

BROADWATER PUBLIC SCHOOL

Flood Emergency Response Plan

Prepared for: School Infrastructure New South Wales

Document no: DESIGN_DOC-230824-BROADWATER_FERP_REV03

Revision no: 03



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Revisions

Revision	Description	Date	Prepared by	Approved by	Signature
00	Internal	02/02/23	Isaac Kan	00	
01	Draft (BR220288_BROADWATER_FERP_REV01)	03/02/23	Isaac Kan Karl Umlauff	01	
01	Final	17/02/23	Karl Umlauff	Jarrod Novosel	
02	Revised site layout	21/07/23	Karl Umlauff	Jarrod Novosel	
03	Updated reference	24/08/23	Karl Umlauff	Jarrod Novosel	

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1 Introduction

1.1 Purpose of Flood Emergency Response Plan

The definition of a Flood Emergency Response Plan is provided below (Australian Institute for Disaster Resilience, 2020):

Flood emergency response (management) plan - A flood emergency plan is a set of agreed arrangements that provide a framework for the management of a flood. A flood emergency plan provides a robust and adaptable framework that outlines the progression of emergency management functions and the parts that each actor will play. This includes defining the roles and responsibilities of different agencies and outlining the strategies for the performance of key flood management capabilities.

The State Emergency and Rescue Management Act 1989 (SERM Act), s 5, defines the stages of an emergency (known as the comprehensive approach), as follows:

- (a) prevention in relation to an emergency includes the identification of hazards, the assessment of threats to life and property and the taking of measures to reduce potential loss to life or property, and
- (b) preparation in relation to an emergency includes arrangements or plans to deal with an emergency or the effects of an emergency, and
- (c) response in relation to an emergency includes the process of combating an emergency and of providing immediate relief for persons affected by an emergency, and
- (d) recovery in relation to an emergency includes the process of returning an affected community to its proper level of functioning after an emergency.

This site-specific Flood Emergency Response Plan primarily relates to the preparation and response stages as far as school emergency management is concerned and provides only limited information and procedures to assist the school in the recovery stage.

The NSW SES has no statutory authority to review, assess or approve private flood emergency response plans (Department of Planning and Environment, 2022).

1.1.1 Limitations

It is important to understand there are limitations associated with this site-specific Flood Emergency Response Plan. During an unfolding rainfall or flood event, site-specific FERPs may not be able to provide:

- access to the scale of the event
- knowledge of rapidly changing conditions
- uncertainty of predictions and consequences
- actions and timing necessary on a community scale that considers local flood conditions.

The school community may or do not have:

- an awareness of the uncertainties of flooding
- capacity to undertake training for flood emergency response
- access to the information and resources available to the NSW SES during flooding
- access to new information as it becomes available

This FERP may not capture the foregoing information.

It is important to note that Local Flood Plans are updated as new information becomes available and as lessons are learnt from flood events, therefore when the Local Flood Plan is updated, a formal review of this FERP should

be undertaken and the FERP updated. The NSW SES should advise the school when the Local Flood Plan is updated and if the FERP requires formal review, updating and approval by the SES.

1.2 Guideline documents

The structure of this FERP has been formulated from guidelines and other Flood Emergency Response Plans.

The primary document adopted as guidance for content of the FERP is:

- *Support for Emergency Management Planning. Flood Risk Management Guide EM01* (Department of Planning and Environment, 2023). The document is structured as follows:
 - Part A – Flood risk management and emergency management planning
 - Part B – Emergency management information from the flood risk management process
 - Part C – Flood emergency response classification of communities
 - Part D – Considering flood emergency management constraints in decision-making.

The following guidelines have also been utilised in preparation of this FERP:

- Australian Disaster Resilience Handbook Collection
 - *Flood Emergency Planning for Disaster Resilience*
 - *Evacuation Planning – Handbook 4.*

1.3 Location

Broadwater Public School is located at 9 Byrnes Street, Broadwater NSW 2472 on Lots 4 & 5, DP1043232 and Lot 501, DP755624. The Richmond River is located to the west of the school.

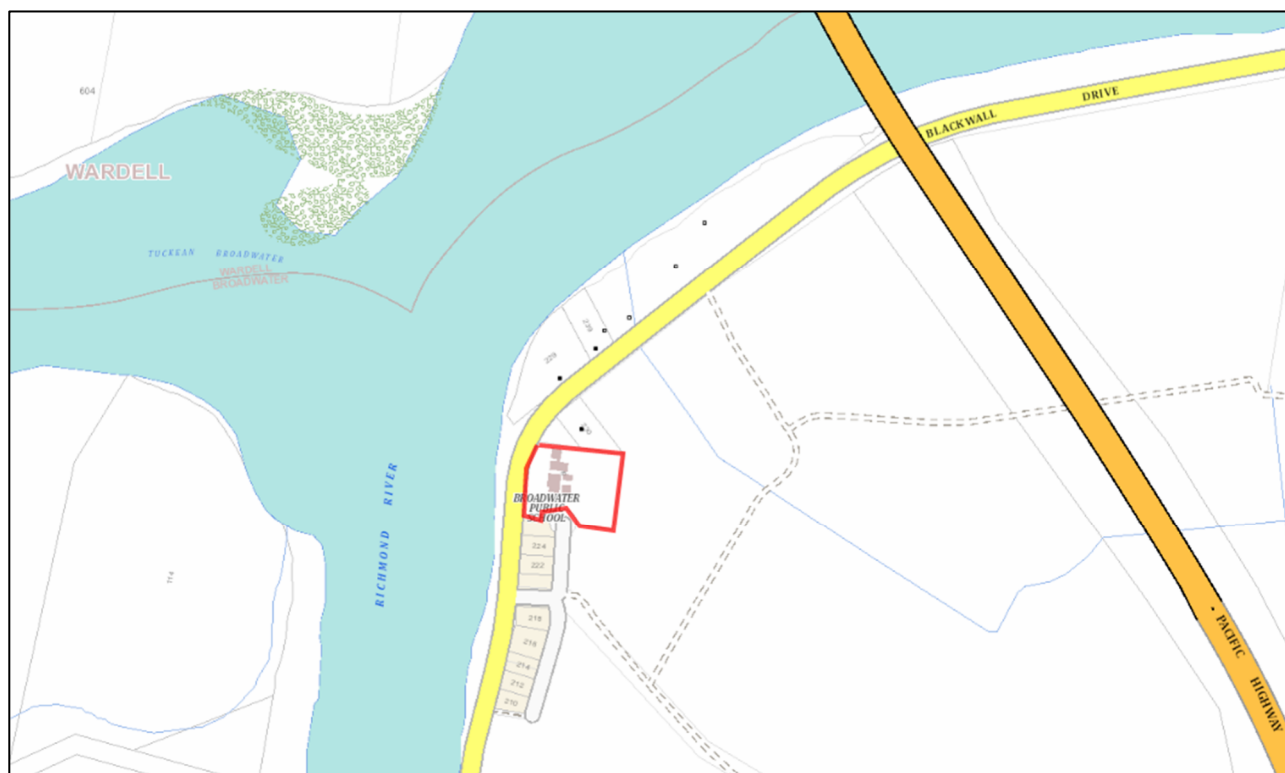


Figure 1-1 School location (NSW Government Spatial Map Viewer)

1.4 Preferred school re-development Masterplan

Preliminary Masterplan school re-development site layouts and elevations were developed in 2022 and 2023 by project team consultants for consideration and comment by SINSW. The solution creates a usable undercroft for the school, which provides:

- greater resilience against future flood events with floor levels higher than the minimum habitable floor level required by Council, peak flood level of 2022 (flood of record) and Probable Maximum Flood (PMF) level, and
- optimal school amenity and maximises usable spaces.

The school re-development layout and indicative elevation for Broadwater Public School is shown in the figure below. The proposed floor level for Broadwater Public School is 6.3 m AHD, which is above the Probable Maximum Flood level of 6.0 m AHD.

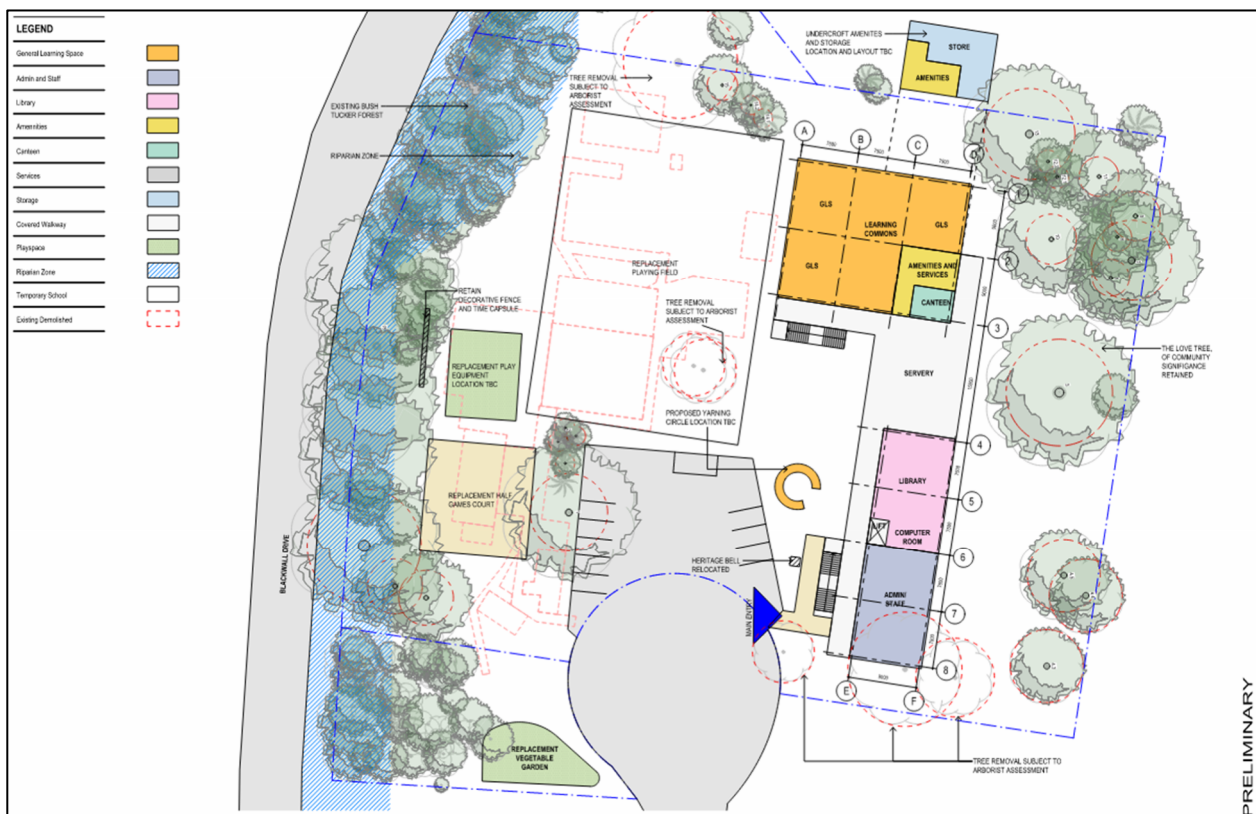


Figure 1-2 Preliminary Masterplan school re-development site layout (Revision F dated 08/05/2023)

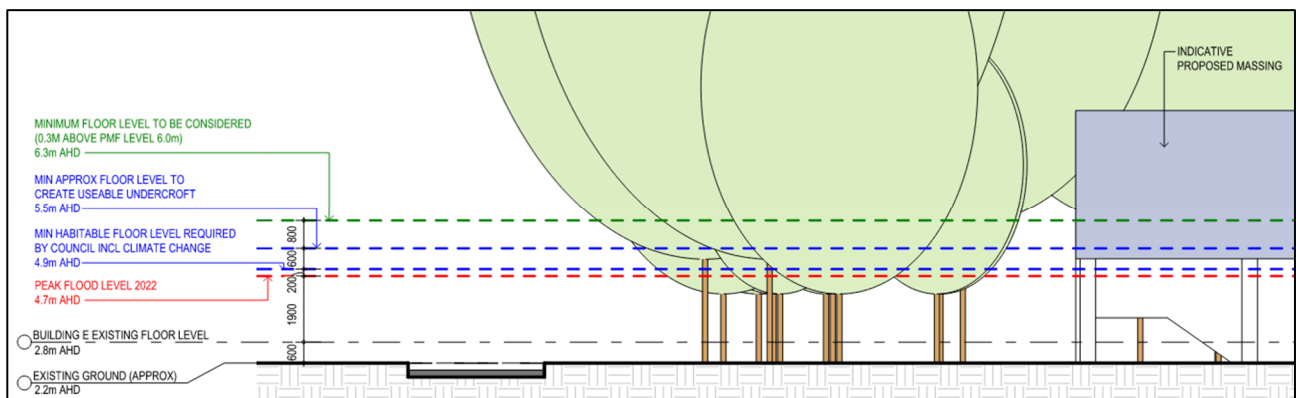


Figure 1-3 Indicative section for Broadwater Public School

1.5 Glossary of terms

Abbreviation/acronym or term	Definition
Annual Exceedance Probability (AEP)	The chance of a flood event can be described using a variety of terms, but the preferred method is the Annual Exceedance Probability (AEP). A flood with a 1% AEP has a 1% chance (or 1 in 100 odds) of being exceeded in any year. Currently, the 1% AEP event is designated as having an 'acceptable' risk for planning purposes nearly everywhere in Australia. However, good planning needs to consider more than just the 1% AEP flood.
Areas with overland escape route	Areas with overland escape route are those areas where escape from rising floodwater is possible by traversing overland to higher ground (Figure 14). The area may also have access roads to flood-free land that cross lower-lying flood prone land. Evacuation can take place by road only until access roads are closed by floodwater. Escape from rising floodwater after roads are cut is possible but involves traversing overland to higher ground. Anyone not able to walk out before access roads are cut must be reached by using boats and aircraft. If people cannot get out before inundation, rescue will most likely be from rooftops.
Australian Height Datum (AHD)	The Australian Height Datum (AHD) is the official national vertical datum for Australia. The datum that sets mean sea level as zero elevation. The level of 0.0 metres AHD is approximately mean sea level. All levels are based around this benchmark that is recognised as the Australian standard. AHD is a measurement used in Council flood studies.
Average Recurrence Interval (ARI)	The long-term average number of years between the occurrence of a flood as big as or larger than the selected event.
Effective warning time	The effective warning time available to a flood-prone community is equal to the time between the delivery of an official warning to prepare for imminent flooding and the loss of evacuation routes due to flooding. The effective warning time is typically used for people to self-evacuate, to move farm equipment, move stock, raise furniture, and transport their possessions.
Flash flooding	Flood that is sudden and unexpected. It is often caused by sudden local or nearby heavy rainfall. It is generally not possible to issue detailed flood warnings for flash flooding. However, generalised warnings may be possible. It is often defined as flooding that peaks within six hours of the causative rain. Local overland flooding, or flash flooding, occurs within 6 hours of rain falling and can happen after a short burst of heavy rain such as from a thunderstorm. It is generally short in duration but can be dangerous, as high intensity rainfall events can lead to high velocity floods. These can result in safety issues as there is often little warning of such floods because gauges, which are typically placed in river systems, may not pick up localised drainage issues.
Flood awareness	An appreciation of the likely effects of flooding, and a knowledge of the relevant flood warning, response and evacuation procedures. In communities with a high degree of flood awareness, the response to flood warnings is prompt and effective. In communities with a low degree of flood awareness, flood warnings are liable to be ignored or misunderstood, and residents are often confused about what they should do, when to evacuate, what to take with them and where it should be taken.
Flood hazard	A measure of the floodwaters potential to cause harm or loss. Full definitions of hazard categories are provided in: ▪ Australian Disaster Resilience Handbook Collection. <i>Flood hazard guideline 7-3</i>. ▪ NSW Government. Department Of Environment & Climate Change. <i>Flood Emergency Response Planning Classification Of Communities</i> ▪ NSW Government. Department of Infrastructure, Planning and Natural Resources. <i>Floodplain Development Manual</i>. The management of flood liable land. April 2005.
Flood Watch (Bureau of Meteorology)	The Bureau issues a Flood Watch to provide early advice of a developing situation that may lead to flooding. A Flood Watch is not a warning of imminent flooding. A Flood Watch provides information about a developing weather situation including forecast rainfall totals, catchments at risk of flooding, and indicative severity where required. The product also provides links to weather warnings, other Bureau flood-related products, and contact details and information of relevant emergency services.

Abbreviation/acronym or term	Definition
	Although there is uncertainty attached to a Flood Watch, its early dissemination can help individuals and communities to be better prepared should flooding eventuate.
Flood Warning (Bureau of Meteorology)	Flood Warnings are issued by the Bureau to advise that flooding is occurring or expected to occur in a geographical area based on defined criteria. Flood Warnings may include either qualitative or quantitative predictions or may include a statement about future flooding that is more generalised. The type of prediction provided depends on the quality of real-time rainfall and river level data, the capability of rainfall and hydrological forecast models and the level of service required. A quantitative or qualitative flood warning of Minor, Moderate or Major flooding is provided in areas where the Bureau has specialised warning systems. They provide advanced warning about the locations along river valleys where flooding is expected, the likely class of flooding and when it is likely to occur. Predictions of expected water levels and the timing of flood peaks are provided at key forecast locations.
Gauge height	The height of a flood level at a particular gauge site related to a specified datum. The datum may or may not be the AHD (see also Australian Height Datum).
Likelihood	Likelihood is the terminology that is used to describe the annual chance of flooding from river, creek and storm tide.
Minor flooding (Bureau of Meteorology)	Causes inconvenience. Low-lying areas next to watercourses are inundated which may require the removal of stock and equipment. Minor roads may be closed and low-level bridges submerged.
Moderate flooding (Bureau of Meteorology)	In addition to the above, the evacuation of some houses may be required. Main traffic routes may be cut by flood waters. Some buildings may be affected above the floor level.
Major flooding (Bureau of Meteorology)	In addition to the above, extensive areas are inundated. Many buildings may be affected above the floor level. Properties and suburbs are likely to be isolated and major traffic routes likely to be closed. Evacuation of people from flood-affected areas may be required. Utility services may be impacted.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from PMP and, where applicable, snow melt, coupled with the worst flood-producing catchment conditions. 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. The extent, nature and potential consequences of flooding associated with a range of events rarer than the flood used for designing mitigation works and controlling development, up to and including the PMF event, should be addressed in a floodplain risk management study.
Riverine flooding (from heavy rainfall)	Riverine flooding happens when widespread, prolonged rain falls over the catchment of a river. As the river channel reaches capacity, excess water flows over its banks causing flooding. River flooding downstream can occur hours or days after the rainfall has finished. River flooding may coincide or exacerbate flooding in adjacent creeks and tributaries and may itself be exacerbated by higher than normal high tide conditions. Riverine flooding can: - contain fast flowing, high velocity elements which create a risk to life - rise quickly causing specific areas to become isolated - create challenges for evacuating people safely - create standing or slow-moving water that lasts for days to weeks - cause infrastructure to malfunction further contributing to community scale disruption (e.g. water and sewer systems not functioning, power supply interrupted, road pavements damaged, land slips, etc.) - cause environmental health issues due to contaminated water from overflowing sewers/septic tanks, and floating debris including animal carcasses.

2 Flood Behaviour

2.1 Catchment

Broadwater Public School is located within the floodplain of the Richmond River, being the major river in the lower reach of the catchment. The main river in the upper catchment is the Wilsons River. The total catchment area is over 7,000 km². The location of Broadwater Public School relative to the catchment is shown in the figure below.

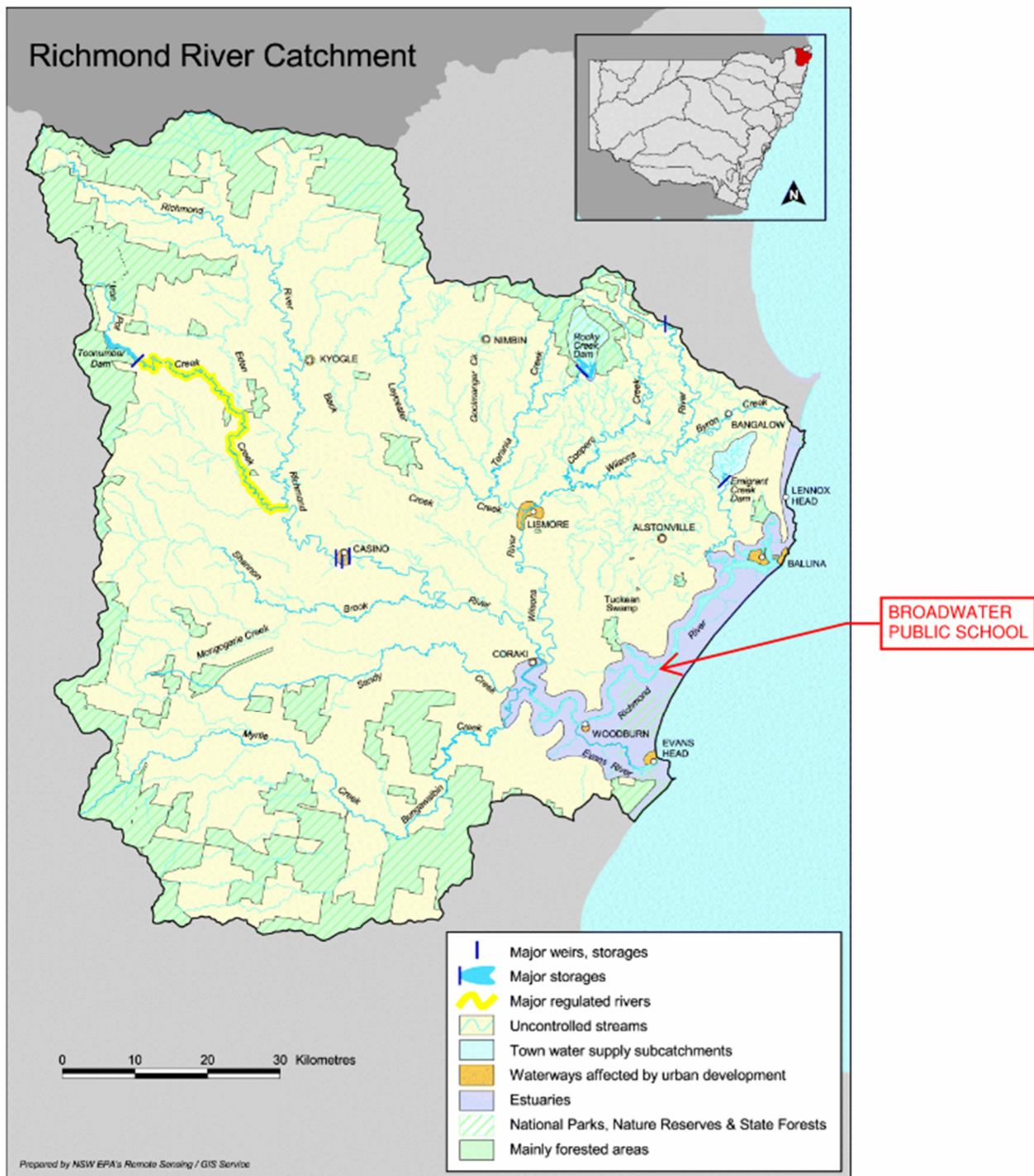


Figure 2-1 Richmond River Catchment (Source: Environment NSW, 2023)

2.2 Flood sources and mechanism

Flooding in Broadwater is predominantly the result of the Richmond River local catchment flooding. Flooding also occurs when the Wilsons River breaks its banks upstream of Coraki and fills the Tuckean Swamp. This floods all the area across the river from Broadwater around Dungarubba and Bagotville. This flood water also travels to the Tuckean Broadwater downstream of Broadwater.

Overland flow emanating from Baraang Drive may also enter the school site at the northern boundary from Baraang Drive and the adjacent property to the north.

Concurrent flooding of Wilsons River, Richmond River and Bungawalbin Creek can cause the flood risk at Broadwater to increase (Wardell Community Connect, 2022).

2.3 Meteorological conditions leading to major flooding

The area is subject to severe weather such as low-pressure systems and cyclones, which result in heavy rains and flooding. The worst floods are typically due to multi-day high rainfall events that occur when rain-bearing weather systems stall over a region and occur during a temporally compounding event (one where heavy rainfall events occur too rapidly in succession for a catchment to dry in between). The February - March 2022 rainfall was a temporally compounding event, whereby each successive storm intensified the impact of the previous storms. The intensity of the resultant flooding event was amplified because the rain fell in a saturated catchment and in locations with terrain and landscape characteristics conducive to flooding.

2.4 Flood risk to school

Under climate change conditions, the school grounds are likely to be directly affected by flooding in an event more frequent than the 20 year ARI (5% AEP) flood. This event has a likelihood of 1 in 20 chance (5%) of occurring or being exceeded in any particular year.

It is possible for the school to be isolated by floodwater with road access routes to/from the school cut.

2.5 Flood characteristics

The following table presents the flood characteristics at the school for climate change conditions (²BMT WBM, 2012).

Table 2-1 Flood characteristics at school location

Flood likelihood (ARI)	Flood likelihood (AEP)	Flood level at school (m AHD)	³ Flood depth (m) at school	Flood Velocity (m/s at school)	Flood hazard classification ¹	Flood hazard category ²
5 year ARI	20%	Not available	Not available	Not available	Not available	Not available
20 year ARI	5%	3.2 m AHD	Up to 1.2 m	Not available	Not available	Areas with Overland Escape Route
50 year ARI	2%	3.9 m AHD	Up to 1.9 m	Not available	Not available	Areas with Overland Escape Route
100 year ARI	1%	4.4 m AHD	Up to 2.4 m	Up to 0.5 m/s	H5	Areas with Overland Escape Route
-	PMF	6.0 m AHD	Up to 4.0 m	> 1 m/s adopted	H6	Areas with Overland Escape Route

¹ Flood hazard classification as outlined by *Australian Emergency Management Institute (2014)*.

² Flood hazard category as outlined *Flood Emergency Response Planning Classification Of Communities*.

³ Flood depths interpreted from (²BMT WBM, 2012) flood study.

Flood likelihood definitions are as follows:

- 1% AEP - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
- 2% AEP - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.

- 5% AEP - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
- 20% AEP - A flood of this size or larger has a 1 in 5 chance or a 20% probability of occurring in any year.

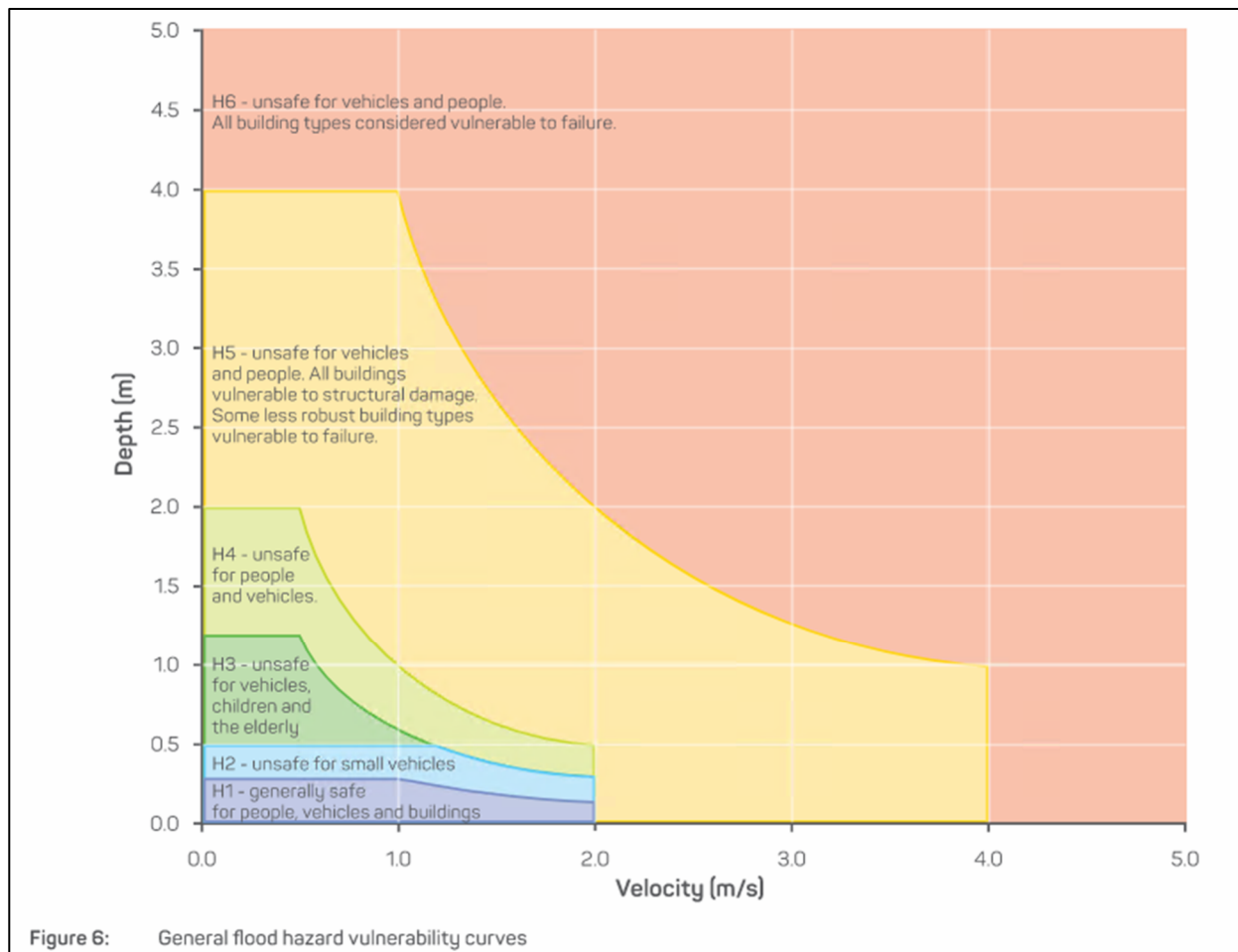


Figure 2-2 General flood hazard vulnerability curves (Australian Institute for Disaster Resilience, 2017)

2.6 Flood warning time

The following information is provided to give an understanding of the flood warning time available to Broadwater.

The Bureau of Meteorology's (Bureau of Meteorology, 2013) target warning lead time (for issuing of Flood Warnings) for the automatic river height gauge at:

- Coraki is 24 hours before the gauge reaches the 3.8 m (between Minor flood classification level of 3.4 m and Moderate flood classification level of 5.0 m)
- Bungawalbin is 24 hours before the gauge reaches the Moderate flood classification level of 4.5 m
- Woodburn is 12 hours before the gauge reaches the Minor flood classification level of 3.2 m.

It is concluded that the flood warning time to the lower Richmond River between Broadwater and Ballina is between 12 and 24 hours, with the worst case for evacuation planning being 12 hours.

The following indicative flow travel times for flood peaks are also provided (SES, 2018):

- From Lismore to Coraki is 10 to 20 hours
- From Coraki to Woodburn is 5 to 10 hours, and
- From Coraki to Broadwater is 10 to 20 hours.

- The effective warning time is 6 hours, which is based on a 6 hour period being required after receiving a flood prediction for the SES to decide on a strategy and mobilise resources.

2.7 Flood maps

Refer to Appendix C for flood extent maps for the lower reach of the Richmond River between Broadwater and Ballina for the 20 year ARI, 100 year ARI and Probable Maximum Flood events (²BMT WBM, 2012).

2.8 Historical floods

The first flood of the Richmond River that was recorded by European settlers occurred in 1846. Historical flood levels at the Broadwater gauge are listed in the table below. Historical flood levels at the school site are not available. The March 2022 flood is the flood of record at Broadwater and believed to be the flood of record at the school location. Major flooding can occur at Broadwater above only 2.14 m AHD as there are habitable dwellings at this elevation within the floodplain at Broadwater.

The Flood Classification for Broadwater is:

- **Major flood level** = 3.0 m (gauge); 2.14 m AHD
- **Moderate flood level** = 2.5 m (gauge); 1.64 m AHD
- **Minor flood level** = 2.0 m (gauge); 1.14 m AHD.

Table 2-2 Historical flood levels (highest floods selected since 1954) in chronological order (BMT WBM (2008) and SES (2021) and SMH (2022))

Flood event	Peak flood level (m) at Broadwater gauge	² Peak flood level (m AHD) at Broadwater gauge	Flood level (metres AHD) at school	BOM Flood classification
1954	4.58	3.72	-	Major flood level
1962	3.55	2.69	-	Major flood level
1974	4.11	3.25	-	Major flood level
1988	3.29	2.43	-	Major flood level
2017	2.94	2.08	-	Moderate flood level
2022	5.58	4.72 ¹	4.70	Major flood level

¹Derived from 7.72 m quoted gauge flood level (corrected to 4.72 m due to perceived typographical error).

²Level in m AHD requires 0.86 m to be subtracted from the Broadwater gauge level (m).

3 Flood Emergency Response Preparation

3.1 Effectiveness of Flood Emergency Response Preparation

The effectiveness of this FERP is based on the reliance of evacuation, and the plan is owned, understood and practised by the school operational management and school community. The uncertainties of flooding are also a factor in determining the effectiveness of the FERP.

Evacuation can be an effective strategy if there is sufficient time available and evacuation is properly planned and executed. Evacuation is therefore dependent on flood warning time and effective warning time (refer foregoing) and time to enact the evacuation before evacuation routes are cut or emergency services are no longer able to rescue the occupants due to unsafe weather or flood conditions or because they are overwhelmed.

3.2 Declaration of emergency

The Premier can declare a state of emergency in NSW under the SERM Act if satisfied that particular circumstances exist. However, under the State Emergency Service Act 1989 (SES Act) the emergency powers may be exercised where a flood (or other hazards) occurs without the need for any declaration (²Fuller M. and O’Kane M, 2022).

In the absence of a declaration, evacuation warnings or orders may be issued by the NSW SES or NSW Police Service.

3.3 Roles, responsibilities and contact details

3.3.1 School

Broadwater Public school has the following administration staff in addition to teachers. The table provides a suggested title for roles and responsibilities under the *Flood Emergency Response Plan (FERP)* provided in section 4, and their office days.

Table 3-1 Broadwater Public School administration staff professional title and FERP title

Professional title	FERP role	Office days
School Principal	Flood Warden	Mon – Fri
Teacher	Backup Flood Warden	Mon – Fri
Administrative Manager	Assistant to Flood Warden	Mon – Fri
Librarian/RFF teacher	Assistant to Flood Warden	Part-time
General Assistant	Assistant to Flood Warden	Part-time

Table 3-2 Roles and responsibilities for Broadwater Public School

Name	Role and responsibilities	Contact details	
Stephen Curtin	▪ School Principal ‘Flood Warden’ ▪ Consultation and communication with the SES local unit and the Local Council <i>Local Emergency Management Committee (or Local Disaster Management Group)</i> during non-flood periods ▪ Delegates tasks to Backup Flood Warden and School administration staff and follows up on progress/completion ▪ Arrangement of flood evacuation drills ▪ Updating of the relevant contact information in this FERP ▪ Subscribe to alerts and warnings across various media platforms ▪ Monitor alerts and warnings regarding severe weather, catchment rainfall and flood levels ▪ Communication of flood warnings and notifications to school community ▪ Arranging evacuation of school prior to flooding ▪ Preparing school grounds for expected flood inundation ▪ Arranging alternative schools to take students during flood recovery period ▪ Refer to Section 4 for more responsibilities.	Mob:	0417 085 604
		Landline:	02 6682 8226
		Email:	
Deb Watts	▪ Teacher ‘Backup Flood Warden’ ▪ Completes tasks assigned by Flood Warden and updates them on progress/completion ▪ Carry out the roles and responsibilities of ‘Flood Warden’ during his/her absence ▪ Refer to Section 4 for more responsibilities.	Mob:	
		Landline:	02 6682 8226
		Email:	
Rebecca Dicoski	▪ Administrative Manager ‘Assistant to Flood Warden’ ▪ Completes tasks assigned by Flood Warden and updates them on progress/completion ▪ Maintains parent’s/carer’s and citizen’s contact information for flood emergency warning communication purposes ▪ Updating trades companies and equipment suppliers register ▪ Refer to Section 4 for more responsibilities.	Mob:	
		Landline:	02 6682 8226
		Email:	

3.3.2 Authorities and organisations

The following table presents the relevant Authorities and organisations, their role/responsibility and contact details, for the purposes of the implementation of the Flood Emergency Response Plan. Additional Authorities and organisations can be added by the Flood Warden. Regular updating of the table is recommended as information changes.

Table 3-3 Role/responsibility and contact details of relevant Authorities

Organisation	Service provided and role/responsibility	Contact number	Local contact name if available	Website
Police/Fire/Ambulance	Life threatening emergencies. Local Emergency Operations Controller (LEOCON) – senior police officer stationed within the LGA with experience in emergency management	000 (mobiles 000 and 112)	-	-
State Emergency Service (SES)	<u>Lead agency for flood emergency management and flood combat.</u> Establishment of flood warning systems. Development of flood plans. Flood warning and evacuation notifications. Flood evacuation services. Flood recovery services. The SES can establish a Flood Rescue Area of Operations (FRAO), giving it the authority to coordinate and control flood rescues.	132 500	-	https://www.ses.nsw.gov.au/
<Electricity distributor>	Electricity supply		-	
Richmond Valley Council	Local road network. Providing flood information via the online Disaster Dashboard. Assistance with setting up evacuation centres and providing flood advice to SES. Flood recovery.	(02) 6660 0300	-	Refer to Table 3-5 for Disaster Dashboard weblinks.
Ballina Police Station	Not for emergency calls	(02) 6681 8699	-	-
Woodburn Police Station	Not for emergency calls	(02) 6682 2444	-	-
<Security company>	-	1300 880 021	-	
Disaster Welfare Services	If you have been affected by floods and require assistance.	1800 018 444	-	-
School safety and response	-	1300 363 778	-	-
Assisted school transport	-	1300 338 278	-	-

Organisation	Service provided and role/responsibility	Contact number	Local contact name if available	Website
Northern Rivers Buslines	Evacuation (school administration to set up evacuation services)	02 6626 1499	-	https://www.buslinesgroup.com.au/northern-rivers/
Sodhi Bus Service	Evacuation (school administration to set up evacuation services)	02 6621 2279	-	https://www.sodhibusservice.com.au/

3.4 Flood warning notice signage and placement locations

Flood warning notice signage is recommended be installed within the school grounds at a prominent location near the main school entry point for the information of the school community. The following flood warning notice has been devised for implementation.

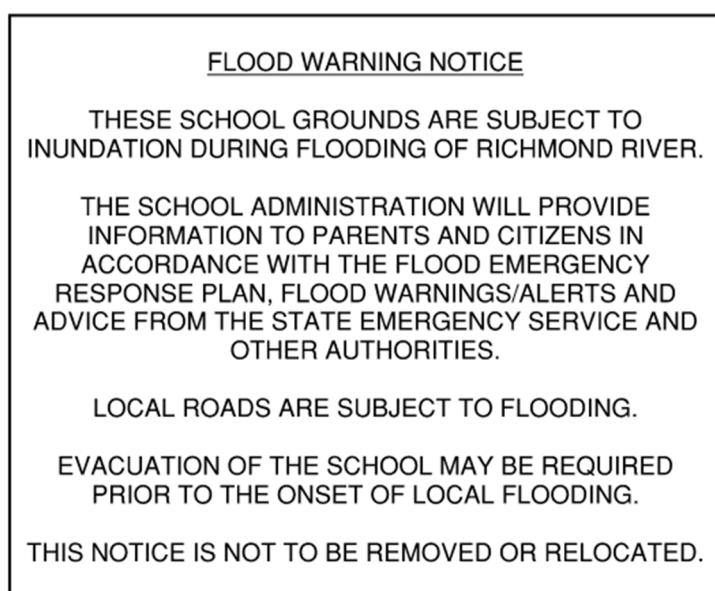


Figure 3-1 Broadwater Public School flood warning notice sign

3.5 Forecast, warning and alert services

3.5.1 Public warning process

The SES works with the Bureau of Meteorology and Councils to develop warning systems and ensure consistent warning products and messaging across the state. The SES uses gauge information to prepare flood intelligence, issue warnings and respond to flooding. However, there are many assets, such as flood and weather gauges, which are owned by the community, private organisations and government agencies, that are currently not used by the SES to inform public warnings. The Bureau of Meteorology, SES and Councils all issue different warning products (Fuller M. and O’Kane M, 2022).

3.5.2 Lessons learnt from February/March 2022 flood event notifications

In regard to the February/March 2022 flood event, the 2022 Flood Inquiry (Fuller M. and O’Kane M, 2022) summarised that the Bureau of Meteorology extensively forecast and communicated to Government and the community the risk of severe weather and identified and communicated the risk of intense localised rain, life threatening flash flooding and potential for rapid river rises. However, the risk of such severe weather was not adequately communicated through the SES Flood Bulletins and other warning products.

The 2022 Flood Inquiry records that there were numerous inadequacies in the flood warnings issued by the State Emergency Service in regard to flooding in the Northern Rivers.

The 2022 Flood Inquiry was told:

- the Bureau forecasts are based on river height as measured by gauges, and that most residents are unable to translate this information to their own risk of being flooded
- existing flood forecasts and warnings that provide users with estimates of river height are not effective in communicating, either to communities or emergency services, when and where flooding is expected
- warnings also need to include both what could happen to water levels, and what action the community needs to take.

The SES is working on initiatives to improve the distribution of warning messages, including aligning to the Australian Warning System, which is a nationally consistent hazard-agnostic approach to emergency warnings (refer to Section 3.5.4 of this report).

There should also be better use of Community broadcasters (community-owned and operated independent radio services).

3.5.3 Bureau of Meteorology

The Bureau of Meteorology has the responsibility to issue severe weather warnings, Flood Watches and Flood Warnings. This information is processed by the se can be re-issued by the State Emergency Service and other Authorities.

Warnings issued by the Bureau of Meteorology are described below:

- Severe thunderstorm warnings - range in character from short-lived events to systems producing widespread damage across broader areas. Weather phenomena accompanying these storms include any combination of large hail, damaging or destructive winds, tornadoes and intense rainfall leading to local flash flooding.
- Severe weather warning - are provided for potentially hazardous or dangerous weather and are issued (in a flooding context) for very heavy rain that may lead to flash flooding.
- Flood Watch - Flood Watch provides early advice of potential riverine flooding to emergency services and communities at risk of flooding. Flood watches are issued (up to four days in advance of large-scale weather systems) when the combination of forecast rainfall and catchment or other hydrological conditions indicate that there is a significant risk of potential flooding.
- Flood Warning - Flood Warnings are issued by the Bureau to advise that flooding is occurring or expected to occur in a geographical area based on defined criteria. Flood Warnings may include either qualitative or quantitative predications or may include a statement about future flooding that is more generalised. The type of prediction depends on the quality of real-time rainfall and river level data, the capability of rainfall and hydrological forecast models and the level of service required.
- Minor Flooding, Moderate Flooding, Major Flooding – refer to Section 0 for descriptions. Major riverine systems have Minor, Moderate and Major flood levels defined for at-risk areas.

3.5.4 State Emergency Service (SES) and Australian Warning System (AWS)

The NSW SES moved to the Australian Warning System (AWS) for flood notifications on 30 September 2022. The AWS is a nationally consistent, three-tiered approach designed to make warnings clearer and lead people to take action ahead of severe weather events. The warning system comprises warning levels, action statements, hazard icons, colours and shapes.

- Warnings are now based on impacted community with increased localised information

- In addition to existing channels, warnings will be published to the HazardWatch platform at hazardwatch.gov.au, and displayed on the NSW SES website.

More information is available at <https://www.ses.nsw.gov.au/about-us/our-warnings/>.

The warning levels, action statements and icons are presented below.

Warning levels and action statements

There are three levels within the AWS - Advice, Watch & Act and Emergency Warning. For each level, there are a series of clear action statements to guide positive action by the community. These include 'stay informed', 'prepare to evacuate' and 'move to higher ground' as shown below:

- **Advice** - an incident has started. Stay up to date in case the situation changes.
 - Stay informed
 - Monitor conditions
 - Reduced threat: return with caution
- **Watch and Act** - conditions are changing and you need to start taking action now to protect you and your family.
 - Do not enter floodwater
 - Prepare to evacuate
 - Prepare to isolate
 - Avoid the area
- **Emergency Warning** - the highest level of warning. You may be in danger and need to take action immediately.
 - Evacuate now / Evacuate before [time]
 - Shelter now
 - Move to higher ground



Advice

An incident has started. Stay up to date as the situation changes.



ACTION STATEMENTS

Stay informed
Monitor conditions
Reduced threat: return with caution



Watch and Act

Conditions are changing and you need to start taking action now to protect you and your family.



ACTION STATEMENTS

Do not enter floodwater
Prepare to evacuate
Prepare to isolate
Avoid the area



Emergency Warning

You may be in danger and need to take action immediately.



ACTION STATEMENTS

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

Figure 3-2 AWS – Advice, Watch and Act and Emergency Warning (1SES, 2022)

3.5.5 HazardWatch

The HazardWatch Web App provides warnings and information about riverine flooding currently occurring within NSW. Refer to section 3.6.1 for internet link.

3.5.6 Catchment river height gauges

There are several river height gauges upstream of Broadwater Public School in the Richmond River catchment. The main rivers and creeks within the catchment that drain to the lower Richmond River at Broadwater Public School are Richmond River, Wilsons River and Bungawalbin Creek.

The figure below shows the locations of river height gauges in the upper and lower catchment. 'Real time' flood levels recorded by these river height gauges can be accessed online to understand flood conditions in the upper catchment and to gain an understanding of potential flood conditions that may eventuate in the lower Richmond River at Broadwater Public School.



Figure 3-3 Figure showing the location of river height gauges on rivers upstream of the school

The following table lists applicable river height gauges upstream of Broadwater Public School to be accessed to be informed of upstream flood conditions and potential local flood conditions in the vicinity of the school.

Table 3-4 River height gauges upstream of Broadwater Public School

Rainfall or river height gauge	Gauge description	Weblink for gauge levels	BOM Flood Classifications (metres at gauge)
River height	Lismore (Wilsons River) The Wilsons River Rowing Club Gauge is the guide for riverine flood levels that impact South Lismore. Located on Wilsons River near Lismore CBD. https://www.google.com/maps/search/?a pi=1&query=-28.81,153.2733	https://disaster.lismore.nsw.gov.au/dashboard/waterways or http://www.bom.gov.au/fwo/IDN60231/IDN60231.058176.plt.shtml	Minor 4.20 Moderate 7.20 Major 9.70
River height	East Gundurimba (Wilsons River) Located upstream of school on Wilsons River (upstream of Coraki) near Lismore. https://www.google.com/maps/search/?a pi=1&query=-28.845709492362,153.2668938144	https://disaster.lismore.nsw.gov.au/dashboard/flood or http://www.bom.gov.au/fwo/IDN60231/IDN60231.558047.plt.shtml	N/A
River height	Tuckurimba (Wilsons River) Located upstream of school on Wilsons River (upstream of Coraki). https://www.google.com/maps/search/?a pi=1&query=-28.9619,153.3066	https://disaster.lismore.nsw.gov.au/dashboard/flood or http://www.bom.gov.au/fwo/IDN60231/IDN60231.558076.plt.shtml	N/A
River height	Kyogle (Richmond River) Located upstream of school on Richmond River at Kyogle. https://www.google.com/maps/search/?a pi=1&query=-28.6206,152.9962	http://www.bom.gov.au/fwo/IDN60231/IDN60231.558002.plt.shtml	Minor 12.00 Moderate 14.40 Major 16.00
River height	Casino (Richmond River) Located upstream of school on Richmond River at Casino. https://www.google.com/maps/search/?a pi=1&query=-28.8637,153.0553	http://www.bom.gov.au/fwo/IDN60231/IDN60231.558013.plt.shtml	Minor 11.90 Moderate 14.90 Major 17.70
River height	Coraki (Richmond River) Located upstream of school on Richmond River (upstream of Bungawalbin). Coraki has been adopted as the reference point for flood warning times due to there being more reliable data available from the Coraki stream gauge record. In addition, the Coraki gauge is far enough upstream to provide sufficient warning time for evacuation to be implemented at Wardell (and Cabbage Tree Island, Broadwater and Empire Vale). (Patterson Britton & Partners, 2009) https://www.google.com/maps/search/?a pi=1&query=-28.983801959254,153.28723404683	https://disaster.lismore.nsw.gov.au/dashboard/flood or http://www.bom.gov.au/fwo/IDN60231/IDN60231.058175.plt.shtml	Minor 3.40 Moderate 5.00 Major 5.70

Rainfall or river height gauge	Gauge description	Weblink for gauge levels	BOM Flood Classifications (metres at gauge)
River height	Bungawalbin (confluence of Bungawalbin Creek and Richmond River) Located upstream of school at confluence of Bungawalbin Creek and Richmond River (upstream of Woodburn). Real-time monitoring of flood levels at Woodburn can be undertaken to verify the gauged levels at Coraki (Patterson Britton & Partners, 2009). https://www.google.com/maps/search/?api=1&query=-29.03345558948,153.27761472168	https://disaster.lismore.nsw.gov.au/dashboard/flood or http://www.bom.gov.au/fwo/IDN60231/IDN60231.058184.plt.shtml	Minor 3.00 Moderate 4.50 Major 5.00
River height	Woodburn Located upstream of school on Richmond River at Woodburn. https://www.google.com/maps/search/?api=1&query=-29.071149,153.342364	https://disaster.lismore.nsw.gov.au/dashboard/flood or http://www.bom.gov.au/fwo/IDN60231/IDN60231.058061.plt.shtml	Minor 3.20 Moderate 3.70 Major 4.20
River height	The Broadwater Gauge, located at the Broadwater SES Headquarters, is the guide for riverine flood levels that impact the Broadwater area. This is a manual gauge and river height levels may not be published on the BOM website until flood flows are occurring.	-	Minor 2.00 Moderate 2.50 Major 3.00

3.6 Methods of dissemination of alerts and notification platforms

3.6.1 Emergency Authority platforms

Warnings may be disseminated in a variety of ways including through mass media (ABC Radio), on agency websites and social media platforms.

Formal warnings may not always be received, so it is important to be aware of the situation by listening to the radio and monitoring warnings and alerts on various internet sites and river height levels. If it feels unsafe, act early and move away from the threat to a safe location.

The SES provides advice using any combination of the below methods:

- Flood warnings through official SES website - <https://www.ses.nsw.gov.au/>
- Hazardwatch Web App
- Emergency Alert (via mobile phone SMS +61 444 444 444')
- Mobile and fixed public address systems
- Two-way radio
- Telephone/Fax
- Door knocking
- Mobile and fixed sirens
- Distribution through established community liaison networks/partnerships:
 - ABC Radio
 - ABC Emergency 'Incident Map'
 - Local Council
 - Authorised social media sites.

The Early Warning Network is also available and can be subscribed to for:

- location specific warnings <https://www.earlywarningnetwork.com.au/services-location-alerting>, and
- regional warnings <https://www.earlywarningnetwork.com.au/regional-alerting>.

Table 3-5 Notification platforms

App or Website or Media (Platform)	Description	Weblink
ABC Emergency Incident Map	Provides locations and general details of incidents Australia-wide. Provides general information.	https://www.abc.net.au/emergency/
BOM website	Flood Watches and Flood Warnings.	http://www.bom.gov.au/nsw/warnings/
BOM Twitter	The Bureau tweets about current and impending weather, especially significant weather events, including cyclones, tsunami and floods. Tweets generally link to information on the website which remains the most up-to-date and comprehensive official source of information.	https://twitter.com/BOM_au https://twitter.com/BOM_NSW
SES	Flood warnings through official SES website using the Australian Warning System (AWS).	https://www.ses.nsw.gov.au/
HazardWatch Web App	HazardWatch Web App provides warnings and information about riverine flooding currently occurring within NSW.	https://www.hazardwatch.gov.au/
Emergency Alert	DO NOT BLOCK +61 444 444 444. This number is related to Emergency Alert service. If the caller ID number or message header on your phone displays the number '+61 444 444 444' it is genuine. Emergency Alert is the national telephone warning system used by emergency services to send voice messages to landlines and text messages to mobile phones within a defined area about potential emergencies. i.e. "Floods, fires and other significant events can impact pose significant threat to members of the community in impacted area. Emergency Alert allows telephony notifications to be distributed to these areas, through both mobile and land line services, to provide warning of these events. Subscription to this service is not required.	For more information: https://www.emergencyalert.gov.au/home
Ballina Council Disaster Dashboard	Provides map view or list view information for: ■ Flood incidents ■ Road and bridge conditions ■ Rain and waterways ■ Evacuation centres	https://ballina.disasterdashboards.com/dashboard/overview https://emergency.ballina.nsw.gov.au/
Richmond Valley Council Disaster Dashboard	Provides map view or list view information for: ■ Flood incidents ■ Road and bridge conditions ■ Rain and waterways ■ Evacuation centres	https://richmondvalleycouncil.disasterdashboards.com/dashboard/overview
Emergency + (Plus)	The Emergency+ app is a free app developed by Australia's emergency services and their Government and industry partners. The app uses GPS functionality built into smart phones to help a Triple Zero (000) caller provide critical location details required to mobilise emergency services.	https://www.emergencyplus.com.au/
Road closures	Northern Rivers NSW road closures (incidents, flooded roads).	https://northernrivers.myroadinfo.com.au/search.asp
Road closures	Transport NSW	https://www.livetraffic.com/ or 132 701

App or Website or Media (Platform)	Description	Weblink
Social Media sites (official)	- NSW Flood Update - Northern NSW Severe Weather - NSW Incident Alerts - NSW Incidents - NSW SES Lismore City Unit - NSW SES Broadwater	https://auslanemergency.com.au/index.php/deaf-deafblind/nsw-resources/social-media/
Social Media sites (other)	- NSW SES - NSW Police Force - NSW Rural Fire Service - EWN (Early Warning Network) Alerts – New South Wales	https://auslanemergency.com.au/index.php/deaf-deafblind/nsw-resources/social-media/
Local Radio Frequencies	- Radio ZZZ FM (Goonellabah) - Radio 2LM (Goonellabah) 2NCR FM (Lismore) - Radio ABC North Coast	-

3.6.2 Council flood alert 'SMS' platforms

Richmond Valley Council does not provide a flood alert 'SMS' platform for dissemination of flood alerts.

3.6.3 School notification platforms

The increase in the use of technology and social media is now an important communication tool, which enables real time communication and played a critical role in the 2022 floods. The school platform can be used to share weather updates, flood warnings, evacuation notifications and road access to/from the school by the flood warden and school community. The school community should be subscribed to this page.

Other local school social media pages are also provided.

Table 3-6 School notification platforms

School	Description	Weblink
Broadwater Public School	Facebook social media page	Search 'Broadwater Public School P&C'
Empire Vale Public School	Facebook social media page	https://www.facebook.com/EmpireValePublicSchool/
Wardell Public School	Facebook social media page	https://www.facebook.com/WardellIPS/

3.7 Flood evacuation

3.7.1 Evacuation strategy and methods

3.7.1.1 Authority to evacuate

In an emergency, a direction to evacuate is made by the Incident Controller (NSW SES) in consultation, where possible, with the NSW Police Force (²Fuller M. and O'Kane M, 2022).

3.7.1.2 Co-ordination of evacuation

The Department of Education is to co-ordinate the evacuation of schools if not already closed. The school principal may close the school for the purpose of evacuation.

3.7.1.3 Evacuation strategy and methods

An evacuation strategy is adopted for Broadwater Public School due to the flood warning time being approximately 12 hours, and the effective warning time being at least 6 hours.

The evacuation strategy for the school for the purposes of evacuation prior to flood inundation of local roads, the school and the wider area is as follows:

- School administration to be subscribed to severe weather warnings and flood notification alert systems
- Timely relaying of Bureau of Meteorology Severe Weather Alerts or SES 'Advice' or 'Watch and Act' or 'Emergency Warning' warnings to parents and citizens/carers
- Closure and evacuation of Broadwater Public School is recommended when the river height (nominated trigger level) at **Coraki river height gauge is forecast to exceed Minor level or approach Moderate level**. *It is important to understand that the first Flood Warning issued by the BOM may refer to Major flood level being reached (and not refer to Minor or Moderate level).* Flood heights that exceed the **Moderate** flood level at the Coraki river height gauge will soon commence to inundate roads at Broadwater.
- Students are largely unable to self-evacuate and require assistance from parents/carers and multiple methods of evacuation must be available for the FERP to be effective, such as:
 - arrangement with a local bus service to be on-call and available for the evacuation of all students to a pre-determined evacuation location is required
 - by parents and carers
 - by teachers and school staff
- Evacuation to safe areas must be complete within 6 hours of receiving an 'Evacuate now' warning from the SES
- Database of names, phone numbers (mobile and landline) of parents and citizens/carers (emergency contacts for student welfare)
- A messaging system to communicate to parents and citizens/carers (emergency contacts for student welfare) that evacuation may be or is required. Methods include (more than one can be used):
 - Bulk 'SMS' messaging to all mobile phones on a list
 - Messaging via social media channels
 - Telephone
 - Email
- Distribution of the evacuation route map to higher ground and a pre-determined evacuation location

- When an evacuation warning is issued by the SES, total evacuation is to be undertaken
- Evacuation is to be undertaken as early as possible, which is aided by monitoring of warnings and weather conditions in the upper catchment and upstream flood conditions
- Evacuation must not require people to drive or walk through flood water
- Parents and citizens/carers or responsible adults are to evacuate the students under local traffic arrangements from the school via managed evacuation routes or along the rural road network to safe areas.
- In the event roads are cut and evacuation is not possible, the Flood Warden is to advise the NSW SES:
 - The number of people requiring transport
 - Details of any medical evacuations required
 - Whether additional assistance is required to effect the evacuation.
- Evacuees are to go to home with their parents, or to friends or relatives, or else be taken to the nearest accessible evacuation centre. The homes of students, friends or relatives may also be subject to flood inundation, therefore these destinations may not be safe to stay at for extended periods if a major flood event occurs.
- The NSW SES will advise when return to evacuated areas is safe after flood waters have receded and reliable access is available.
- The process for making decisions by the school in the event of a flood emergency should be consistent with the process in section 1.3 of the school's *emergency management plan*.

The evacuation process is illustrated in the following figure.

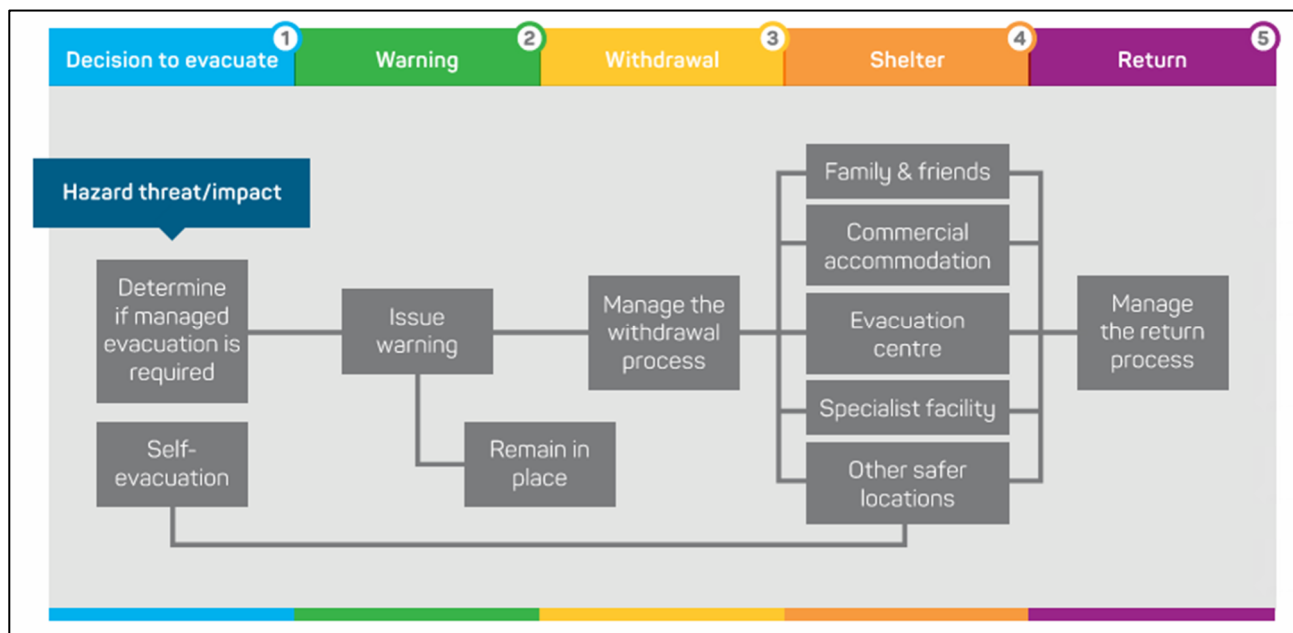


Figure 3-4 Evacuation process (Australian Institute for Disaster Resilience, 2017)

3.7.1.4 Warning messages

The school administration should relay flood warning messages issued by the SES to the school community (parents and carers/citizens) through the electronic communications systems (email, SMS, social media) without delay upon receiving them. This includes evacuation warnings and evacuate now notifications.

If an evacuation warning is received, the school administration can elect to close the school. This decision should be made early on the information at hand. The school community should be notified of this decision and why it was made (e.g. potential flooding of local roads and school grounds) immediately and as early as possible. The school should arrange for students to be collected or for a local bus service to take students to a pre-determined location for students to be collected by their parents.

The school administration should regularly keep the school community notified of changing weather/flood conditions and decisions made.

3.7.2 Emergency assembly point

The school 'Love Tree' in the back playground is the primary emergency assembly point with the staff car park as the secondary emergency assembly point. The offsite emergency assembly point for evacuation is the southern end of School Lane. Refer to the *Emergency Management Plan for Broadwater Public School*.

3.7.3 School evacuation routes

The primary vehicular evacuation route from Broadwater to higher ground is via Barang Drive (Blackwall Drive), Macdonald Street, Broadwater-Evans Head Road and the Pacific Highway over Richmond River towards Alstonville.

South of East Wardell, flooding does not create an immediate problem for Broadwater until flooding exceeds Major flood level at the Broadwater river height gauge (3.0 m gauge level) or Moderate flood level at the Coraki river height gauge (5.0 m gauge level). Soon after, arterial roads will start to close causing isolation of the Broadwater township and outlying rural areas including Riley's Hill. (SES, 2022).

The local evacuation destination is nominated at Broadwater Memorial Park at Little Pitt Street, Broadwater. Refer to Appendix A

3.7.4 Evacuation centres

The following evacuation centres in the table below were set up by the NSW SES in March 2022 for Northern NSW. Locations of evacuation centres may vary between disaster events. Refer to the SES website for a list of current evacuation centres in the event of onset of flooding.

The preferred evacuation destination for students is to their homes or homes of relatives if they are not flood-prone.

Table 3-7 Evacuation centres in the vicinity of Broadwater Public School

Suburb	Evacuation centre address
Alstonville	Alstonville Cultural Centre. 42-46 Commercial Rd, Alstonville NSW 2477
Goonellabah	Goonellabah Sports and Aquatic Centre 1 Wallerawang Drive, Goonellabah NSW 2480
Woodburn	Woodburn Public School Woodburn Street, Woodburn NSW 2472
Wardell	Wardell Sports Club Bath Street, Wardell NSW 2477

3.8 Flood response training

The most effective form of flood response training is for the school administration to read and be familiar with this report, and the roles, responsibilities and actions contained within them.

An annual discussion (refresher training) before the wet season (November to April) between the school administration and the parents and citizens committee should be undertaken as to content of the report.

The school administration should essentially be focussed on:

- Roles and responsibilities in the *Flood Emergency Response Plan*
- Understanding the flood risk and flood warning times
- Familiarisation with upper catchment, contributing rivers and creeks and locations of river height gauges
- Being familiar with the nominated trigger level at **Coraki river gauge is forecast to exceed Minor level or approach Moderate level**
- Educating the school community in newsletters or meetings about flood awareness
- Being subscribed to SMS or social media alerts (Bureau of Meteorology (BOM) and State Emergency Service (SES))
- Evacuation routes and informing the school community.

3.9 Flood educational awareness

The following online flood education resources for schools is available for education of students and the school community.

3.9.1 SES flood education resources for primary schools

The NSW provides online flood education resources for Primary school students including:

- 'Water in the Valley' is a primary school resource that supports the NSW Geography syllabus, as well as integrated approaches to literacy, numeracy and science for Stages 1, 2 and 3. It is designed to support teachers across NSW to educate school students about flood risk, using the example of flooding in the Hawkesbury-Nepean Valley
- Children's activities.

The information and resources are available at <https://www.ses.nsw.gov.au/for-schools/>.

3.9.2 Flood resilience

Cool Australia (assisted by the Australian Institute for Disaster Resilience (AIDR) and National Recovery and Resilience Agency) provides a free course titled 'How to teach a unit on fire and flood resilience'. The course is described as:

A roadmap for how to approach teaching a unit on fire and flood resilience in their own classroom. While primarily focused on fire and flood resilience, it will reference the importance of an all-hazards approach to disaster resilience education.

The course is available at <https://learn.coolaustralia.org/course/teach-fire-flood-resilience-cc062/>.

3.9.3 Flood conditions and impacts on the environment and community

The Australian Institute for Disaster Resilience (AIDR) has produced:

- Natural hazards education series for lower and middle primary (e.g. emergency plan, emergency kit, driving in floodwater, flash floods). The series is available at <https://schools.aidr.org.au/disaster-resilience-education/teaching-resources/#/>.

- a *Flood lesson plan* where students investigate major historical flood events in their local area and identify protective actions to prepare for and respond to a flood event, including flood management strategies. The plan is available at <https://schools.aidr.org.au/media/5593/aidr-flood-lesson-plan.pdf>.

4 Flood Emergency Response Plan

4.1 School operational phase

4.1.1 Existing Local Flood Plans

The NSW SES has produced the Richmond Valley Flood Emergency Sub Plan for Richmond Valley within which Broadwater Public School is located.

The Local Flood Plan has been reviewed and relevant information applied to this FERP.

4.1.2 Existing school emergency management plan

The Broadwater Public School *Emergency Management Plan* (effective March 2021) was reviewed so the content of this FERP is consistent with the existing emergency management plan. The emergency management plan should be utilised in parallel with the FERP in the event of a pending flood.

4.1.3 Procedures during non-flood periods

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers. This section is re-produced in Appendix E Flood Emergency Response Plan.

Table 4-1 Procedures during non-flood periods

Task	Description	Responsibility
Familiarisation with FERP	Reading the FERP and being familiar with its contents (flood mechanisms, upstream rainfall and river height gauges) and procedures. Discussing the FERP with P&C committee members at least annually, and confirming roles and responsibilities.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Subscribing to notifications, flood warning and alert systems	Subscribe to relevant notification and alert systems as listed in this FERP. Parents and citizens should be notified of the availability of relevant notification and alert systems. Add the weblinks listed in this FERP to computer and mobile phone 'Favourites'. Set up subscription (fees apply) to Early Warning Network (https://www.earlywarningnetwork.com.au/) for river gauge/flood alerting for the Coraki river height gauge (refer to Table 3-4). EWN can also send location alerts for weather hazards, Flood Watches etc specific to the school location (separate fee applies). Refer to Appendix D for fee structure.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden - P&C committee members
Education of school community	Sharing relevant flood awareness and educational resources with teachers, parents and citizens, students, and responding to their questions. Incorporating flood awareness and appropriate content of FERP into school curriculum.	- School Principal ('Flood Warden') - Backup Flood Warden - Teachers
Alternative schools	Arranging alternative schools to take students during flood recovery period.	- School Principal ('Flood Warden') - Department of Education

Task	Description	Responsibility
Alternative accommodation	Parents and citizens should be encouraged to look into the potential for alternative accommodation (friends, relatives) if their home is flood-prone or disrupts power supply or other utilities. This is if school operations are not disrupted long-term in the event that flooding inundates the school grounds but does not cause above-floor flooding of school buildings (classrooms, administration).	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Parents and citizens contact information	Maintain a database of the contact details of parents and citizens (name/s, landline, mobile, email addresses) for communication purposes. Text message system to be set up so School Principal ('Flood Warden') can send emergency messages (such as flood warnings, alerts and evacuation orders) at short notice to all parents and citizens. This method of communication should not be solely relied upon in emergency situations.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Social media group	Create one or more social media platforms 'private group' for parents and citizens to subscribe. Platforms to be utilised for flood warning and alert notifications and general communication.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden ▪ P&C committee members
Register of structural engineers	Maintain a database of the contact details of structural engineers to inspect building undercroft slabs, structural columns, staircases after a flood event that inundates the school grounds but does not cause above-floor flooding of school buildings.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Register of trades companies and equipment suppliers	Maintain a database of the contact details of trades companies and equipment suppliers for flood recovery phase i.e. ▪ Electricians ▪ Plumbers/Drain cleaners ▪ Landscapers ▪ Specialised trades (fencing contractors) ▪ Generator supply companies	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden ▪ P&C committee members
Recovery equipment	Plan a location for generators in the event school is operational after a flood event but power has not been restored. Generators to be adequate for: ▪ Lighting ▪ Air conditioning ▪ Computers ▪ Refrigeration.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden

4.1.4 Procedures before floods (Flood preparation)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers. This section is re-produced in Appendix E Flood Emergency Response Plan.

The following phases of activation for response to a flood event have been adopted according to the levels used by the SES (Australian Warning System).

Table 4-2 Procedures before pending floods (Flood preparation)

Task	Description	Responsibility
ADVICE LEVEL (HIGH RAINFALL EVENT OCCURRING IN CATCHMENT AND FLOODING IS LIKELY UPSTREAM) An incident has started. Stay up to date as the situation changes.		
Monitoring flood alerts and warnings	Upon issue of a 'Advice' notification by the SES that an incident has started (e.g. widespread severe rainfall event in the upper catchment, or major flooding in occurring in the upper catchment), the school is to monitor conditions and further alerts, relaying the notification to the school community. Monitor the weather warnings and forecasts for the Richmond River catchment regarding the potential for, or occurrence of high catchment rainfall, that may lead to lower Richmond River flooding. Monitor alert systems (BOM website) for Flood Watch and Flood Warning notifications from the Bureau of Meteorology for the Richmond River. Monitor SES website for flood warnings. Monitor Ballina Council Disaster Dashboard. Monitor HazardWatch Web App. Monitor other social media platforms for warnings and advice.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Communication with school community	Relay weather warnings, that major upper catchment rainfall is occurring, and flooding is likely in upper catchment. Keep school community up to date as to changing rainfall and flood conditions. Inform the school community as to flood warning time to lower Richmond River. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) of the upper catchment rainfall/flood event and SES 'Advice' notification.	- School Principal ('Flood Warden') - Backup Flood Warden

Task	Description	Responsibility
WATCH AND ACT LEVEL (FLOODING IS OCCURRING UPSTREAM AND FLOODING IN SCHOOL LOCAL AREA IS LIKELY) Conditions are changing and you need to start taking action now.		
Monitoring flood alerts and warnings	Upon issue of a 'When a Prepare to Evacuate - Watch and Act' is issued by SES, you should prepare to evacuate. Monitor notification systems in 'ADVICE LEVEL' table above. Closure and evacuation of Wardell Public School is recommended when the river height at Coraki river gauge is forecast to exceed Minor level or approach Moderate level. <i>It is important to understand that the first Flood Warning issued by the BOM may refer to Major flood level being reached (and not refer to Minor or Moderate level).</i> Flood heights that exceed the Moderate flood level at the Coraki river height gauge will soon commence to inundate roads at Broadwater.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Communication with school community	The school is to relay the SES notification to the school community. Keep school community up to date as to changing rainfall and flood conditions. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) of the flood event and SES 'Watch and Act' notification.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden
Plan for evacuation	Contact bus company for potential evacuation of school. School community to be ready for potential evacuation notice from SES in the event that flooding is predicted to impact the lower Richmond River. Determine where Evacuation Centres are located for information of student families. Follow instructions from Emergency Services. Consider closing the school early and evacuate school prior to roads being flooded.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Prepare school grounds for flooding	Move all ground level assets to upper access walkways if possible. Rubbish – Remove rubbish and recycle bins to upper access walkways if possible.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Electricity supply	Electricity utility provider will power down the local power grid if river levels are predicted to inundate low lying dwellings.	▪ Electricity utility provider

4.1.5 Procedures during floods (Flood response)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers. This section is re-produced in Appendix E Flood Emergency Response Plan.

The following phases of activation for response to a flood event have been adopted according to the levels used by the SES (Australian Warning System).

Table 4-3 Procedures during floods (Flood response)

Task	Description	Responsibility
EMERGENCY WARNING LEVEL (FLOODING IN SCHOOL LOCAL AREA IS IMMINENT) You may be in danger and need to take action immediately.		
Monitoring flood alerts and warnings	Upon issue of a ' Evacuate Now - Emergency Warning ' by SES, you should prepare to evacuate. The school is to relay the notification to the school community. Monitor notification systems in 'ADVICE LEVEL' table above.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Close school and evacuate Communication with school community	Contact bus company for evacuation of school. Contact parents and citizens to collect children immediately. Undertake role call to check all students have evacuated. Determine where Evacuation Centres are located for information of student families. Follow instructions from Emergency Services. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) that the school is closing and SES 'Evacuate Now - Emergency Warning' 'Watch and Act' notification.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden

4.1.6 Procedures after floods (Flood recovery)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers. This section is re-produced in Appendix E Flood Emergency Response Plan.

Table 4-4 Procedures after floods (Flood recovery)

Task	Description	Responsibility
'ADVICE LEVEL' notification by SES (REDUCED THREAT: RETURN WITH CAUTION – ADVICE) When it is safe for residents and businesses to return to a flood affected area.		
Monitoring flood alerts and warnings	Upon issue of a ' Reduced Threat: Return with Caution – Advice ' by SES when it is safe for residents and businesses to return to a flood affected area. Monitor notification systems in 'ADVICE LEVEL' table above.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Inspect school grounds	Contact structural engineer to inspect and confirm the structural stability of school buildings before entering. Contact qualified electrician to check power points, electrical equipment, appliances, or electrical hot water systems for damage. They must be repaired and tested before use. Contact plumber to inspect onsite sewage system if present.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Clean up school grounds	Arrange cleaning contractor to undertake wash down of undercrofts. Arrange desilting of drainage and pits, remove silt from undercrofts. Wear suitable protective clothing, including boots and gloves, when cleaning up.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Communication with school community	Regularly advise school community on progress of restoration of school and when school will reopen.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Contact trades companies and equipment suppliers	Contact trades companies and equipment suppliers to ascertain their availability in the few weeks, for potential flood recovery services at the school.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Contact structural engineer	Contact structural engineer to arrange inspection of building undercroft slabs, columns, fencing upon flood waters receding and roads being reopened.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Review and update FERP	Review and update the FERP.	School Principal ('Flood Warden')

4.2 Construction phase

4.2.1 Roles and responsibilities

The following tasks are recommended for the Head Contractor 'ADCO' during the construction phase.

Table 4-5 Roles and responsibilities for Head Contractor 'ADCO' at Broadwater Public School

Name	Role and responsibilities	Contact details	
TBC	▪ Head Contractor ADCO ▪ Subscribe to alerts and warnings across various media platforms ▪ Monitor alerts and warnings regarding severe weather, catchment rainfall and flood levels ▪ Removal of plant and evacuation of site is recommended when the river height at Coraki river gauge is forecast to exceed Minor level or approach Moderate level. <i>It is important to understand that the first Flood Warning issued by the BOM may refer to Major flood level being reached (and not refer to Minor or Moderate level).</i> Flood heights that exceed the Moderate flood level at the Coraki river height gauge will soon commence to inundate roads at Broadwater. ▪ Communication of flood warnings and notifications to sub-contractors ▪ Arranging evacuation of contractors prior to flooding ▪ Removal of plant, equipment, tools, fuel, building materials from school grounds to flood-free areas offsite ▪ Secure floatable debris or materials or remove from site prior to flooding ▪ Preparing school grounds for expected flood inundation 'make safe' ▪ Inform School Infrastructure NSW of preparations	Mob:	
		Landline:	
		Email:	

4.2.2 Contact list of relevant authorities

The following roles contact list of relevant Authorities have been identified for the purposes of the implementation of the Flood Emergency Response Plan. Additional Authorities can be added by the Flood Warden. Regular updating of the table is recommended as information changes.

Refer to Table 3-3.

5 Further actions

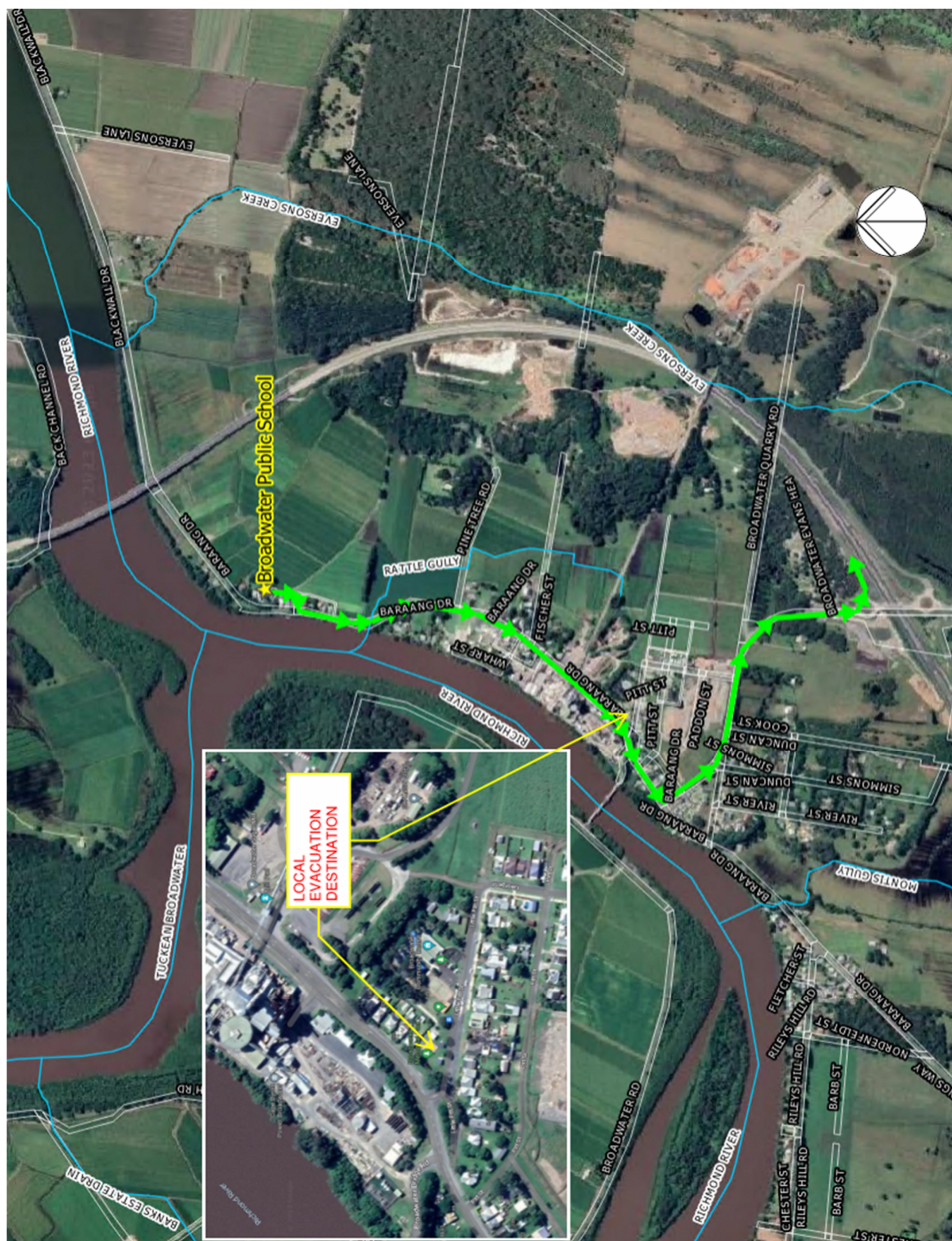
Further actions are as follows:

- The school administration should engage Early Warning Network to set up a subscription service to provide alerts for severe weather forecasts and catchment river height gauge levels
- School administration to undertake annual evacuation preparations prior to the wet season (typically November to April)
- School administration to undertake responsibilities in Sections 3 and 4
- Install flood warning notice per Section 3.4 prior to operational status of the re-developed school
- The Head Contractor undertake responsibilities in Section 4.2.

6 References

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- SES (2022). FloodSafe Community FloodSafe. Woodburn and Broadwater. <https://www.ses.nsw.gov.au/media/5151/floodsafe-woodburn-2021-september-2nd-draft.pdf>
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Appendix A Flood evacuation routes



Appendix B SES Community FloodSafe Brochure for Woodburn and Broadwater

During a flood

Flood Warnings are issued by the Bureau of Meteorology (BoM) when flooding is about to happen or is already happening. A Flood Warning provides a predicted flood level on a river gauge and a time at which the river will reach, exceed or peak at that level.

During a flood, there are some simple things you can do to stay safe:

- ⚠ Never drive, ride or walk through floodwater.
- ✓ Keep listening to your local radio station for information, updates and advice.
- ✓ Keep in contact with your neighbours.
- ✓ Be prepared to evacuate if necessary.

Evacuate

During a flood the NSW SES and other emergency services may ask you to evacuate.

The NSW SES aims to keep people safe and minimise the risk to life and property when floods occur. Follow evacuation advice. Being prepared will allow you to respond quickly should you need to evacuate.

- ✓ Locate important papers, valuables and mementos. Put them in your emergency kit
- ✓ Take your emergency kit with you
- ✓ Turn off the electricity and gas at the mains before you leave and turn off and secure gas bottles
- ✓ Stack possessions, records, stock or equipment on benches and tables, placing electrical items on top
- ✓ Secure objects that are likely to float and cause damage
- ✓ Relocate waste containers, chemicals and poisons well above floor level
- ✓ Prepare to take your pets with you
- ✓ Act early before roads to high ground are closed by floodwater.

When you evacuate

You must leave well before roads to high ground are closed by flood water.

Proceed to the evacuation centre you are asked to go to. Help will be available at an evacuation centre established by the Department of Family and Community Servies.

- Assistance will include:
- ✓ Temporary accommodation
 - ✓ Financial help
 - ✓ Personal support
 - ✓ Refreshments and meals
 - ✓ Clothing and personal needs

After a flood

Keep away from flood affected areas until emergency services advise that is safe to return. These areas can be dangerous for the health and safety of you and your family. Discard all food that has come into contact with floodwater and clean and sanitise your belongings.

A local recovery centre may be established by a range of government departments and community agencies. You may be able to get advice on everything from insurance to counselling. In the event of a flood, information is available from Disaster Welfare Services on **13 77 88** or nsw.gov.au/resilience-nsw

How the NSW SES helps the community

The NSW SES is responsible for the emergency management of floods in NSW. This includes planning for floods and working with communities about how to protect themselves and their property.

During floods the NSW SES will provide flood information and safety advice, can arrange for the delivery of essential supplies, conduct evacuations and undertake flood rescues.

Emergency contacts & support

- Police, Fire and Ambulance - 000** (triple zero)
Life-threatening emergencies.
- NSW SES Emergency Assistance - 132 500**
The deaf, hard of hearing or speech impaired can call Triple Zero (000) or SES on (132 500).
- LiveTraffic**
livetraffic.com for local road information.

Richmond Valley Council
(02) 6660 0300
richmondvalley.nsw.gov.au for local road closure information.

Richmond Valley Disaster Dashboard
Can be viewed at richmondvalleycouncil.disasterdashboards.com/dashboard/overview

Bureau of Meteorology
bom.gov.au/nsw for the latest flood and weather warnings.

Accurate as at Sept 2021
- Local Land Services**
1300 795 299
lls.nsw.gov.au for support services where agriculture and animals are affected.

Disaster Welfare Services
1800 018 444
emergency.nsw.gov.au for flood recovery services.

NSW Dept. of Primary Industries dpi.nsw.gov.au
For support services where agriculture and animals are affected.

Essential Energy **132 080**
essentialenergy.com.au for supply and outages.

Telstra - 132 203 telstra.com.au for service disruptions in a disaster.



FOR EMERGENCY HELP IN FLOOD, STORM AND TSUNAMI CALL

132 500

In life-threatening emergencies call 000 (triple zero)

For further information about flooding visit ses.nsw.gov.au



Community FloodSafe



Woodburn and Broadwater



Are you at risk from floods?

Woodburn is a small township on the banks of the Richmond River, a population of about 700 people. Woodburn is at the junction of the Richmond River and Rocky Mouth Creek.

In a major flood, water will normally enter the majority of the shops and business premises and will enter the low-levels of the raised houses within the town.

Broadwater is another small town on the banks of the Richmond River known for its historic sugar mill, with a population of 436 .

Flooding can be the result of the Richmond River, local catchment and when the Wilsons River breaks its banks upstream of Coraki and fills the Tuckean Swamp.

This floods all of the area across the river from Broadwater around Dungarruba and Bagotville.

This flood water also travels to the Tuckean Broadwater downstream of Broadwater..

Warning time for a Richmond River flood is typically 3-4 days, whereas local catchment flooding can occur within several hours of significant rainfall.

Generally, flooding does not create an immediate problem for the residents of Broadwater until flooding exceeds Major flood level.

Soon after, arterial roads will start to close causing isolation of the Broadwater township and outlying rural areas including Rileys Hill.

It is important that residents and businesses in Woodburn, Broadwater and surrounding areas are aware of their flood risk, have a plan and know when to act.

These areas have flooded in the past, and they will flood again.



What happens in a Woodburn flood?

Heights at gauge	Expected consequence
5.22m	Peak Height - Flood of record 1954
5.12m	About 90% of Woodburn is now isolated.
5.07m	Peak Height - February 1956
4.91m	Peak Height - March 1974
4.70m	Peak Height - April 1989
4.40m	About 20 shops experience flooding.
4.20m	Major Flood Height. Approximate height at which water flows over the highway at the IGA Supermarket in River Street. The majority of the elevated residences in Woodburn will have water in the lower levels.
4.14m	Rocky Mount Creek breaks its banks flooding the lower areas in southern Woodburn.
4.12m	Flood water start to flow underneath the houses in the northern section of Woodburn.
4.04m	Peak Height - April 1989
3.70m	Moderate Flood Height. Evacuation warnings will begin to be issued by the NSW SES.
3.40m	Woodburn to Coraki Road could close from around this height.
3.20m	Minor Flood Height. Water starts to build over the road between Woodburn and Coraki.

Key heights in metres at the Woodburn flood gauge

Stay informed

Flood information, road closures and advice on evacuations will be broadcast over local radio stations:

94.5FM
ABC

104.3FM
2LM

107.9FM
COWFM

88.9FM
RV Radio

Flood predictions and river height information are available from the Bureau of Meteorology. NSW SES issue flood bulletins on what may happen and safe actions. It is important to know the height that affects your property in terms of isolation, inundation and evacuation.

What happens in a Broadwater flood?

Heights at gauge	Expected consequence
4.58m	Peak Height Flood of record 1954.
4.33m	The majority of Broadwater is impacted by flooding.
3.63m	At this height a number of properties will be impacted by above flood inundation. Mainly along the Pacific Hwy and Fischer, Fletcher, Byrnes and George Streets
3.30m	Evans Head Broadwater Road may close east of the Sunrise caravan park resulting in the closure of the last road out of Broadwater. Riley's Hill becomes isolated.
3.00m	Major Flood Height. Peak Height - April 1988. The river first breaks the bank in Broadwater along Wharf Street between Mathers Lane and Rattle Creek. Water will encroach and possibly cover the old Pacific Hwy in this area.
2.94m	Peak Height - March 2017
2.74m	Water breaks over the Bagatville Barrage This is an indicator for the rural residents in the Dungarubba, Kilgin and Green Forrest area that one of their main access/egress routes is close to being lost.
2.50m	Moderate Flood Height.
2.00m	Minor Flood Height.

Key heights in metres at the Broadwater flood gauge



When flooding is likely

A Flood Watch is issued by the Bureau of Meteorology when flooding is likely. Act early should flooding occur.

RESIDENTS:

- ✓ Listen to your local radio station for information, updates and advice.
- ✓ Locate and check your emergency kit and follow your Emergency Plan. Go to [ses.nsw.gov.au](https://www.ses.nsw.gov.au)
- ✓ Check on your neighbours and make sure they are aware of possible flooding.
- ✓ Prepare to move pets, including agisted animals to high ground.

BUSINESS OWNERS AND MANAGERS:

- ✓ Follow your Business FloodSafe Plan, developed by working through the Emergency Business Continuity Kit on the NSW SES website [ses.nsw.gov.au](https://www.ses.nsw.gov.au)
- ✓ Check neighbouring businesses are aware of possible flooding.
- ✓ Back up records and store off-site.
- ✓ Make preparations to raise or relocate stock, records and equipment.
- ✓ Check the evacuation routes for your business and make sure your employees know when they are likely to close. This will ensure they can leave before flooding occurs.

Assistance for animals

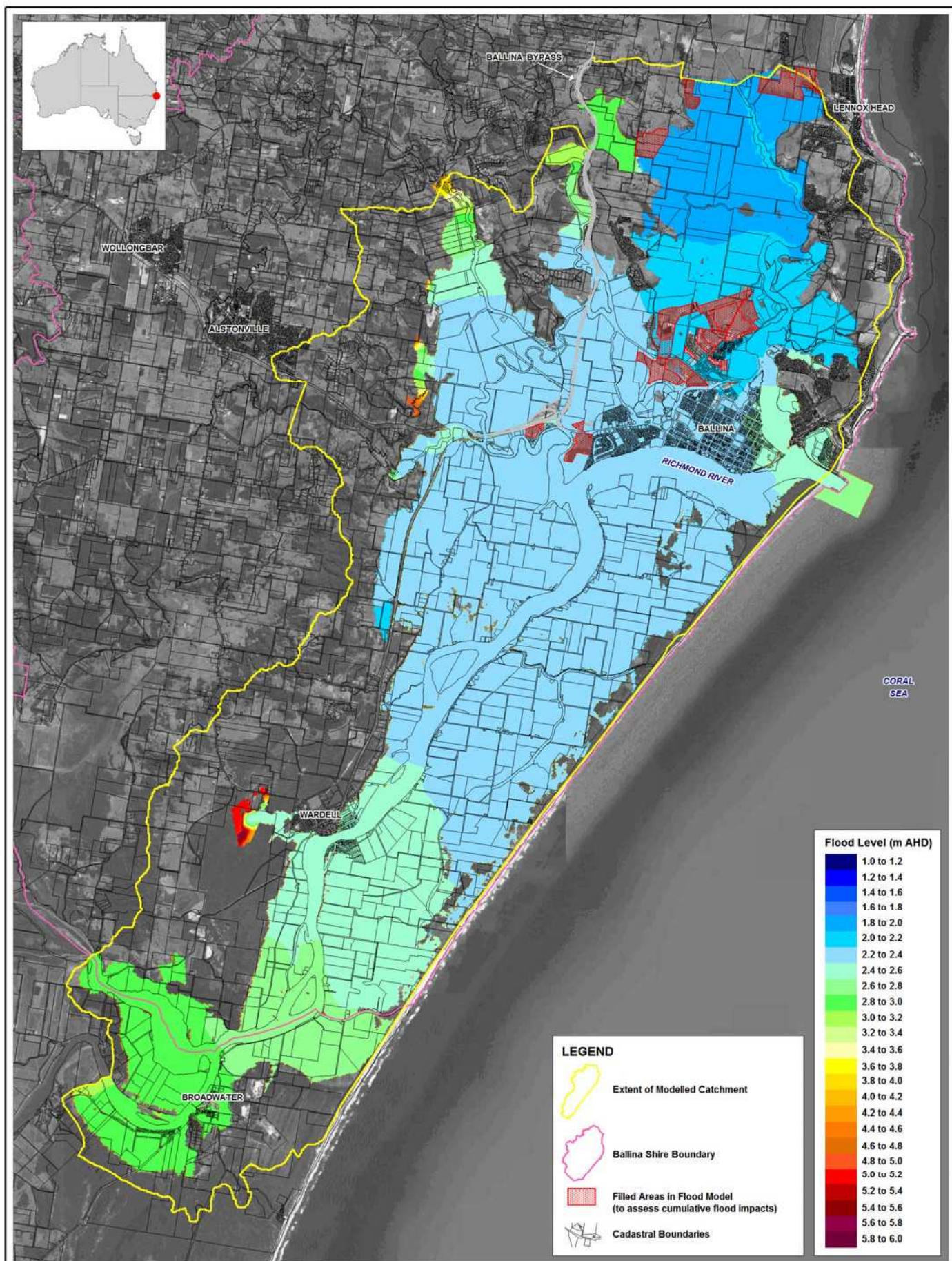
NSW Department of Primary Industries coordinate animal welfare and relief services for livestock, wildlife and companion animals.

This may include assistance for animal care services and emergency fodder supply in areas affected by a flood emergency.

Local Land Services can also be contacted for support services where agriculture and animals are affected.

Appendix C Flood maps

C.1 20 year ARI flood extent map



Title: **20 Year ARI Flood Level for 2100 Climate Change Horizon**

Drawing No: **B17316-FRMS-L-203**

Rev: **A**

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

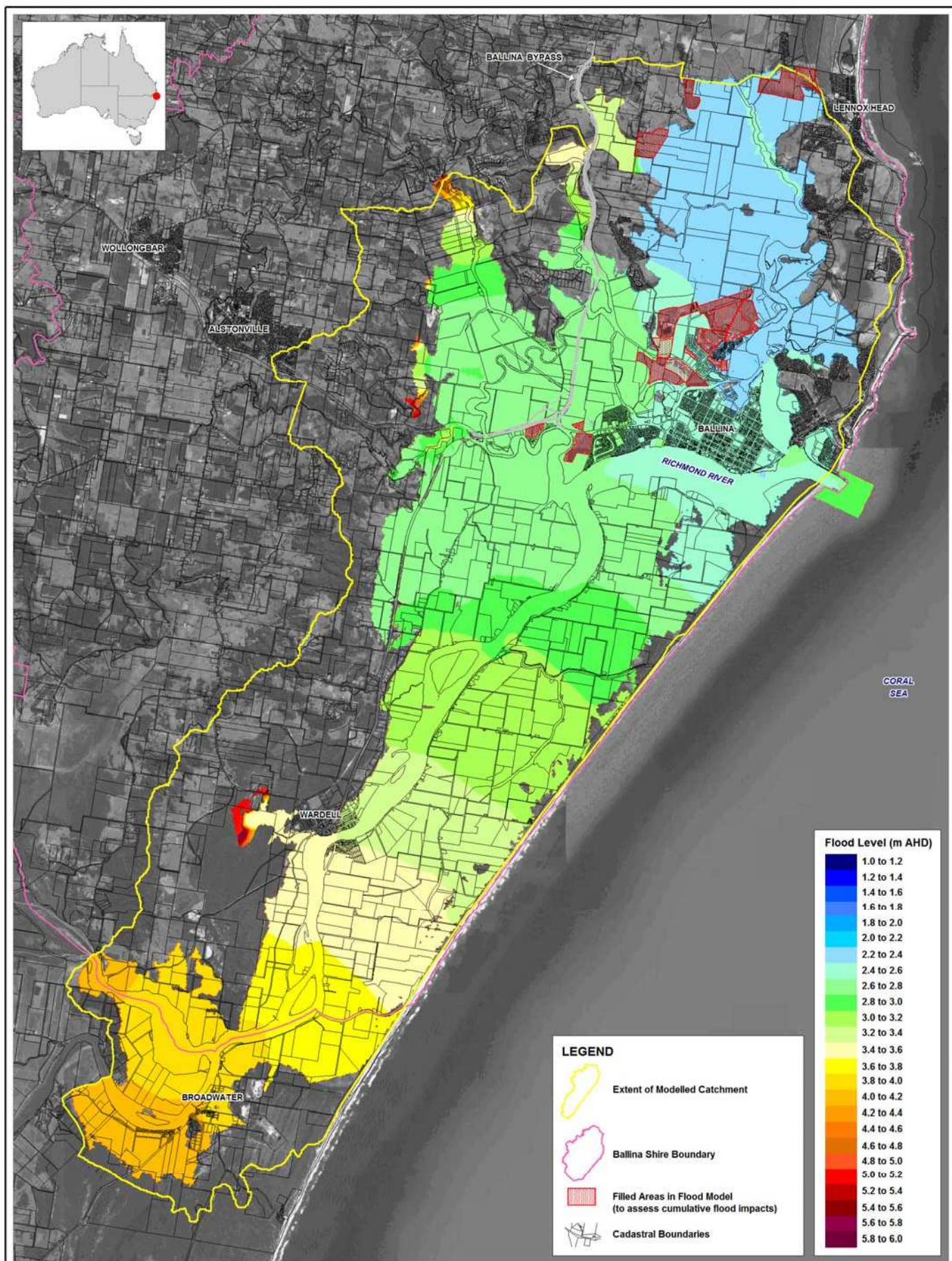


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Approx. Scale



Filepath: I:\B17316_I_BRH_Ballina_FRMS&P\DRG\Ballina Flood Study 111201\FLD_015_111205_20Y Flood Level 2100 Climate Change Horizon.WOR

C.2 100 year ARI flood extent map



Title:
100 Year ARI Flood Level for 2100 Climate Change Horizon

Drawing No:
B17316-FRMS-L-205

Rev:
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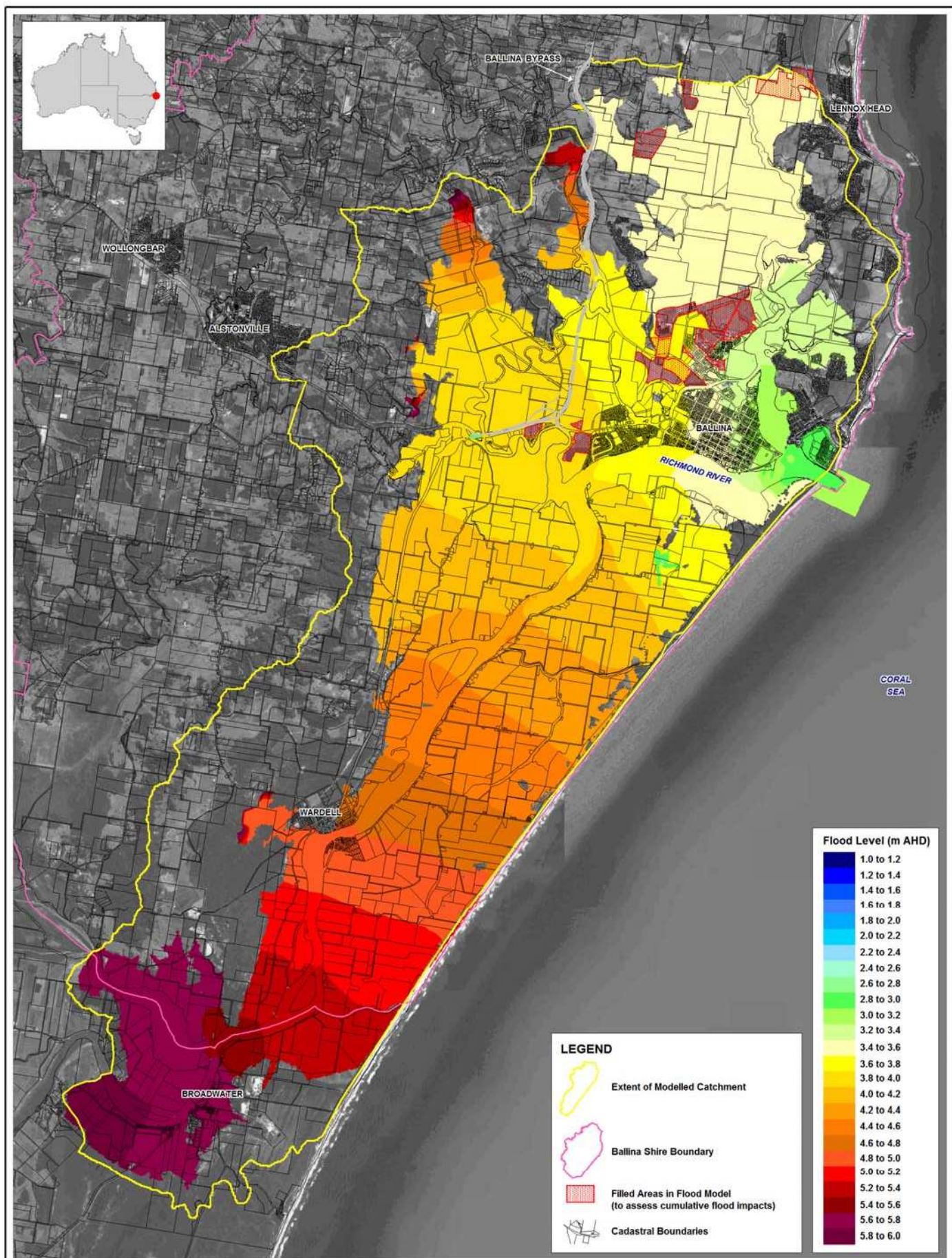


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Approx. Scale



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C.3 Probable Maximum Flood extent map



Title:
PMF Flood Level for 2100 Climate Change Horizon

Drawing No:
B17316-FRMS-L-207

Rev:
A

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Approx. Scale



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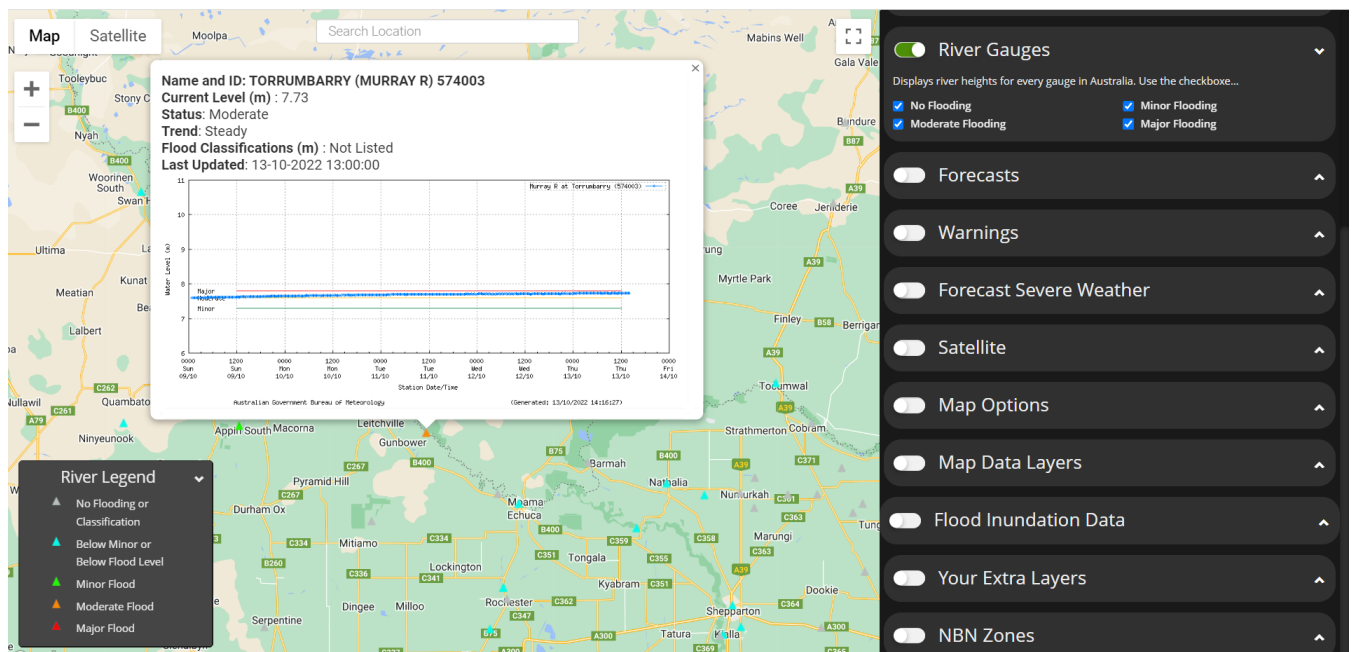
Appendix D Early Warning Network river height gauge / flood alerting



River Gauge / Flood Alerting

We monitor and alert of set (Minor, Moderate, Major) or custom triggers (up to two triggers per River Gauge). When a trigger is met, we will immediately alert your allocated personnel (maximum 5 recipients per River Gauge) of a trigger being met via email and/or SMS.

Simply advise what River Gauges you would like to be alerted of and the triggers and staff we should alert, and we take care of the rest.



Pricing (ex GST in AUD):

Initial Set-Up Fee: \$95

Monthly Access Fees

1 River Gauge: \$39

2-5 River Gauges: \$29 each

6-10 River Gauges: \$19 each

Appendix E Flood Emergency Response Plan

E.1 Procedures during non-flood periods

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers.

Table E - 1 Procedures during non-flood periods

Task	Description	Responsibility
Familiarisation with FERP	Reading the FERP and being familiar with its contents (flood mechanisms, upstream rainfall and river height gauges) and procedures. Discussing the FERP with P&C committee members at least annually, and confirming roles and responsibilities.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Subscribing to notifications, flood warning and alert systems	Subscribe to relevant notification and alert systems as listed in this FERP. Parents and citizens should be notified of the availability of relevant notification and alert systems. Add the weblinks listed in this FERP to computer and mobile phone 'Favourites'. Set up subscription (fees apply) to Early Warning Network (https://www.earlywarningnetwork.com.au/) for river gauge/flood alerting for the Coraki river height gauge (refer to Table 3-4). EWN can also send location alerts for weather hazards, Flood Watches etc specific to the school location (separate fee applies). Refer to Appendix D for fee structure.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden - P&C committee members
Education of school community	Sharing relevant flood awareness and educational resources with teachers, parents and citizens, students, and responding to their questions. Incorporating flood awareness and appropriate content of FERP into school curriculum.	- School Principal ('Flood Warden') - Backup Flood Warden - Teachers
Alternative schools	Arranging alternative schools to take students during flood recovery period.	- School Principal ('Flood Warden') - Department of Education
Alternative accommodation	Parents and citizens should be encouraged to look into the potential for alternative accommodation (friends, relatives) if their home is flood-prone or disrupts power supply or other utilities. This is if school operations are not disrupted long-term in the event that flooding inundates the school grounds but does not cause above-floor flooding of school buildings (classrooms, administration).	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Parents and citizens contact information	Maintain a database of the contact details of parents and citizens (name/s, landline, mobile, email addresses) for communication purposes. Text message system to be set up so School Principal ('Flood Warden') can send emergency messages (such as flood warnings, alerts and evacuation orders) at short notice to all parents and citizens. This method of communication should not be solely relied upon in emergency situations.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Social media group	Create one or more social media platforms 'private group' for parents and citizens to subscribe. Platforms to be utilised for flood warning and alert notifications and general communication.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden - P&C committee members

Task	Description	Responsibility
Register of structural engineers	Maintain a database of the contact details of structural engineers to inspect building undercroft slabs, structural columns, staircases after a flood event that inundates the school grounds but does not cause above-floor flooding of school buildings.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden
Register of trades companies and equipment suppliers	Maintain a database of the contact details of trades companies and equipment suppliers for flood recovery phase i.e. ▪ Electricians ▪ Plumbers/Drain cleaners ▪ Landscapers ▪ Specialised trades (fencing contractors) ▪ Generator supply companies	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden ▪ P&C committee members
Recovery equipment	Plan a location for generators in the event school is operational after a flood event but power has not been restored. Generators to be adequate for: ▪ Lighting ▪ Air conditioning ▪ Computers ▪ Refrigeration.	▪ School Principal ('Flood Warden') ▪ Backup Flood Warden ▪ Assistant to Flood Warden

E.2 Procedures before floods (Flood preparation)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers.

The following phases of activation for response to a flood event have been adopted according to the levels used by the SES (Australian Warning System).

Table E - 2 Procedures before pending floods (Flood preparation)

Task	Description	Responsibility
ADVICE LEVEL (HIGH RAINFALL EVENT OCCURRING IN CATCHMENT AND FLOODING IS LIKELY UPSTREAM) An incident has started. Stay up to date as the situation changes.		
Monitoring flood alerts and warnings	Upon issue of a 'Advice' notification by the SES that an incident has started (e.g. widespread severe rainfall event in the upper catchment, or major flooding in occurring in the upper catchment), the school is to monitor conditions and further alerts, relaying the notification to the school community. Monitor the weather warnings and forecasts for the Richmond River catchment regarding the potential for, or occurrence of high catchment rainfall, that may lead to lower Richmond River flooding. Monitor alert systems (BOM website) for Flood Watch and Flood Warning notifications from the Bureau of Meteorology for the Richmond River. Monitor SES website for flood warnings. Monitor Ballina Council Disaster Dashboard. Monitor HazardWatch Web App. Monitor other social media platforms for warnings and advice.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Communication with school community	Relay weather warnings, that major upper catchment rainfall is occurring, and flooding is likely in upper catchment. Keep school community up to date as to changing rainfall and flood conditions. Inform the school community as to flood warning time to lower Richmond River. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) of the upper catchment rainfall/flood event and SES 'Advice' notification.	- School Principal ('Flood Warden') - Backup Flood Warden

Task	Description	Responsibility
WATCH AND ACT LEVEL (FLOODING IS OCCURRING UPSTREAM AND FLOODING IN SCHOOL LOCAL AREA IS LIKELY) Conditions are changing and you need to start taking action now.		
Monitoring flood alerts and warnings	Upon issue of a 'When a Prepare to Evacuate - Watch and Act' is issued by SES, you should prepare to evacuate. Monitor notification systems in 'ADVICE LEVEL' table above. Closure and evacuation of Wardell Public School is recommended when the river height at Coraki river gauge is forecast to exceed Minor level or approach Moderate level. <i>It is important to understand that the first Flood Warning issued by the BOM may refer to Major flood level being reached (and not refer to Minor or Moderate level).</i> Flood heights that exceed the Moderate flood level at the Coraki river height gauge will soon commence to inundate roads at Broadwater.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Communication with school community	The school is to relay the SES notification to the school community. Keep school community up to date as to changing rainfall and flood conditions. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) of the flood event and SES 'Watch and Act' notification.	- School Principal ('Flood Warden') - Backup Flood Warden
Plan for evacuation	Contact bus company for potential evacuation of school. School community to be ready for potential evacuation notice from SES in the event that flooding is predicted to impact the lower Richmond River. Determine where Evacuation Centres are located for information of student families. Follow instructions from Emergency Services. Consider closing the school early and evacuate school prior to roads being flooded.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Prepare school grounds for flooding	Move all ground level assets to upper access walkways if possible. Rubbish – Remove rubbish and recycle bins to upper access walkways if possible.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Electricity supply	Electricity utility provider will power down the local power grid if river levels are predicted to inundate low lying dwellings.	Electricity utility provider

E.3 Procedures during floods (Flood response)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers.

The following phases of activation for response to a flood event have been adopted according to the levels used by the SES (Australian Warning System).

Table E - 3 Procedures during floods (Flood response)

Task	Description	Responsibility
EMERGENCY WARNING LEVEL (FLOODING IN SCHOOL LOCAL AREA IS IMMINENT) You may be in danger and need to take action immediately.		
Monitoring flood alerts and warnings	Upon issue of a 'Evacuate Now - Emergency Warning' by SES, you should prepare to evacuate. The school is to relay the notification to the school community. Monitor notification systems in 'ADVICE LEVEL' table above.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Close school and evacuate Communication with school community	Contact bus company for evacuation of school. Contact parents and citizens to collect children immediately. Undertake role call to check all students have evacuated. Determine where Evacuation Centres are located for information of student families. Follow instructions from Emergency Services. Notify other school Principals in the area (Empire Vale Public School, Wardell Public School, Cabbage Tree Public School) that the school is closing and SES 'Evacuate Now - Emergency Warning' 'Watch and Act' notification.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden

E.4 Procedures after floods (Flood recovery)

The following tasks are recommended for the School Principal ('Flood Warden'), Backup Flood Warden, school administration staff, P&C committee members, and teachers.

Table E - 4 Procedures after floods (Flood recovery)

Task	Description	Responsibility
'ADVICE LEVEL' notification by SES (REDUCED THREAT: RETURN WITH CAUTION – ADVICE) When it is safe for residents and businesses to return to a flood affected area.		
Monitoring flood alerts and warnings	Upon issue of a 'Reduced Threat: Return with Caution – Advice' by SES when it is safe for residents and businesses to return to a flood affected area. Monitor notification systems in 'ADVICE LEVEL' table above.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Inspect school grounds	Contact structural engineer to inspect and confirm the structural stability of school buildings before entering. Contact qualified electrician to check power points, electrical equipment, appliances, or electrical hot water systems for damage. They must be repaired and tested before use. Contact plumber to inspect onsite sewage system if present.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Clean up school grounds	Arrange cleaning contractor to undertake wash down of undercrofts. Arrange desilting of drainage and pits, remove silt from undercrofts. Wear suitable protective clothing, including boots and gloves, when cleaning up.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Communication with school community	Regularly advise school community on progress of restoration of school and when school will reopen.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Contact trades companies and equipment suppliers	Contact trades companies and equipment suppliers to ascertain their availability in the few weeks, for potential flood recovery services at the school.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Contact structural engineer	Contact structural engineer to arrange inspection of building undercroft slabs, columns, fencing upon flood waters receding and roads being reopened.	- School Principal ('Flood Warden') - Backup Flood Warden - Assistant to Flood Warden
Review and update FERP	Review and update the FERP.	School Principal ('Flood Warden')