

Flood Evacuation Management Plan

**Hurlstone Agricultural High
School (Hawkesbury)**

Prepared for Conrad Gargett / 10/08/2018

161108

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1.0 Introduction

Taylor Thomson Whitting (TTW) have prepared a Flood Evacuation Management Plan (FEMP) for the proposed Hurlstone Agricultural High School Hawkesbury ("School"). The School is located within the Western Sydney University site in Richmond at 2 College Street, Richmond.

This FEMP has been prepared to respond to a submission made by Hawkesbury City Council with regards to the State Significant Development Application for the School (reference number SSD 17_8614). As the location of the School is below the probable maximum flood level, Council has requested that the impact of the development on regional flood evacuation be considered in consultation with the NSW State Emergency Services, Sydney Western Region (SES) and Infrastructure NSW (INSW) and that a FEMP be developed and implemented for the proposal.

TTW and Department of Education (DoE) representative MACE have consulted relevant SES and INSW officers on the 26th June 2018 regarding the proposed development and particular the need for the site's FEMP. During the 26th June 2018 meeting, it can be noted that both SES and INSW did not express any potential adverse effect onto the regional evacuation strategy.

The purpose of this FEMP is to summarise the flood risks within the site, identify preparation measures that should be undertaken, and provide an action plan with steps to be completed during a flood event.

1.1 Reference Documents

In the preparation of this Plan, the following documents were referred to:

- Hawkesbury Nepean Flood Plan prepared by NSW Government dated September 2015.
- Hawkesbury City Local Flood Plan prepared by State Emergency Service dated December 2010.
- Hawkesbury Floodplain Risk Management Study and Plan prepared by Bewsher dated July 2012.
- NSW Government Education & Communities "Richmond High Flood Emergency Policy – Hawkesbury River Management Guidelines"

2.0 Flood Behaviour

This report has been based on a Flood Risk Assessment prepared for the School conducted by TTW. The following section provides a summary of the findings of the Assessment. The findings were based on review of Council documentation as well as conducting a TUFLOW model for the local catchment.

2.1 Flood Source

The site is affected by two flooding mechanisms; mainstream riverine flooding from the Hawkesbury River and overland flooding from the local catchment. Liaison with Council revealed that the 1% AEP flood level due to riverine flooding of the Hawkesbury River was RL 17.3m AHD which is several metres lower than site's existing surface levels. As a result, TTW undertook modelling to ascertain the effects of catchment flooding due to local overland flow to determine the worst case scenario – for details refer to TTW's "Civil Engineering and Stormwater Management Plan" report which incorporates Flood Risk Assessment study.

Following the flood modelling, it was determined that the worst case flood occurs from the local catchment for the 1% AEP and from riverine flooding for severe flood events including the Probable Maximum Flood (PMF).

For Flood Evacuation purposes, the publicly available PMF level caused by the Hawkesbury River will be used.

2.2 Peak Flood Levels

The peak flood levels are equal to 22.9m AHD for the 1% AEP and 26.4m AHD for the PMF. The proposed ground floor levels are therefore higher than the 1% AEP flood level (being at 23.60m AHD) and the proposed first floor and second floor are higher than the PMF flood level (27.95m AHD and 31.85m AHD respectively).

For Evacuation purposes the PMF flood level of 26.4m AHD will be used. This accuracy of this flood level has been confirmed by SES during the consultation process.

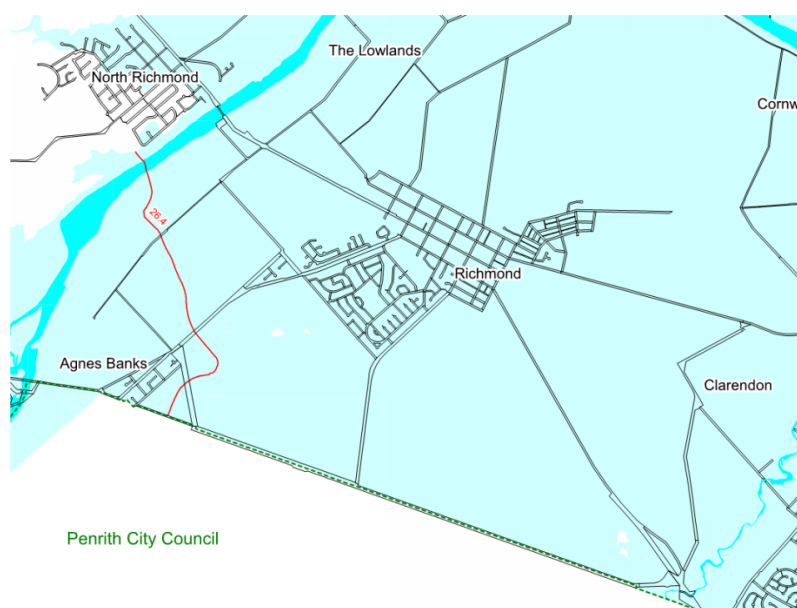


Figure 2.1: PMF Flood Level/Extent

Source: Hawkesbury Floodplain Risk Management Study and Plan prepared by Bewsher dated July 2012

3.0 Flood Warnings and Evacuation

3.1 Flood Watches and Warnings

Severe weather and thunderstorm warnings are issued by the Bureau of Meteorology (BOM) www.bom.gov.au. These warnings are continually updated with a description of the likely conditions (including predicted extreme rainfall depth).

BOM issues flood alerts, advice and watches for the Hawkesbury Nepean River through coordination with the SES, water agencies and local councils.

A **Standard Emergency Warning Signal** (SEWS) will be used by SES to precede all *Top Priority* Flood Warnings and all Evacuation Warnings. Once activated Evacuation Orders are broadcast over the radio stations.

A **Flood watch** is issued by the BOM up to four days prior to a flood event. A watch is generally updated daily and may be issued before, during or after rainfall has occurred.

Flood warnings are issued by the BOM when flooding is occurring or expected to occur in a particular area. Warnings may include specific predictions of flood depths dependent on real-time rainfall and river level data. These warnings are distributed to Council, Police and the relevant local SES, as well as being available on the BOM website, through telephone weather warnings and radio broadcasts.

SES Evacuation Warning is a warning message from SES advising the community to prepare for likely evacuation. The warning advises people what to do and what to prepare to take with them.

A **Flood Evacuation Order** is a notification to the community, authorised by the SES, when the intent of an Incident Controller is to instruct a community to immediately evacuate in response to an imminent threat. It also advises where people should go and may advise which evacuation route to take.

Coordination of Flood Evacuation Warnings and Orders

The overall coordination of the regional road evacuation routes will be conducted from the Evacuation Coordination Desk at the NSW SES Sydney Western Region Headquarters as shown in Figure 3.

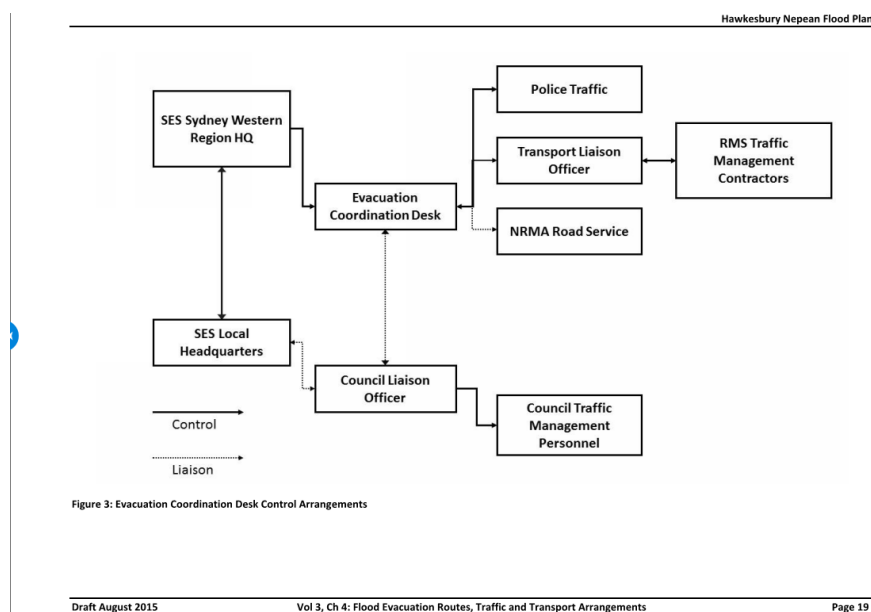


Figure3.0: Evacuation Overall coordination

Source: Hawkesbury Nepean Flood Plan. A Sub Plan of the State Emergency Management Plan (EMPLAN) – September 2015

The NSW SES Sydney Western Region Incident Controller will decide when to issue Evacuation Warnings and Evacuation Orders for specific Sectors.

The Incident Controller (“Evacuation Coordination Desk”) will distribute these warnings to other NSW SES control centres; metropolitan media outlets for immediate broadcast; and the Joint Media Information Centre. The Incident Controller will also advise Police and the NSW Transport Management Centre to begin traffic management procedures on regional evacuation routes.

The Incident Controller will distribute an evacuation warning through the following systems (when available) internet, fax, email, text message, and automatic telephone dialling with pre-recorded messages.

NSW Local Controllers will distribute Evacuation Warnings through Warden systems. Emergency service personnel using public announcement systems in vehicles, and door knocking.

If there is sufficient notice of a potential evacuation, the SES Sydney Western Region Controller will discuss temporary closure of appropriate schools with the Regional Director of the Western Sydney Region from the Department of Education.

Due to long lead time required for SES to mobilise the required resources, the SES Sydney Western Region Incident Controller will provide an early notice to the school should the school need to be evacuated.

3.2 Public Address System

The School will have a Public Address (PA) system including continuous bell that can alert students and staff in the event of an emergency. The school will have an internal Evacuation Procedure, as part of the School's Emergency Management Plan, that addresses the process for evacuation within the school grounds.

In the event of this emergency tone, students and staff will assemble in a designated assembly point.

Refer to Appendix A for the location of this assembly point. Regular emergency drills will be undertaken to ensure students and staff are aware of the emergency procedures.

4.0 Flood Response

4.1 Staff Responsibilities

In the event of a severe flood, various staff members will be responsible for specific tasks as detailed in Table 4.1. Once the school is in operation these roles will need to be delegated to specific staff members.

Table 4.1: Staff Flood Responsibilities

Role	Location	Responsibilities
Department of Education	N/A	<ul style="list-style-type: none"> - Prepare Emergency Management Plan that addresses the recommendations of this report - Liaise with The Transport Services Functional Area for Buses resources allocation and arrangement for the school during flood evacuation event. - Pass information to school bus drivers/companies on expected or actual impacts of flooding - Liaise with SES for the early release of students whose travel arrangements may be disrupted by flooding. - Liaise with the parents of boarder students to organise alternative accommodation during the flood evacuation event. - Liaise with SES for temporary closure of school potential impacted by flooding - Assist with evacuation coordination
Chief Warden	Within school	<ul style="list-style-type: none"> - Inform Staff of flood risk - Coordinate flood evacuation drills - Decide if evacuation is required prior to warnings from SES - Liaise with SES
First Aid Officer	Within school	<ul style="list-style-type: none"> - Coordinate assistance for less able students and staff during evacuation - Prepare a Flood Emergency Kit that includes a portable radio, torch, spare batteries, first aid materials, emergency contact numbers, candles, waterproof matches, waterproof bags and required medications.
Floor Wardens	Within school	<ul style="list-style-type: none"> - Coordinate evacuation of their designated floor and assist in evacuation

Staff	Within school	<ul style="list-style-type: none"> - Assist Floor Wardens in evacuation of students - Report missing students to Floor Wardens
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4.2 Key Contact Details

In the event of a severe flood, key telephone numbers have been listed in Table 4.2 below.

Table 4.2: Key Contact Numbers

<u>IMPORTANT TELEPHONE NUMBERS</u>	
Administration Office	tba
Principal	tba
Stores Office	tba
Chief Warden	tba
Floor Warden	tba
Deputy Principal	tba
Counsellor	tba
Deputy Principal	tba
First Aid Officer	tba
<u>OUTSIDE SCHOOL CONTACTS</u>	
** Ambulance / Fire – Call Office numbers shown above to contact	
State Emergency Services	132 500
Dept Education – State Office	9836 9000
Dept Education – District Office	4724 8799
Busway – Glendenning Office	9625 8900
Busway – Windsor Office	45749200
Busway – Penrith Office	4721 9900
Westbus/Hills Bus – Head Office	9890 0000
Westbus/Hills Bus – Windsor Depot	4572 5600
Hawkesbury Hospital	4560 5555
Police – Windsor	4560 6999

5.0 Assembly Point and Evacuation Routes

5.1 Emergency Assembly Point

An Emergency Assembly Point has been nominated at the ground floor of building five. Refer to **Appendix A** for location. This location has been decided based on it being central to the school and located at a reduced level of 23.4 to 23.55 which is above the level of the 1% AEP flood event. In the event of evacuation being required, the assembly point is located near to Vines Drive providing a point of evacuation to the local road network.

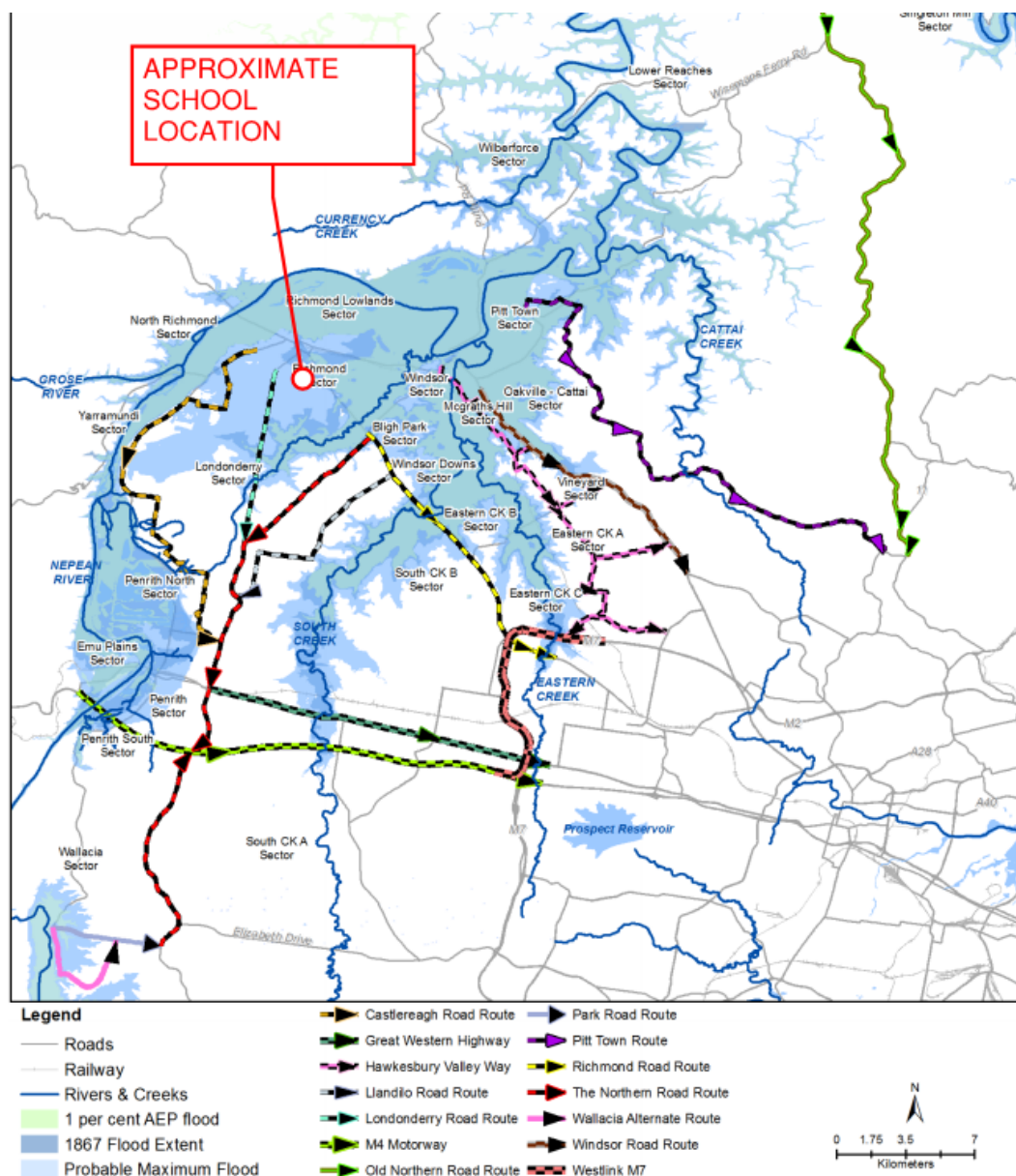
5.2 Evacuation Routes

The following information is provided for information only. For “Flood Response Actions” – refer to Section 7 of this FEMP for details.

SES has advised that the students and staff will be evacuated to the Evacuation Centre at Olympic Park in Homebush Bay

The designated regional road evacuation routes (refer to **Figure 5.1** for locations) for Level 2 flood operations are:

- a. The Windsor Road Route (closed at 13.5m AHD)
- b. The Pitt Town Road Route (closed at 16.0m AHD)
- c. The George Street Route (closed at 15.0m AHD)
- d. The Blacktown-Richmond Road Route (closed at 14m AHD)
- e. The Llandilo Road Route (closed at 23.8m AHD)
- f. The Northern Road Route
- g. The Londonderry Road Route (closed at 18m AHD)
- h. The Castlereagh Road Route (closed at 20.2m AHD)
- i. The M4 Motorway Route
- j. The Old Northern Road Route



Map 1: Regional Evacuation Routes within the Hawkesbury-Nepean Valley

Figure 5.1: Regional Evacuation Routes

Source: Hawkesbury Nepean Flood Plan. A Sub Plan of the State Emergency Management Plan (EMPLAN) – September 2015

As detailed in the Hawkesbury City Local Flood Plan, Castlereagh Road is identified as the primary evacuation route (closed when inundation reaches a flood level of 20.2m AHD) and Londonderry Road as the secondary route (closed when the flood level reaches 18m AHD).

If the flood level is expected to exceed 20.2m AHD at the Windsor gauge, then the Richmond Sector will be evacuated to assigned evacuation centres via the evacuation route detailed.

Given the School frontage is located on Vines Drive, approximately 600m from the intersection of Vines Drive and Londonderry Road, it is recommended that the evacuation route be via Londonderry Road. Should the flood level be expected to reach a higher level than 18m, it is recommended that evacuation occur via Castlereagh Road.

5.3 On-Site Refuge

Ground floor levels have been set at 23.60m AHD to be located above the 1% AEP flood level with a minimum of 500mm freeboard provided. While there are two three-storey buildings that have levels above the PMF, as the majority of buildings on site are only one-storey, and given the size of the School, it is recommended that the School be evacuated during extreme flood events.

Should there be students or staff isolated on site during a flood event, it is recommended that they move to the second storeys of Buildings 2 or 3 and contact emergency services.

6.0 Preparation for Flood Response

6.1 Education

As identified in the Hawkesbury Floodplain Risk Management Plan (Bewsher, 2011), community awareness of flooding is a significant issue within the floodplain due to the infrequency of severe floods and the anticipated depths of these floods.

6.1.1 Staff

As part of the preparation for a flood event, those with responsibilities within this Plan should review and be familiar with their roles. Inductions should be held to educate staff on their role during a flood event.

6.1.2 Students

To increase awareness within the School, it is recommended that students be educated on the potential flood risk and actions that will be undertaken during a flood event. As part of this education, evacuation drills should be conducted regularly to ensure students are aware of the procedures for evacuation.

Lessons should also be held that address flood risks and highlight dangerous behaviours during a flood event. These lessons could be based on materials available on the NSW SES website which have been tailored for students of various ages.

6.2 Evacuation Drills

It is recommended that evacuation drills be held at a minimum of twice yearly to ensure all students and staff are aware of and familiar with their flood response actions, the sound of the alert and the location of the assembly point.

6.3 Flood Emergency Kit

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

- Radio with spare batteries;
- Torch with spare batteries;
- First aid kit and other medicines;
- Candles and waterproof matches;
- Waterproof bags;
- A copy of the School's Emergency Management Plan; and
- Emergency contact numbers.

This Emergency Kit should be stored in a waterproof container and is the responsibility of the First Aid Officer.

7.0 Flood Response Actions

WHEN A FLOOD WATCH IS ISSUED the following actions should be undertaken:

1. Ensure the emergency kit is ready to use.
2. Listen to the local radio station for updates on forecasted flood heights and timings.
3. Call SES for an update and possible evacuation advice.
4. Notify all staff and students of the flood watch and assist availability of staff to assist with emergency actions if required.
5. Ensure staff are familiar with the safe flood evacuation route

WHEN A FLOOD WARNING IS ISSUED the following actions should be undertaken:

1. Undertake the actions nominated under the “flood watch”.
2. **During School Hours:**
 - **Arrange for the early release of Students with SES ON 132500. For life-threatening emergencies phone 000 immediately**
 - **Coordinate the safe return of students in consultation with SES and school transport operators to their homes. (Note: SES has advised that the students and staff will be evacuated to the Evacuation Centre at Olympic Park in Homebush Bay.)**
 - **Call Westbus/Busway (Bus Operator is to be confirmed) and coordinate the required transport resources for evacuation.**
 - **Send SMS to parents**
 - **Direct All students and staff to the Assembly point within the school before the property is flooded.**
 - **Evacuate Students.**
 - **Evacuate Staff**

NOTE: Should there be students or staff isolated on site during a flood event, it is recommended that they move to the second storeys of Buildings 2 or 3 which should be free of flood waters and contact emergency services.

NOTE: Avoid driving or walking through floodwaters. These are the main causes of death during flooding. Although the school ground may not be flooded, the safe travel arrangements for students to go home is likely to be disrupted by flooding and/or road closures.

3. **Outside of School Hours:**
 - **Close down the school and notify students and staff of the temporary closure of the school**

8.0 Limitations and Revision of the Flood Emergency Response Plan

This FEMP only addresses the evacuation strategies during extreme flooding events for students and staff within the school ground and is consider a Guide only. It does not cover students and staff individual safe travel arrangements on their way to school when their safe travel arrangements may be disrupted by flooding and/or road closures.

It is the NSW Department of Education & Communities' responsibility to ensure this FEMP is current and updated as necessary to be in line with relevant standards, directorate, legislation, and the Regional's State Emergency Management Plan to ensure the health, safety and welfare of all staff, students and others.

9.0 Recommendations

- 1) DoE to liaise with The Transport Services Functional Area for Buses resources allocation and arrangement prior to School being operational.
- 2) Prepare Emergency Management Plan that addresses the recommendations of this FEMP.
- 3) Update the Important Telephone Numbers in Section 4 of this report prior to School being operational.
- 4) Flood-educate staff and students through Education and Evacuation Drills as detailed in the Section 6 of this FEMP.
- 5) DoE to review and update this FEMP as necessary once a year.
- 6) **All staff to be familiar with Flood Response Actions as detailed in the Section 7 of this FEMP.**

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Appendix A

Emergency Assembly Point

