitt Street MERRYLANDS NSW 2160

Council refers to your request dated 30 August 2024 requesting flood information at the above property.

**1% ANNUAL EXCEEDANCE PROBABILITY (AEP) FLOOD:**

The above property is shown to be **affected** by the 1% Annual Exceedance Probability (AEP) flood, according to the information available to Council from the "A'Becketts Creek Overland Flood Study" prepared by Lyall & Associates Consulting Water Engineers in June 2017.

The 1% AEP flood level refers to a flood which has a 1% chance of being equalled or exceeded in any one year and this site has been assessed as **a medium flood risk**. It should be noted that a flood could occur that is more severe than the 1% AEP flood at any time.

The maximum 1% AEP flood level relevant to the subject property has been determined (see the attached plan) to Australian Height Datum (AHD) as follows:

1. At location A - 17.1 mAHD
2. At location B - 17.0 mAHD

The subject property has been identified as Flood Control lot. Under the SEPP (Exempt & Complying Development) 2008 Regulation 3.5(1), a Complying Development Certificate must not be issued for, "Development under this code must not be carried out on any part of a flood control lot, other than a part of the lot that the council or a professional engineer who specialises in hydraulic engineering has certified, for the purpose of the issue of the relevant complying development certificate, as not being any of the following:

- a) a flood storage area,
- b) a floodway area,
- c) a flow path,
- d) a high hazard area,
- e) a high risk area.

Council has determined that part of the flood control lies in one of the five items above – **items A, B and C**; therefore, a CDC cannot be issued on this site. The identified flood items are represented by the darker area within the 1% AEP flood extent on the attached map. If the development is proposed within any part of this zone (dark blue area), a pre and post flood study must accompany the Development Application. Alternatively, if the development is proposed within the uncoloured and/or light blue areas (flood fringe zone), a CDC may be considered for this site. However, the surface

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T 02 8757 9000 E council@cumberland.nsw.gov.au W cumberland.nsw.gov.au  
ABN 22 798 563 329

Welcome *Belong Succeed*

flows must not be impeded (blocked) and the redevelopment shall allow the free movement of the flood around any proposed structure(s).

In all cases, flood level on adjacent properties shall not be increased. Supporting documentation is to accompany the development.

Minimum habitable floor levels shall be 0.5m above the flood level at the upstream side of the structure. Minimum non-habitable floor levels (garages, laundry, sheds, etc.) shall be 0.15m above the flood level at the upstream side of the structure. Interpolation between flood levels is allowed.

The relationship between these levels and the ground surface may be determined by a survey of the property undertaken by a Registered Surveyor.

It should be noted that where the development or redevelopment of the property is proposed, reference should be made to the relevant Development Control Plan with regard to flooding and drainage issues. Please include a copy of this letter and map with any Development Application that you may lodge with Council for the subject site.

For modelling purposes, the models (pre and post development flood study) shall be calibrated to Council's 1%AEP Flood levels (or interpolated levels) at least 10 metres upstream and downstream from the property boundaries. "Council's TUFLOW model for the catchment is available and recommended to be used to undertake the assessment. Once engaged, the consultant must enter into a license agreement for the use of Council's flood model for the specific purpose of preparing the FIA for the proposed development. In cases where uses of the TUFLOW model proves impractical, using an alternative 2D model is advised for the FIA preparation".

**Note:**

The brown shaded area on the attached Map represents the flood waters with a depth of flow less than 100mm and does not attract any flood controls. It is presented on the flood map to show the continuity of flooding within the area. However, if development occurs within the brown areas, the structure shall not impede or divert flows to adjacent properties.

Flood levels are not static due to changing circumstances (e.g., revision of the flood model) and accordingly the above flood level is only valid for one year from the above date.

**PROBABLE MAXIMUM FLOOD (PMF):**

The above property is shown to be **affected** by the Probable Maximum Flood (PMF), according to the information available to Council.

The nearest PMF flood levels available from the "A'Becketts Creek Overland Flood Study" prepared by Lyall & Associates Consulting Water Engineers in June 2017 shown in the Map attached are as follows:

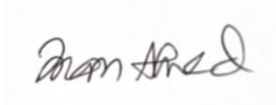
1. At location A - 19.7 mAHD
2. At location B - 19.6 mAHD

The coloured areas on the attached map represents the extent of the flood event. The light brown areas do not attract flood controls.

PMF levels are primarily used for evacuation purposes in the development of the property.

Should you have any further enquiries in this regard, please contact Luiza Atakulova, Planning Systems Support Officer during normal office hours, Monday to Friday on 8757 9955.

Yours sincerely,



Inam Ahmed  
**Stormwater and Flood Management Planner**

# APPENDIX (CONTINUED)

**Table 2: Flood Compatible Materials**

Building component	Flood material compatible	Building component	Flood material compatible
<b>Flooring and sub-floor structure</b> <ul style="list-style-type: none"> <li>Concrete slab-on-ground construction</li> <li>Suspension reinforced concrete slab</li> </ul>		<b>Doors</b> <ul style="list-style-type: none"> <li>Solid panel with water proof adhesives</li> <li>Flush door with marine ply filled with closed cell foam</li> <li>Painted metal construction</li> <li>Aluminium or galvanised steel frame</li> </ul>	
<b>Floor covering</b> <ul style="list-style-type: none"> <li>Clay tiles</li> <li>Concrete, precast or in situ</li> <li>Concrete tiles</li> <li>Epoxy, formed-in-place</li> <li>Mastic flooring, formed-in-place</li> <li>Rubber sheets or tiles with chemical-set adhesives</li> <li>Silicone floors formed-in-place</li> <li>Vinyl sheets or tiles with chemical-set adhesive</li> <li>Ceramic tiles, fixed with mortar or chemical-set adhesive</li> <li>Asphalt tiles, fixed with water resistant adhesive</li> </ul>		<b>Wall and ceiling linings</b> <ul style="list-style-type: none"> <li>Fibro-cement board</li> <li>Brick, face or glazed</li> <li>Clay tile glazed in waterproof mortar</li> <li>Concrete</li> <li>Concrete block</li> <li>Steel with waterproof applications</li> <li>Stone, natural solid or veneer, waterproof grout</li> <li>Glass blocks</li> <li>Glass</li> <li>Plastic sheeting or wall with waterproof adhesive</li> </ul>	
<b>Wall structure</b> <ul style="list-style-type: none"> <li>Solid brickwork, reinforced, concrete or mass concrete</li> </ul>		<b>Insulation windows</b> <ul style="list-style-type: none"> <li>Foam (closed cell types)</li> <li>Aluminium frame with stainless steel rollers or similar corrosion and water resistant material</li> </ul>	
<b>Roofing structure (for situations where the relevant flood level is above the ceiling)</b> <ul style="list-style-type: none"> <li>Reinforced concrete construction</li> <li>Galvanized metal construction</li> </ul>		<b>Nails, bolts, hinges and fittings</b> <ul style="list-style-type: none"> <li>Brass, nylon or stainless steel</li> <li>Removable pin hinges</li> <li>Hot dipped galvanized steel wire nails or similar</li> </ul>	
<b>Electrical and mechanical equipment</b> <p>For dwellings constructed on land to which this Part applies, the electrical and mechanical materials, equipment and installation should conform to the following requirements.</p>		<b>Heating and air conditioning systems</b> <p>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.</p>	
<b>Main power supply</b> <p>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.</p>		<b>Fuel</b> <p>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.</p>	
<b>Wiring</b> <p>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.</p>		<b>Installation</b> <p>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.</p>	
<b>Equipment</b> <p>All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.</p>		<b>Ducting</b> <p>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.</p>	
<b>Reconnection</b> <p>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.</p>			

# Home Emergency Plan

To help your household  
prepare for floods, storms  
and tsunami



FOR EMERGENCY HELP IN FLOOD,  
STORM AND TSUNAMI CALL

**132 500**

In life-threatening emergencies call 000 (triple zero)



FloodSafe



StormSafe



TsunamiSafe



## Welcome to your Home Emergency Plan

The NSW SES is responsible for the emergency management of floods, storms and tsunami in NSW.

This Home Emergency Plan is specifically targeted to these events but the advice can be useful for other hazards.

Being prepared now can significantly reduce:

- Loss of life
- Loss of property
- Loss of possessions

Being prepared now can also help you respond better and recover faster when these events happen.



## Possible hazards where I live:

- Storms
- Flash Floods
- Floods
- Tsunami
- Coastal Erosion and Inundation
- Tropical cyclones

These hazards can have devastating impacts on people, property and possessions. Even if you are not directly impacted by floods, storms or tsunami, you may still be affected by these events as roads may be damaged or flooded, access to areas may be restricted, amenities may be lost, you may become isolated, areas you are planning to travel to may be impacted and family or friends may be affected.



## I am responsible for:

- People with low or no vision
- People with low or no hearing
- People with restricted or no mobility
- People having difficulty in learning or understanding
- People taking medication
- People relying on a power supply
- Elderly people
- Children under 5
- Children aged from 5 to 12 years
- Aged from 13 to 18
- People from Culturally and Linguistically Diverse (CALD) backgrounds
- People you have employed that live on your property
- Animals living with you at your property and any animals you own or care for which are kept on another property
- Friends
- Family members living away from me
- Neighbours



## Prepare NOW

8 tips you can do now to prepare for floods, storms and tsunamis, as well as for other disasters:

### 1. Know your risk

- Know if where you live could be at risk from floods, storms or tsunamis, as well as other disasters

#### *Know your storm risk*

- Visit the NSW SES StormSafe website [www.stormsafe.com.au](http://www.stormsafe.com.au) for StormSafe information and read the StormSafe Guide
- Talk with neighbours and people who have lived in the area for a while about the local storm history

#### *Know your flood risk*

- Find out about your local flood history and visit the NSW SES FloodSafe website [www.floodsafe.com.au](http://www.floodsafe.com.au) and read the FloodSafe Guides relevant to your area
- Talk with neighbours and people who have lived in the area for a while about the local flood history
- Know the heights your area is affected by floods. Your local council may be able to provide you with specific information on how floods affect your property
- Be aware of the natural signs of flooding such as heavy rainfall and rushing or pooling water

#### *Know your tsunami risk*

- Visit the Bureau of Meteorology website [www.bom.gov.au](http://www.bom.gov.au) to find out what a tsunami is, how they are generated, what warning systems are in place and what warning products exist
- Know what to do when these warnings are issued

To find out your bushfire risk, visit the NSW Rural Bushfire Service [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)

To find out your urban fire risk, visit Fire and Rescue NSW [www.nswfb.nsw.gov.au](http://www.nswfb.nsw.gov.au)

For information on earthquakes, heat waves and other disasters, visit the Australian Emergency Management Institute [www.em.gov.au](http://www.em.gov.au)



## 2. Know where to go

- Have a plan of where you will go if you need to evacuate

## 3. Know your plan

- Use this Home Emergency Plan to document what you will do before, during and after flood, storm and tsunami
- Practice and update your plan regularly

## 4. Get your kit together

- Put together an [emergency kit](#) which is suitable for your household needs

## 5. Check your insurance

- If insurance is available, check the cover is adequate for where you live and make sure it is current

## 6. Prepare now to act early

- Know the triggers for what you need to do and when you need to do it
- Practice your Home Emergency Plan regularly and keep it up-to-date
- Maintain a sufficient level of supplies in case you become isolated
- Know what to do if you have no amenities

## 7. Listen to local radio

- Know the local radio station you need to listen to for information, updates and advice
- Know the ABC radio frequency in your area.

## 8. Know who to call

- Keep a list of emergency numbers near your phone, on your mobile or on your fridge.

NSW SES 132 500  
Life-threatening emergencies 000 (triple zero)  
NSW SES Facebook [www.facebook.com/nswses](https://www.facebook.com/nswses)  
NSW SES X <https://x.com/nswses>



## Get your kit together.

Put together an emergency kit today!

An emergency kit can help save precious time in an emergency situation. It provides items you might need if you lose power or need to leave your home in a hurry.

### Your emergency kit contents:

- Portable radio with spare batteries
- Torch with spare batteries
- First aid kit (with supplies necessary for your household)
- Candles and waterproof matches
- Important papers including emergency contact numbers
- Copy of any Home Emergency Plans
- Waterproof bag for valuables

### When leaving or evacuating your property, place in your emergency kit:

- A good supply of required medications
- Any special requirements and supplies for babies, the disabled, infirm and/or elderly
- Appropriate clothing and footwear
- Fresh food and drinking water

Keep your emergency kit in a waterproof storage container.

There may be other items you need to place into your emergency kit depending on what risks there are in your area. Check with the NSW Rural Fire Service and Fire & Rescue NSW for specific items you may need to place in your emergency kit if you are at risk of bushfire or urban fire.

Check your emergency kit on a regular basis and remember to check use-by dates on batteries and gloves. Re-stock any items if you need to.



## What can be done NOW:

### Storms:

- Maintain your property, yard and balcony
- Trim overhanging trees and branches around your property
- Clear leaves and other debris from gutters and downpipes
- Check that walls, eaves and roofs are secure and in good repair

Storms can also cause flash flooding, which can be very dangerous.

It is safer not to be in an area if flash flooding is a possibility.

Be aware of natural indicators of flash flooding:

- Very heavy rainfall
- Rushing or quickly pooling water

### Floods:

- Know the triggers for what you need to do and where you need to go when it floods
- Talk with your local NSW SES members about being FloodSafe
- Be aware of the natural signs of flooding such as heavy rainfall and rushing and pooling water
- Talk with friends and relatives about organising a safe place to stay outside flood affected areas
- Know the safest route to travel if you need to evacuate

### Coastal Erosion Inundation:

In case of a storm surge or very high tide when there is a storm or other coastal flooding, know your nearest safe high ground and the safest access route.

Check with the NSW Office of Environment and Heritage [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au) or Your local council about temporary coastal protection works.

### Tsunami:



Find out what kind of tsunami warnings may be issued by visiting the Bureau of Meteorology, Joint Australian Tsunami Warning Centre web page 'About Tsunami Warnings' [www.bom.gov.au/tsunami](http://www.bom.gov.au/tsunami)

You could be in an area where an official warning may not be available, therefore you should be aware of the natural warning signs that a tsunami may be approaching.

- You may see the ocean drop. As tsunami approach the shoreline, the sea level may, but not always recede or drop dramatically before returning as a fast moving series of waves
- You may experience an earthquake
- You may hear an unusual roaring sound from the ocean before the arrival of a tsunami.

#### *Cyclones:*

- Prior to the cyclone season, identify the strongest part of your property to move to should a cyclone happen
- Check that the walls, eaves and roof are secure and in good repair
- Check with your local council or your building control authority to see if your home has been built to cyclone standards
- Preferably fit shutters, or at least metal screens, to all glass areas
- Identify a care support person (family member, friend, service worker, neighbour), who can help plan and prepare
- This care support person may also be available to assist in putting this plan into action

#### *People with low or no vision:*

- Make audio recordings of emergency plans
- If there is a seeing-eye dog, know how to care for it in an emergency. Remember to keep a collar, harness, identification tags, food and medical records handy

#### *People with low or no hearing:*

- Note these numbers in your plan:
- If you are in a life threatening situation call 106 (a Text Emergency Call or TTY)
- The National Relay Service [133 677 (TTY) or 1300 555 727 (Speak and listen)] can connect you to other emergency services



*People with restricted or no mobility:*

- Consider placing mobility devices in an handy location so that access to them is easier in an emergency
- Plot an accessible evacuation route
- Think in advance about what might need to be done if the access ramp was unusable or lifts in the building were not operating

*People on medication:*

- Stock up on enough medication in advance, to last at least a week
- Write down the names of medications, their dosages and other instructions and place this in the emergency kit

*People requiring constant power supply:*

- Ensure back-up power supply in the home or where evacuating to

*Elderly:*

- Identify a care support person who can help prepare an emergency plan or pass on any information via a preferred means of communication
- This care support person may also be available to assist when needed to put into action this emergency plan
- Family may also be able to assist in preparing an emergency plan

*Children under 5:*

- Have a supply of required items for babies and toddlers for at least a week. Items may include nappies, baby food, formula and medications

*Children from 5 - 18 years:*

- Involve your children in planning for floods, storms and tsunami
- Ask them what are important things to do when preparing for, responding to and recovering from these events
- Give your children specific roles and practice your plan with them
- Talk to teachers at the school your children go to and encourage them to access teaching resources or request visits to the school from emergency service organisations

*People from Culturally and Linguistically Diverse (CALD) Backgrounds:*

- Find out what the different warning services are and what they mean for you and where you live
- Ask a translator service, relative or service provider to help you understand about flood, storm and tsunami risk where you live



- Write down in your own language what the different warnings mean and what you need to do in response to them.

#### *Pets:*

- ID tags for all your pets are up-to-date and securely attached to collars or carriers
- Pet carriers are secure and in working order
- Each pet has a leash, collar and harness where necessary
- A current picture of your pet and a current picture of you with your pet
- Veterinary records and medications are current
- Emergency vet contact information and number
- Written feeding and medication instructions for your pet, including what not to feed them
- A pet first aid kit

Store several day's worth of food and water for each pet.

Include any agisted animals you own or care for. Remember property where you keep animals may be higher risk than your own.

#### *Agisted animals:*

- Talk to the property owner about the local risks and about their emergency plans
- Add these plans to your Home Emergency Plan
- Monitor the weather conditions near where your animals are agisted

#### *For Livestock:*

- Fit gates on internal fences to avoid moving stock along public roads
- Mark gates and water locations on a map of your property. Have this map available in case someone has to move stock for you

More information is available from the Department of Primary Industries  
[www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

#### *For wildlife:*

RSPCA [www.rspcansw.org.au](http://www.rspcansw.org.au)

#### *Neighbours:*

- Let your neighbour know about your plan
- Use any information they give you and include this in your plan
- Make a coordinated plan so that you both can share resources



### Employees:

- Make sure where you work has a business continuity plan which includes what to do in an emergency situation for flood, storm or tsunami. The Business FloodSafe Toolkit can help businesses plan for floods [www.floodsafe.com.au](http://www.floodsafe.com.au)
- Practice emergency plans at work
- Make sure work plans fit with personal plans and talk with employees/employers about this
- Make sure planning includes people leaving early for personal or safety reasons





## BEFORE all emergencies:

Warnings are issued by the Bureau of Meteorology for floods, severe weather, thunderstorms, tropical cyclones and tsunami through their website [www.bom.gov.au](http://www.bom.gov.au)

- Activate this emergency plan
- Listen to your local radio station for information, updates and advice
- Check to see if neighbours are aware of the warning and need assistance
- Locate and check your emergency kit
- Follow all advice and instructions given to you by emergency services

It is safer to be away from areas which are going to be impacted by these events.

When flash flooding is likely the best action to take is to leave low-lying areas (evacuation) well before it may happen, but only if it is safe to do so. If you are trapped by rising floodwater, seek refuge in the highest part of a sturdy building. Stay there and call 000 (triple zero).

- Contact care support persons if you have previously organised to do this and prepare to respond as you have planned

### *Children:*

Children may become frightened when floods, storms or tsunami are about to happen.

- Stay calm and reassure children that they can take steps to be safe
- Let your children know exactly what is happening, what they can do to help and what they need to do
- Move children away from the impact area immediately



## BEFORE Storms:

When a Severe Weather Warning or a Severe Thunderstorm Warning is issued by the Bureau of Meteorology:

- Secure or put away any loose items from around your home, property or balcony that could become dangerous in storms
- Stay indoors away from windows
- Park vehicles under solid shelter away from trees and power lines
- If driving, pull over to the side of the road away from gutters, drains, trees and power lines
- Reconsider non-essential travel
- Bring children inside keeping them clear of windows
- Bring pets inside keeping them clear of windows

## BEFORE Cyclones:

- Fill fuel tank
- Stock clean drinking water
- If advised, collect children from school or childcare centre and go home
- Close shutters or board-up or heavily tape all windows
- Draw curtains and lock doors

## BEFORE Floods:

A Flood Watch may be issued by the Bureau of Meteorology when floods have the possibility of happening. A Flood Warning is issued by the Bureau when flooding is likely. Flood Warnings are issued on rivers that have flood gauges.

- Locate pets and include them in your flood preparation
- Coordinate relocation of agisted animals
- Move animals to high ground with adequate natural feed. Additional feed may be required for animals stranded for extended periods
- In extreme circumstances, the best option may be to cut fences so that animals can escape danger (and be collected later)



## BEFORE a Tsunami:

*When a Tsunami Watch is issued:*

- Locate your emergency kit and add any medications, important papers, special items for babies, elderly, clothing, food and water
- Locate and follow your emergency plan
- Keep listening to your radio station for information, updates and advice

*When a Tsunami Warning is issued:*

- Follow all advice and instructions given to you by emergency services

Sometimes there can be little or no warning of storm activity.



## EVACUATING:

Emergency Warnings are issued by the NSW SES for floods, storms and tsunami through the NSW SES website [www.ses.nsw.gov.au](http://www.ses.nsw.gov.au) and local media.

Emergency Warning - the highest level of warning. You may be in danger and need to take action immediately. Action statements may include:

- Evacuate now / Evacuate before [time]
- Shelter now
- Move to higher ground

When an Emergency Warning is issued:

- Locate important papers, valuables and mementos. Put them in your [Emergency Kit](#)
- Keep listening to your local radio station for information, updates and advice
- Follow instructions given to you by emergency services

When an *Emergency Warning* / *Evacuate now* is issued, staying inside a property, even one which you think is safe, may be very dangerous. If you are warned to evacuate it is always safest to move to a location away from the affected area early:

- Turn off the electricity and gas at the mains before you leave and turn off and secure any gas bottles
- Take your emergency kit
- Take your pets with you
- Never enter or travel through floodwater
- Keep listening to your local radio station for information, updates and advice
- Follow your Home Emergency Plan or Business Plan
- Follow all instructions given to you by emergency services
- Wear appropriate clothing

You should leave well before roads and evacuation routes are cut off or closed.

Stay with family or friends away from the affected area. Evacuation centres may also be established by welfare services in your area. Help may include:

- Temporary accommodation
- Financial help
- Personal support
- Refreshments and meals
- Clothing and personal needs
- Help in contacting family and friends
- Take enough medication with you to last at least a week
- Identify a place to go which has a back-up uninterruptible power supply



- Take relevant and adequate toddler and baby items with you to last at least a week
- Take your pets with you making sure they are either leashed, muzzled and/or transported appropriately
- Make sure your pets are catered for wherever you evacuate to
- Have clean up supplies including litter bags, paper towels, wipes, sanitisers and garbage bags
- Take pet toys, beds, blankets, towels and treats

To learn more about our warnings levels and actions statements, visit <https://www.ses.nsw.gov.au/about-us/our-warnings/>



## DURING all emergencies

- For emergency help in floods, storms and tsunamis, call the NSW SES on 132 500
- In life-threatening emergencies, call 000 (triple zero)
- Check that your neighbours have received all warnings and advice
- Keep listening to your local radio station for information, updates and advice
- Follow all advice and instructions given to you by emergency services
- Make sure children follow the emergency plan

## DURING storms:

- Stay clear of creeks, drains, causeways, gutters, streams, fallen trees, power lines and damaged buildings
- If driving, put on your hazard lights and pull over to the side of the road, keeping clear of drains, causeways, streams, creeks, trees and power lines
- If outdoors, seek secure shelter away from drains, causeways, streams, creeks, trees and power lines

## During cyclones:

- Remain indoors
- Disconnect all electrical appliances
- Listen to your battery powered radio for information, updates and advice
- Stay inside and shelter clear of windows and in the strongest part of the building
- If the building starts to break up, protect yourself with mattresses, rugs or blankets under a strong table or bench or hold onto a solid fixture
- Beware that the centre of a cyclone can be calm. If the wind drops, don't assume the cyclone is over; violent winds will soon resume from another direction. Wait for the official 'Reduced threat: return with caution'
- If driving, stop (handbrake on and in gear) but well away from the sea and clear of trees, power lines and streams. Stay in the vehicle

## DURING floods:

A Flood Warning is issued by the Bureau of Meteorology when flooding is about to happen and may be updated during floods.

A Flood Warning provides a predicted flood level on a river gauge and a time at which the river will reach that level.

- Never drive, ride or walk through floodwater
- Never play in floodwater
- Keep in contact with your neighbours
- Be prepared to evacuate if advised



Floodwater can be deeper and faster flowing than it appears. It can erode roadways and create deep pot holes.

Floodwater can also contain sewerage, debris, dead animals and contaminants such as oil and petrol.

## **DURING Tsunami:**

When a Marine and Immediate Foreshore Threat Tsunami Warning has been issued:

- Get out of the water and move away from the immediate water's edge of harbours, coastal estuaries, rock platforms, and beaches
- Boats in harbours, estuaries and in shallow coastal water should return to shore. Secure your boat and move away from the waterfront
- Vessels already at sea should stay offshore in deep water until further advised
- Do not go to the coast to watch the tsunami, as there is the possibility of dangerous, localised land inundation of the immediate foreshore
- Check that your neighbours have received this advice

When a Land Inundation Threat Tsunami Warning has been issued:

- Evacuate low-lying parts of coastal towns and villages in the tsunami impact area
- Vessels already at sea should stay offshore in deep water until further advised
- Go to higher ground, at least ten metres above sea level, or if possible move at least one kilometre away from all beaches and the water's edge of harbours and coastal estuaries
- Take only essential items that you can carry including important papers, family photographs and medical needs
- It may be in your own interests to walk to safety if possible to avoid traffic jams
- If you cannot leave the area take shelter in the upper storey of a sturdy brick or concrete multi-storey building



## AFTER all emergencies:

If outside the impacted areas:

- Do not enter these areas until an official 'Reduced threat: return with caution' has been issued

If inside impacted areas:

- Be aware of health and safety issues
- Keep listening to your local radio station for information, updates and advice
- Check to see if your neighbours need help
- Do not go sightseeing as this may hinder recovery efforts or put yourself and others at risk

Animals may be distraught, frightened or disoriented after a disaster event.

If any animals are missing, check with local pounds, animal shelters, animal control authorities, RSPCA or boarding kennels. Take a recent photo of your pet with you.

## AFTER storms:

- Check your house or property for damage
- Stay clear of creeks, drains, causeways, gutters, streams, fallen trees, power lines and any damaged buildings

The NSW SES can assist with temporary measures to make your property safer. Any damage needs to be assessed and repaired by qualified tradespeople.

## AFTER Floods:

- Ensure the structural stability of your property before entering. Check for damage to windows, walls and the roof and be especially cautious of potential contaminants including asbestos
- Make sure the electricity and gas is turned off before going inside. Use a torch to carry out inspections inside buildings
- If power points, electrical equipment, appliances or electrical hot water systems have been exposed to floodwater or are water damaged in any way, they must be inspected by a qualified electrician before use
- Gas appliances and gas bottles that have been exposed to floodwater should be inspected for safety before use
- Wear suitable protective clothing, including boots and gloves, when cleaning up
- Be aware of any slip, trip or fall hazards
- Never eat food which has been in contact with floodwater
- Only use clean utensils and personal items



- Have a supply of fresh drinking water

The NSW SES will issue an 'Reduced threat: return with caution' when it is safe to return to an area that has been evacuated.

### **AFTER a Tsunami:**

A Tsunami Cancellation will be issued when the tsunami threat has passed.

If you are in an area impacted by a tsunami, follow all advice and instructions given to you by emergency services.



## RECOVERY

The aftermath of a natural hazard can affect people in different ways. Sometimes we may be exposed to things that are distressing.

The NSW SES has developed a [Recovery Guide](#) to assist people recover from floods, storms and tsunamis.

Here are a few tips from the guide:

- If you can, contact family or friends to let them know that you are OK or if you need help
- Follow all instructions given to you by emergency services
- Update your plan with what you have learned from this disaster

NSW Rural Fire Service and NSW Fire and Rescue can also provide information on recovering from bushfire and urban fire - [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au) and [www.fire.nsw.gov.au](http://www.fire.nsw.gov.au)

Natural disasters can damage property and people, but they can also often help build a sense of community.

Talk to people in your community and help each other where possible. Seek out information and share it with those around you.

As part of the recovery from natural disasters, communities and Government are also supported by the non-Government sector. Community partners such as the Salvation Army, ADRA, Anglicare, St Vincent De Paul and the Red Cross provide a range of assistance to support people and communities in time of need.

Disaster Recovery Centres may be established following some disasters. Recovery centres may provide a range of welfare services including financial assistance, personal support, organising temporary accommodation and providing information and referrals. If you have been affected by floods and require assistance, contact Disaster Welfare Services on 1800 018 444