

# **Flood Emergency Response Plan**

## **Ulladulla Public School Upgrade**

**Prepared for NSW Department of Education / 25 March 2025**

232045

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| 3   | 19/03/2025 | LC          | EC          | Updated per Urbis and SI comments |
| 4   | 25/03/2025 | LC          | EC          | Updated site plan                 |

## Glossary and Abbreviations

|   |         |  |
|---|---------|--|
| Annual Exceedance Probability           | AEP     | The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage   |
| Australian Height Datum                 | AHD     | A common national surface level datum often used as a referenced level for ground, flood and flood levels, approximately corresponding to mean sea level.  |
| Average Recurrence Interval             | ARI     | The long-term average number of years between the occurrence of a flood equal to or larger in size than the selected event. ARI is the historical way of describing a flood event. AEP is generally the preferred terminology.   |
| Bureau of Meteorology                   | BoM     | An executive agency of the Australian Government responsible for providing weather services to Australia and surrounding areas.  |
| Development Control Plan                | DCP     | A Development Control Plan is a document prepared by the Council which provides detailed guidelines which assist a person proposing to undertake a development. A DCP must be consistent with the provisions and objectives of a Local Environmental Plan (LEP).   |
| Finished Floor Level                    | FFL     | The level, or height, at which the floor of a building or structure (including alterations and additions) is proposed to be built.   |
| Flood hazard                            |         | A source of potential harm or a situation with a potential to cause loss of life, injury and economic loss due to flooding. Flood hazard is defined as a function of the relationship between flood depth and velocity.  |
| Flood Planning Level                    | FPL     | The combination of the flood level from the defined flood event and freeboard selected for flood risk management purposes.   |
| Freeboard                               |         | A factor of safety typically used in relation to the setting of floor levels or levee crest levels. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action, localised hydraulic behaviour etc.                           |
| Local Environmental Plan                | LEP     | LEPs provide a framework that guides planning decisions for local government areas through zoning and development controls. Zoning determines how land can be used (for example, for housing, industry, or recreation).  |
| New South Wales State Emergency Service | NSW SES | The NSW SES is an agency of the Government of New South Wales, is an emergency and rescue service dedicated to assisting the community in times of natural and man-made disasters.   |
| Probable Maximum Flood                  | PMF     | The largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land, that is, the floodplain. |
| Representative Concentration Pathways   | RCP     | RCPs make predictions of how concentrations of greenhouse gases in the atmosphere will change in future as a result of human activities. The four RCPs range from very high (RCP8.5) through to very low (RCP2.6) future concentrations.   |

## Severe Weather Warning

The Bureau of Meteorology issues Severe Weather Warnings whenever severe weather is occurring in an area or is expected to develop or move into an area. Severe Weather Warnings are issued for:

- Sustained winds of gale force (63 km/h) or more
- Wind gusts of 90 km/h or more (100 km/h or more in Tasmania)
- Very heavy rain that may lead to flash flooding
- Widespread blizzards in Alpine areas
- Very large waves and high tides expected to cause unusually damaging or dangerous conditions on the coast

## 1.0 Introduction

This Flood Emergency Response Plan (FERP) has been prepared to support a Review of Environmental Factors (REF) for the NSW Department of Education (DoE) for Ulladulla Public School upgrade (the activity).

The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

This document has been prepared in accordance with the *Guidelines for Division 5.1 assessments* (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI) as well as the *Addendum Division 5.1 guidelines for schools*.

The purpose of this report is to outline the flood behaviour at the site, including the time to inundation and recession over key access roads, and to determine the most appropriate emergency response strategy for the proposed building. The details of this report are based on currently available information at the time of writing.

### 1.1 Reference Documents

This report has been prepared with reference to the following documents and guidelines:

- Australian Institute of Disaster Resilience (AIDR) Guideline 7-3: Flood Hazard (2017)
- Department of Planning and Environment (2021) Considering Flooding in Land Use Planning Guideline
- FloodSafe guidelines and the relative FloodSafe Tool Kits
- NSW Department of Planning and Environment (2023) Flood Risk Management Manual (<https://www.environment.nsw.gov.au/topics/water/floodplains/floodplain-manual>)
- NSW Department of Planning and Environment (2023) Support for Emergency Management Guideline, Flood Risk Management Guideline EM01 (<https://www.environment.nsw.gov.au/research-and-publications/publications-search/support-for-emergency-management-planning>)
- NSW Department of Planning and Environment (2025) Shelter-in-place guideline for flash flooding (<https://pp.planningportal.nsw.gov.au/draftplans/made-and-finalised/shelter-place-guideline-flash-flooding>);
- NSW Department of Planning, Housing and Infrastructure – Planning Circular PS 24-001, Update on addressing flood risk in planning decisions, 1st March 2024
- NSW Environment and Heritage (2021) Millards Creek – Physical data (<https://www.environment.nsw.gov.au/topics/water/estuaries/estuaries-of-nsw/millards-creek>)
- NSW SES (2022) Shoalhaven City Flood Emergency Sub Plan – A Sub Plan of the Local Emergency Management Plan (EMPLAN) (<https://www.ses.nsw.gov.au/media/5902/shoalhaven-city-local-flood-emergency-sub-plan-oct-2022.pdf>)
- NSW State Emergency Service (SES) Guidelines
- Shoalhaven City Council (2014) Shoalhaven Local Environmental Plan (SLEP)
- Shoalhaven City Council (2021) Millards Creek Flood Study – Final Study Report, prepared by Water Modelling Solutions
- Shoalhaven Development Control Plan (2014) – Chapter G9: Development on Flood Prone Land, Part 5.1: General controls
- TTW (2025) Flood Impact and Risk Assessment, dated 25 March 2025.



## 2.0 Site Description

Ulladulla Public School is located at 241 Green Street, Ulladulla NSW 2539. The site is located within the Shoalhaven Local Government Area (LGA) and has an approximate area of 3.5 hectares. An aerial photograph of the site is provided at Figure 1. The site is comprised of three lots, legally referred to as follows:

- Lot 1 in Deposited Plan 122514
- Lot 1 in Deposited Plan 529425
- Lot 1 in Section 16 in Deposited Plan 759018

The site is zoned SP2 Educational Establishment and existing development comprises various buildings, a car park, landscaping, a sports field and sports courts associated with Ulladulla Public School. Ulladulla Public School currently comprises 22 Permanent Teaching Spaces (PTS) and 11 Demountable Teaching Spaces (DTS). The western portion of the site contains playing fields, sports courts and parking. Vegetation is interspersed throughout the site.

The site is irregularly shaped with a long frontage to Green Street to the south. Land to the north of the site is zoned RE1 which consists of natural bushland. Low density residential dwellings adjoin the site along the western boundary.

The primary access to the site is via the vehicular entrance at Green Street, which leads onto the staff car park, beneath the proposed building.



Figure 1: Aerial Photograph of the Site (Source: Urbis, January 2024)

### 3.0 Proposed Activity Description

The proposed activity relates to upgrades to Ulladulla Public School. Specifically, the proposed activity comprises the following:

- Construction of a new two-storey home base building over existing car park.
- Alterations to existing car park under new building.
- Construction of new stairs and covered walkways.
- Installation of new fencing.
- External landscape works.
- Installation of solar panels.
- Installation of new pedestrian gate and fire brigade booster.
- Tree removal.

Any works relating to the existing demountables or works associated with substations will be undertaken via a separate planning pathway. Figure 2 provides an extract of the proposed site plan.

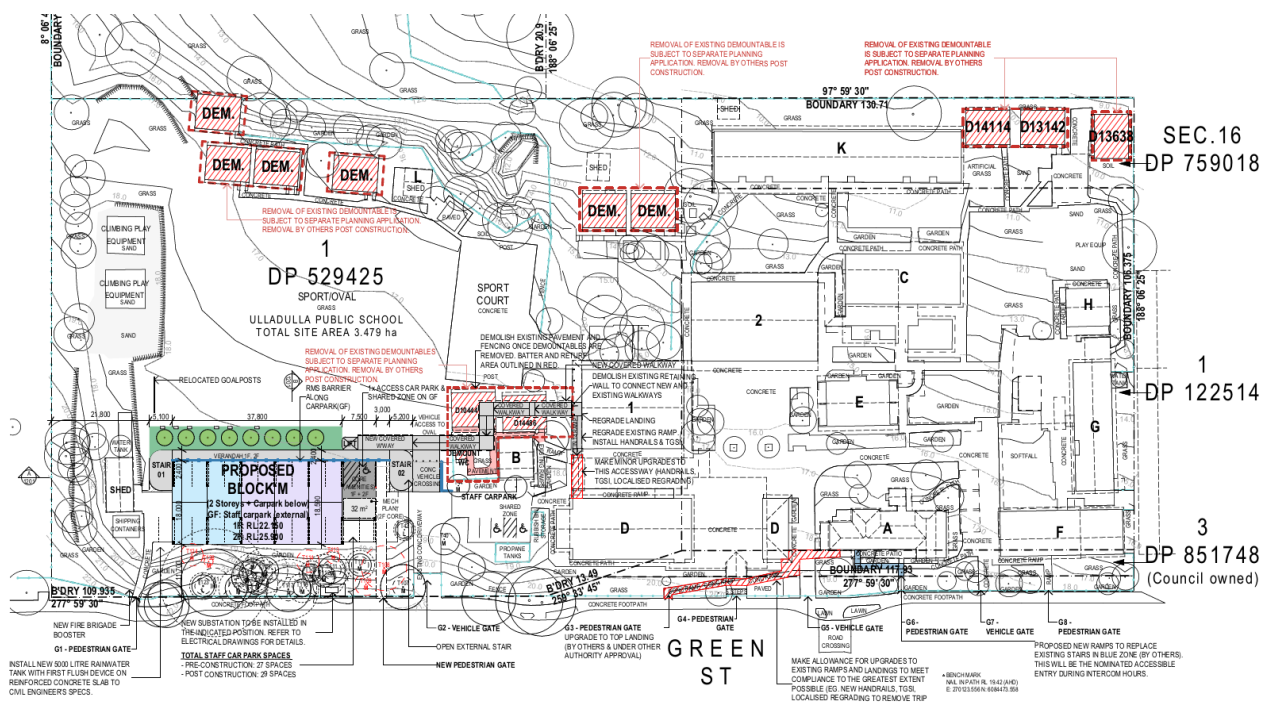


Figure 2: Site (Source: Fulton Trotter, dated March 2025)



## 4.0 Flood Behaviour

TTW obtained Shoalhaven City Council's DRAINS and TUFLOW model (developed by Water Modelling Solutions for the Millards Creek Flood Study, 2021) in order to determine the flood behaviour in the area.

The model was updated to incorporate detailed site survey information alongside the post-construction design levels alongside the new building, located at the existing car park. The modelling was based on the 100% Concept Design information for the site. For the Probable Maximum Flood (PMF), a range of storm durations from the 15-minute storm up to the 360-minute storm were run. Although the 30-minute storm is critical for the site in terms of peak surface water levels, this FERP includes an analysis of longer duration events to determine the maximum potential impact time for the site.

### 4.1 Flood Depths and Levels

Given the steep and deep banks of Millards Creek, the site is unaffected by mainstream flooding, with flow contained within the channel banks up to and including in the PMF event. Although the site is unaffected by mainstream flooding, it is impacted by overland flows generated upstream of the site. Figure 3 and Figure 4 present flood depths and levels at the site in the 1% AEP and PMF events, respectively.

Flows over Green Street overtop the kerb at the southwest of the site, forming a distinct flow path beneath the proposed building in the 1% AEP event, within the redeveloped staff car park area. Depths here reach up to 300mm in the 1% AEP event, and 470mm in the PMF. The grassland directly north of the proposed building is flood free in the 1% AEP event (including the stairs and lift access areas). In the critical 30-minute PMF event, depths across the proposed veranda reach a maximum of 150mm.

Surrounding the proposed building, flood levels peak at 18.88m AHD in the 1% AEP event and 19.02m AHD in the PMF, at the southwest of the building.

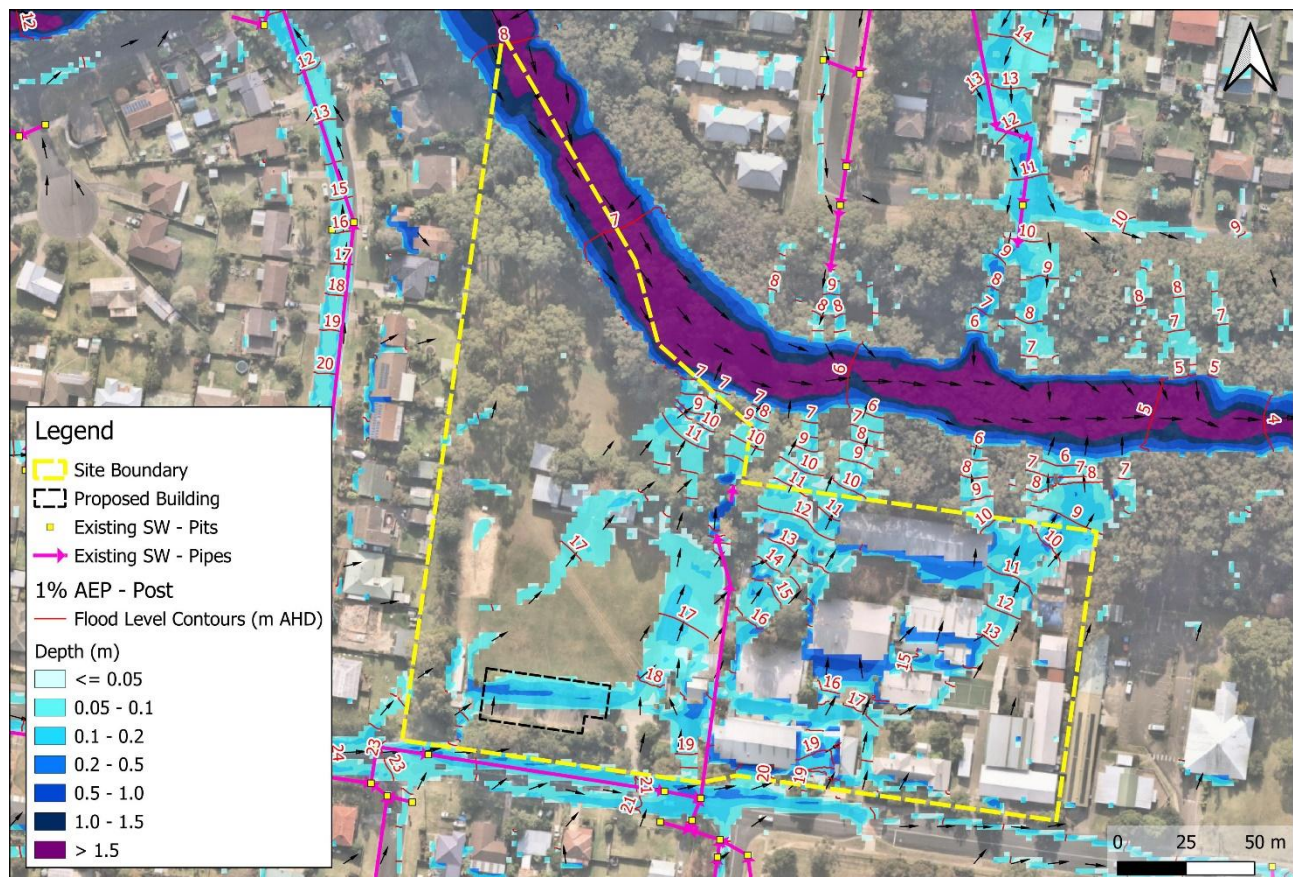


Figure 3: Flood levels and depths (1% AEP event)



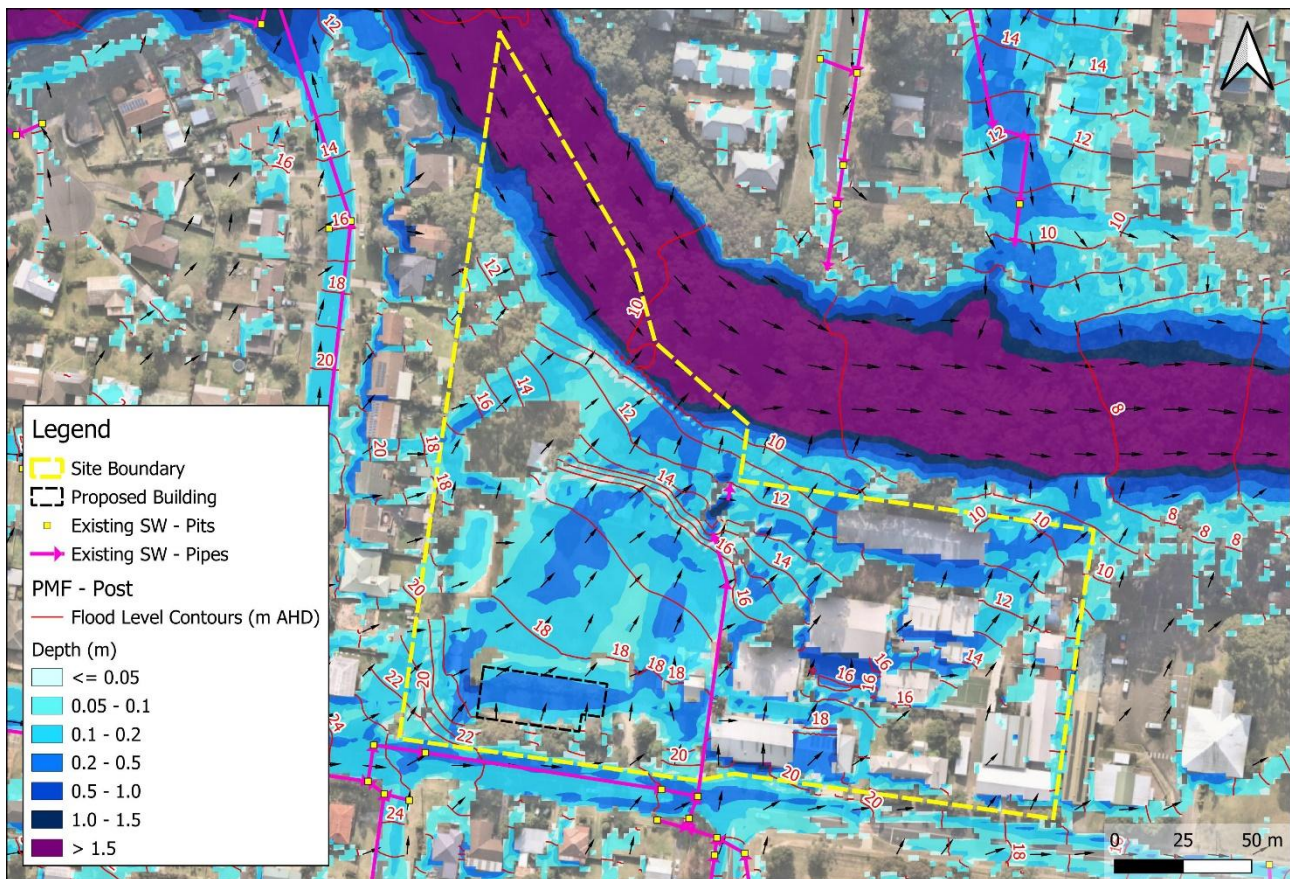


Figure 4: Flood levels and depths (PMF event)

## 4.2 Flood Hazard

A hazard assessment was conducted using the flood hazard vulnerability curves set out in 'Handbook 7 – Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia' of the Australian Disaster Resilience Handbook Collection (2017).

These curves assess the vulnerability of people, vehicles and buildings to flooding based on the velocity and depth of flood flows. The flood hazard categories are outlined in Figure 5, ranging from a level of H1 (generally safe for people, vehicles and buildings) to H6 (unsafe for vehicles and people, with all buildings considered vulnerable to failure).

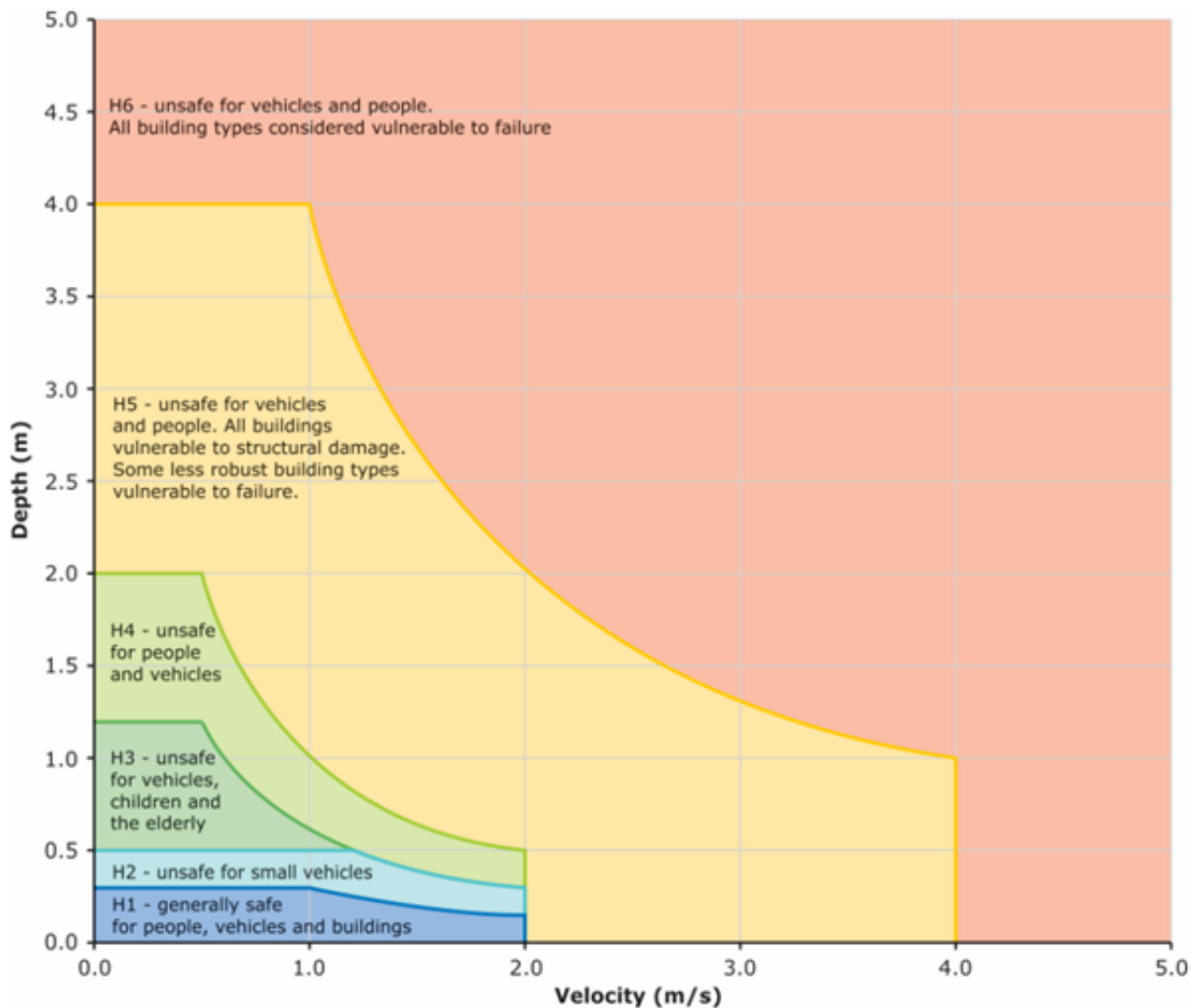


Figure 5: Flood hazard vulnerability curve (Source: Flood Risk Management Guide FB03 - Flood Hazard, NSW Department of Planning and Environment, 2022)

Figure 6 and Figure 7 present the flood hazard categorisation around the site in post-construction conditions in the 1% AEP and PMF events, respectively.

- In the 1% AEP event, flows across the staff car park (in the undercroft of the building) and the vehicular driveway are regarded as low (H1) hazard, which is generally safe for people, vehicles and buildings. However, in both directions on Green Street, the site's southern frontage, flows are classified as H2 hazard level (unsafe for small vehicles) and upwards.
- In the PMF, flows overtopping onsite from Green Street at the southwest of the site are classified as H5 hazard level (unsafe for vehicles and people). These high hazard flows extend across the western extent of the redeveloped staff car park. This does not impact the proposed activity, given that the adopted flood emergency response is pre-emptive closure and shelter in place. This area of high-hazard flows would not be accessed during the PMF event.



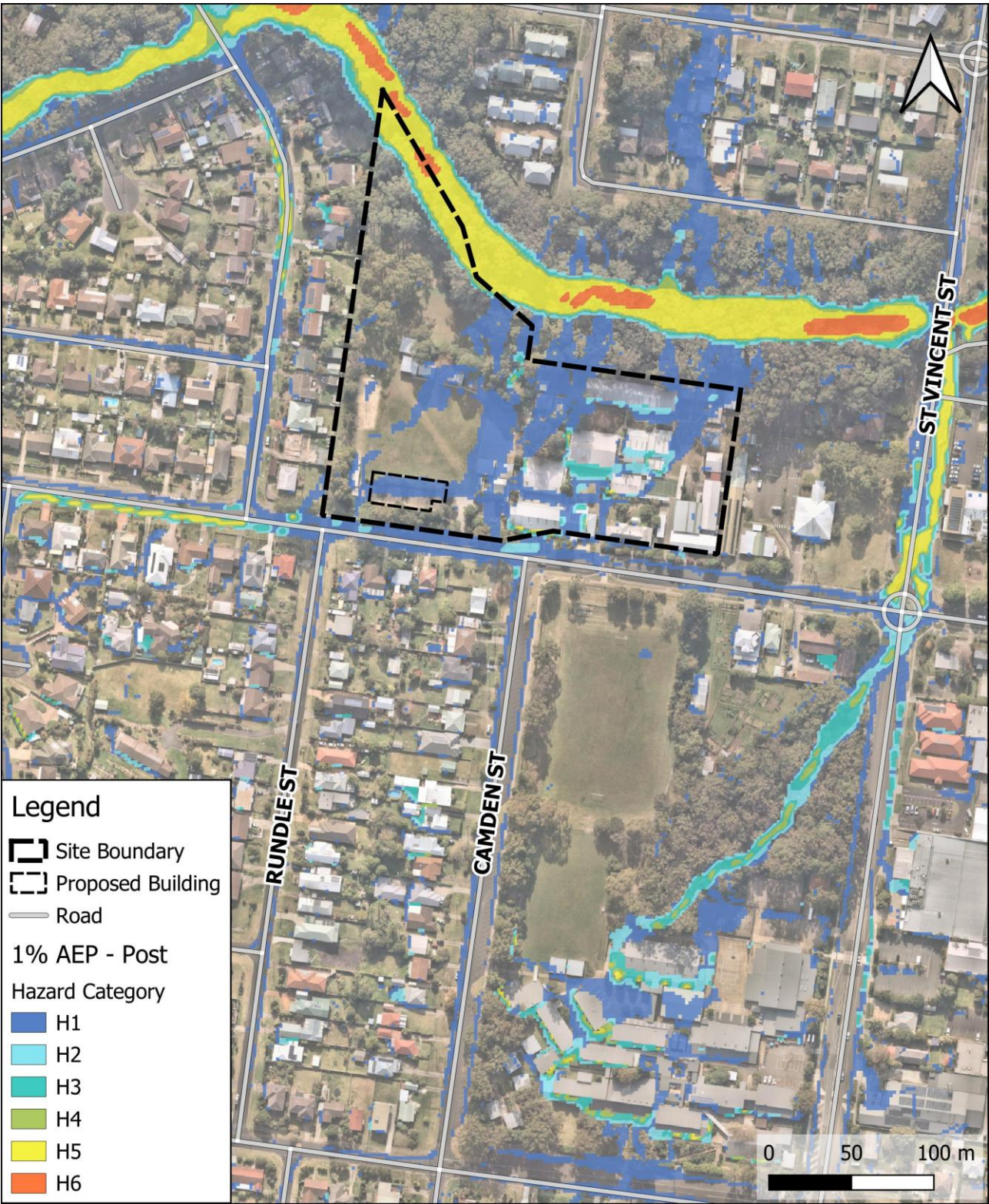


Figure 6: Flood hazards (1% AEP event)



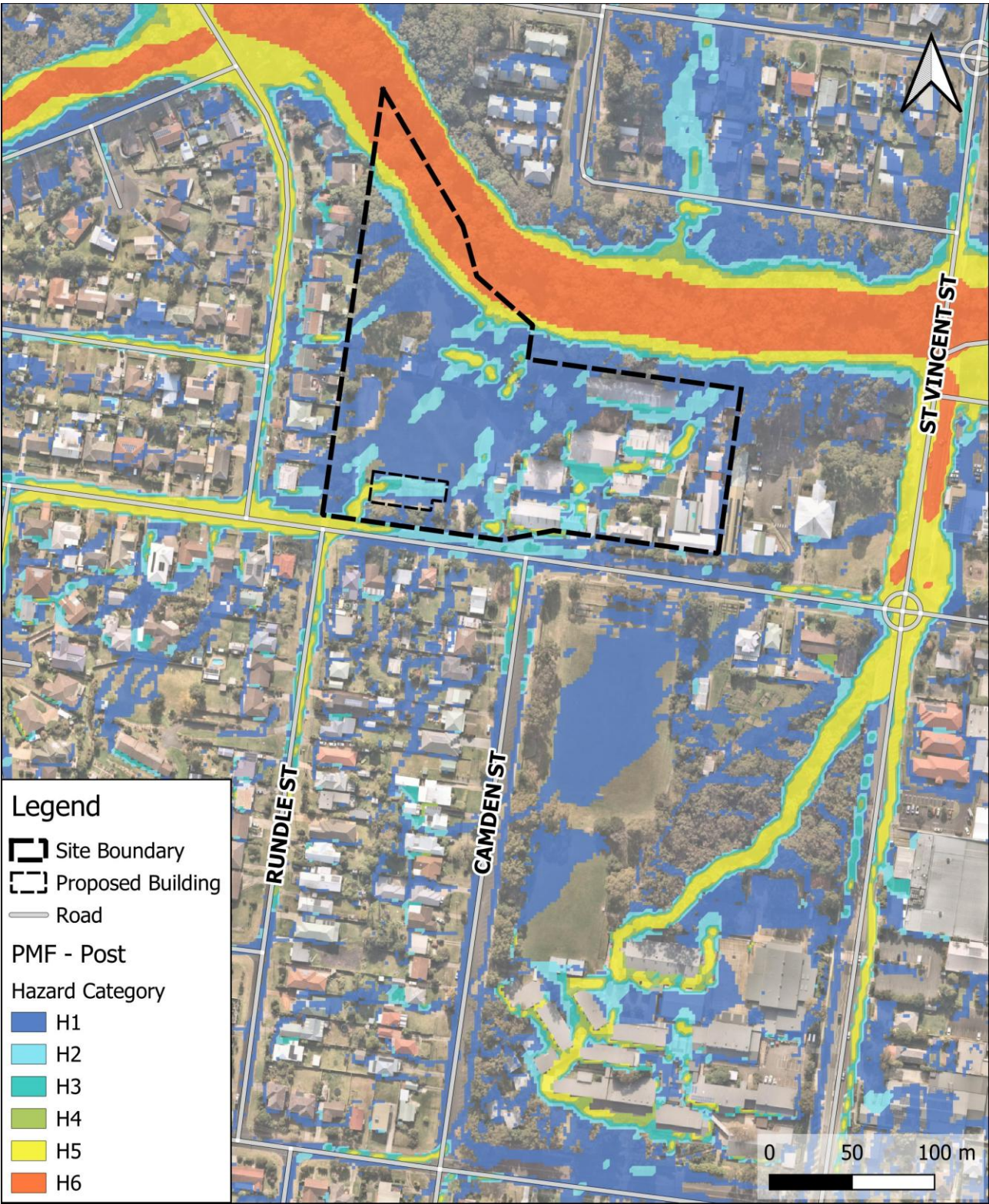


Figure 7: Flood hazards (PMF event)

4.3 Inundation and Recession Times

Table 1 presents a summary of the inundation and recession times for a range of storm events and durations. In all modelled events and storm durations, Camden Street is the least hazardous access road, and the first to return to flood free conditions. Review of model outputs indicate that the PMF 2-hour storm event is critical in terms of isolation, with floodwaters over Camden Street clearing after 1 hr 45 minutes.

St Vincent Street, the key access route to the northern side of the creek, has a more prolonged period of impact, with a recession time of up to 5 hrs and 15 minutes during the 6-hour duration PMF storm.

In terms of time to inundation, flows typically inundate the surrounding access roads rapidly, cutting off portions of St Vincent Street (at the crossing over Millards Creek) and the western extent of Green Street within 15–45 minutes.

Table 1: Time to inundation and recession at the site

| Event + Duration  | Time to Inundation   | Recession Time  |  |   |
|-------------------|--|---|--|---|
|                   |  | Proposed Building   | Camden St  | St Vincent St   |
| 1% AEP 45 minutes | < 45 minutes until the northern portion of St Vincent Street (including the roundabout onto Green St) and the western extent of Green Street are impacted by high hazard flows (H5). | The stairwells and entry points to Level 1 of the building are not flood affected, with no notable access constraints.  | Flood free for duration of this event  | Flood free 1hr 15 minutes following the onset of the storm.                                   |
| PMF 30 minutes    | < 15 minutes until St Vincent Street and the western extent of Green Street are impacted by high hazard flows (H5, some areas H6).   | The stairwells to Level 1 are affected by flows with a maximum hazard level of H1, and return to flood free conditions within 45 minutes of the onset of the storm.                         | Flows (up to H5 hazard) are largely contained within the kerb and gutter. Flood free 45mins after onset of storm                 | Flood free approximately 1hr 15 minutes following the onset of the storm.                     |
| PMF 1 hr          | < 15 minutes until St Vincent Street (including the roundabout) and the western extent of Green Street are impacted by high hazard flows (H5, some areas H6).                        | The stairwell access to Level 1 is affected by flows categorised as H1 hazard and returns to flood-free conditions 1hr after the onset of the storm.  | Flows (up to H5 hazard) are contained within kerb and gutter. Flood free 1hr after onset of storm                                | Flood free 1hr 30 mins after the onset of the storm.  |
| PMF 2 hrs         | < 15 minutes until St Vincent Street (including the roundabout) and the western extent of Green Street are impacted by high hazard flows (H5).                                       | The stairwell access to Level 1 is affected by flows categorised as H1 hazard and returns to flood-free conditions 1hr 45 minutes after the onset of the storm.                             | Flows (up to H5 hazard) are contained within the kerb and gutter system. Flood free 1hr 45 minutes after the onset of the storm. | Flows across St Vincent Street recede fully 2hrs 45 minutes following the onset of the storm. |
| PMF 4.5 hrs       | < 45 minutes until St Vincent Street is impacted by high hazard flows (up to H5).  | The stairwell access to Level 1 is affected by low hazard (H1) flows and returns to flood-free conditions 1hr 45 minutes after the onset of the storm.                                      | Flood free for duration of this event  | Flood free approximately 4 hrs 45 minutes after the onset of the storm.                       |
| PMF 6 hrs         | < 45 minutes until St Vincent Street is impacted by high hazard flows (up to H5). One lane of the western portion of Green Street is impacted by high hazard flows.                  | The stairwell access along the northern side of the proposed building is flood-free for the duration of the event. The pedestrian pathway onto Green St is flood-free after 1hr 45 minutes. | Flood free for duration of this event  | Flood free approximately 5 hrs 15 minutes after the onset of the storm.                       |



## 5.0 Flood Response Strategy

### 5.1 Pre-Emptive Closure

Although flash flood events are characterised by minimal warning times, there would be advanced notice of the extreme rainfall experienced in a 1% AEP or PMF event. Where there is enough warning prior to school opening hours, the school should be closed in advance of the flood event so children can be safe at home and parents do not have to drive through roads that could become hazardous.

An SMS should be sent to parents at the earliest opportunity (once the severe weather warning is issued by BOM) to advise of the school closure.

### 5.2 Shelter-in-Place

Shelter-in-place (SIP) guidance published by the NSW Department of Planning, Housing and Infrastructure (DPHI, 2025) states that SIP is an appropriate emergency management strategy for development proposed in flash flood environments when the flood warning time is less than 6-hours and the duration of isolation is less than 12 hours.

In the 30-minute PMF event, there is less than 15 minutes from the onset of the storm until flows over Green Street and St Vincent Street become hazardous. The roads return to flood-free conditions after approximately 1 hour. In longer duration events, flows over these roads take up to 5 hrs 15 minutes to fully recede, however the overall risk to the site is lower, given that other routes (via Rundle Street and Camden Street) provide alternative access to the site. Given this, it is expected that the maximum isolation period is 1hr 45 minutes.

Where there is not advanced notice of severe weather, and staff and students are already in the school, the secondary flood management strategy for the site is therefore to shelter-in-place. It should be noted that the new building is elevated well above the PMF level and will not experience above-floor inundation. As a result, the building is safe to shelter in from Level 1 and upwards, and has adequate facilities to support SIP, including ambulant toilets and staff and student toilets, as per the design criteria outlined in the DPHI's SIP guideline.

Based on current site plans, the overall building floor area is 1,345m<sup>2</sup>, with a 'usable' floor area of 941m<sup>2</sup> to shelter within (based on a 30% reduction to account for furniture). The DPHI's shelter-in-place guideline recommends a minimum floor space of 2m<sup>2</sup> per person. The proposed building therefore has capacity to shelter 470 people. During the shelter-in-place orders, all staff and students are to remain indoors. The Chief Warden should ensure that there are no site users outdoors, including within the staff car park area within the undercroft of the building.

### 5.3 Secondary Risks

Although shelter-in-place is the preferred emergency response strategy should a severe event begin without sufficient warning, any decision to shelter-in-place must consider secondary risks, including medical emergencies and building fire. Both the Milton-Ulladulla hospital and the Ulladulla Fire Station are located north of Millards Creek, with implications for site access during significant flood events given the impact to St Vincent Street Bridge in events as frequent as 2-5% AEP.

While there is no passage to the north of the creek that is flood-free or low hazard in all events (up to the PMF), Figure 8 presents an alternative route from the site onto Princes Highway that avoids St Vincent Street by travelling west on Green Street. It should be noted that **this route is not flood-free, is cut off by high hazard flows in the PMF event, and should only be used by emergency personnel** in the event of a secondary emergency following a risk assessment.

Caution must be taken when driving across Green Street, particularly the portion between Rundle Street and Vigilant Street. In the PMF, this area is cut off by high hazard (H5) flows. In the 0.2% AEP event, the centre of the roadway here is affected by flows with a maximum hazard level of H2, with H5 flows towards the gutter. The route is as follows:

- Egress from site, turning right onto Green Street, travelling west for approx. 1.3km.

- Turn right onto Pirralea Road, travelling northwest.
- Continue onto Slaughterhouse Road until the junction with Princes Highway.

This route leads onto Princes Highway, with access into Milton and Milton-Ulladulla Hospital to the northwest. In the event of a fire, emergency personnel should avoid southbound travel on the Princes Highway, given that the Princes Highway Bridge over Millards Creek is inundated in the 2-1% AEP event. The school should be accessed via the route outlined in Figure 8, if deemed safe.

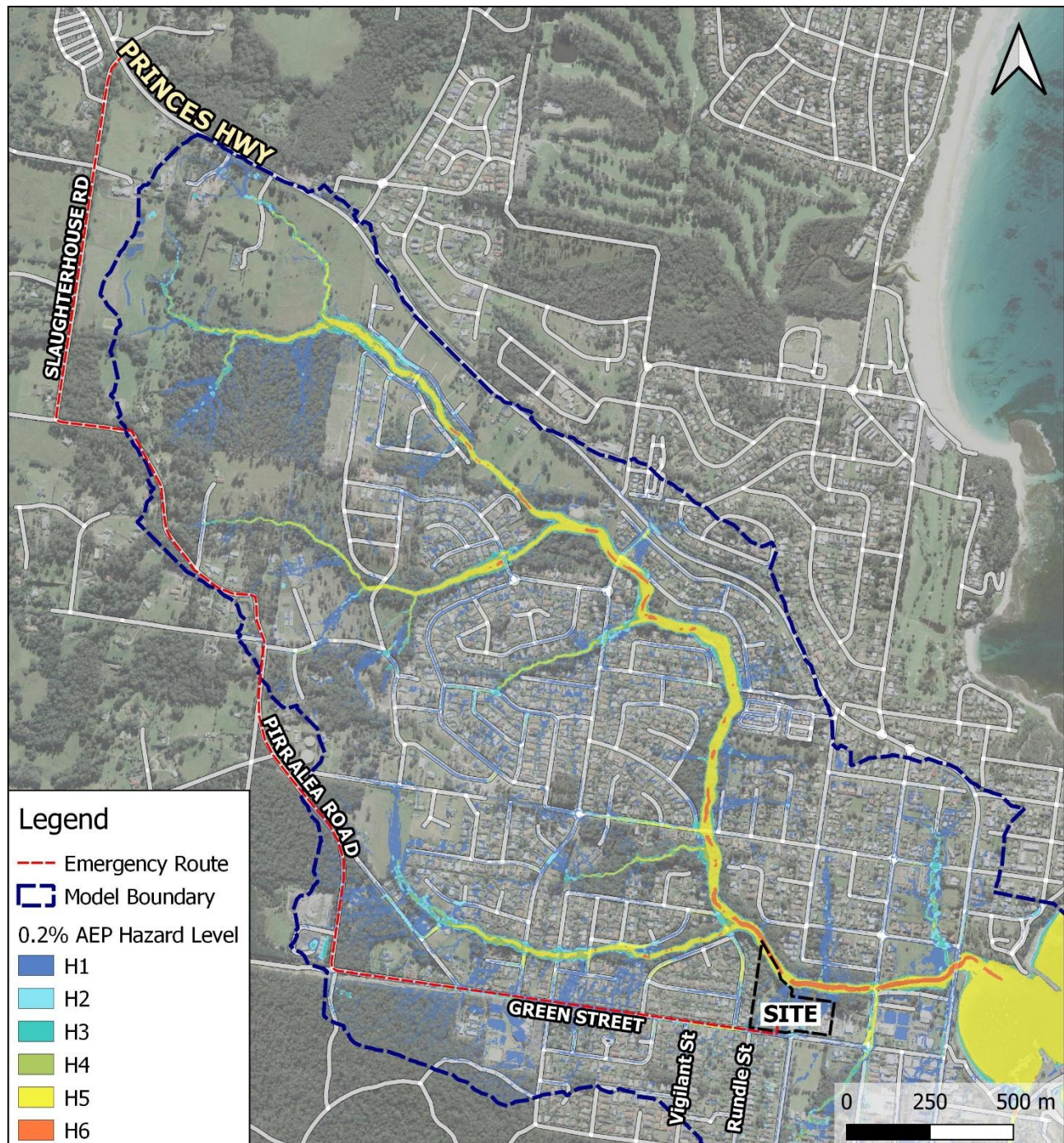


Figure 8: Route for emergency personnel in the event of a secondary emergency



## 6.0 Flood Warnings and Notifications

### 6.1 Bureau of Meteorology

Severe weather and thunderstorm warnings are issued by the Bureau of Meteorology (BoM). These warnings are continually updated with descriptions of the likely conditions, including predicted extreme rainfall depths. Flood warnings are issued by the BoM when flooding is occurring or is expected to occur in an area. Warnings may include specific predictions of flood depths dependent on real-time rainfall and river level data. These warnings are distributed by BoM to councils, police and the relevant local SES, as well as being available on the BoM website.

- A **Flood watch** is issued by the BoM up to four days prior to a flood event. A watch is generally updated daily and may be issued before, during, or after rainfall has occurred.
- **Flood warnings** are issued by the BoM when flooding is occurring or expected to occur in a particular area. Warnings may include specific predictions of flood depths dependent on real-time rainfall and river level data. These warnings are distributed to Council, Police, and the relevant local SES, as well as being available on the BoM website, through telephone weather warnings and radio broadcasts.

### 6.2 NSW SES Australian Warning System

NSW SES has recently implemented the Australian Warning System (AWS) which replaces their previous evacuation orders and warnings system. The AWS is a new national approach to information and 'Calls to Actions' for hazards including flooding. The System uses a nationally consistent set of icons, with three warning levels: Advice, Watch and Act, and Emergency Warning. The flood warnings are described in Figure 9.



Figure 9: Australian Warning System – Three Warning Levels

The NSW SES utilises a range of sources to build detailed flood intelligence within local communities, including information from flood studies and historical flood data. As part of the transition to the Australian Warning System, the NSW SES has increased flexibility to tailor warnings at the community level, based on the expected consequences of severe weather events.

The Chief Warden is responsible for monitoring information from the AWS. Impacted communities will continue to receive flood warnings through the NSW SES website, NSW SES social media channels and by listening to local ABC radio stations. The NSW SES has also developed an all-hazards warning platform, Hazard Watch, to provide an additional channel for communities to access important warning information.

Each warning has three components:

- 1) **Location and hazard:** The location and the type of hazard impacting the community.
- 2) **Action statement:** For each warning level there are a range of action statements to guide protective action by the community. These statements evolve as the warning levels increase in severity.

Statements range from 'prepare now' at the Advice level, to 'avoid the area' at the Watch and Act level, to 'seek shelter now' in the Emergency Warning level. As the situation changes and the threat is reduced, the level of warning will decrease accordingly.

- 3) **The warning level:** The severity of the natural hazard event based on the consequence to the community.

## 6.3 Triggers

It should be noted that the flashy nature of flooding at the site (and the inherently limited warning time associated with this type of flooding) limits the capacity of both the BoM and NSW SES to issue warnings and flood notifications with sufficient lead time. It is important to note that the warnings outlined above may not be available, or occur, with sufficient advanced warning.

Alternative triggers are required for the school to ensure adequate response time, primarily involving continued monitoring of severe weather warnings, media updates via local radio stations and social media alongside visual observation of flows across the site and over Green Street (if safe to do so). While the Chief Warden is responsible for monitoring information from the AWS, NSW SES recommend that all site users (namely, all staff members and wardens) refer to the HazardWatch website and the Hazards Near Me app.

## 6.4 Emergency Signals

The site should have a Public Announcement (PA) system that can be used by the Chief Warden to inform all staff of the chosen response strategy in the event of a flood emergency. This ensures that staff with key responsibilities in the Plan can begin to fulfil their duties without delay.

The PA system should be used alongside SMS and email updates to staff and parents to inform them of any severe weather or flood warnings covering the site or key access routes.

## 7.0 Flood Response Team

### 7.1 Staff Responsibilities

In the event of a severe flood, various staff members will be responsible for specific tasks as detailed in Table 2. Before the site is in operation, these roles must be delegated to specific staff members.

Table 2: Staff Flood Responsibilities

| Role                     | Responsibilities   |
|--------------------------|--|
| <b>Chief Warden</b>      | <ul style="list-style-type: none"> <li>- Decide if pre-emptive closure can occur if warnings are received prior to school opening hours or with several hours' notice</li> <li>- Monitor flood warnings and notifications from BoM and AWS</li> <li>- Monitor BoM weather in the area of the site</li> <li>- Inform staff and students/parents of flood risk</li> <li>- Coordinate flood SIP drills</li> </ul> |
| <b>First Aid Officer</b> | <ul style="list-style-type: none"> <li>- Coordinate assistance for less able students and staff</li> <li>- Prepare a Flood Emergency Kit that includes a portable radio, torch, spare batteries, first aid materials, emergency contact numbers, candles, waterproof matches, waterproof bags and required medications</li> </ul>  |
| <b>Staff</b>             | <ul style="list-style-type: none"> <li>- Check visitor log and student registers so all site users can be accounted for</li> <li>- Report missing students or site visitors to Chief Warden</li> </ul>   |

### 7.2 Key Contact Details

In the event of a severe flood, key telephone numbers have been listed in Table 3 below.

Table 3: Key Contact Numbers

| <b><u>IMPORTANT TELEPHONE NUMBERS</u></b> |              |
|---|--------------|
| Chief Warden                              | tba          |
| Deputy Principal                          | tba          |
| Safety/First Aid Officer                  | tba          |
| <b><u>External Contacts</u></b>           |              |
| Police/Ambulance                          | 000          |
| NSW State Emergency Services (SES)        | 132 500      |
| Fire & Rescue NSW – Ulladulla             | 02 4478 4977 |
| Ulladulla Police Station                  | 02 4454 8599 |
| Milton Ulladulla Hospital                 | 02 4454 9100 |

## 8.0 Preparation for Flood Response

### 8.1 Education

As part of the preparation for a flood event, all staff and students must be made aware and advised of the flood risks present on site and the flood protocols & procedures via signage. All staff must be made aware of their management responsibilities via briefing. This will form part of the mandatory site inductions that all staff must undertake prior to commencing work. A copy of this FERP, which includes emergency response procedures, will be made available at communal areas within the site as well as the main office. This FERP must be regularly reviewed by the Chief Warden, or in the event of any staff restructure or other significant change, to ensure it is up to date.

It is recommended that students and frequent users of the site are educated on the potential flood risk and actions that will be undertaken during a flood event. Lessons should also be held that address flood risks and highlight dangerous behaviour during a flood event. Materials available on the NSW SES website have been tailored for students of various ages.

### 8.2 Signage

It is important that the site has adequate signage for flood warning, similar to those in Figure 10. Flood warning signs should be positioned around the site to identify areas affected by Category H3 hazard and higher in the critical PMF event, in accordance with the Flood Hazard Flood Risk Management Guide FB03, NSW Department of Planning and Environment. Refer to Figure 7 for hazard categorisation of flows in this event.

If time permits, temporary signage should also be placed at the driveway onto Green Street, highlighting the flood risk to users travelling west on this road, and the flood risk to vehicles at the St Vincent Street roundabout to the east.



Figure 10: Signage and Gauges

### 8.3 Flood Drills

To reduce human behaviour risks, this plan should be regularly exercised, in a similar manner to that of fire evacuation drills. It is recommended that flood drills be held annually to ensure all staff are familiar with the sound of the alert and their subsequent flood response actions. It is the responsibility of the Chief Warden to



ensure that drills are organised and that any issues with these drills are attended to, and if necessary, procedures adjusted, and drills rerun.

These drills are required to test the suitability of the plan, identify gaps and to provide staff the opportunity to put into practice their specific responsibilities. If issues arise, this plan should be reviewed and updated. The Chief Warden will also ensure that all site drills are recorded in an appropriate records book and any non-conformities reported and responded to.

## **8.4 Flood Emergency Kit**



A Flood Emergency Kit should be prepared prior to a flood event taking place and regularly checked to ensure that supplies within the kit are sufficient and in working condition. This check could occur after the flood drill takes place to provide a regular schedule. The Kit should include:

- Radio with spare batteries;
- Torch with spare batteries;
- First aid kit and other medicines;
- Waterproof bags;
- A copy of the Site Emergency Management Plan; and
- Emergency contact numbers.

This Emergency Kit should be stored in a waterproof container, and it is the responsibility of the First Aid Officer to make sure that this kit is maintained and available during an emergency.

Other items for self-sufficiency should be stored, maintained and regularly updated in an accessible location within the proposed building in the event that shelter-in-place actions are deemed necessary. This would include sufficient drinking water and food as well as fire extinguishers.

## 9.0 Flood Response Actions

| Flood Emergency Response Plan  |   |
|--|---|
| Flood Warning and Notification Procedures  | Protocols   |
|  | The following actions must be undertaken:   |
| <p>1) Weather forecast predicts significant rainfall event in the area</p> <p>or BoM issues a <b>FLOOD WATCH</b></p> <p>or NSW SES issue a yellow “<b>ADVICE</b>” warning</p>                                     | <ol style="list-style-type: none"> <li>1) Ensure the emergency kit is ready to use, and there is sufficient drinking water and food in an accessible location within the proposed building.</li> <li>2) Listen to the local radio station for updates on forecasted rainfall intensity, flood heights and timings. If onsite, Chief Warden is to conduct visual assessment of conditions onsite and at the Green St driveway. Listen to the local radio station for updates on forecasted flood heights and timings. Monitor updates on social media and NSW SES platform Hazard Watch.</li> <li>3) Call NSW SES or local police for an update and advice.</li> <li>4) Notify all staff and students of the potential for flash flooding and confirm availability of staff to assist with emergency actions if required.</li> <li>5) Ensure staff are familiar with the flood emergency strategy</li> </ol> <p>If a significant storm is forecast with advanced warning (&gt;6 hrs), the <b>Chief Warden</b> should pre-emptively close the school. Notify parents and staff via SMS and email</p>  |
| <p>2) Flash flooding is reported in the media / via visual observation</p> <p>or BoM issues a <b>FLOOD WARNING</b></p> <p>or NSW SES issue an amber “<b>WATCH AND ACT</b>” or red “<b>ACT NOW</b>” warning</p>  | <p>If the flood event is not anticipated to impact the site, the <b>Chief Warden</b> is to continue hourly check-ins and postpone high risk activities (e.g. outdoor activities).</p> <p>If flood event is anticipated to impact the site, the <b>Chief Warden</b> must undertake the following actions:</p> <p><b>Outside of School Hours:</b></p> <p>Close down the school. If the flood is expected to continue into school hours, notify students and staff of the temporary closure of the school via SMS and email.</p> <p><b>During School Hours:</b></p> <ul style="list-style-type: none"> <li>• <b>For life-threatening emergencies phone 000 immediately.</b></li> <li>• Contact NSW SES on 132500 to confirm response strategy.</li> <li>• A warning message should be broadcast over the PA system confirming a significant flood event. Occupants within the proposed building, will be advised to remain where they are, and not to leave the building. Within classrooms, teachers should conduct a headcount to ensure all students are accounted for.</li> <li>• The Chief Warden should ensure that no one is outdoors or within the undercroft of the proposed building. Once everyone is indoors, access to the stairwells should be closed off with temporary signage advising site users of the flood risk below.</li> <li>• Send SMS to parents to inform them of shelter-in-place procedures. The SMS should remind parents not to drive through floodwaters or to try to collect their children.</li> <li>• If time permits, the Chief Warden should coordinate asset protection, including power shutdown and relocation of assets, prior to the onset of the storm.</li> <li>• The Chief Warden is to follow any action statements provided via the AWS or NSW SES.</li> </ul> <p><b>NOTE: Avoid driving or walking through floodwaters. These are the main causes of death during flooding. Although the school ground may not be flooded, safe travel arrangements for students to go home may be disrupted by flooding and/or road closures.</b></p> |
| <p>3) Visual observation shows flood is receding or the alert has been downgraded by the relevant authorities.</p>   | <p>Once it has been confirmed that the water level has reduced to a suitable level, and if determined safe, the <b>Chief Warden</b> may announce that classes can resume as normal.</p> <p>An additional SMS should be sent to parents advising them that they may collect their children if preferred. Staff must review a hard copy of the class list and record student release.</p>   |

## 10.0 Mitigation Measures

Mitigation measures identified as necessary are outlined in Table 4.

Table 4: Mitigation Measures

| Project Stage | Mitigation Measures   | Reason for Mitigation   | Report Section           |
|---------------|---|---|--------------------------|
| Design        | This FERP is based on the 100% Concept Design information for the proposed site, and must be reviewed following the detailed design stage, prior to the site becoming operational   | To ensure the information in this FERP is still relevant  | N/A                      |
| Operation     | Delegate staff responsibilities   | To ensure all staff are aware of their specific roles and flood reponse actions   | Section 7.1, Section 9.0 |
| Operation     | Education and signage. Depth markers will be implemented along the piers within the undercroft of the proposed building to demonstrate the estimated 1% AEP and PMF depths, ensuring that site users are aware of the potential risks of flooding at the site | To ensure all staff and students are aware of the flood risks present onsite and the flood protocols and procedures via signage | Section 8.1, Section 8.2 |
| Operation     | Flood drills  | To ensure staff and students are familiar with the sound of the alert and their flood reponse actions                           | Section 8.3              |
| Operation     | Flood emergency kit should be prepared and regularly checked  | To ensure that supplies are in working condition  | Section 8.4              |

## 11.0 Limitations and Revision of the FERP

This FERP only addresses the emergency response strategies during extreme flooding events for staff and students within the proposed building, not the wider school, and is considered a guide only. It does not cover staff and student safe travel arrangements to the site or when their safe travel arrangements may be disrupted by flooding and/or road closures.

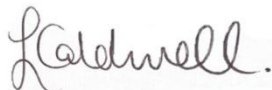
In addition, this FERP is based on the currently available information for the proposed site, and must be updated following the detailed design stage, prior to the site becoming operational.

## 12.0 Evaluation of Environmental Impacts

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that:

- The proposed activity is considered to result in low flood risks to people present at the school during a flood event and will not have significant adverse effects on the locality, community or environment (refer to TTW's Flood Impact and Risk Assessment report for Ulladulla Public School submitted alongside this report);
- The construction of the proposed building reduces flood risk to site users by providing additional safe space well above the PMF level for temporary shelter. In addition, the building has close access to the site's car park and driveway for more efficient egress, limiting exposure of staff and students to potentially severe weather conditions or hazardous flows.
- Potential impacts can be mitigated and/or managed to ensure that there is minimal impact on the locality, community and/or the environment.

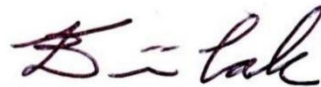
Prepared by  
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