Business Flood Safe Plan

Lismore South Public School

Prepared to Support a Review of Environmental Factors (REF) for the Rebuild of Lismore South Public School (the activity)

Prepared for Department of Education / 20 Feb 2025

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Rev	Date	Prepared By	Approved By	Remarks
1	17/12/24	AV		Draft
2	20/02/25	AV		Final

Glossary and Abbreviations

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

Executive summary

The Business Flood Safe Plan ensures the safety of students, staff, and property at Lismore South Public School (LSPS) by identifying flood risks, outlining preventative measures, and establishing response strategies. Given the school's high-risk flood location, a proactive safety approach is essential.

The primary response strategy is early evacuation before the levee overtops, ensuring students and staff leave well before flood impacts. Shelter-in-place is discouraged and should only occur if evacuation is impossible due to blocked routes or unsafe conditions, in which case emergency services must be involved.

The school will close when the Bureau of Meteorology (BoM) issues a Flood Warning or the NSW SES issues an "Advice" alert for a 10% AEP or higher flood event. Flood modelling confirms that the site and nearby roads are impacted at these levels, justifying proactive closures. The evacuation route via Elliot Rd, Wilson St, and Ballina Rd to Southern Cross University provides a safe path if used promptly.

Evacuation drills will ensure that staff and students are prepared for quick and orderly departures. Flood warnings will be closely monitored through BoM, NSW SES, and early warning apps to provide timely alerts. Emergency supplies, including first aid kits, food, water, and communication tools, will be stored in safe, accessible locations. Infrastructure protection measures will include elevating critical equipment, using waterproof storage, and incorporating flood-resistant materials. Post-flood recovery efforts will focus on structural safety checks, hygiene protocols, and a gradual reopening process.

Regular updates to the plan, staff training, and community awareness initiatives will help maintain ongoing preparedness. A hybrid learning model may be implemented during school closures to minimize disruptions. This plan offers a clear and practical approach to flood safety and response, ensuring LSPS remains resilient and well-prepared for future flood events.

1.0 Introduction

This Business flood safe plan has been prepared to support a Review of Environmental Factors (REF) for the rebuild of Lismore South Public School (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by, or on, behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

The activity will be carried out at Lismore South Public School (LSPS) located at 69-79 Kyogle Street, South Lismore (the site).

The purpose of this report is to outline how the school will manage flood-related risks to safety, property, and critical operations, including fit-outs and goods. The plan ensures that the school activity, can maintain operations or recover as quickly as possible in the event of flooding, minimizing disruptions and protecting valuable assets. It covers essential actions for safeguarding personnel, infrastructure, and equipment, and provides clear guidance on how to manage operations during a flood, whether that involves evacuation, shelter-in-place procedures, or temporary suspension of business activities. By identifying potential flood risks and establishing clear protocols, the plan aims to enhance the business's resilience to flooding, mitigate potential damage, and ensure a swift and efficient recovery. Furthermore, it incorporates strategies for regular updates and training to keep staff prepared for any flood-related emergencies, ensuring that the business is continuously aligned with best practices in flood risk management.

2.0 Flood Impact and Risk Assessment

The Flood Impact and Risk Assessment (FIRA) for the proposed rebuild of Lismore South Public School in South Lismore evaluates the relevant development controls for the site. New site survey data and the proposed civil design, developed by the TTW Civil team, were integrated into the Council’s TUFLOW model to assess flood behaviour under both existing and proposed site conditions. Additionally, a revised modelling approach was implemented to enhance the depiction of elevated buildings on the site, considering various flood events, from the 10% AEP event to the PMF event, under both current and proposed conditions.

The flood modelling results show that the site experiences flooding in all flood scenarios, including the 10% AEP event. Table 1 provides the flood levels for the site in each flood scenario under post-development conditions, ranging from the 10% AEP event to the PMF event.

Table 1 – Flood Level at the LSPS site Obtained from Flood Modelling.

Flood Event	Flood Level at the Site (m AHD)
10% AEP	10.82 – 10.92
5% AEP	11.62 – 11.71
1% AEP	12.60 – 12.65
1% AEP + Climate Change	13.14 – 13.19
February 2022 Flood	14.42 – 14.45
0.2% AEP	13.11 – 13.16
PMF	16.72 – 16.77

Based on the latest available DCP (Revised Flood Prone Lands DCP - Post Exhibition [Clean]), the site is located in a high-risk flood precinct, as shown in Figure 1.

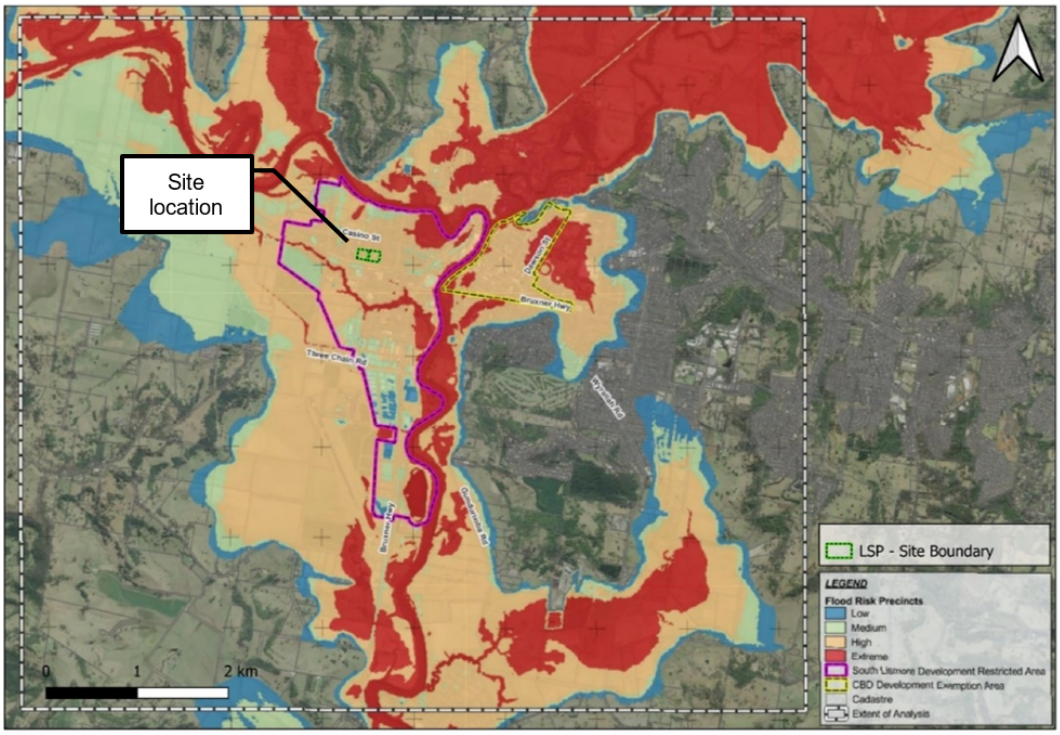

Figure 1- Lismore flood risk Precincts (Sources: Revised Flood Prone Lands DCP - Post Exhibition [Clean]),)

It's important to note that the February 2022 +500 mm freeboard is used as the flood planning level, and the site is completely impacted even during the 10% AEP event.

3.0 Flood Emergency Response plan

TTW has been engaged by the Department of Education to develop a Flood Emergency Response Plan (FERP) for this site. The FERP outlines the flood risks, identifies preventative measures to mitigate these risks, and provides a detailed action plan for preparedness and response before and during a flood event.

3.1 Flood Response Strategy

The preferred response strategy is early evacuation before the levee overtops, ensuring that students and staff leave well in advance of flood impacts. Sheltering in place is strongly discouraged and should only be considered as a last resort if evacuation is not possible, such as when routes are blocked, road conditions are unsafe, or there is insufficient time for a safe departure. In such cases, emergency services must be involved to provide support.

3.2 School Closure Triggers

To minimize risk and prevent exposure to rising floodwaters, the school will close when the Bureau of Meteorology (BoM) issues a Flood Warning or when the NSW SES issues an "Advice" alert for a 10% AEP or higher flood event. Flood modelling confirms that the site and surrounding roads are impacted during a 10% AEP or more severe storm, reinforcing the need for proactive closures. Where feasible, the school may transition to online learning to minimize disruptions.

3.3 Evacuation and Preparedness Measures

The flood response triggers, including school closure and evacuation timing, will be refined in collaboration with the NSW SES to align with current flood warning systems and regional flood risk assessments. The designated evacuation route via Elliot Rd, Wilson St, and Ballina Rd to Southern Cross University provides a safe evacuation path if followed promptly. The Rowing Club gauge serves as an additional flood monitoring tool.

To enhance preparedness, staff and students must:

- Receive flood education and awareness training
- Participate in evacuation drills
- Follow clear signage and designated assembly points, such as the Main Hall

For further details, please refer to the FERP prepared by TTW for this project.

4.0 Safety Measures

4.1 Student and Staff safety

Evacuation routes and emergency assembly points are established in the FERP to ensure the safe evacuation of Students, staff and any visitors.

4.2 Flood Warning Systems

Flood warnings are issued by the BoM when flooding is occurring or is expected to occur in an area. These warnings may include specific predictions of flood depths based on real-time rainfall and river level data. The warnings are distributed to Councils, Police, and the relevant local SES, and are also made available on the BoM website.

In addition to BoM warnings, other early warning systems provide more detailed flood information. The Australian Warning System (AWS) offers alerts with comprehensive details. The Early Warning Network (EWN), a subscription-based service, consolidates publicly available data, and the "Hazard Near Me" map is a free app that provides real-time information about local emergencies, including floods.

Further information on these warning systems and how to use them is provided in the FERP.

4.3 Emergency Supplies

It is essential to keep emergency supplies, such as flashlights, first aid kits, waterproof gear, batteries, and non-perishable food items, in a readily accessible location. These supplies should be regularly checked and replenished to ensure they remain functional and adequate for use during an emergency. Additionally, having a backup communication system is highly recommended. This ensures uninterrupted communication between staff, emergency services, and relevant authorities during a crisis, even if primary communication networks fail. Proper training in the use of these supplies and systems should also be provided to staff to enhance preparedness.

4.4 Property and Goods Protection

4.4.1 Fit-Out Protection

It is essential to elevate critical infrastructure, such as electrical systems and data servers, as high as possible to minimize flood damage. Additionally, in accordance with the DCP (Building Materials and Design section),

services such as air conditioning units, electrical switchboards, storage hot water units, and water tanks must be installed above the Flood Planning Level (FPL). Lifts and elevators should be designed with flood-resilient features, such as waterproof lift pits, sealed electrical components, and control systems located above the FPL. Implementing these measures ensures the protection of vital systems and infrastructure during flood events.

4.4.2 Goods and Inventory Storage

To minimize potential losses during a flood, valuable goods, inventory, and important documents should be relocated to higher floors or areas safely above the flood risk level. For items that must remain on the ground floor, use waterproof containers, sealed storage units, or elevated shelving to provide protection against water damage. Ensure all storage solutions are securely fastened to prevent movement or tipping during flood events.

An effective inventory management system is essential to identify and prioritize high-value or high-risk items for relocation during rising water levels. This system should include a clear plan for categorizing items based on importance and vulnerability, along with designated safe storage locations. Staff should receive training on these protocols and participate in regular drills to practice efficiently relocating goods in a time-sensitive manner.

Critical documents should also be digitized, with secure backups stored on cloud platforms or external drives located offsite, to prevent permanent loss of essential records. Clear signage and accessible maps can further aid staff by indicating designated safe storage areas, helping to ensure a swift and organized response when necessary.

It is important to note that during flooding, evacuation should remain the primary response. School staff must prioritize facilitating evacuation procedures and ensure that time is used efficiently to safeguard the safety of students and staff above all else.

4.5 Flood Event Response

Flood evacuation is the primary and preferred response strategy for managing flooding at LSPS, as it prioritizes the safety of students and staff by moving them to higher, safer ground.

Shelter-in-place is considered a last-resort measure, to be used only when evacuation is no longer possible due to time constraints, rapidly rising floodwaters, or other unforeseen circumstances. In such situations, shelter-in-place procedures must ensure that students and staff remain in a secure, elevated location within the school premises, with access to emergency supplies and communication systems to coordinate with emergency services.

The full flood response strategy, including detailed evacuation plans and preparation measures, is outlined in the FERP.

4.6 Post-Flood Actions

It is important to consider the following safety precautions when returning to the school after severe flooding to ensure the safety of students, staff, and visitors, and to minimize health, structural, and operational risks.

Key Considerations When Returning to School After Flooding:

1. Wait for confirmation from NSW SES that it is safe to return to the school.
2. Structural Safety:
    - Ensure the structural integrity of the school buildings before entering.

   - Inspect for damage to windows, walls, and roofs, and check for potential contaminants such as asbestos or Mold.
3. Hazard Awareness:
   - Be cautious of fallen powerlines and loose tree branches around the school grounds.
4. Electrical and Gas Safety:
   - Ensure that electricity and gas supplies are turned off before entering the building.
   - Use a flashlight to conduct inspections inside.
   - All electrical equipment, appliances, power points, and gas systems exposed to floodwater must be inspected by qualified professionals before use.
   - If standing water is near electrical systems, contact an electrician for advice before proceeding.
5. Health and Hygiene:
   - Wear appropriate protective clothing, including sturdy boots, gloves, long pants, long sleeves, and eye protection. Use a hat, sunscreen, and insect repellent when necessary.
   - Ensure that children and students do not participate in the cleanup to avoid exposure to hazards.
   - Avoid consuming food or using utensils that have come into contact with floodwater.
   - Wash hands thoroughly before eating or drinking and disinfect any cuts or wounds immediately. Cover wounds with waterproof dressings to avoid infection.
   - Use disinfectant to clean surfaces in classrooms, offices, and common areas.
6. Cleanup and Assistance:
   - Be mindful of slip, trip, and fall hazards during the cleanup process.
   - Offer assistance to colleagues or staff members who may need help.
   - Refrain from unnecessary movement around the school grounds during recovery efforts to avoid hindering cleanup operations.
7. Additional Safety Considerations:
   - Ensure the school’s water supply is safe for drinking before use.
   - Handle electrical equipment with caution and ensure it is fully checked and dried by an electrician before being used again.
   - If there is any doubt about the safety of gas appliances or systems, have them inspected by a qualified professional before use.

By following these precautions, the school can ensure a safe return for all staff and students, while facilitating a smoother recovery process.

4.7 Flood Insurance:

Ensure that the business has adequate flood insurance coverage including not limited to

- Property damage (buildings, fit-outs, equipment).
- Loss of goods (inventory).

It’s essential to review terms of the policy regularly to ensure it remains up to date.

4.8 Review and update

It is essential to regularly review and update the flood safety plan to ensure its ongoing effectiveness and relevance. This review should be conducted at least annually or immediately after a flood event, a significant change in school operations, or any other event that may affect the school's preparedness.

A post-event review is particularly crucial as it allows the school to assess the response effectiveness, identify areas for improvement, and incorporate any lessons learned from the event into future procedures. This could involve feedback from staff, students, emergency services, and any other relevant stakeholders.

The updated plan should also account for changes in the school's infrastructure, staffing, or external conditions such as local flooding patterns or changes in regulations. Additionally, procedures should be refined based on new technologies or best practices in flood management.

The flood safety plan must be a living document, continuously evolving based on lessons learned, changing circumstances, and improvements in flood management practices. Regular updates will ensure that the school is always prepared and that the safety of students and staff remains a top priority.

5.0 Conclusion and Recommendation

The Business Flood Safety Plan plays a critical role in ensuring the well-being of both employees and students, while also protecting valuable assets and maintaining the continuity of operations during and after a flood event. By incorporating comprehensive safety measures and property protection strategies, the plan effectively addresses various flood scenarios, from minor to major events.

A key component of the plan is its focus on protecting critical infrastructure, including fit-outs, electrical systems, goods storage, and key business operations, while also ensuring that the safety of students and staff is a priority. By proactively identifying and addressing potential flood risks, the plan minimizes the likelihood of significant damage to both physical assets and operational capacity. This is achieved through a combination of preventive measures, such as elevating infrastructure, waterproofing storage areas, and implementing flood-resistant designs, as well as response strategies that facilitate quick and efficient recovery.

In addition to physical protection, the plan outlines clear procedures for evacuation, emergency communications, and business continuity. These measures ensure that, in the event of a flood, students, staff, and visitors are kept safe, and that school operations can resume as quickly as possible with minimal disruption. Evacuation routes, shelter-in-place protocols, and flood awareness training for staff and students are integral components of this preparedness.

The Business Flood Safety Plan not only aims to minimize damage and protect assets but also ensures that students are well-protected and that the school environment remains safe. The plan emphasizes a proactive approach to flood risk management, enabling the school to recover swiftly and continue operations with confidence, regardless of the severity of the flooding. Through ongoing reviews, updates, and staff training, the plan remains adaptable, reflecting changing risks and operational needs, ensuring that the safety of both students and staff is consistently maintained.

To minimize class cancellations and maintain productivity during frequent flood events, it is recommended to implement several proactive strategies. Flexible scheduling options should be put in place to allow for adjustments to classes based on weather forecasts. In the event of expected floods, teachers can reschedule lessons or transition to online platforms, ensuring the continuity of learning. Furthermore, a hybrid learning system should be established, enabling the use of online platforms during temporary school closures. By ensuring both teachers and students are familiar with these tools, the school can maintain a productive learning environment, even during disruptions, thus reducing the overall impact of flooding on education.

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