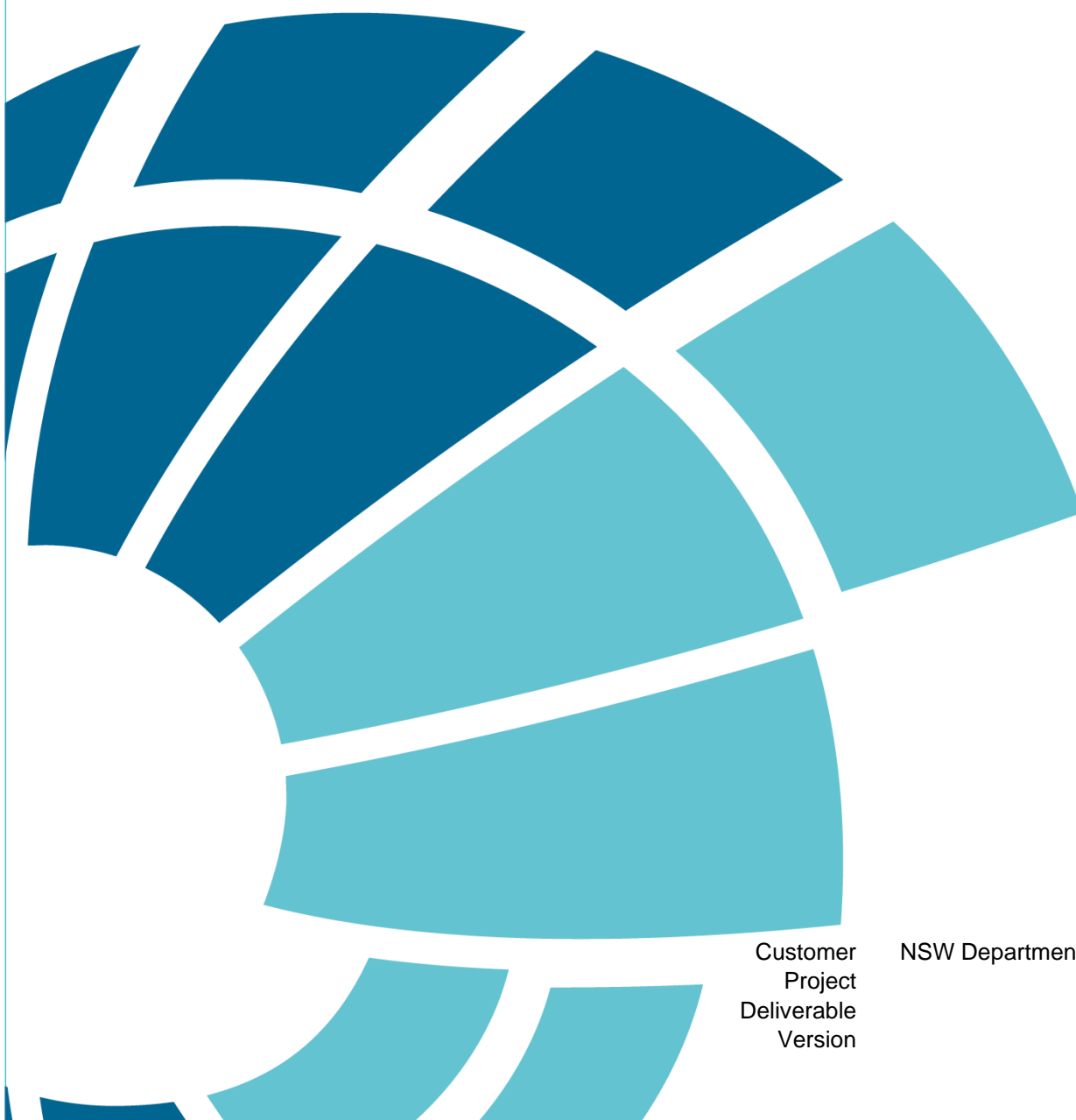


Lennox Head Public School Flood Emergency Response Plan



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1 Introduction

1.1 Project Description

This Flood Emergency Response Plan (FERP) has been prepared by BMT on behalf of the NSW Department of Education (the Applicant) to assess the potential environmental impacts that could arise from the new school development at Montwood Drive, Lennox Head; Lot 5 DP1239938 (the Site). This report has been prepared to identify and address the flood emergency management requirements for the proposed school.

This report accompanies a Review of Environmental Factors (REF) that seeks approval for the construction and operation of a new primary school at the site, which involves the following works:

- Construction of a new school building, including learning hubs and an administration and library building.
- Construction of a multi-purpose hall.
- Construction and operation of a preschool.
- Construction of car parking, waste storage and loading area.
- Associated site landscaping and open space improvements.
- Associated off-site infrastructure works to support the school, including (but not limited) services, driveways and pedestrian crossings.

For a detailed project description, refer to the Review of Environmental Factors (REF) prepared by EPM Projects.

1.2 Site Description

The Site is located on the corner of Montwood Drive and Snapper Drive with a 170m road frontage to Montwood Drive (western boundary) and 260m road frontage to Snapper Drive (northern boundary). The Site comprises a single allotment, legally described as Lot 5 in deposited plan (DP) 1239938 with an approximate site area of 4.17ha. The Site is approximately 2.5km north of Ballina Airport and 4.5km north of Ballina town centre.



Figure 1.1 Aerial of the Site (NSW Planning Portal Spatial Viewer)

1.3 Assessment Overview

The assessment has considered predicted flood risk from both regional (North Creek, a tributary of the Richmond River) and local catchment flooding based on the following data sources:

- A desktop assessment of regional flood characteristics from the Ballina Flood Study Update (BMT, In Draft 2024), herein sometimes referred to as the Draft 2024 Ballina Flood Study; and
- Outputs from the Lennox High School Flood Risk and Impact Assessment (BMT, 2025) and hydraulic model (herein the 'BMT Overland Study').

The Site is subject to regional backwater flooding from North Creek in rare and extreme flood events, with flood depths and extent of inundation increasing in magnitude up to the Probable Maximum Flood (PMF). In such events, the Site is subjected to high flood depths and hazardous flood conditions for which flood emergency management is required. Local overland flooding resulting from extreme rainfall events is also considered.

This report outlines the proposed strategy for flood emergency management at the Site, with consideration of North Creek flooding, local overland flooding, the proposed development, and relevant local and state government policies and guidelines including the *Flood Risk Management Manual* (NSW DCCEEW, 2024), the *Flood Risk Management Guideline EM01: Support for Emergency Management Planning* (NSW DCCEEW, 2024) and the *Shelter-in-Place Guideline for Flash Flooding* (DPHI, 2025). The report describes the requirements for the proposed buildings that form part of the development such as required finished floor levels (FFL), as well as requirements for flood emergency management

including evacuation procedures, warning systems, signage, and responsibilities of building wardens in case of a flood emergency during school operational phase.

The principal flood emergency management strategy proposed herein is the non-attendance (i.e closure) of the school prior to flooding based on the issue of a flood warning by BoM or the SES or emergency storm warning. In the event that this does not happen, and the school is in operation when a flood warning is issued, the recommended secondary emergency management strategy is off-site evacuation in response to the triggers specified in this FERP.

Once the proposed development is completed, a concise Operational Flood Emergency Response Plan (OFERP) is recommended to be developed by the school in consultation of SES based on this FERP.

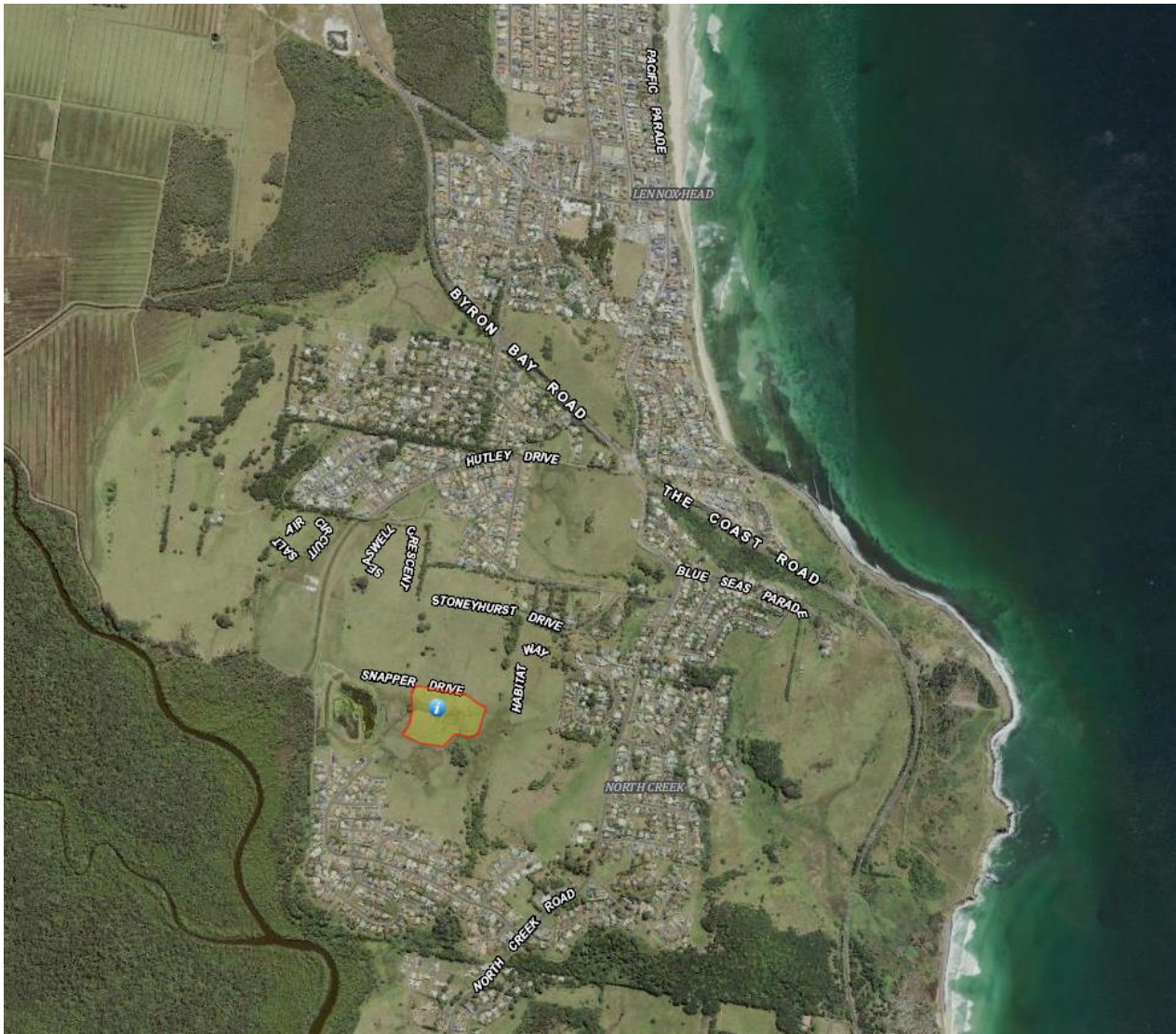


Figure 1.2 Site Locality (Source NSW SIX Maps)

2 Description of Proposed Development and Site Flood Behaviour

2.1 Proposed Development Summary

The proposed development is the construction of a new school campus, including the followings, on the Site.

- Construction of a new school building, including learning hubs and an administration and library building (Building A).
- Construction of a multi-purpose hall (Building C).
- Construction and operation of a preschool (Building C).
- Construction of car parking, waste storage and loading area.
- Associated site landscaping and open space improvements.
- Associated off-site infrastructure works to support the school, including (but not limited) services, driveways and pedestrian crossings.

The layout of the new proposed school campus is shown on Figure 2.1.

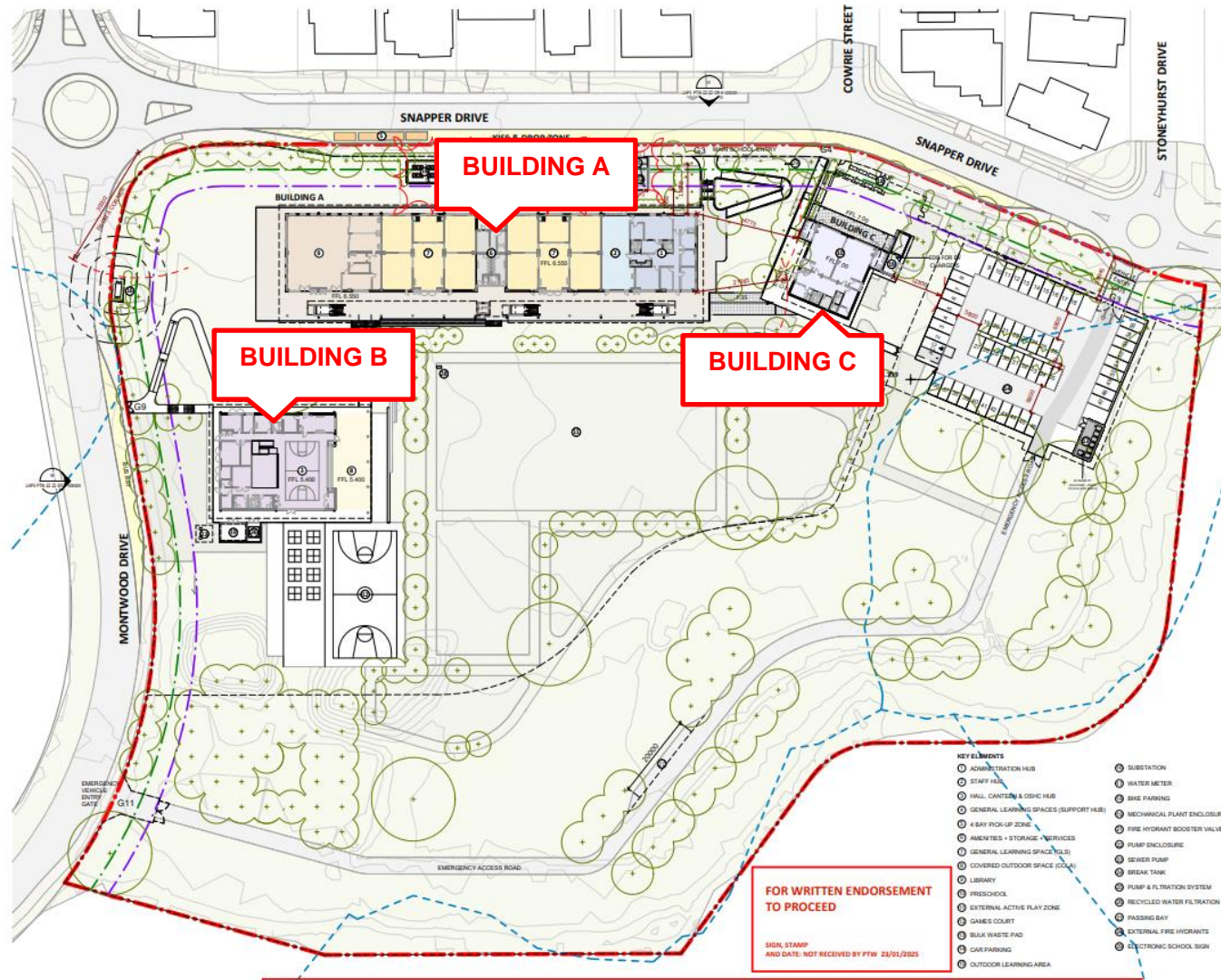


Figure 2.1 Ground Floor Site Plan (PTW Architects, 2025)

REFERENCE: Drawing Number LHPS-PTW-ZZ-GF-DR-A-020001 Rev 06-DR-A-020001 Rev 02, Project PA030574, PTW Architects)

2.2 Proposed Access Arrangement

2.2.1 Snapper Drive and Montwood Drive (Local Roads)

Snapper Drive and Montwood Drive are orientated in an east-west and north-south direction respectively and provide local road access to the school. Montwood Drive is orientated in a north-south direction. Snapper Drive and Montwood Drive meet at the north-west corner of the Site. Montwood Drive continues north to a roundabout that connects to Stoneyhurst Drive. Stoneyhurst Drive connects to North Creek Road via Henderson Lane to the north-east of the Site. North Creek Road is a main road in the vicinity of the Site which, via a roundabout, connects to Byron Bay Road to the north and to the Coast Road to the south.

2.2.2 Byron Bay Road and Coast Road (Regional Road)

Byron Bay Road and Coast Road are regional roads oriented in a north-south direction along the coast line. Byron Bay Road acts as a connector between Lennox Head and Byron Bay in the north. Coast Road acts as a connector between Lennox Head and Ballina in the south.

2.2.3 Pacific Highway (State Road)

The Pacific Highway is orientated in a north-south direction and acts as a major connector between towns located along the east coast. Coastal towns have access to Pacific Highway through local or regional east-west oriented roads. Ross Lane is one of those local connectors that connects Byron Bay Road to the Pacific Highway. Ross Lane is positioned 2.5 km north of the roundabout abovementioned.

2.3 Flood Behaviour

2.3.1 Regional Flooding

The results of the Draft 2024 Ballina Flood Study indicate that the southern portion of the Site will be affected by backwatering from North Creek from at least the 1 in 20 AEP (5% AEP) event, scaling with event rarity up to the PMF. Peak regional flood levels at the Site are summarised in Table 2.1 below.

Table 2.1 Peak Flood Level at Site predicted by Existing Study

Flood Event	Peak Flood Level (m AHD)
1 in 20 (5% AEP)	2.2
1 in 100 (1%) AEP	2.5
1 in 500 (0.2%) AEP	2.6
PMF	5.4

A comparison of the predicted maximum peak PMF level on Site of 5.4 mAHD against proposed finished floor levels (FFL) for the development (see Figure 2.1) is included in Table 2.2 below.

Table 2.2 Comparison of Proposed Building FFLs with PMF

Proposed Building	Proposed Building FFL (mAHD)	Commentary
Building A	6.55	Building would be elevated over one metre above regional PMF
Building B	5.4	Building would be elevated at or just above regional PMF
Building C	7	Building would be elevated over one metre above regional PMF
Carpark	5.739 (lowest point)	Carpark would be elevated above regional PMF

The proposed development works are not expected to intersect with the predicted regional flood extent for any event up to and including the 1 in 500 AEP event under existing or future climate change conditions. However, lower lying areas along the Site's southern boundary (adjacent to the tributary of North Creek), Montwood Drive and the neighbouring lot to the west of the Site would all be expected to be inundated by deep floodwaters.

The PMF extent in the vicinity of the Site has been extracted from the Draft 2024 Ballina Flood Study and is shown in Figure 2.2. As shown in the Figure, the regional flooding extent will inundate the majority of the Site to the south and cause complete inundation of Montwood Drive south of Snapper Drive. However, the northern portion of the Site – including Buildings A and C – Snapper Drive, Montwood Drive north of Snapper Drive and Stoneyhurst Drive are not predicted to be inundated, providing both potential flood-free locations on Site and rising road access away from the Site.



Figure 2.2 Regional PMF Extent at Site (BMT, In Draft 2024)

Peak PMF flood hazards in the southern portion of the Site vary with Site terrain, but peak flood hazards of up to:

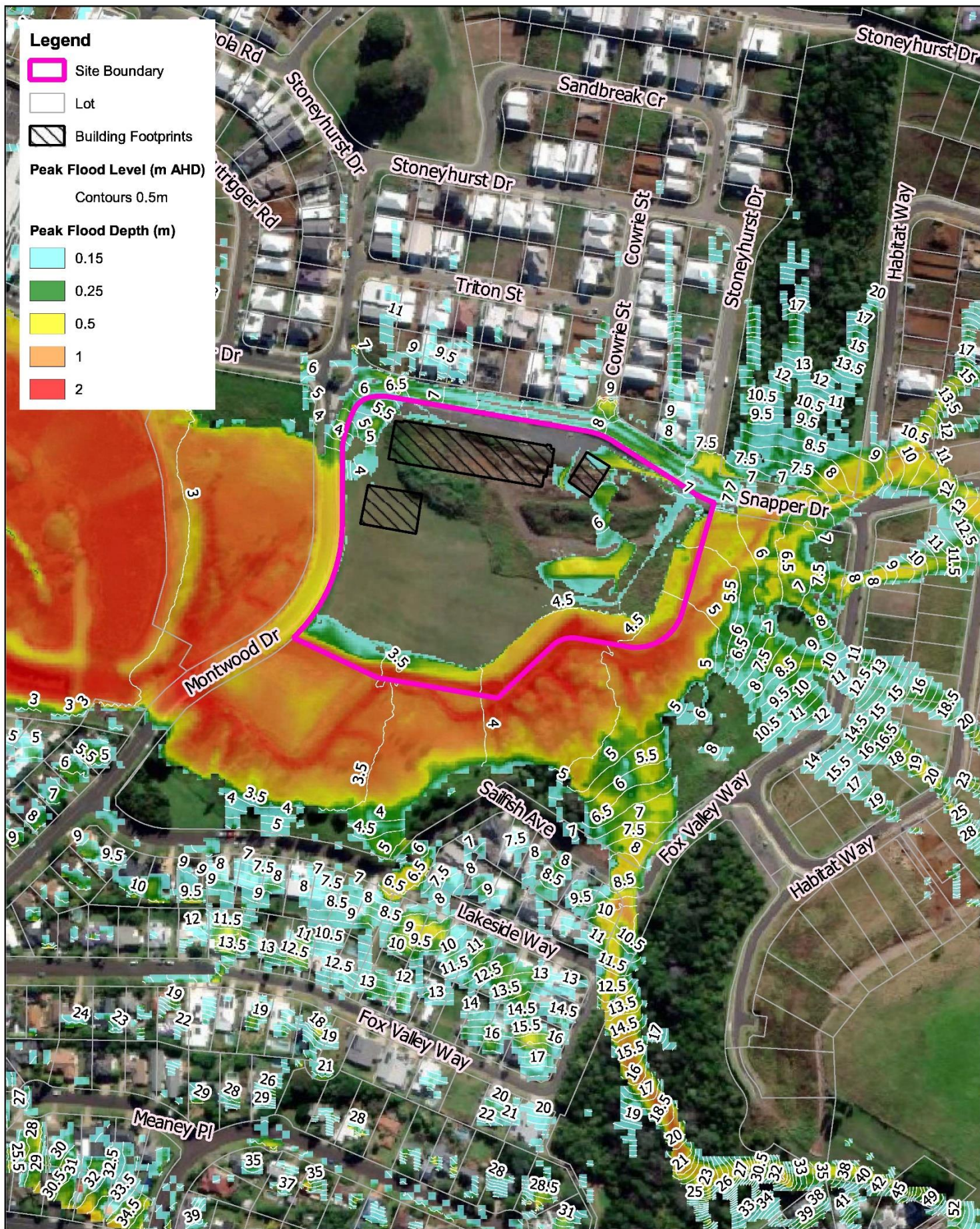
- An H5 classification (considered unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure) would be present along southern Montwood Drive and the watercourse to the South of the Site; and
- An H4 classification (considered unsafe for vehicles and people) would be present in the southern portion of the Site including the area surrounding Building B.

It is noted that while the finished floor level of Building B would place occupants above the peak PMF level, the area surrounding the building would still be subject to deep floodwaters in a PMF event.

Potential egress route (Section 3.2.2) from the Site via southern Montwood Drive will be cut by North Creek backwaters from the 1 in 100 AEP or 1% AEP event. However egress from the Site via Snapper Drive is not expected to be affected by riverine flooding for any event up to and including the PMF. As potential road evacuation routes are available from the Site after it is inundated, the Site is classified as having Rising Road Access (RRA). Further discussion of evacuation routes is included within this FERP.

2.3.2 Overland Flooding

Existing flood conditions at the Site were determined as part of the BMT Overland Study for the PMF event. The Site grades significantly from elevated areas in the north-east to low lying areas along the tributary of North Creek in the south-east. As a result, flood depths and high flow areas are concentrated along the southern boundary and within the existing on-site pond. Minimal flood affectation is predicted within the proposed development footprint. Post-development local catchment PMF flood conditions are shown in Figure 2.3.



Title:

Peak Flood Depths and Levels - Post-Development Conditions - PMF Event

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

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Peak flood levels applicable to this assessment are provided in Table 2.3. It is noted that Buildings A and B are subject to peak depths below 0.1 m in the PMF event and would be elevated at least 0.3m above the peak PMF level. Building C would be subject to slightly higher flood depths (up to 0.15 m) at its northern entryway in the PMF, which would result in minor overtopping of the north of the building in that event. The BMT Overland Study conservatively excludes the on-site stormwater drainage system, and it is likely that predicted flood levels on Site would be lower if on-site runoff were captured.

Table 2.3 Local Overland PMF Level

Building	Proposed FFL (mAHD)	Peak Post-Development PMF Level (mAHD)
A	6.55	6.2
B	5.4	4.6
C	7.0	7.1

Analysis of Overland Flood Warning Time and Rate of Rise

Runoff would occur rapidly following the onset of rainfall in a local catchment PMF event, and there would not be enough time provided for the school to evacuate. The majority of the Site is flood-free for all local catchment flooding, and the proposed Buildings A and B would be elevated well above the peak local catchment PMF flood level. Minor overfloor flooding could occur at the north of Building C during a PMF (noting that the modelling conservatively does not include local stormwater drainage), but it is noted that flood-free access would be available from Building C to Building A – via Snapper Drive – in the PMF if egress were considered necessary.

Given the extreme nature and the low flood affectation of the event, following the onset of rainfall in a local catchment PMF students and staff in lower lying reaches of the Site should swiftly make their way north and seek shelter inside Buildings A, B or C until rainfall ceases or directed by the SES. It is noted that a PMF event is likely to be preceded by the issue of several very dangerous thunderstorm warnings; and if multiple warnings are issued prior to school commencement, closure of the school should be considered in line with the overall emergency management strategy for the Site. Given the majority of the developed portion of the Site will only be affected by shallow overland flows (predominantly below 0.1 m but up to 0.2 m) during a local PMF event, the finished floor levels at all 3 buildings and the short duration of inundation, flooding associated with local overland flooding at the proposed development is considered to be low risk and further consideration of overland flooding is not included in this FERP.

3 Consideration of Emergency Management

3.1 Existing Locality Response Arrangement

Regional flood emergency response for the Ballina LGA is outlined in the *Ballina Shire Local Flood Emergency Sub Plan* (herein 'the Ballina LFESP') (NSW SES, 2023). According to the Ballina LFESP Lennox Head is part of East Ballina Sector, and the proposed school falls within the Lennox Head A subsector. The East Ballina sector has Rising Road Access to the North and East. The flood warning gauge for the East Ballina Sector is listed as Byrnes Point (AWRC Number 203461) although it is noted that the gauge does not have flood classifications (minor, moderate, major) assigned, and that there is no key warning gauge in this sector. It is suggested instead that upstream gauges may be used to give an indication of flood severity.

As identified in the Ballina LFESP, the emergency management strategy for the East Ballina sector is evacuation of the at-risk population, and closure of evacuation routes is one of the key risks. Flood warnings and information for the East Ballina sector are provided through a range of notices, including Flood Watch (BoM), Flood Warnings (BoM), Australian Warning System (AWS) Advice, AWS Watch and Act, AWS Emergency Warning, sequenced door knocking of evacuation sector, media announcements (including social media), emergency alerts (SMS, landlines) and Standard Emergency Warning Signal. Specific property protection measures relevant to this FERP include monitoring rising flood waters.

Evacuation and/or isolation triggers at a sector-wide scale include closure of the main evacuation routes prior to inundation and property inundation. Evacuation may be considered when a 2% AEP event is predicted in the Ballina Sector or where inundation of low-lying parts of the Lennox Head A subsector may occur. This may be equivalent to levels between approximately 2.6m – 2.8m RRVD¹ (1.7 – 1.9 mAHD) at the Byrnes Point Gauge. Flood levels/inundation in Ballina Nature Reserve and North Creek will have significant impact on inundation in the East Ballina sector.

The nominated evacuation route for the Lennox Head A subsector is identified as Hutley Drive towards the Coast Road, and then Ballina Street to Lennox Head Community Centre. There is a low point in the vicinity of the intersection of Snapper and Hutley Drive with a low point of approximately 1.2 mAHD identified as being at risk of overtopping in certain flood events. It is noted that other local roads can be taken to the Coast Road (see Figure 3.1). The method of evacuation applicable to properties within the Lennox Head A subsector is primarily self-evacuation by private transport to the evacuation centre/assembly area at the Lennox Head Community Centre - 1 Mackney Lane, Lennox Head.

3.2 Consideration of Available Best Practice Response Strategies

3.2.1 Monitoring of Rising Water Level Considerations

Observation of Rising Water Level in the Wider Richmond Catchment

Since there is no gauge on North Creek upstream of the Site and regional North Creek flooding occurs as a result of backwater flooding from the Richmond River, the Woodburn Gauge² is nominated to monitor rising water level in the wider Richmond catchment. The Woodburn gauge is the nearest gauge (on the Richmond River) to the Site. The gauge is located approximately 42 km upstream of the confluence between the Richmond River and North Creek to the south-west of the Site. The Woodburn gauge is used by BoM to provide flood warnings and the SES to provide local flood advice (the SES also hold a Flood Intelligence Card for the gauge): and while it is noted that the gauge is not reflective of flooding at the Site, thus it is considered an appropriate means of monitoring flood affectation in the

¹ mAHD can be obtained by $RRVD - 0.857 = mAHD$

² BoM number 58061, AWRC number 203412

wider Richmond River catchment and the potential for backwater flooding as a result. The Woodburn gauge classifies minor, moderate and major flooding at 3.2 mAHD, 3.7 mAHD and 4.2 mAHD respectively. The gauge has a target warning lead time of 12 hours for minor floods (3.2 mAHD water level) at the gauge (BoM, 2024).

Observation of Rising Water Level in the Vicinity of the Site

While monitoring rising water in the wider Richmond catchment (see above and Section 4.2.1) is required to be informed of possible regional flood events, being informed of rising water in the vicinity of the Site is needed to take action in response to a flood event. Following a forecasted or recorded water level of 4.2 m AHD at the Woodburn Gauge (major flooding), the water level in the vicinity of the Site must be constantly monitored.

Monitoring of the water level in the vicinity of the Site can be carried out in a variety of ways. This could include the installation of a camera in the southern portion of the Site to monitor overtopping of Montwood Drive (thus allowing the chief flood warning or their nominate delegates 24 hour off-site monitor access), or it could be achieved through the installation of a local telemetry system or staff gauge at the Site.

Given regional flooding of the Site is not expected to occur until an event exceeding the 1 in 100 AEP event (and the presence of rising road access and flood-free areas north of the Site), the installation of a staff gauge is considered appropriate as a preliminary observative device. The gauge should be installed in low lying areas of the Site adjacent to the southern boundary. A preliminary trigger levels of 2.6 mAHD (a flood equivalent to the 1 in 500 AEP event) is nominated for closure of the school and evacuation of the Site.

It is noted that a 2.6 mAHD trigger level, while likely coinciding with some overtopping of Montwood Drive and inundation of the lower reaches of the Site, would be several metres below, and not a direct risk to, the proposed development. However, given the potentially vulnerable populations at the school and the rarity of the event, it is considered an appropriate initial trigger for evacuation/closure. Trigger levels should be confirmed as part of the OFERP.

It is noted that the Richmond River PMF has a critical duration of 120 hours, and that the associated rate of rise at the Site would therefore be several hours (if not days) at a minimum. This is considered an appropriate timeframe for observation of flooding at the Site (even in the unlikely absence of flood warnings and forecasts from the SES/BoM).

3.2.2 Off-Site Evacuation Considerations

Consideration has been given to Site access constraints and opportunities to inform the evacuation strategy for the school during operational hours. Given the potential risks of a delayed site evacuation – waiting for parent pick-up, or parent non-availability during the school day – it is recommended that the school population is evacuated by bus to a nominated emergency shelter location prior to inundation of the egress route. Further details can be confirmed in the preparation of a final OFERP.

The proposed assembly point for evacuation via both bus and parent pick-up is on Snapper Drive at the main school entry. As nominated by the Ballina LFESP, the Lennox Head Community Centre at 1 Mackney Lane, Lennox Head is proposed as the evacuation centre.

Figure 3.1 shows the proposed evacuation route for transfer of evacuees from the school to the proposed evacuation centre (i.e. Lennox Head Community Centre). The evacuation route is proposed via Snapper Drive/Montwood Drive onto Stoneyhurst Drive north, before connecting east onto North

Creek Road, Ballina Street and Park Lane access Mackney Lane and the Lennox Head Community Centre.

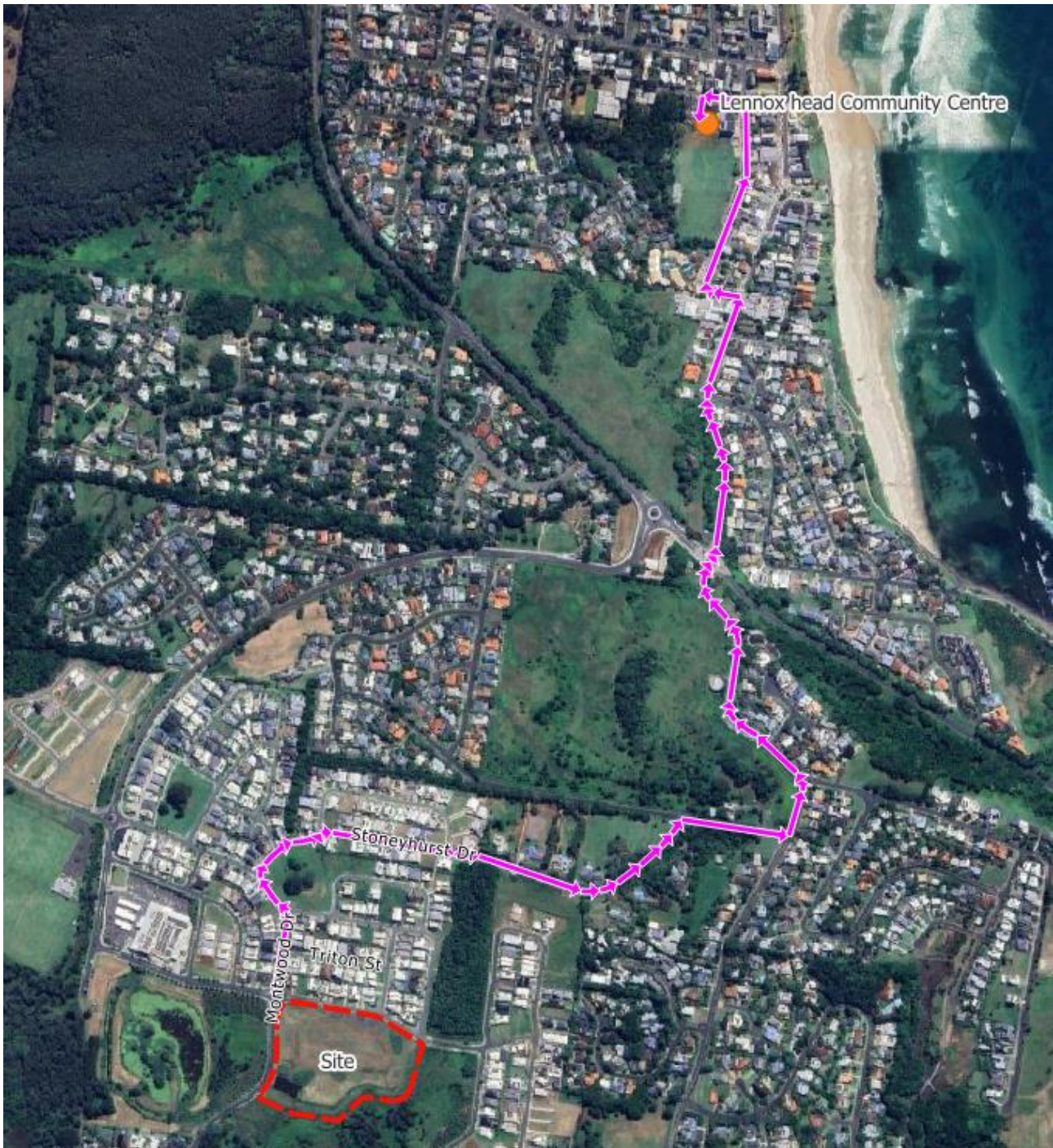


Figure 3.1 Proposed Off-Site Evacuation Route

3.2.3 Shelter-in-Place Considerations

The Shelter-in-Place Guideline for Flash Flooding (DPHI, 2025) has been recently finalised and released by the NSW Department of Housing and Planning. The guideline aims to assist consent authorities to undertake site specific, risk-based assessment to assess if shelter-in-place (SIP) is a suitable emergency management strategy for development in flash flood environments.

According to the SIP Guideline, SIP is considered appropriate when:

- *SIP aligns with existing emergency management strategy for the area.*
- *Off-site evacuation has been investigated and determined to be unachievable.*
- *If the development includes medical centres, emergency service and community facilities, and sensitive and hazardous land uses, some of which may not be suitable for SIP.*
- *There is no existing government developed flood warning systems that give advanced detailed forecasts of flash flooding to allow sufficient time to evacuate to the proposed refuge locations.*
- *Flash flooding is the only flood risk present at the Site.*
- *Flooding occurs within less than 6 hours from the commencement of causative rain, and the duration of SIP due to isolation by floodwaters is less than 12 hours from the commencement of rainfall.*
- *The development is not subject to high hazard flooding (floodways, high hazard H5 and H6 area) or surrounding roadways are not subject to high hazard flooding.*

As off-site evacuation is considered a feasible emergency management response, and given the regional flooding at the Site, a shelter-in-place approach to emergency management has not been considered.

4 Flood Emergency Response Procedure

This section describes some of the specific actions to be undertaken in anticipation of a flood event, as well as actions recommended during and after a flood event.

4.1 Overview

Given the slow moving, regional backwatering flooding at the Site, observations of flood behaviour in the wider Richmond River and vicinity of the Site should inform the emergency management response, including:

- Observation of floodwaters downstream (west) of the Site and on lower Montwood Drive
- Flooding at the Woodburn Gauge
- Flooding in the wider Richmond River/Ballina catchment.

The following procedures are proposed as part of the FERP.

Principal Emergency Management Strategy

- Closure of the school during non-operational hours in response to:
 - A recorded flood level of 2.6 mAHD at the Site; and/or
 - Issue of severe thunderstorm or emergency storm warnings for the Ballina LGA in consultation with the SES.

It is noted that School closure is in line with current Department of Education practice, which is to advise parents of possible flooding events the day before or morning prior to commencement of the school, if they occur and suggest that students be kept at home.

Secondary Emergency Management Strategy

- Closure of the school during operational hours and evacuation of occupants to the Lennox Head Community Centre in response to:
 - A recorded flood level of 2.6 mAHD at the Site; and/or
 - Issue of severe thunderstorm or emergency storm warnings for the Ballina LGA in consultation with the SES.

4.2 Emergency Warning System Overview

Warning in case of a flood event is required to alert wardens (Section 4.3) and other people on-site that an extreme flood event may be imminent. Flood levels can rise rapidly, and it is necessary to ensure that sufficient warning time is given so that personnel could implement strategies as described in this FERP. The flood warning system for the Site is proposed to include the following:

- BoM and SES Existing Flood Warning;
- BoM and SES Rainfall and Dangerous Thunderstorm Forecast; and
- Rising water level observation in the vicinity of the Site.

4.2.1 BoM's Existing Flood Warning System

Flood warning information such as water levels can be accessed via the BoM webpage as per the following link:

- Flood Warning: <http://www.bom.gov.au/nsw/warnings/>

The BoM's Flood Warning System should provide effective flood warning to facilitate safe evacuation. BoM provides flood forecasting and warning services based on a number of rainfall and stream level gauges scattered throughout the catchment. The nearest flood forecasting location to the Site is the Woodburn Gauge at Woodburn as discussed in this FERP.

4.2.2 BoM's Rainfall Forecast System

Rainfall forecast information can be accessed via the BoM webpage as per the following links:

- Rainfall Forecast: [New South Wales Forecasts \(bom.gov.au\)](http://www.bom.gov.au/newswales/forecasts/)
- BoM's Rainfall Radar: <http://www.bom.gov.au/australia/radar/>
- Rainfall Gauge Totals: [New South Wales Rainfall and River Conditions \(bom.gov.au\)](http://www.bom.gov.au/newswales/conditions/)
- MetEye: <http://www.bom.gov.au/australia/meteye/>

4.2.3 On-Site Water Level Warning System

A monitoring system is proposed to be installed on Site to observe water levels in the south-west corner of the Site and on Montwood Drive. A staff gauge is preliminarily recommended, although a camera system and telemetric water level gauge may also be appropriate. The Chief Flood Warden (Section 4.3) will be responsible for observations at the gauge.

4.2.4 Flood Warning Communication

It is understood an SES Watch and Act order will be provided to the Department of Education Liaison Officer by the Incident Controller at SES when floodwaters at a relevant flood gauge reach a pre-determined flood level.

The Watch and Act order will consist of the following actions:

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

It is understood that the Department of Education Liaison Officer contacts the school personnel as described in Section 4.3 as soon as the SES Watch and Act order is received.

It is also noted that SES warnings are announced on their website: <https://www.ses.nsw.gov.au/>

4.3 Flood Response Personnel

Positions and responsibilities will need to be assigned to on-Site personnel for managing the flood response. A chief or head flood warden will need to be nominated to observe flood warnings and

severe thunderstorm warnings in the wider Richmond catchment, monitor rising water level in the vicinity of the Site and manage the evacuation of the Site if/when needed as described in this FERP. Individual building and open spaces wardens (herein ‘the wardens’) will also need to be nominated for each of the buildings on Site.

Individual wardens can be granted access to information about water level in the vicinity of the Site, but should not make decisions based on the information and instead wait to be instructed by the chief warden. The wardens’ responsibilities shall include evacuation of students, staff and any visitors if/when needed as described in this FERP. Contact details of the head warden and all individual building wardens shall be presented in an OFERP to facilitate contact with the SES. The OFERP is to be prepared by the school operator to formalise Richmond River flood warnings observation, on-site rising water level monitoring, flood evacuation planning and strategy with respect to flood intelligence, the flood behaviour presented in this FERP, and relevant procedures. The OFERP will be expected to build on the strategy and intent presented in this FERP.

During an off-site evacuation, the wardens will be identified by wearing reflective safety vests and coloured hard hats so that visitors to the site will be able to recognise the wardens with ease. The wardens’ responsibilities may involve checking classrooms, vehicles and other spaces to ensure there are no personnel remaining, before directing all parties towards the Site’s exits. Wardens will coordinate evacuation of students, staff and visitors from this point via private car and/or bus as appropriate. The wardens will need to be familiar with the details in the OFERP and will direct people to safety via the evacuation routes.

If the SES takes control of the Site, then they may override the provisions of the OFERP. Further coordination of the proposed OFERP will need to be undertaken with the SES. Regular drills will be required of the wardens to ensure flood/emergency awareness and preparedness of the wardens and employees.

Table 4.1 demonstrates flood response personnel positions and responsibilities proposed in this FERP.

Table 4.1 Flood Response Personnel Positions and Responsibilities

Position	Responsibilities
Director of the Campus	<p>Coordinate preparation of an OFERP implementing the recommendations of this report.</p> <p>Closure of the School if water level in south-west corner of the Site reaches 2.6 mAHD during non-working hours of the School OR a severe thunderstorm or emergency weather warning is issued (in consultation with SES).</p> <p>Closure and evacuation of the School if water level in south-west corner of the Site reaches 2.6 mAHD OR a severe thunderstorm or emergency weather warning is issued (in consultation with SES) during school hours.</p>
Chief/Head Flood Warden	<p>Monitor weather at 4pm daily for upcoming extreme rainfall events</p> <p>Observe flood warnings issued for the wider Richmond catchment and at Woodburn Guage</p> <p>Observe severe thunderstorm warnings issued for the area</p> <p>Monitor water level in Montwood Drive and low-lying area of the Site once a major flood is forecasted or recorded at Woodburn Gauge OR a severe thunderstorm warning is issued for the area.</p> <p>Liaise with Director of Campus to decide school closure or evacuation</p>

Position	Responsibilities
	Liaise with SES or Emergency Services personnel if they attend the Site Coordinate flood evacuation drills – preliminary suggestion of one on the first day of operation each year
Building Flood Wardens	Liaise with the Chief Flood Warden Monitor weather at 4pm daily for upcoming extreme rainfall events Coordinate Site evacuation Coordinate assistance for staff, students and visitors with mobility difficulties
First Aid Officers	Prepare and maintain Flood Emergency Kit Manage Individual Health Care Plans where applicable
Staff	Maintain calm and direct students and visitors through evacuation process.

4.4 Education

School management should educate all occupants to be aware of and adequately trained in emergency response procedures; and as such, advocate for the implementation of a training program (the FERP Training Program) to ensure all occupants receive appropriate training to enable them to act in accordance with this FERP. It is anticipated that the FERP Training Program will include all necessary training requirements to enact the FERP and will be reviewed and updated on a five-yearly basis or following implementation of the FERP in response to a flood event..

4.5 Flood Signage

It is recommended that flood warning signage be installed around the Site, particularly in low-lying area of the Site positioned along southern and western boundaries. An example sign is shown in Figure 4.1.



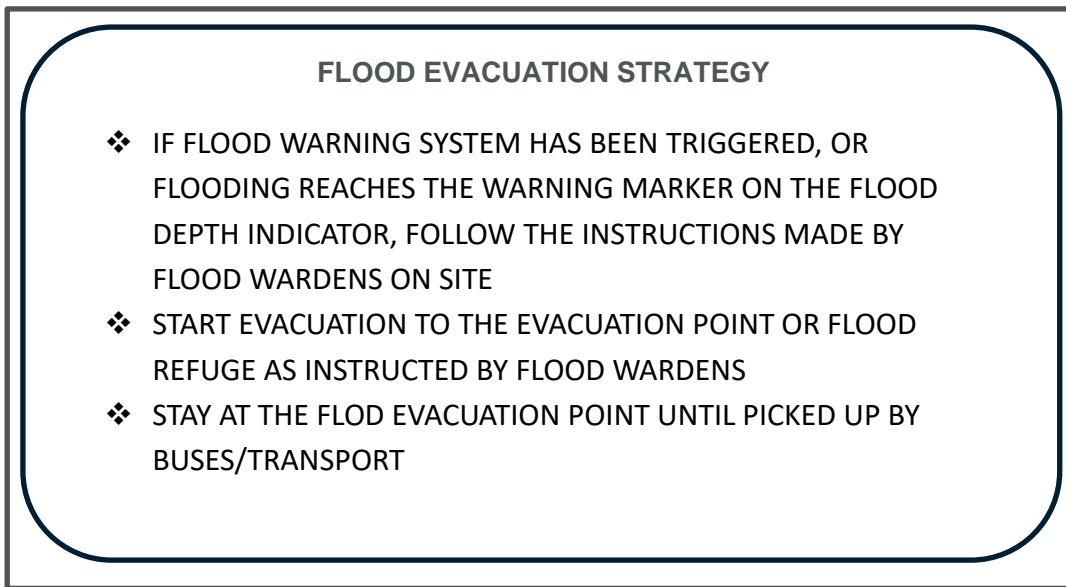
Figure 4.1 Example of a Flood Zone Sign (Source: nationalsafetysigns.com.au)

To accompany the flood warning system, the buildings should include appropriate signage indicating what actions are to be undertaken in the event of flooding. This should consist of instructions (including direction arrows) that can be interpreted if the flood wardens are not available.

The following signs are recommended:

- Flood depth indicators at visible locations such as low-lying areas of the Site along southern and western boundaries;
- Entry/exit points to stairwells; and
- Evacuation routes (refer drawings in Section 4.4.1).

An example of the typical signage that might be displayed at key points is given in Figure 4.6.



4.6 Before a flood

Outlined below are several flood safety actions to be followed by students, staff and visitors on Site in anticipation of a potential flooding event:

- Monitor Local ABC radio, Live Traffic NSW app, BoM Flood Warnings and BoM Rain and River Data for water levels, evacuation alerts and road closures. Prepare for a potential school closure. Closure of the school should occur when water level in south-west corner of the Site reaches 2.6 mAHd.
- In addition to monitor publicly available warnings, including flood warnings issued at Woodburn Gauge and severe thunderstorm warnings issue for the area. The Chief Warden is to monitor water level at the proposed on-site water level gauge.
- Review and be familiar with the applicable *SES Emergency Business Continuity Plan*.
- Ensure that the FERP and OFERP is up to date.
- Check (or prepare) the contents of the Emergency Flood Kit(s) and ensure that it is at the correct location.
- Identify the needs of vulnerable persons likely to be on-Site during the flood emergency.
- Inspect the property for hazardous substances, furniture, equipment and sensitive belongings, and relocate to another flood free area if possible.

- Check communication devices such as internet connections, mobile phone, landline phone or radio. If a device has become inoperable, identify a suitable alternative (such as a back-up device or using the device of someone else in the building).
- Communicate to all students, parents, staff, and visitors of the premises the requirements of the applicable *SES Emergency Business Continuity Plan*, location of the Emergency Flood Kit, and discuss the risk of flooding to the site, contact/communication methods, and actions to take before, during and after a flood event.
- Appropriately train people in key roles (such as chief warden) and appropriately train/drill students and staff in flood evacuation procedures.
- Ensure that any electrical equipment located below the PMF level is disconnected or isolated from the electricity and gas supplies.

4.7 During a Flood

‘During a Flood’ refers to the conditions where water level at south-west corner of the Site reaches or exceeds 2.6 mAHD or a severe thunderstorm or emergency weather warning is issued.

4.7.1 Priority 1: Non-attendance (i.e. Closure) of School

Non-attendance (i.e. Closure) of the school based on a recorded 2.6 mAHD water level in south-west corner of the Site or the issue of a severe thunderstorm or emergency weather warning (in consultation with the SES).

Parents and caregivers should be kept informed about potential flash flooding based on BoM’s forecast systems described above. School closure should be communicated with parents and staff to advise parents of possible flooding events the day before they occur and suggest that students be kept at home.

4.7.2 Priority 2: Evacuation

Off-Site Evacuation

If water level in south-west corner of the Site reaches 2.6 mAHD or the issue of a severe thunderstorm or emergency weather warning (in consultation with the SES) occurs during school hours, off-site evacuation should commence. Confirmation of evacuation arrangements – i.e. whether the school will allow parents to pick-up students or evacuate the students via bus to a nominated evacuation location – should be confirmed during detailed design or the development of the operational FERP, noting:

- Non-attendance is the priority emergency management response; and
- In the worst-case PMF event, the proposed egress from the Site via Snapper Drive onto Montwood Drive north is not expected to be affected by riverine flooding.

4.8 After a Flood

Outlined below are a few key flood safety measures to be followed by all occupants after a flood event has occurred:

- Check that electrical power and gas has been isolated to all flood affected areas of the building. If electrical systems or appliances (including items such as hot water systems) have become inundated, these should be inspected by a qualified electrician. Gas appliances and any gas bottles should also be inspected for safety before use.

- Check any flooded areas for safety hazards and structural stability. For example, items may have moved as a result of floodwater. Have flood sensors and alarm system professionally assessed to ensure they are still in working order following event.
- Review response performance during the flood. Identify any areas for improvement and update flood emergency response plan if required.

Further information is provided in the SES “*After a flood*” fact sheet.

5 Conclusion and Recommendations

This report outlines a flood emergency management strategy for the new Lennox Head Public School that has been developed with consideration of:

- The nature of flooding and flood hazard at the Site from regional Richmond River and North Creek flooding, and local (overland) flooding for design flood events up to and including the PMF;
- The proposed design and use of the Site; and
- Best practice guidance and documents for flood risk management in NSW.

Critical flood conditions at the Site are driven by backwater flooding from the Richmond River. Low-lying areas of the Site will be inundated by regional backwater flooding from the 1 in 20 (5%) AEP event, increasing with event rarity to the 1 in 500 (0.2%) AEP event. Substantial inundation is predicted in the PMF, with depths of up to 2.9 m in the south-west corner of the Site. However, it is noted that the northern portion of the Site (including Buildings A and C) is expected to be flood free for all regional flooding events and that finished floor levels for Buildings A, B and C are elevated above the regional PMF level. The Site also Rising Road Access in all the events up to and including PMF, and significant flood warning time is expected to be available given regional affectation at the Site.

The Principal Flood Emergency Response Strategy proposed is the closure of the School prior to commencement of operations in response to either:

- A flood level of 2.6 mAHD at the Site (equivalent to a 1 in 500 AEP event); OR
- The issue of a severe thunderstorm or emergency storm warning (in consultation with the SES).

In the event school operations have occurred prior to either of the above triggers, the Secondary Flood Emergency Response Strategy is evacuation of all Site occupants to the Lennox Head Community Centre north-east via a flood-free egress route; following Montwood Drive to the north, Stoneyhurst Drive to the east and then onto North Creek Road, Ballina Street and Park Lane all to the north to access Mackney Lane and the Lennox Head Community Centre.

The following considerations are to be made beyond this assessment:

- Confirmation with SES that the available warning time is sufficient for safe Site evacuation and the preferred evacuation modality (private cars, emergency buses, parent's pick-up etc.).
- Confirmation of the proposed evacuation route with SES.
- Periodic and scheduled review and revision of the FERP after it is finalised and implemented.
- Evacuation drills are recommended at least once per year.
- The FERP should be regularly exercised, reviewed, and updated to ensure wardens and staff are aware of the procedure and that it remains current and relevant and ensure consistency with the contemporary emergency management arrangements relevant to the area (i.e. the Ballina Shire Local Flood Sub Plan).
- Once the proposed activity is completed, an OFERP is recommended to be developed by the school in consultation of SES based on this FERP.

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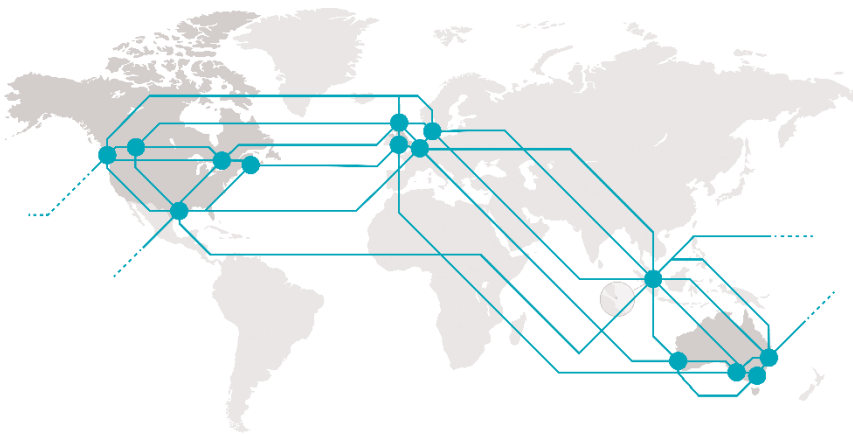
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