



CIVIL

Flood Emergency Response Plan

for

Campsie Private Hospital, Campsie, NSW

for Hailiang Property Campsie Pty Ltd

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Report details

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445 Canterbury Road, Campsie, NSW 2194

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Revision History

Revision	Report Status	Prepared	Reviewed	Issue Date
1	For Planning Proposal	R Suckling	L Gitzel	02/09/2022

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		Date
Prepared by	RS	02/09/2022
Checked by	LG	02/09/2022

Flood Response Summary

The following provides a summary of the findings of this Flood Emergency Response Plan including a summary of the flood behaviour, floor levels with respect to the flood behaviour, the recommended flood response actions, and the recommended on-site flood refuge locations.

Flood Levels

Table 1 – Summary of Flood Behaviour (subject site and vicinity)

Event	1% AEP	PMF
Flood Level (mAHD)	26.1m - 26.8m AHD	29.0 m AHD (approx).
Flood Depth (m)	0.1m - 0.2m	0.1m - 0.5m
Velocity (m/s)	0.1m/s (approx)	1.0 up to 10m/s (approx)
Hazard Category	Low (Flood Fringe)	High (Floodway) (in Road Network)

Floor Levels

Table 2 - Internal Floor Levels

Floor	Level (m AHD)	Relationship to Flood Levels
Basement Levels (B1-B5)	8.645 to 20.645	Below 1% AEP and PMF
Lower Ground Floor	23.645	Below the 1% AEP and PMF
Upper Ground Floor	28.645	Above 1% AEP and Below PMF
Levels 1 to 9	33.795 to 64.495	Above 1% AEP and PMF
Roof	68.145 to 72.745	Above 1% AEP and PMF

Flood Response Actions

Table 3 – Flood Response Actions Summary

WHEN	WHAT	BY WHO
Prior to Flooding	Assemble Emergency Kit	First Aid Officer
	Check Floodsafe Kit every three months	First Aid Officer
	Coordinate Evacuation Drills twice per year (minimum)	Chief Flood Warden
	Sign up and maintain Early Warning Network and Floods Near Me App subscription	Chief Flood Warden Deputy Flood Warden
	Monitor weather situation at 9am and 4pm every afternoon	Chief Flood Warden
	Inductions for new staff to include flood risk associated with the subject site and refuge procedure.	Chief Flood Warden
On-site Refuge	Receive warning of Severe Storm Warning of Flash Flooding with rainfall predicted to be greater than: <ul style="list-style-type: none"> • 63mm over 30 minutes • 89mm over 1 hour • 114mm over 2 hours 	Chief Flood Warden
	Make decision to cancel non-essential procedures/operations and notify non-essential staff and visitors to return home if safe to do so.	Chief Flood Warden
	Communicate decision to remain on-site to all remaining staff, patients and any visitors (if unable to evacuate early) and organise seating and lighting.	Chief Flood Warden
	Wait it out at nominated refuge point	All
	Maintain regular communication with staff, patients and facility users.	Chief Flood Warden
	Do not attempt to drive or walk through floodwaters. If stranded on-site and water inundates floor level, call 000 immediately.	All
Once Risk has Passed / After a Flood	Check all services and structural stability of buildings.	Qualified persons
	Return to operation.	Chief warden

Key Personnel

Table 4 – Key Personal Summary

Person Organisation	Name	Number
Chief Flood Warden		
Deputy Flood Warden		
First Aid Officer		
SES	-	132 500
Police / Fire / Ambulance	-	000
Canterbury Bankstown Council Contact Hotline	-	(02) 9707 9000

Onsite Refuge Location

As the project is still in concept design and planning proposal phase, exact on-site refuge locations are yet to be determined, however preliminary architectural concept drawings indicate level 1 and above will be suitable locations for onsite refuge above the PMF flood levels as presented in Figure 1.

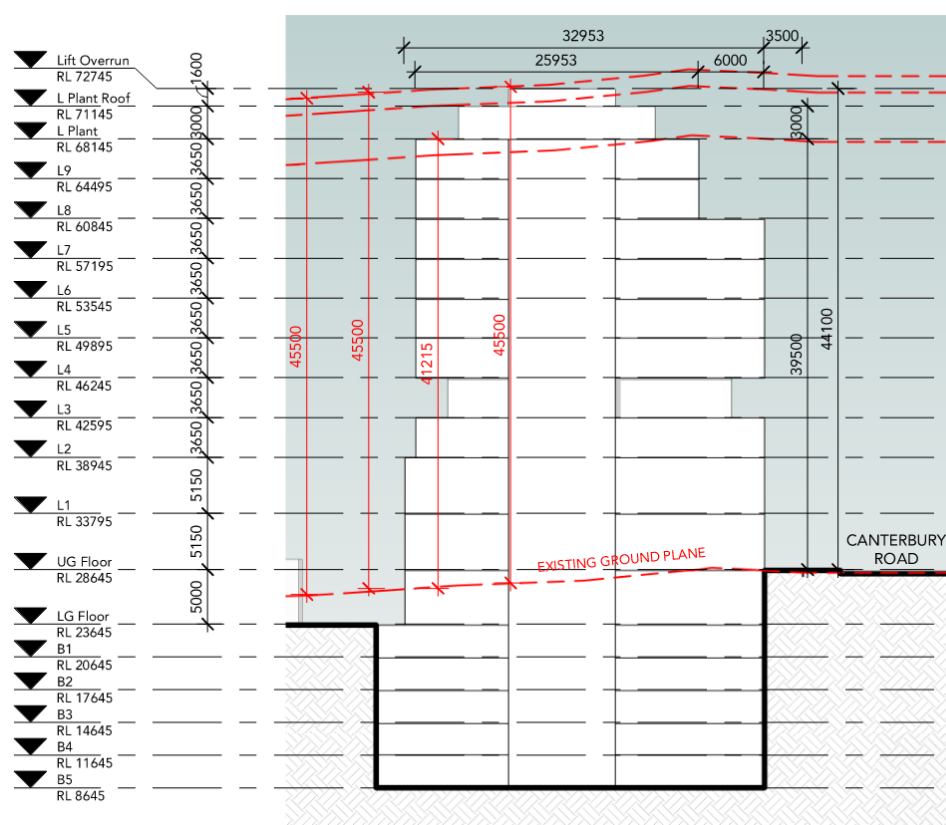


Figure 1 - Preliminary Architectural Section

Introduction

Northrop Consulting Engineers have been engaged by Hailiang Property Campsie Pty Ltd to prepare a preliminary Flood Emergency Response Plan for the proposed Campsie Private Hospital located at 445 Canterbury Road, Campsie (the subject site).

This report has been prepared to comply with the Department's Gateway Recommendations (PP-2022-1169) dated the June 2022. In particular, item 2 of the Department's recommendations suggests a Flood Emergency Response Plan be prepared;

“to demonstrate that the occupants of the hospital can effectively evacuate given the flood affection of the site and surrounding access roads to address consistency with or justify inconsistency with section 9.1 Ministerial Direction 4.1 Flooding”

This plan outlines the likely emergency response for the facility during a flood event. The plan recommends shelter-in-place (vertical evacuation) during predicted major and extreme flood events between the 1% AEP to the Probable Maximum Flood (PMF). This is recommended due to the high hazard flood conditions anticipated in the regional road network during these events. This is generally consistent with the findings outlined in the 'Preliminary Flooding Advice' prepared by Martens Consulting Engineers, dated 2nd November 2021 and is considered to satisfy Section 9.1(2) item (d) of the NSW Ministerial Direction for Flooding.

It is noted that this plan has been prepared as a preliminary plan for the purposes of the approval. It is anticipated that this plan will be updated prior to Construction Certificate to incorporate additional available information, such as more detailed floor plans and the incumbent operator's standard emergency procedures.

Subject Site

The subject site is located at 445 Canterbury Road, Campsie and consists of Lots 13, A and B of DP391661, Lot 15 DP3995, Lots A and B DP416123, Lots A and B DP355656 and Lot 3 DP337683.

The site is bound by Canterbury Road to the south, Stanley Street to the west, and existing residential and commercial developments to the north and east. Existing land use consists of a commercial / retail facility and associated carparking and landscaped facilities.

A subject site locality plan is presented below in Figure 2.

This Flood Emergency Response Plan (FERP) has been prepared to:

- Promote satisfactory awareness of expected flood behaviour and flood risks associated with the subject site.
- Nominate roles and responsibilities when preparing for and responding to a flood emergency.
- Identify measures to monitor weather forecasts and highlight warning systems available.
- Provide education and awareness material for training programs with respect to flooding of the subject site.
- Identify potential evacuation and evasion procedures including evacuation routes if appropriate and flood refuge opportunities.

Contained herein is a description of the methodology and information used to prepare this report, a summary of the likely flood behaviour, recommendations for flood preparation and recommended response actions during a flood event.



Figure 2 - Locality Plan (obtained from SIX Maps www.maps.six.nsw.gov.au)

Methodology and Available Data

This plan was developed based on the flood information contained within Council's Stormwater System Report (REF: WP-SIA-2314/2021) dated the 5th of November 2021. Additional information with respect to the flood behaviour for the subject site has been obtained from the following locations:

- Final Overland Flow Study, Canterbury LGA Cooks River Catchment prepared by Cardno and dated 19th April 2016, herein referred to as the "Cooks River OFS (Cardno, 2016)".
- Preliminary Flooding Advice – 445-459 Canterbury Road Campsie, NSW prepared by Martens Consulting Engineers and dated 2nd November 2021, herein referred to as the "Martens Flood Letter (Martens, 2021)".

The following local emergency management plans were reviewed in the preparation of this plan.

- The Canterbury-Bankstown Local Emergency Management Plan (EMPLAN) prepared by the Canterbury Bankstown Local Emergency Management Committee and dated September 2020
- The Canterbury-Bankstown Flood Emergency Sub Plan, prepared by the NSW State Emergency Service and dated September 2021

The expected flood behaviour for the subject site is based on the above flood information and is summarised in the **Flood Behaviour** section of this plan.

A review of the Bureau of Meteorology (BoM) and State Emergency Service (SES) guidelines and Canterbury Bankstown Council Website have been undertaken to report on the likely warning types described in the **Flood and Evacuation Warnings** section of this plan.

Consideration has been given to the personnel most likely to be on-site and responsible for flood emergency response. This is outlined in the **Flood Response Personnel** section of this plan.

Analysis of the site and nearby topography, in combination with the likely flood behaviour has informed the assembly points and on-site refuge points nominated in the **Assembly Point, Floor Levels and On-site Refuge** sections of this plan.

Contact numbers for relevant emergency response agencies and the proposed local evacuation centre are noted in the **Emergency Contact** section of this plan.

Finally, a review of the Canterbury Bankstown Development Control Plan and aforementioned flood studies, NSW State Flood Plan and Emergency Business Continuity Plan have contributed to the recommended preparation and response actions outlined in the **Flood Response Preparation** and **Flood Response Actions** sections of this plan.

Flood Behaviour

Flood Source and Behaviour

Flooding of the subject site is expected to be the result of overland surface flow generated by local catchment run-off during extreme rainfall events. This flood event is detailed in the Cooks River OFS (Cardno, 2016).

The Cooks River OFS (Cardno, 2016) suggests critical storm durations are relatively short, with durations ranging from 60-120 minutes during the 1% Annual Exceedance Probability (AEP) and as short as 15 minutes in more extreme rainfall events such as the Probable Maximum Flood (PMF) storm event. These storm systems are often typical of micro-burst, or isolated storm events which can often be difficult to predict, resulting in little to no warnings prior to the rainfall event, and can result in the occurrence of flash flooding. Flood water is expected to rise and fall relatively quickly.

Peak Flood Levels, Depth and Velocities

Figure 3 presents the 1% AEP peak flood depth and elevation for the site, as presented in the Stormwater System Report (Canterbury Bankstown, 2021).

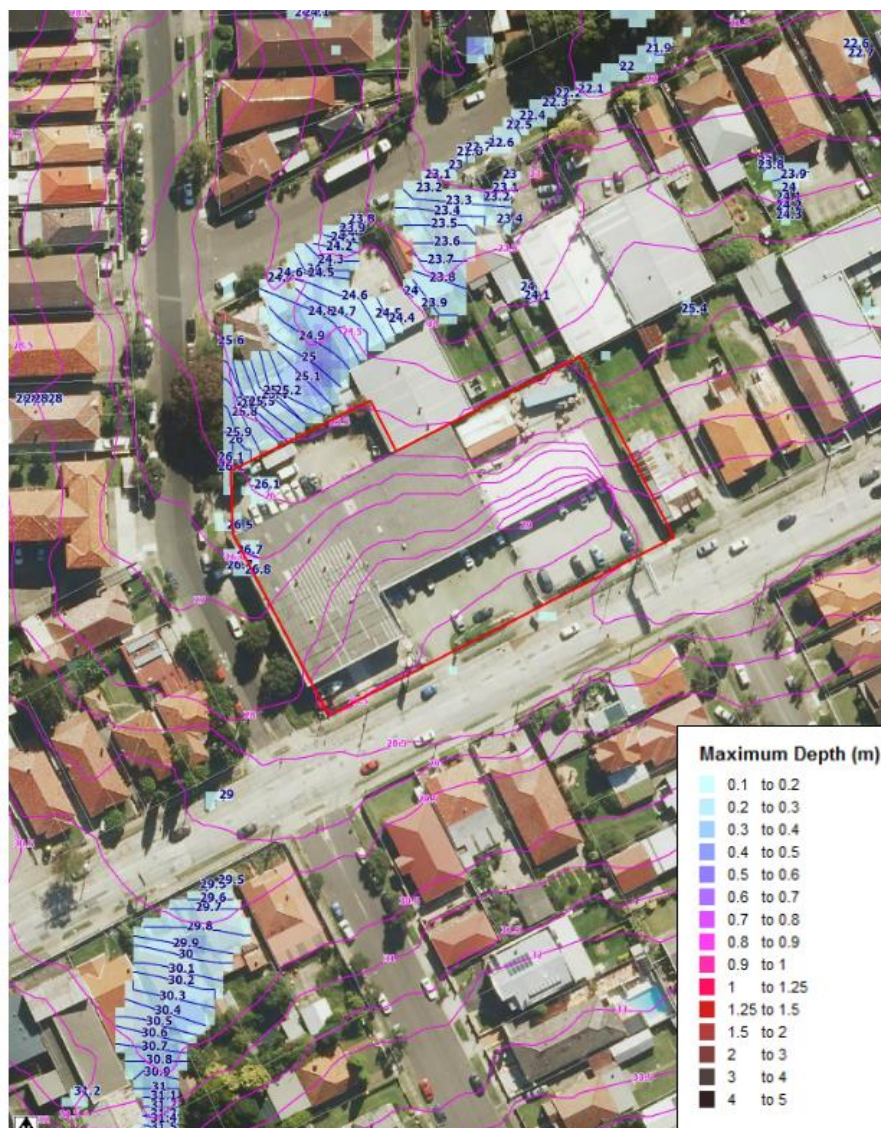


Figure 3 - 1% AEP Flood Depth and Elevations (Stormwater System Report; Canterbury Bankstown Council 2021)

From the above **Figure 3** it can be observed that the site is generally not expected to be significantly flood affected during the 1% AEP, with the exception of minor flood extents identified along the western boundary.

It is noted that the modelling methodology adopted in the Cooks River OFS (Cardno, 2016) excludes flood depths less than 100mm, and as such, although it is not shown, there is the potential shallow surface flow (<100mm) within the road network and vicinity during the 1% AEP event.

The Stormwater System Report (Canterbury Bankstown 2021) identifies that the 1% AEP flood level is approximately **RL26.1m AHD**, however from Figure 3, localised patches of flood water greater than 100mm are observed at **RL26.8m AHD** along Stanley Street.

The peak flood depths for the PMF event have been extracted from the Cooks River OFS (Cardno, 2016) are presented in Figure 4.

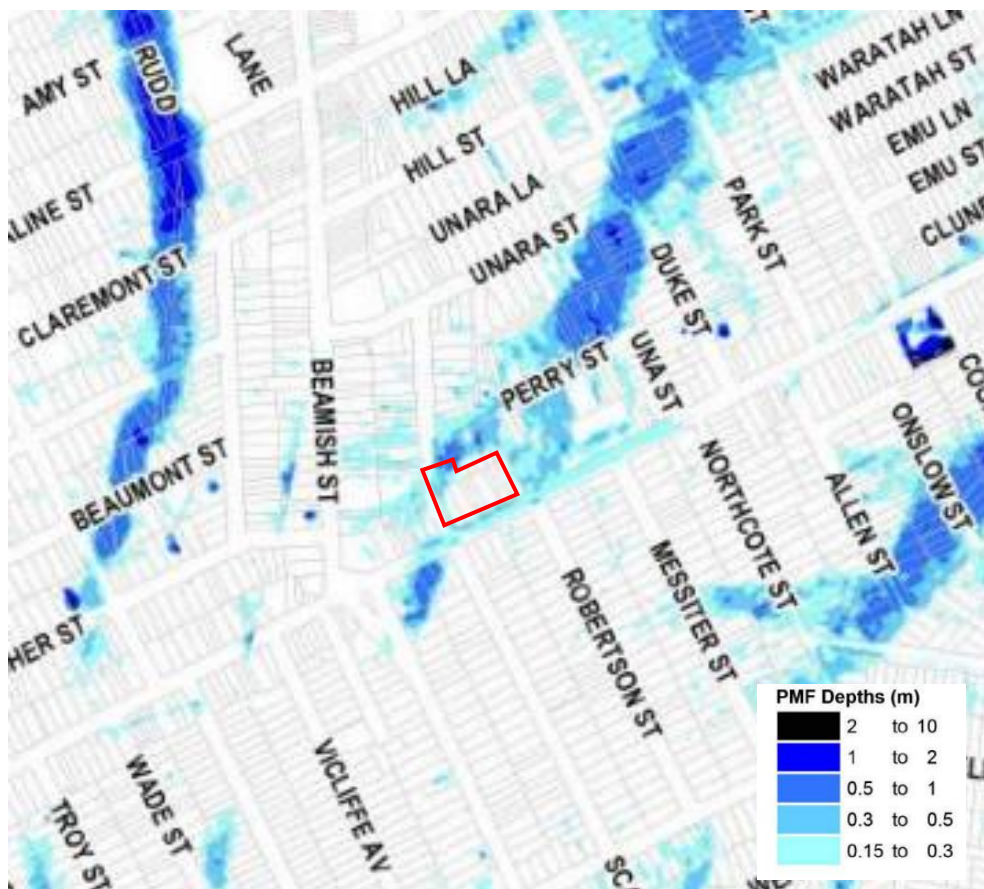


Figure 4 - PMF Flood Depths (Cooks River OFS; Cardno, 2016)

It can be observed that during the PMF flood event, the site remains mostly flood free, with the extents contained within Canterbury Road and Stanley Street, with the exception of the north-western corner of the site. Based on existing levels in Canterbury Street and the depth of flooding observed, it is estimated that the PMF Flood level is approximately **RL29.0m**.

It is important to note that the events discussed herein are rare to extreme events which are not expected to occur every time it rains. The 1% AEP is commonly referred to as the “100-year flood event” while, the PMF has a nominal Annual Exceedance Probability of between 1 in 100,000 and 1 in 10 million.

The following Figure 5 and Figure 6 present the peak flow velocities for the 1% AEP and PMF events respectively.



Figure 5 - 1% AEP Peak Flow Velocities (Cooks River OFS; Cardno, 2016)



Figure 6 - PMF Peak Flow Velocities (Cooks River OFS; Cardno, 2016)

The peak velocities for the 1% AEP within the proximity of the site are observed to be generally between **0-0.2m/s** with minor extents up to **0.5m/s** also observed. The PMF event contains velocities which have the potential to exceed **2m/s**, (**up to 10m/s** within Stanley Street and between **1-2m/s** within Canterbury Road).

Flood Hazard and Risk to Property and Life

The Cooks River OFS (Cardno, 2016) uses the NSW Floodplain Development Manual (April 2005) provisional hydraulic hazard categories which identify Low, Transitional and High Hazard. These categories present the relative risk to property and life during major and extreme events and are determined using the flood depth and velocity flood characteristics. The following Figure 7 provides a summary of the relationship between these elements demonstrating how the hazard conditions are defined.

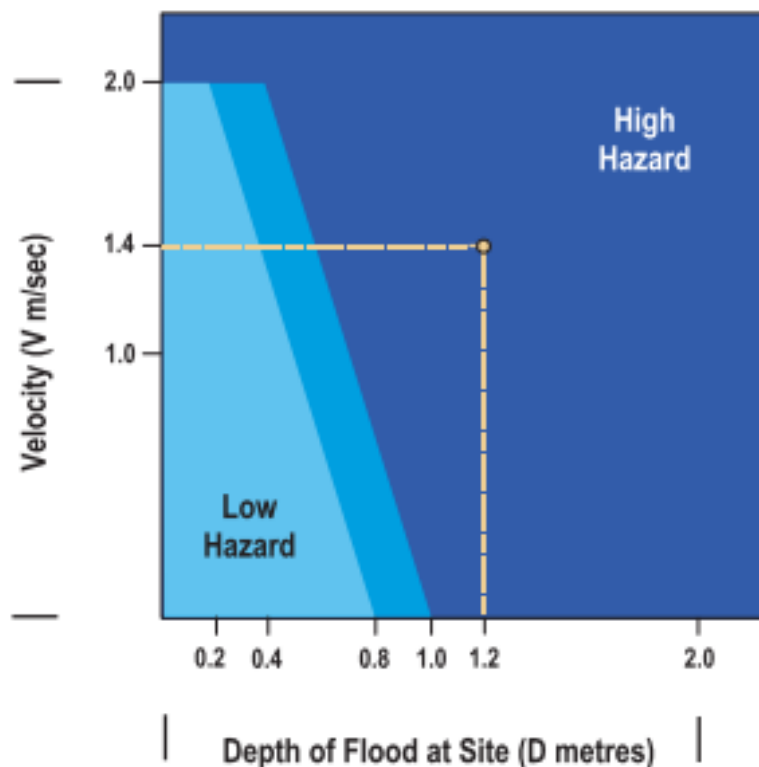


Figure 7 - Provisional Hydraulic Hazard Categories (NSW Floodplain Development Manual (April 2005))

The following Figure 8 and Figure 9 present the Provisional Hazard conditions during the 1% AEP and PMF respectively.

The 1% AEP identifies low hazard conditions within the vicinity of the subject site, with high and transitional hazards located in Stanley Street and Canterbury Road in the PMF event.

Given the presence of high and transitional hazard categories in the PMF flood event, and the fact the majority of the site footprint remains flood free (with the exception of minor encroachment along the boundaries) in the 1% AEP and PMF events, evacuation of the subject site should not be attempted during an extreme event in excess of the 1% AEP. Cancellation of non-essential operations on-site may occur prior to rainfall, enabling early evacuation of visitors and non-essential staff prior to the commencement of rainfall.



Figure 8 - 1% AEP Provisional Hazard (Cooks River OFS; Cardno, 2016)



Figure 9 - PMF Provisional Hazard (Cooks River OFS; Cardno, 2016)

As shelter-in-place or on-site refuge will be utilised in extreme flood events above the 1% AEP, the proposed structure will need to be designed to account for any additional flood forces during the PMF event, to ensure that safe refuge can be sought on-site during the storm event. Whilst the building is to

be designed to resist any flood forces, flood ingress may still occur at the lower ground floor or lower basement levels of the building.

Staff, patients and visitors may not be safe in the lower levels of the facility. These areas, including the lower ground floor and basement carparking should be evacuated and not accessed during a flood event unless advised otherwise by emergency personnel.

Do not Drive or Walk through Floodwater.

Remember, If It's Flooded, Forget It!

Flood and Evacuation Warnings

A network of rainfall gauge stations is maintained throughout the greater Sydney region. These provide information to the Bureau of Meteorology (BoM) as one source of information informing their flood warning system.

The Bureau should issue one of five types of warnings through local radio, television and through their website <http://www.bom.gov.au>. In addition, the SES may issue a flood bulletin, evacuation warning or evacuation order.

Due to the sensitive nature of this location, it is recommended the nominated Flood Wardens (described below) register for automatic text and email notifications from the Early Warning Network Service which filters and passes on BoM warnings. In addition, the Floods Near Me App and Bureau of Meteorology Weather App / Website provides information for current flood warnings

The warning types are as follows:

Severe Weather Warning

Severe weather warnings are issued by the Bureau for potentially dangerous weather conditions. A description of the threat will be included in the warning along with the time for next issue. It is noted that a severe weather warning does not imply that flooding will eventuate. Warnings are generally updated every six hours, or as the event dictates.

This type of warning should be accompanied with predicted extreme rainfall depth as discussed in the **Flood Response** section, as well as observed values from around the state.

Severe Thunderstorm Warning

A severe thunderstorm warning will be issued if there is strong evidence that a severe thunderstorm will develop, or if a severe thunderstorm is reported. Flash flooding may occur during severe thunderstorms. Warnings are generally updated every three hours or shorter as required.

Flood Alert/ Watch/ Advice

A flood alert/ watch/ advice will be issued if flood producing rain is expected. This provides an early warning that flooding may occur.

Generalised Flood Warning

A generalised flood warning is to be issued when flooding is expected to occur in a given area. Three hours warning time is expected from issue of warning to peak flood level as per the "Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 3.13" (Bureau of Meteorology, 2020).

This is the most likely warning type for the subject site should evacuation need to occur.

Minor/ Moderate/ Severe Flood Warning

A more detailed flood warning may be issued based on any additional information available. Three hours warning time is expected from issue of warning to peak flood level.

All warnings will be issued through the SES/BOM website, radio and television.

All public and commercial television stations should broadcast warnings.

SES Flood Bulletins

The SES may issue a flood bulletin providing information of the likely flood consequences and recommended actions.

Evacuation Warning

The SES may issue an evacuation warning which allows time to prepare for evacuation.

Evacuation Order

The SES will issue an Evacuation Order if evacuation is required. If this occurs **evacuation must be undertaken**. Broadcast will be via radio/ TV, door knock, automated telephone message or SMS.

On-Site Emergency Communication

If a PA system is provided as part of the new development, it is recommended it be configured to sound an emergency tone meaning all staff, patients and visitors are to assemble in the designated assembly point under the direction of staff and Flood Wardens to then receive information from the Chief Flood Warden. The tone will be tested every three months as a minimum.

Should a PA system be unavailable or inoperable in the event of an emergency, an air horn and handheld loudspeaker is located within the Flood Emergency Kit. These will be used to obtain people's attention and direct them to the emergency assembly point or facilitate evacuation offsite.

Early Warning Network Automated Text and Email Services

The Chief Flood Warden is recommended to register for automatic alerts within the Early Warning Network (www.ewn.com.au) which will filter the above BoM warnings and send texts and emails to notify of the situation.

Floods Near Me NSW

Recently the NSW SES and NSW Public Works have created a Beta version of Floods Near Me NSW which is both a webpage (<http://www.floodsnearme.com.au/>) and Phone Application. The application is expected to also filter BoM warnings relevant to the user and may be used by the Chief Flood Warden and Deputy Chief Flood Warden as an additional resource.

Flood Response Personnel

Summarised in Table 5 below are the facilities nominated emergency personnel, their location and responsibilities in managing flood response.

Table 5 - Flood Response Personnel

	Location	Responsibilities
Chief Flood Warden	On-site	<ul style="list-style-type: none"> • Coordinate flood evacuation drills. • Monitor weather daily for upcoming extreme rainfall events. • Receive notifications from the Early Warning Network. • Decide when Cancellation of activities or refuge is required. • Communicate Cancellation and on-site refuge to staff, patients, and visitors. • Liaison with SES or Emergency Services personnel if they attend site. • Remain calm and direct visitors and staff through the evacuation procedures.
First Aid Officer	On-site	<ul style="list-style-type: none"> • Prepare and maintain Flood Emergency Kit. • Prepare and coordinate assistance for staff, patients and visitors with mobility difficulties.
Deputy Chief Flood Warden	On-Site	<ul style="list-style-type: none"> • Undertake Chief Flood Warden duties when Chief Flood Warden is unavailable. • Maintain calm and direct staff and visitors through the evacuation process.
Flood Wardens	On-Site	<ul style="list-style-type: none"> • Assist Chief and Deputy Chief Flood Warden with evacuations.
Staff	On-site	<ul style="list-style-type: none"> • Maintain calm and direct visitors onsite through refuge processes. • Assist in relocation of patients or visitors to safe refuge locations.

It is anticipated the Chief Warden, who is in charge of emergencies and evacuation (as per future Hospital Emergency Policy), will be nominated the role of Chief Flood Warden.

A nurse or doctor who is on-site on a regular basis should be nominated the role as the First Aid Officer. Similarly, staff members who are on-site on a regular basis should be nominated the role of Deputy Chief Flood Warden and general Flood Wardens.

It is recommended that at least one Flood Warden is assigned in each level and section of the facility.

All remaining staff are to assist the Flood Wardens with evacuation during a flood emergency.

It is noted that these responsibilities are expected to be updated prior to Occupation based on the Incumbent Operators emergency procedures.

Assembly Point and Evacuation Routes

Emergency Assembly Point

A suitable location shall be nominated as the **Emergency Assembly Point** which is to be located on the Level 1 (or above) following further design development of the architectural plans.

Staff, patients and visitors on-site following declaration of an emergency should proceed to this location (if ambulatory) to receive instruction from the Chief Flood Warden.

In the event where a 1% AEP flood event or above is declared, all non-essential procedures are to be cancelled, with all non-essential visitors and staff to return home if safe to do so.

There is a risk that power and essential services to the building may be cut off during a major flood event. This may cause a significant problem if in the middle of a procedure. As such any high-risk patients may be transferred to a nearby hospital prior to the commencement of rainfall if feasible.

It is also recommended to have a back-up generator or other forms of emergency power to ensure critical systems of the building remain operational, that may otherwise be disrupted during an extreme flood event. It is strongly recommended that in the event of a flood the elevators are not used unless backup power supply is provided.

Similarly, depending on final design and flood mitigation measures, access into the basement levels should not be attempted. These areas may have the potential for stormwater ingress during an extreme event and it is possible staff, patients or staff may become trapped.

It is the responsibility of the Chief Flood Warden to activate the emergency procedure with all remaining staff, patients and visitors to seek on-site refuge until the storm event has ended.

The above advice may change depending on the Incumbent Operators standard emergency procedures. It is expected the above will be updated prior to Construction Certificate Phase.

Floor Levels and On-Site Refuge

Floor Levels

The proposed medical facility has several floors, including multiple basement levels. The level of each floor is presented below in Table 6. The floor levels with respect to the 1% AEP and PMF flood events are also presented in the below Table 6.

Table 6 - Internal Floor Levels

Floor	Level (m AHD)	Relationship to Flood Levels
Basement Levels (B1-B5)	8.645 to 20.645	Below 1% AEP and PMF
Lower Ground Floor	23.645	Below the 1% AEP and PMF
Upper Ground Floor	28.645	Above 1% AEP and below PMF
Levels 1 to 9	33.795 to 64.495	Above 1% AEP and PMF
Roof	68.145 to 72.745	Above 1% AEP and PMF

On-Site Refuge

In the event where rainfall has commenced or staff, patients and visitors become trapped on-site, refuge may be sought on-site. The nominated on-site refuge point shall be located on **Level 1 (or above)**. We recommend staying onsite once rainfall has commenced. It is anticipated that suitable common spaces shall be available in the upper levels with enough space to accommodate those seeking refuge on-site. It is anticipated this may be a consideration during detailed design.

The **upper levels of the building** may be utilised as additional refuge space. Staff, patients and visitors may proceed alternative refuge locations **following roll call**, provided there is at least one Flood Warden at each of these refuge points, at all times.

Although the storm event may only last a couple hours, there is the potential for flood water to remain for a longer period.

Should you become isolated on-site, move to **Level 1 (or above)** and do not try to evacuate by foot or vehicle and never enter rising flood water. **Call the SES on 132 500 if emergency supplies are getting low, or 000 if in a life-threatening situation. Remember if its flooded, forget it.**

Emergency Provisions for Essential Services

It is recommended the following contingency measures be implemented and maintained to facilitate on-site refuge:

- Staff with first aid training on-site at all times during operation.
- Supply of medicines, non-perishable food items and bottled water to withstand isolation for a prolonged period of time.
- Maintain a minimum run time of at least 24 hours for the backup generator in the event where power is cut for a prolonged period of time.

Do not Drive or Walk through Floodwater.

Remember, If It's Flooded, Forget It!

Emergency Contact

For emergency assistance during flood events, please call the **SES** on **132 500**.

If you are in a life-threatening situation please call **Police, Fire or Ambulance** on **000**.

For road blockages, fallen trees and other local asset issues, please call **Canterbury Bankstown Council Contact Hotline** on (02) 9707 9000.

Flood Response Preparation

It is the responsibility of the Chief Flood Warden to prepare the facility for a flood event. This will be achieved through; induction training provided by the operator, nomination of flood wardens, education of flood risks and behaviour, and the preparation and maintenance of a *Floodsafe Emergency Kit*.

The information presented above is a summary of the flood behaviour and considered key to understanding the risks associated with flooding. This should be displayed in conjunction with other emergency information (such as fire, etc.) throughout the facility.

Flood Emergency Response Drills

Flood Emergency Response Drills are designed to increase flood awareness within the facility. These drills are to be undertaken twice per year to familiarise staff and facility users of the procedures when responding to a flood event.

It is also an opportunity to outline expected flood levels and dangers of entering flood water. The following link can be used as a resource for relocating and/or evacuating patients that are mobility impaired: <https://www.ses.nsw.gov.au/floodsafe/what-floodsafe-means-for-you/mobility-impaired/>.

For new staff it is expected they will be made familiar with the site flooding conditions and made familiar with the emergency procedures and response during the initial site induction.

Floodsafe Emergency Kit

Although the storm event may only last a couple hours, there is the potential for flood water to remain for a longer period following completion of rainfall. As such, enough resources should be contained in the Flood Emergency Kit to ensure anyone trapped on site has enough supplies for a prolonged period. In the event where resources are getting low, the SES may be contacted to provide a re-supply/evacuation from the facility.

Potential items for a flood emergency kit are outlined at; <https://www.ses.nsw.gov.au/floodsafe/prepare-your-home/emergency-kit/>. Items outlined on the SES website and some additional items are presented below:

- Drinking water, medicines and non-perishable food items.
- A copy of the facilities emergency management plan.
- Chemical register.
- Air horn and hand-held loudspeaker.
- Portable radios with spare batteries.
- Torches with spare batteries.
- Lanterns with spare batteries.
- Two-way radio with spare batteries.
- A first aid kit.
- Candles and waterproof matches.
- Waterproof bag for valuables.
- A copy of emergency numbers.

When leaving or evacuating due to direction from the SES add the following items:

- **Register** of Staff, Patients and Visitors on-site.
- **Sign in book** for visitors and contractors.
- **Individual Health Care Plans** including asthma puffers, diabetes medication, epi pens, etc.
- **Drinking water** and **non-perishable food items**.

The kit should be kept in a suitable location on **Level 1 (or above)** in a roll trolley suitable for easy deployment in the event of an evacuation/refuge. The contents of the kit and management during a flood event will be the responsibility of the **First Aid Officer**.

During extreme flooding events, there is the potential for the facility to lose power. It is essential that the items recommended for the Floodsafe Emergency Kit be maintained to ensure those seeking refuge on-site are as comfortable as possible during a flood event.

TRIGGER FOR REVIEW AND EDUCATION:

- Three monthly checking of the emergency kit to ensure all items are in suitable working order.
- Six monthly evacuation drills and reminder of the flood risks.
- Inductions for new staff, highlighting the flood risk associated with the subject site.

BY WHO: Chief Flood Warden and First Aid Officer

Storage of Sensitive Goods

All sensitive goods which are susceptible to damage from flood waters or, if exposed to floodwaters would have significant ramifications to the surrounding area, must not be stored in the basement carpark or ground floors which may become susceptible to flooding. The first floor is above the PMF level and are therefore considered appropriate places to store goods which are sensitive to water.

Monitoring of Weather Situation

It is the responsibility of the Chief Flood Warden to monitor the weather situation and be aware if a warning has been issued. This will be achieved through automatic text messages and emails from Early Warning Network and checking of the local radio stations and the Bureau website.

TRIGGER FOR MONITORING:

- Continuous, 9am and 4pm daily

BY WHO: Chief Flood Warden

Flood Response Actions

Cancellation of Non-essential Operations

In order to minimise the risk to life, it is recommended non-essential operations be cancelled if a **Generalised Flood Warning** or **Severe Weather Warning** is received with nominated rainfall depths equivalent to a 1% AEP flood event as presented in the following Table 7.

Table 7 - Rainfall triggers for Cancellation

Rainfall Depth (mm)	Timescale
63	30-mins
89	1-hour
114	2-hours

Cancellation of all non-essential operations/procedures should occur, with non-essential staff and visitors recommended to return home (if safe to do so). Early evacuation reduces the strain on emergency services during a flood event, however, **should be undertaken well in advance of rainfall occurring.** Once rainfall has commenced, refuge is to be sought on-site as discussed in the following section.

If the Hospital is to provide health services for emergencies, **The Chief Flood Warden shall notify the NSW Ambulance Service** of the temporary inability of the facility to receive or transfer patients due to the high hazard flood behaviour expected within the street frontages.

On-Site Refuge

On-site refuge is recommended if rainfall has commenced, for essential services and those unable to return home.

The procedure for on-site refuge should be carried out as per the following:

- Chief Flood Warden Sound alarm on PA system/via air horn to notify staff, patients and visitors of imminent risk.
- Direct everyone to the Emergency Assembly Point within the upper levels of the building (Levels 1 and above)
- Roll Call to ensure everyone is accounted for.
- Explain that refuge is being sought on-site and the measures in place to make this safe to maintain calm.
- Seek refuge and wait it out.

TRIGGERS FOR REFUGE:

- Weather forecast with a **rainfall depth as below:**
 - **63mm over a period of 30 minutes**
 - **89mm over a period of 1 hour**
 - **114mm over a period of 2 hours**
- Commencement of rainfall in event when a Severe Weather Warning or Generalised Flood Warning is current.
- Evacuation and off-site refuge is deemed impossible

RESPONSIBLE FOR THE DECISION: Chief Flood Warden

Emergency Services Attending Site

There is a possibility that emergency services such as Police, Fire, Ambulance or SES may attend site and assume control from the Chief Flood Warden. Once this has occurred, they are in control of the site and any response operations.

TRIGGERS FOR EMERGENCY SERVICES TAKE CONTROL:

- Police, Fire, Ambulance or SES attending site.

RESPONSIBLE FOR THE DECISION; Chief Flood Warden

After a Flood

Once a Final Flood Warning or SES "All Clear" has been received:

- A thorough check of services such as electricity, sewer, water and gas should be undertaken by qualified persons.
- Personal protective equipment should be worn during the clean-up and disinfectant used.

TRIGGER FOR RETURN:

- All clear given by SES or emergency services and building inspected by representatives appointed by the department of education.

BY WHO: SES, Emergency services, Flood wardens

Revision of this Flood Evacuation Plan

This plan has been prepared as a preliminary plan for the purposes of the approval. It is anticipated this plan will be updated prior to Construction Certificate to incorporate additional available information such as more detailed floor plans and the incumbent operator's standard emergency procedures.

Following occupation, this plan should be revised if the Final Overland Flow Flood Study (Cardno, 2016) is revised or if a new flood study for the site to capture changes in the catchment or additional information or changes in the new design rainfall patterns developed as part of Australian Rainfall and Runoff 2019.

Notwithstanding the above, this plan shall be **revised every three years** or when there is a major operational change or flood event.

Revisions should be undertaken by a suitably qualified flood emergency response consultant.

Conclusion

The subject site is affected by flooding caused by overland flow from the upstream catchment. A review of the proposed development has been undertaken in conjunction with the expected flood behaviour.

This plan has outlined the likely emergency response for the facility during a flood event. The plan recommends early evacuation if possible, and shelter-in-place (vertical evacuation) during predicted major and extreme flood events between the 1% AEP to the Probable Maximum Flood (PMF). This is recommended due to the anticipated high hazard flood conditions expected in Canterbury Road and Stanley Street during these events. This is generally consistent with the findings outlined in the 'Preliminary Flooding Advice' prepared by Martens Consulting Engineers, dated 2nd November 2021 and is considered to satisfy Section 9.1(2) item (d) of the NSW Ministerial Direction for Flooding.

It is noted that this plan has been prepared as a preliminary plan for the purposes of the approval. It is anticipated that this plan will be updated prior to Construction Certificate to incorporate additional available information, such as more detailed floor plans and the incumbent operator's standard emergency procedures.

Through adoption of this plan, the proposed development adequately minimises the flood risk associated with the subject site. The recommendations contained herein assist in managing the risk to life of the staff, facility users and visitors to the subject site.

References

- | | | |
|------------------------------|--------|---|
| Cardno | (2016) | Final Overland Flow Study – Canterbury LGA Cooks River Catchment (ref: 59914085) dated 19 April 2016 |
| Canterbury Bankstown Council | | Stormwater System Report – 445 Canterbury Road, Campsie NSW 2194 (Ref: WP-SIA-2314/2021) dated 5 November 2021 |
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