



# Flood Emergency Response Plan

*for*

Lingard Private Hospital, Merewether, NSW 2291

*for* Health Care Australia Pty. Ltd.

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## Report details

**Project:** Lingard Private Hospital  
 23 Merewether Street and 19 – 27 Hopkins Street, Merewether, NSW 2291

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### Revision History

Revision	Report Status	Prepared	Reviewed	Issue Date
1	Preliminary for SSDA Submission	A Theacos	L Gitzel	04/10/2024
2	Response to Submission	A Theacos	A Brien	20/02/2025

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		Date
Prepared by	AT	17/02/2025
Checked by	GB	20/02/2025
Admin	GB	20/02/2025

## 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 and off-site flood refuge locations.

### Flood Levels

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

Event	1% AEP	PMF
Flood Level (m AHD)	5.7 - 6.2	6.6 - 6.7
Flood Depth (m)	0.1 - 1.2	0.6 - 1.7
Velocity (m/s)	0.5	0.5
Risk to Property	P2	-
Risk to Life	-	L4

### Floor Levels

Table 2 - Internal Floor Levels

Floor	Level (m AHD)	Relationship to Flood Levels
Basement Carpark (B1)	5.47	Below 1% AEP and PMF
Ground Floor (Lingard Precinct - Existing)	6.37	Above 1% AEP and Below PMF
Ground Floor (Hopkins Precinct – New)	6.70	Above 1% AEP and PMF
Ground Floor	6.37	Above 1% AEP and Below PMF
Upper Ground Floor	8.17	Above 1% AEP and PMF
Level 1	11.17	Above 1% AEP and PMF
Level 2	15.07	Above 1% AEP and PMF
Roof	18.97	Above 1% AEP and PMF

## Flood Response Actions

Table 3 – Flood Response Actions Summary

WHEN	WHAT	BY WHO
Prior to Flooding	Assemble <b>Emergency Kit</b>	First Aid Officer
	Check Floodsafe Kit every three months	First Aid Officer
	Coordinate <b>Evacuation Drills</b> twice per year (minimum)	Chief Flood Warden
	Sign up and maintain <b>Early Warning Network</b> subscription	Chief Flood Warden Deputy Flood Warden
	Monitor weather situation at 4pm every afternoon	Chief Flood Warden
	Inductions for new staff to include flood risk associated with the subject site and evacuation procedure	Chief Flood Warden
Evacuation	<b>Text / Email from Early Warning Network</b> with rainfall likelihood to be greater than; <b>50% chance rainfall &gt; 15min 5% AEP</b> <b>50% chance rainfall &gt; 1hour 5% AEP</b> <b>50% chance daily rainfall &gt; up to 250mm</b> <b>AND RAINFALL HAS NOT YET COMMENCED</b>	Chief Flood Warden
	Make decision to <b>Evacuate and Notify</b> Ambulance Service / Police / SES	Chief Flood Warden
	<b>Sound Alert on PA System / Air Horn</b> and Chief Warden to Emergency Assembly Point	Chief Flood Warden
	Direct facility users and visitors to <b>Emergency Assembly Point</b>	Chief Flood Warden
	Call <b>Bar Beach Bowling and Sporting Club</b> to determine they can accept all persons on-site.	Chief Flood Warden
	<b>Contact Ambulance Service</b> to notify of closure of facility	Chief Flood Warden
	<b>Roll call</b> to make sure everyone is accounted for	Chief Flood Warden
	<b>Leave signage</b> notifying any responders attending the site that evacuation has been undertaken	Chief Flood Warden
	<b>Return home</b> and wait out the storm	All
	<b>If unable to return home, evacuate</b> by vehicle to <b>Bar Beach Bowling and Sporting Club</b>	All
On-site Refuge	<b>Warning has been issued triggering evacuation, but RAINFALL HAS STARTED and/or off-site refuge is unavailable.</b>	Chief Flood Warden
	<b>Communicate</b> decision to remain on-site and organise seating and lighting.	Chief Flood Warden
	<b>Wait it out</b> at nominated refuge point	All

	Maintain regular communication with staff, patients and facility users.	Chief Flood Warden
	<b>Do not attempt to drive or walk through floodwaters. If stranded on-site and water inundates floor level, call 000 immediately.</b>	All
<b>Once Risk has Passed / After a Flood</b>	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
Newcastle Council Emergency Hotline	-	(02) 4974 6000
Bar Beach Bowling and Sporting Club	-	(02) 4929 3428
Disaster Welfare Services	-	1800 018 444

## On-site Emergency Assembly and Refuge Points

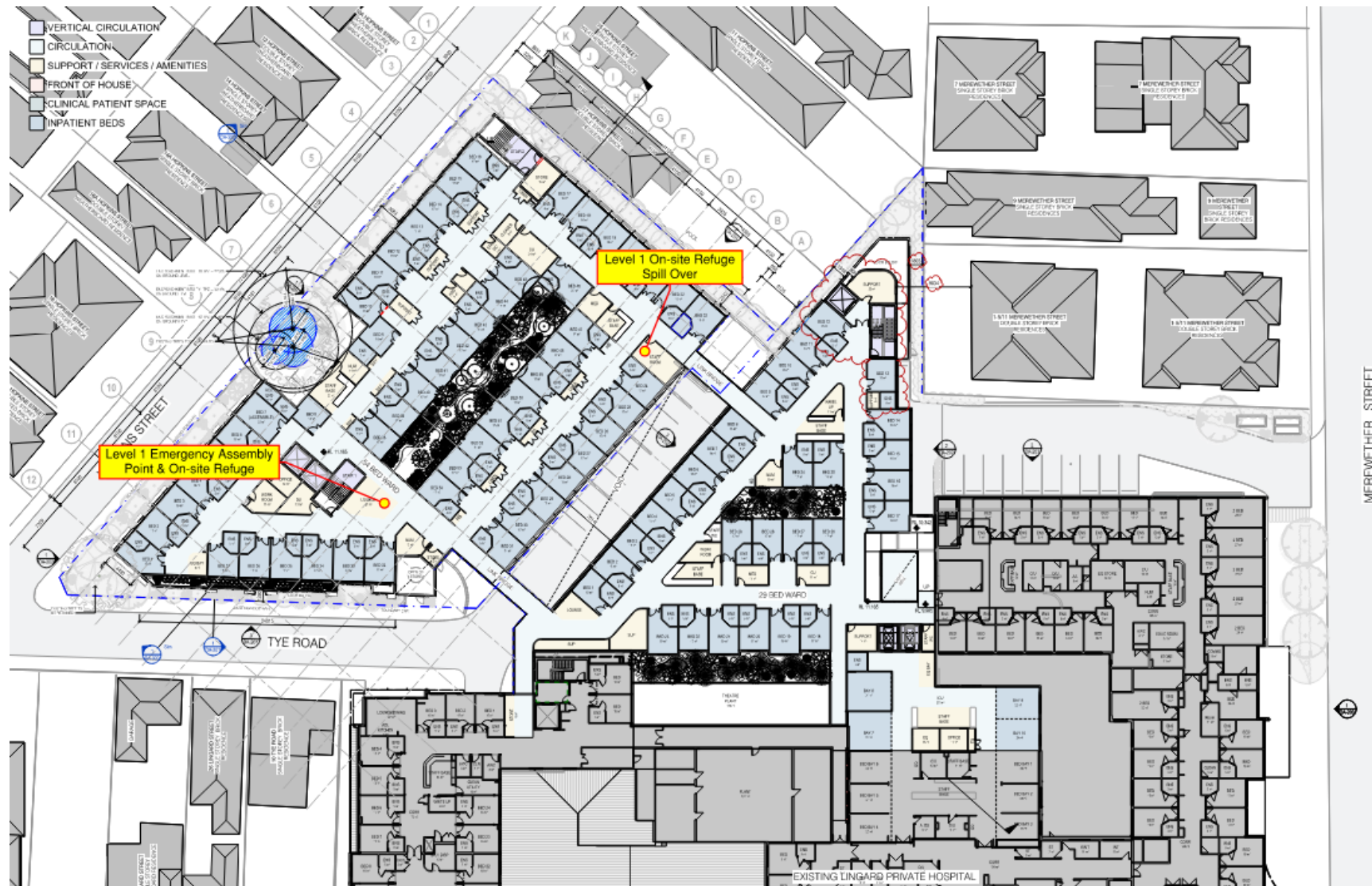


Figure 1 – Level 1 Emergency Assembly Point and On-site Refuge

## Off-site Refuge Facility – Bar Beach Bowling and Sporting Club (29 Kilgour Avenue, Merewether)

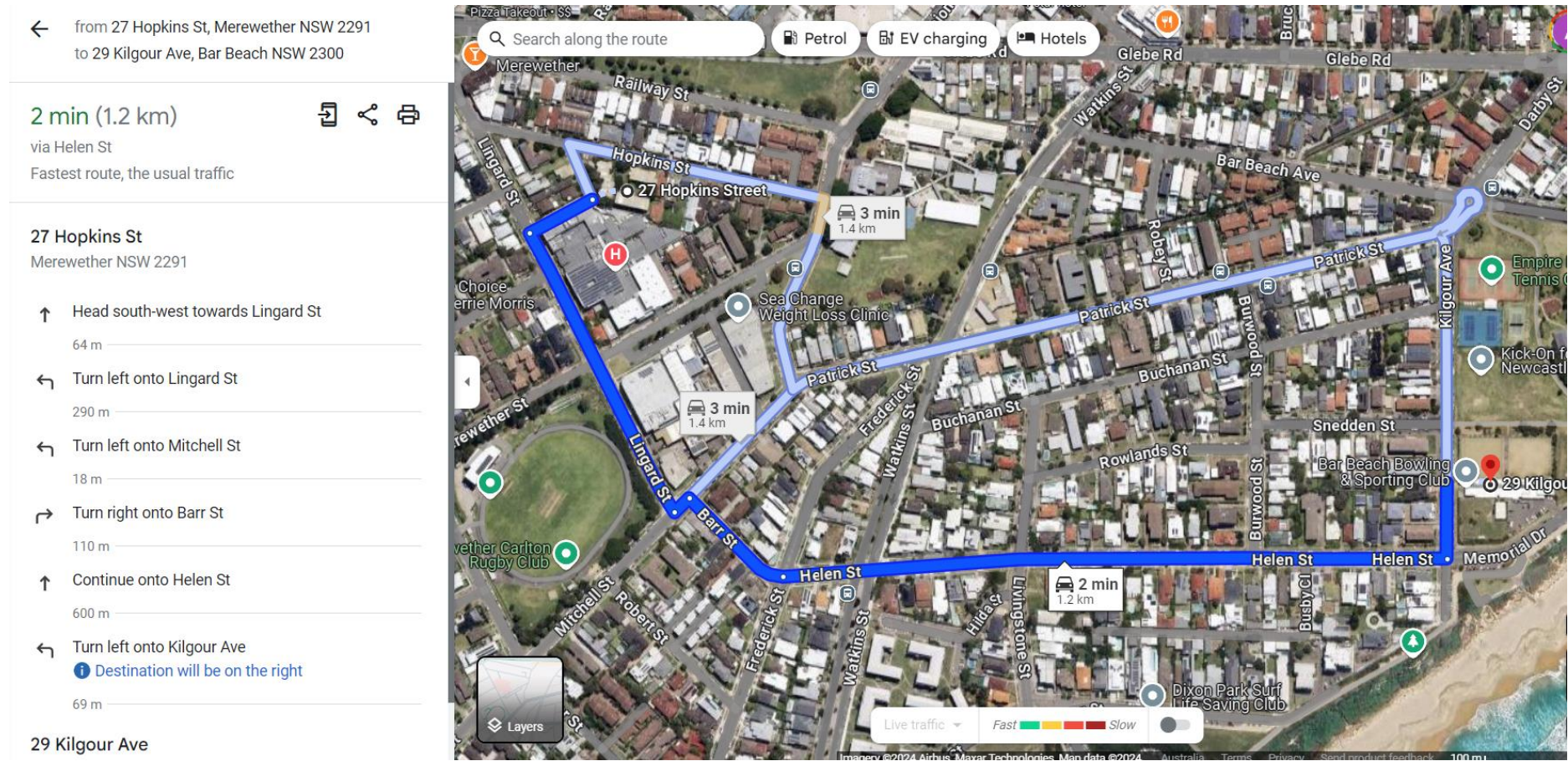


Figure 2 – Evacuation Route to Off-site Refuge Facility (Bar Beach Bowling and Sporting Club)

# Introduction

Northrop Consulting Engineers have been engaged by Health Care Australia Pty Ltd to prepare a Flood Emergency Response Plan for the proposed Lingard Private Hospital located at 23 Merewether Street, Merewether and 19 – 27 Hopkins Street, Merewether (the subject site).

This report has been prepared as a Flood Emergency Response Plan (FERP) to accompany the Flood Impact and Risk Assessment (FIRA) prepared for the purposes of the State Significant Development Application (Ref: SDC2023/0010 & SDD-60316710).

It is anticipated this FERP will be updated at Construction Certificate phase and ongoing as noted in the Revisions of this FERP section contained below.

This FERP has been prepared with consideration to:

- The NSW Flood Risk Management Manual (2023)
- Newcastle City Council Flood Certificates (FL2022/0285, FL2022/0287, and FL2022/00289)
- Newcastle City Council Development Control Plan (Part B, Section B1).
- Flood Impact and Risk Assessment (FIRA) for the proposed Lingard Private Hospital located at 23 Merewether Street, Merewether and 19 – 27 Hopkins Street, Merewether (REV D) prepared by Northrop Consulting Engineers and dated the 4<sup>th</sup> of October 2024, herein referred to as the “FIRA (Northrop, 2024)”.

Contained herein is a description of the subject site, study 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.

## Subject Site

The subject site includes two separate developments of 23 Merewether Street (Lot 100 DP1168197), known as the ‘Lingard Precinct’, and 19 – 27 Hopkins Street (SP49417 & SP40687) known as the ‘Hopkins Precinct’.

The subject site is burdened by an overland flow path that travels along Merewether Street in an easterly direction, past the southern boundary of the subject site and into the Cottage Creek Stormwater Channel located to the east of Watkins Street downstream. A subject site locality plan is presented below in Figure 3.

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 and flood refuge opportunities.



Figure 3 - Locality Plan (obtained from SIX Maps [www.maps.six.nsw.gov.au](http://www.maps.six.nsw.gov.au))

## Methodology and Available Data

This plan was developed based on the flood information contained within Council's Flood Certificates (FL2022/0285, FL2022/0287, and FL2022/00289) dated the 3rd of November 2022. Additional information with respect to the flood behaviour for the subject site has been obtained from the following locations:

- Throsby, Cottage Creek and CBD Flood Study prepared by BMT WBM and completed in August 2008.
- The Newcastle City-Wide Floodplain Risk Management Study and Plan prepared by BMT WBM and completed in June 2012.
- Council's Online interactive flood information portal (<http://newcastle.nsw.gov.au/Flooding>).

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.

It is noted that the draft Throsby, Styx & Cottage Creek Flood Study (Rhelm, 2023), and updated flood modelling is also available at the site as presented in the FIRA (Northrop, 2024). The analysis presented FIRA (Northrop, 2024) suggests flood behaviour in these studies is similar to the levels presented Flood information Certificates. As such, the information presented in the Flood Certificate has been used in preparation of this FERP.

A review of the Bureau of Meteorology (BoM) and State Emergency Service (SES) guidelines and Newcastle 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, evacuation routes and on-site refuge points nominated in the **Assembly Point and Evacuation Routes** and **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 City of Newcastle Development Control Plan and aforementioned flood studies, NSW State Flood Plan and Emergency Business Continuity Plan and the NSW Flood Risk Management Manual (2023) have contributed to the recommended preparation and response actions outlined in the **Flood Response Preparation** and **Flood Response Actions** sections of this plan.

Consideration has also been given to the Lingard Private Hospital – Emergency – Code Orange – Evacuation policy (LNG111) in the preparation of this plan.

# Flood Behaviour

## Flood Source and Behaviour

Flooding of the site and the surrounding properties is expected to be derived by local overland flow from the upstream Merewether Heights catchment. During both the 1% Annual Exceedance Probability (AEP) and Probable Maximum Flood (PMF), flows are expected to come from the north and west run down Merewether Street and, to a lesser extent, Hopkins Street, in an easterly direction, adjacent to the southern boundary of the subject site.

The flood behaviour within the subject site and surrounding areas has been obtained from the Newcastle City Council's online interactive flood maps and is reproduced in Figure 4 below. Note that the **Blue**, **Yellow** and **Red** colours shown have been derived using the 1% AEP design storm event with increasing levels of depth and velocity while the **Green** coloured hatch represents the extent of the floodplain during the PMF design storm event.

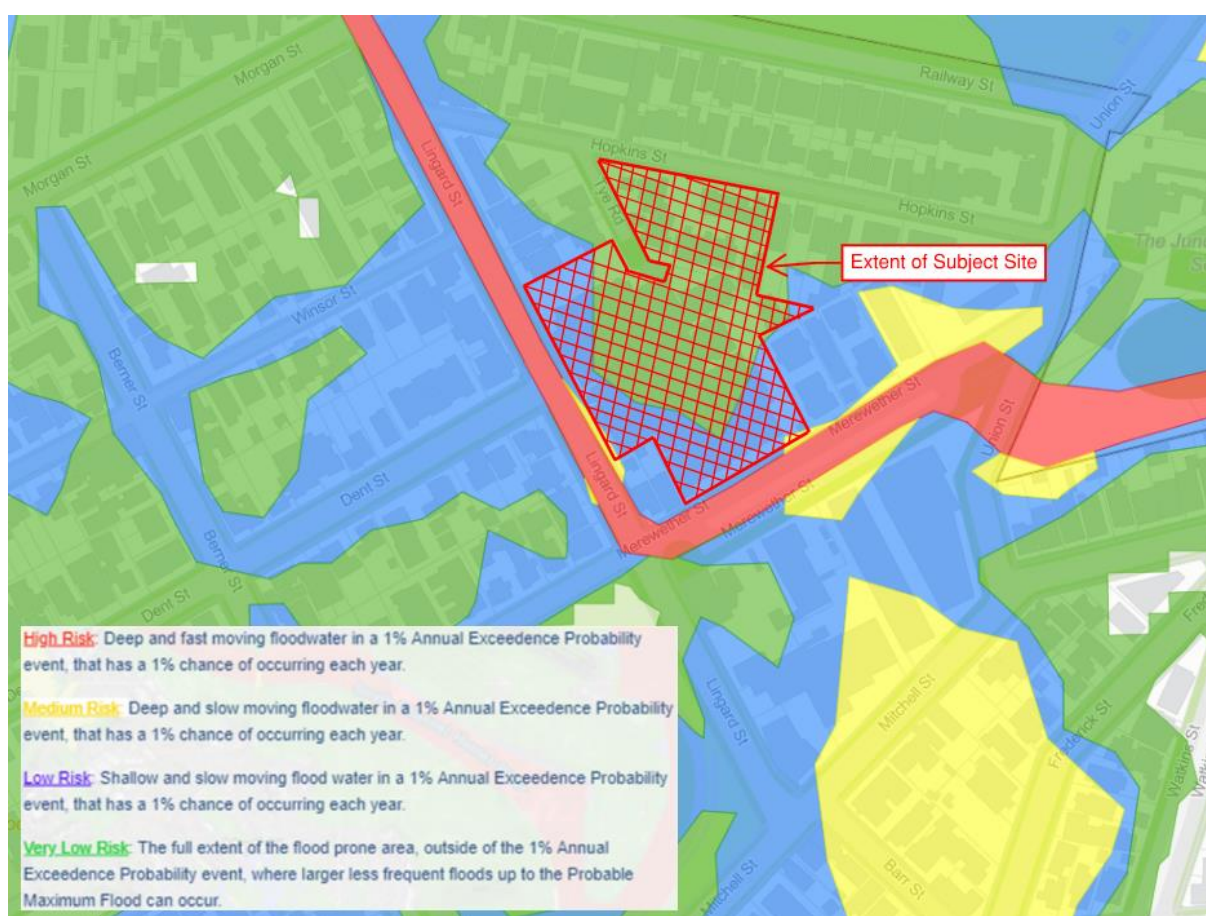


Figure 4 - Risk to Life (TCoN) Online Interactive Flood Maps

During the 1% AEP deep fast flowing flood water is expected in Merewether Street to the south of the subject site while larger less frequent floods up to the PMF could be expected at the street frontage, within Hopkins Street to the north.

Due to the high urbanisation of the upstream catchment, a quick response time is expected following commencement of rainfall. The Throsby, Cottage Creek and CBD Flood Study (BMT WBM, 2008) suggests that the critical duration in the vicinity of the subject area ranges from the one to two-hour duration and as such, the peak is expected to occur within an hour, following the commencement of rainfall.

## Peak Flood Levels, Depth and Velocities

Peak flood levels for both the 1% AEP and Probable Maximum Flood (PMF) events are summarised in Table 5 below. The below flood level data is based on the information provided within a Flood Information Certificate provided by Council (FL2022/0285, FL2022/0287, and FL2022/00289) and dated 3rd of November 2022.

It is important to note that the events defined in the below Table 5 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 1 in 10 million.

**Table 5 – Peak Flood levels**

Event	Flood Level (m AHD)
1% AEP	5.70 - 6.20
PMF	6.60 - 6.70

Review of detailed survey and the civil design drawings suggest the minimum kerb invert levels within both Merewether and Hopkins Streets frontages to be approximately 5.00m AHD and 6.10m AHD respectively. The following Table 6 presents the estimated flood depth at both Merewether and Hopkins Street frontages based on the peak flood levels presented in Table 5 above and the minimum kerb invert elevations.

**Table 6 – Estimated Maximum Flood Depths at Merewether and Hopkins Street Frontages**

Event	Estimated Depth at Merewether Street Frontage (m)	Estimated Depth at Hopkins Street Frontage (m)
1% AEP	1.20	0.10
PMF	1.70	0.60

Note that review of the FIRA (Northrop, 2024) suggests depths are likely less in Merewether Street. Flood Certificates are expected to adopt maximum Flood Levels observed along Lingard Street (within 23 Merewether Street) rather than the range of flood levels observed around the property. As such, the depths presented in **Table 6** above are considered conservative.

Peak flood velocities for the subject site have been provided in the Flood Information Certificate (FL2022/0285, FL2022/0287, and FL2022/00289). The certificate suggests that a peak flood velocity of 0.5m/s is observed across the subject site for both the 1% AEP and PMF.

It is possible evacuation from the site may remain possible during the 1% AEP, although it is not recommended during the peak of the flood event due to the potential for the broader road network to be compromised.

Similarly, with depths in the order of 0.6 - 1.7m during observed around the site, evacuation is expected to be difficult during the peak of an extreme event and is not recommended.

## Flood Hazard and Risk to Property and Life

The City of Newcastle Council Development Control Plan (DCP) defines specific hazard categories to define the risk to property and life during major and extreme events. These categories are based on the expected flood behaviour across the subject site which is defined by specific hydraulic criteria. These hydraulic criteria are outlined in Table 7 below.

**Table 7 – NCC DCP Hydraulic Hazard Classifications (NCC DCP 2012 Sec 4.01 – Flood Management)**

<b>H1</b>	Hydraulically suitable for parked or moving cars $V < 0.5\text{m/sec}$ and $d < 0.3\text{m}$
<b>H2</b>	Hydraulically suitable for parked or moving heavy vehicles and wading by able-bodied adults $V < 2\text{m/sec}$ , $d < 0.8\text{m}$ and $V < 3.2 - 4*d$
<b>H3</b>	Hydraulically suitable for light construction (e.g. Timber frame and brick veneer) $V < 2\text{m/sec}$ , $d < 2\text{m}$ , $v*d < 1$
<b>H4</b>	Hydraulically suitable for heavy construction (e.g. steel frame and reinforced concrete) $V < 2.5\text{m/sec}$ , $d < 2.5\text{m}$ and $v*d < 2.5$
<b>H5</b>	Generally unsuitable $V > 2.5\text{m/sec}$ , $d > 2.5\text{m}$ and $v*d > 2.5$

These hydraulic classifications are defined for the site using the PMF flood depth and velocity results discussed above. The risk to life is then defined by these hydraulic classifications as well as the expected catchment response time and an escape path availability.

The following Table 8 provides a summary of the relationship between these elements demonstrating how the risk to life classifications are defined.

**Table 8 – Risk to Life Hazard Classifications (TCoN DCP 2012 Sec 4.01 – Flood Management)**

				Hydraulic Behaviour Threshold				
				H1	H2	H3	H4	H5
Catchment Response Time	Riverine			L1				
	Flash	Escape Route to flood free land	available	L2		L4		L5
			not available	L3				

The Flood Information Certificates (FL2022/0285, FL2022/0287, and FL2022/00289) identify the subject site to be located in a maximum of the **L4** risk to life category. The following Figure 5 presents the Risk to Life for the subject site and generally vicinity. This confirms Council’s classification of the subject site as L4.

The City of Newcastle Council Development Control Plan (DCP), in particular Section 4.01 – Flood Management defines the L4 risk to life classification as:

*“Short duration flash flooding with no warning time and enclosing waters during the PMF not suitable for wading or heavy vehicles i.e., hydraulic threshold exceeds H2. On site refuge is necessary and if hydraulic threshold exceeds H3, heavy frame construction or suitable structural reinforcement required.”*

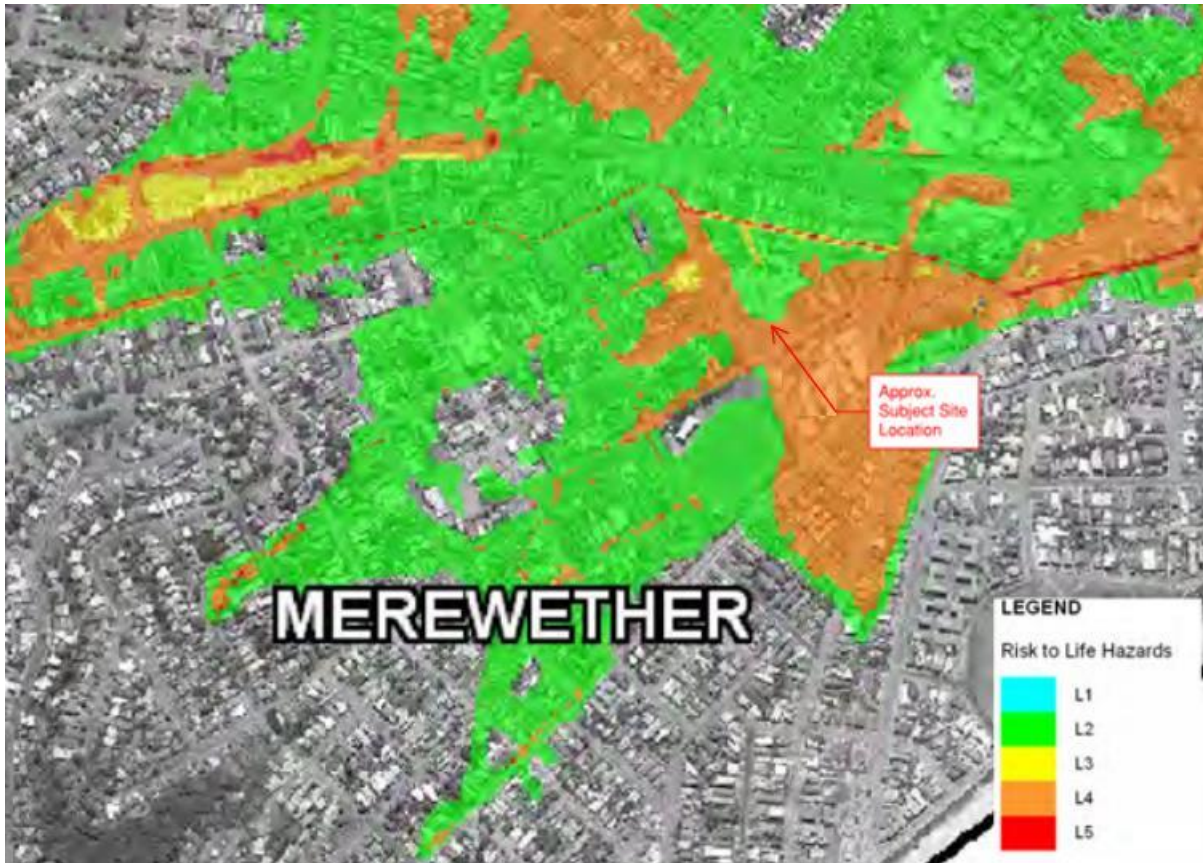


Figure 5 – Risk to Life Categories (The Newcastle City-Wide FRMS&P (BMT WBM,2012))

Similarly, the City of Newcastle Council DCP specifies the risk to property hazard category which is defined using the same hydraulic hazard classification presented in Table 7 above. Rather than using the PMF, the property hazard classifications are instead defined using the 1% AEP. The NCC DCP property hazard classifications are presented in Table 9 below.

Table 9 – Risk to Property Classifications (NCC DCP 2012 Sec 4.01 – Flood Management)

<b>P1</b>	Parked or moving cars remain stable i.e. equivalent to areas of H1 at the Flood Planning Event.
<b>P2</b>	Parked or moving heavy vehicles remain stable i.e. equivalent to areas of H2 at the Flood Planning Event.
<b>P3</b>	Suitable for light construction (e.g. timber frame, masonry and brick veneer) i.e. equivalent to areas of H3 at the Flood Planning Event.
<b>P4</b>	Suitable for heavy construction (e.g. steel frame, reinforced concrete) i.e. Equivalent to areas of H4 at the Flood Planning Event.
<b>P5</b>	Hydraulically unsuitable for normal building construction is equivalent to areas of H5 at the Flood Planning Event.

The maximum risk to property classification for the subject site is presented in the Flood Information Certificate as a **P2** classification. As such, parked or moving heavy vehicles are expected to remain stable and the proposed building is expected to be able to withstand the flood forces during the 1% AEP event.

## Flood and Evacuation Warnings

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 City of Newcastle Council Flood Alert Service which filters and passes on Early Warning Network (EWN) warnings.

A network of rainfall gauge stations is maintained throughout the greater Newcastle and Hunter 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 utilises the Australian Warning System, which is a nationally consistent, three-tiered approach to issue clear warnings and lead people to take action ahead of severe weather events. These warnings can be viewed on the SES website and the HazardWatch website and app.

### Early Warning Network (EWN)

The hospital is required to set up a paid subscription to the Early Warning Network to receive advance daily, and sub-daily rainfall estimates. An example of the warning products is reproduced below.

Tuesday 3 December, 2024	Chance Rainfall >15min 20% AEP	Chance Rainfall >1hr 20% AEP	Chance Rainfall >50mm in previous 24hrs
1200 – 1500	40%	40%	20%
1500 – 1800	45%	45%	20%
1800 – 2100	20%	20%	20%
2100 – 2400	5%	5%	20%
0000 – 0300	0%	0%	20%
0300 – 0600	0%	0%	20%
0600 – 0900	0%	0%	20%
0900 – 1200	0%	0%	20%

	Winds			Severe Storm			Rainfall	
	Chance 70km/h>	Chance 80km/h>	Chance 90km/h>	Chance 70km/h>	Chance 90km/h>	Chance 120km/h>	Amount	Chance of rain
Tuesday 26 <sup>th</sup>	0%	0%	0%	0%	0%	0%	Nil	0%
Wednesday 27 <sup>th</sup>	0%	0%	0%	5%	0%	0%	4-12mm	35%
Thursday 28 <sup>th</sup>	0%	0%	0%	5%	0%	0%	15-25mm	75%
Friday 29 <sup>th</sup>	0%	0%	0%	5%	0%	0%	15-25mm	75%
Saturday 30 <sup>th</sup>	0%	0%	0%	0%	0%	0%	5-10mm	40%
Sunday 1 <sup>st</sup>	0%	0%	0%	0%	0%	0%	3-6mm	25%

#### Example forecast service provided by the EWN:

“Strong to galeforce southerly winds remain forecast today and tomorrow (Saturday), though are still expected to ease a little by comparison with today’s winds. This afternoon’s winds are as forecast in yesterday’s forecast. Gusts are expected to peak at around 65km/h tomorrow, with peak gusts at the upper end of possibilities around 70-75km/h.

This S/SE airstream will bring showers onto the Sydney coastline on a regular basis, and will continue through tomorrow morning, though will begin to ease during the afternoon and evening followed by a substantial easing and clearing by the early hours of Sunday. Fine weather is forecast on Sunday through Tuesday at this point.

At this early stage, Wednesday will see the next troughline and associated southerly change move through Sydney. This will bring some gusts of around 50-55km/h, along with a fairly low risk of a severe storm that may bring some gusty winds of note.”

## **Bureau of Meteorology**

### **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 have varying lead-times, depending on the weather situation, and can range from just an hour or two up to about 24 hours. These 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 is one of the earliest warnings that will be issued by the BoM with advice provided up to four days in advance of the expected onset of flooding (BoM). Although four days warning may be available, they are also occasionally issued during and after the rainfall has occurred, depending on the level of maturity of the flood warning systems and services (BoM).

### **Generalised Flood Warning**

A generalised flood warning is typically more specific than the Flood Alert / Watch / Advice and is 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 3.15" (Bureau of Meteorology, 2024).

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

### **Minor/ Moderate/ Severe Flood Warning**

A Minor / Moderate / Major Flood Warning typically provides more information than a generalised flood warning and is issued when flooding is expected to occur in a given area. These warnings are usually accompanied by a flood gauge level and timing for the peak to occur.

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.

## **SES Australian Warning System**

The SES distributes warnings to media outlets and agencies in the event of predicted hazardous conditions. Each warning has three components:

- The location and type of hazard impacting the community
- For each warning level there are a range of action statements to guide protective action by the community. These statements evolve as the warning levels increase in severity. Statements range from 'stay informed; at the Advice level, to 'prepare to evacuate' at the 'Watch and Act level, to 'evacuate now' in the emergency Warning level. As the situation changes and the threat is reduced, the level of warning will decrease accordingly.
- The severity of the natural hazard event based on the consequence to the community.

The NSW SES will issue three levels of warnings.

## Advice

An incident has started. Stay up to date in case the situation changes. Stay informed, monitor conditions and in the case of a reduced threat, return with caution.

## Watch and Act

Conditions are changing and you need to start taking action now to protect you and your family. Do not enter floodwater, prepare to evacuate, prepare to isolate and avoid the area.

## Emergency Warning

The highest level of warning. You may be in danger and need to take action immediately. Evacuate before [time], evacuate now, shelter now and move to higher ground.

Broadcast will be via radio/ TV, door knock, automated telephone message or SMS.

All warnings will be issued through the SES/BOM website, radio and television. Radio frequencies include ABC Newcastle (1233AM, 106.1FM), Triple J (102.1FM), KOFM (102.9FM), NEWFM (105.3FM), 2NUR (103.7FM), HIT106.9 (106.9FM), 2HD (1143AM).

All public and commercial television stations should broadcast warnings.

## On-Site Emergency Communication

The PA system 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. 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.

## Other Warning Types / Resources

### City of Newcastle Disaster Dashboard

[Newcastle City Council Disaster Dashboard](#) can provide live advice as to which roads may be closed and where hazardous flood conditions may be expected.

The Dashboard should be reviewed regularly during a flood event for accurate updates of emergency conditions in the area including real time road conditions.

### Hazards Near Me NSW

Recently the NSW SES and NSW Public Works have created a new tool called [Hazards Near Me App](#) NSW which is both a webpage and Phone Application. The application filters BoM and RFS warnings relevant to the user and may be used as an additional resource. The Application is free and allows the user to input a radius of interest for receiving notifications.

### Hazard Watch

The NSW SES and Australian Federal Government have prepared the [HazardWatch](#) portal that filters BoM warnings and provides advice on locations and magnitude of predicted hazards. This resource is also free and can be accessed via a smart phone, tablet or laptop.

## Flood Response Personnel

Summarised in Table 10 below are the facilities nominated emergency personnel, their location and responsibilities in managing flood response.

**Table 10 - Flood Response Personnel**

Location		Responsibilities
<b>Chief Flood Warden</b>	On-site	<ul style="list-style-type: none"> <li>• Coordinate flood evacuation drills.</li> <li>• Monitor weather at 4pm daily for upcoming extreme rainfall events.</li> <li>• Receive notifications from the City of Newcastle Council Flood Alert Service.</li> <li>• Decide when Cancellation of activities or Evacuation / Refuge is required.</li> <li>• Communicate Cancellation and Evacuation / Refuge to staff, patients and visitors.</li> <li>• Liaison with SES or Emergency Services personnel if they attend site.</li> <li>• Remain calm and direct visitors and staff through the evacuation procedures.</li> </ul>
<b>First Aid Officer</b>	On-site	<ul style="list-style-type: none"> <li>• Prepare and maintain Flood Emergency Kit.</li> <li>• Prepare and coordinate assistance for staff, patients and visitors with mobility difficulties.</li> </ul>
<b>Deputy Chief Flood Warden</b>	On-Site	<ul style="list-style-type: none"> <li>• Undertake Chief Flood Warden duties when Chief Flood Warden is unavailable.</li> <li>• Maintain calm and direct staff and visitors through the evacuation process.</li> </ul>
<b>Flood Wardens</b>	On-Site	<ul style="list-style-type: none"> <li>• Assist Chief and Deputy Chief Flood Warden with evacuations.</li> </ul>
<b>Staff</b>	On-site	<ul style="list-style-type: none"> <li>• Maintain calm and direct visitors onsite through evacuation or refuge processes.</li> </ul>
<b>Bar Beach Bowling and Sporting Club</b>	29 Kilgour Avenue, Merewether	<ul style="list-style-type: none"> <li>• Nominated off-site refuge facility.</li> <li>• Phone Number: (02) 4929 3428.</li> </ul>

It is anticipated the Chief Warden, who is in charge of emergencies and evacuation (as per the Lingard Private Hospital Emergency – Code Orange – Evacuation Policy – LNG111), 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 / Refuge during a flood emergency.

# Assembly Point and Evacuation Routes

## Emergency Assembly Point

The following Figure 6 presents the nominated **Emergency Assembly Point** for flooding as the **Lounge on Level 1**. Staff, patients (if ambulatory) and visitors on-site following declaration of an emergency should proceed to this location.

It is the responsibility of the Chief Flood Warden to activate the evacuation procedure with all staff, patients and visitors are to evacuate early, prior to rainfall commencing.

It is possible that some patients may not be mobile at the time an emergency is declared. In such an event, the procedure to direct patients to the Emergency Assembly Point should generally follow the Order of Evacuation procedure outlined in the Lingard Private Hospital Emergency – Code Orange – Evacuation Policy (LNG111) and reproduced below.

### Group 1: Ambulant

Ambulatory Patients who require direction only. If light is poor the group should hold hands. Children under the age of 12 should at all times be accompanied by a parent/guardian or an adult staff member. Children should never be left to fend for themselves or entrusted into care of a patient or visitor.

### Group 2: Semi-Ambulant

Semi-ambulant patients requiring minimal assistance. Semi-ambulant children and babies are to be included in Group 1.

### Group 3: Non-Ambulant

Non-Ambulant Patients who have to be physically moved or carried. Patient should never be evacuated in their bed. In this instance these patients should remain until all other patients are evacuated due to risks of blocking egress.

### Group 4: Aggressive, Violent or Resistive

Use reasonable strategies required to evacuate. If unable to evacuate note location of these patients for Chief Warden/Fire Brigade/Police.

Flooding within Lingard and Merewether Streets will make access and egress to and from the facility impractical during a flood event. In the event where staff and visitors are unable to return home, an offsite refuge facility is discussed in the following section of this plan.

It is strongly recommended that in the event of a flood the elevators are not used. There is the potential for flood waters to enter the lift shafts, potentially disabling the lifts during a flood event.

Similarly, access into the basement garage should not be attempted. These areas have the potential for stormwater ingress during an extreme event and it is possible staff, patients or staff may become trapped.

In the event where a 1% AEP flood event or above is declared, the facility should be closed with any planned procedures cancelled. 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 should be transferred to a nearby hospital prior to the commencement of rainfall. This should be undertaken in accordance with the procedure outlined in the Lingard Private Hospital Emergency – Code Orange – Evacuation Policy (LNG111) with the NSW Ambulance Service contacted at the first available opportunity following declaration the emergency.

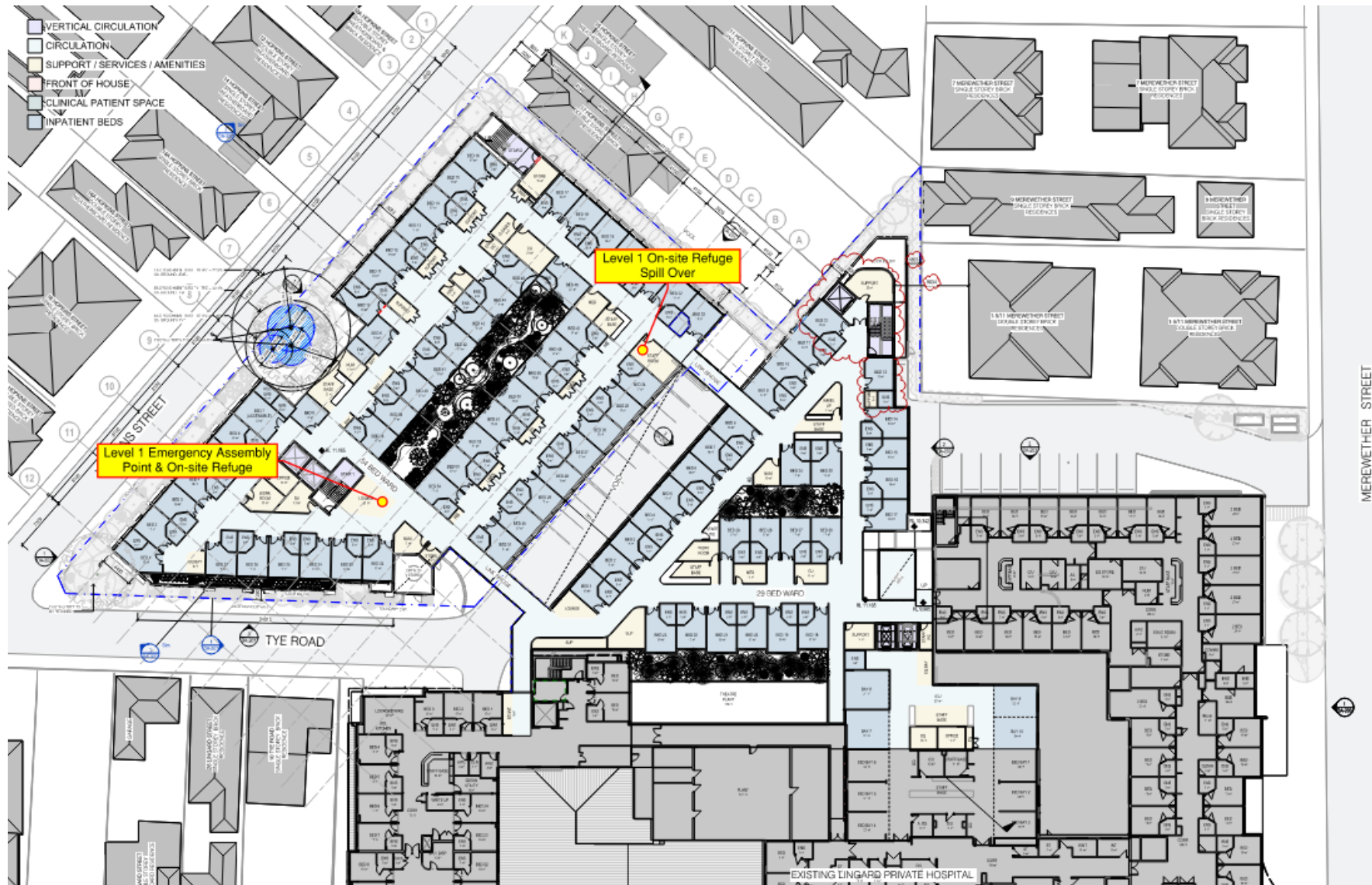


Figure 6 - Flood Emergency Assembly Point Level 1 (Stage 2 Architectural Drawings (Rev 14 dated 24/08/19))

## Evacuation Centre

In the event where staff, patients and visitors are unable to return home, the nominated off-site refuge point is **Bar Beach Bowling and Sporting Club**, located at **29 Kilgour Avenue, Merewether**. This location has been defined as the nearest evacuation centre by the Newcastle Local Disaster Plan (DISPLAN, 2012). Given the expected short duration of storm event (less than approximately two hours) this facility is expected to enable a temporary safe haven for those within the facility until the storm event passes.

If seeking refuge at **Bar Beach Bowling and Sporting Club**, it is recommended the Chief Flood Warden contact the facility prior to leaving the site to ensure refuge is available. This may also be an opportunity to obtain some information regarding the conditions along the evacuation route and whether access to the facility is available.

## Evacuation Route

Once everyone is accounted for and the access and availability of the evacuation centre is confirmed, evacuation should be undertaken to the agreed refuge point under the control of the Flood Wardens and guidance of staff. Review of the flood information available suggests the path of least resistance to the nominated off-site refuge point as shown in the below Figure 7.

It is recommended staff, visitors and patients capable of driving proceed to the nominated off-site evacuation centre. Driving to the facility will remove the potential for the vehicles being flooded and potentially becoming floating debris, creating issues on-site and downstream.

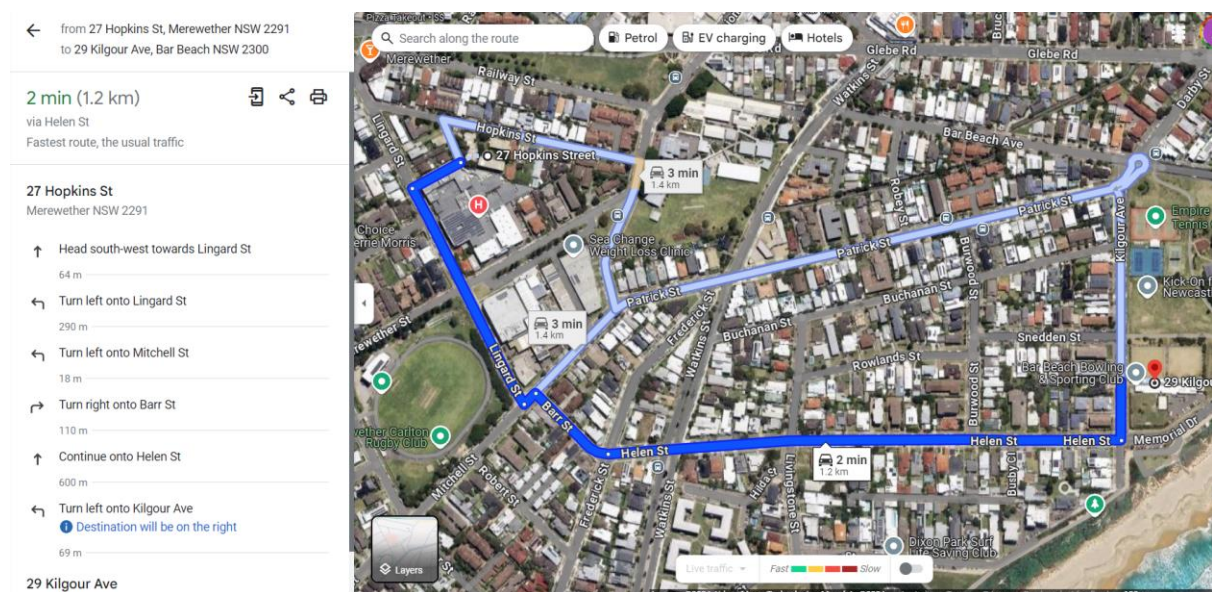


Figure 7 - Evacuation Route

## Non-Flooding Hazards

In the event that non-flooding hazards such as high winds, damaged powerlines and uprooted trees affect the route to the evacuation centre, it is recommended that evacuees pay close attention to Live Traffic NSW (<https://www.livetraffic.com>) and the Newcastle Disaster Dashboard (<https://newcastle.disasterdashboards.com/dashboard/overview>) websites via their smart phone to ensure a safe journey to Bar Beach Bowling and Sporting Club.

# Floor Levels and On-Site Refuge

## Floor Levels

The proposed medical facility has six floors, two of which are considered habitable. The level of each floor is presented below in Table 11. The floor levels with respect to the 1% AEP and PMF flood events are also presented in the below Table 11.

Table 11 - Internal Floor Levels

Floor	Level (m AHD)	Relationship to Flood Levels
Basement Carpark (B1)	5.47	Protected above 1% AEP, below PMF
Ground Floor (Lingard Precinct - Existing)	6.37	Above 1% AEP and Below PMF
Ground Floor (Hopkins Precinct – New)	6.70	Above 1% AEP and PMF
Upper Ground Floor	8.17	Above 1% AEP and PMF
Level 1	11.17	Above 1% AEP and PMF
Level 2	15.07	Above 1% AEP and PMF
Roof	18.97	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 as a means of last resort. As shown in Figure 6 above, the nominated on-site refuge point is the **Lounge on Level 1**. We recommend staying onsite once rainfall has commenced or if evacuation is impractical.

The **Staff Room located on Level 1** has also been nominated as an additional **Refuge Spill Over Point**. Staff, patients and visitors may proceed to this secondary location **following roll call**, provided there is at least one Flood Warden at each of these refuge points, at all times. This location is sited at an elevation of 11.17m AHD, approximately 4.47m above the PMF.

Patient rooms on Level 1 may also be used for refuge provided patients and visitors are supervised by staff.

Should you become isolated on-site, move to **Level 1** of the building 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 24 hours.
- Consideration to connecting the proposed development to the existing facility backup generator or allowance during detailed design to introduce a backup generator for the proposed development.
- Back up provisions in the event where water supply and sewage services are temporarily unavailable.

**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 **The City of Newcastle Council's Emergency Hotline** on (02) 4974 6000.

Once the decision has been made to evacuate, call **Bar Beach Bowling and Sporting Club** on (02) 4929 3428 to ensure they are ready to accept the subject site population.

# Flood Response Preparation

It is the responsibility of the staff 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.

## Evacuation Drills

Evacuation drills are designed to increase flood awareness within the centre. 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 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 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 the **Lounge and Staff Room on Level 1** in a roll trolley suitable for easy deployment in the event of an evacuation. The contents of the kit and management during a flood event will be the responsibility of the **First Aid Officer**.

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 car parks or ground floors which are 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 Council's Flood Alert Service and checking of the local radio stations and the Bureau website.

**TRIGGER FOR MONITORING:**

- Continuous, 4pm daily

**BY WHO:** Chief Flood Warden

# Flood Response Actions

## Hospital Management

The Bureau of Meteorology (BoM) will provide Severe Thunderstorm Warnings several days prior to a large thunderstorm which may produce heavy rainfall and flash flooding. It is recommended that in the event of such a warning, specific actions be undertaken as presented in the Lingard Private Hospital Critical Operations Standing Operating Procedures (COSOPs). Such actions include:

- Isolate affected areas, relocate patients and staff accordingly.
- Ascertain status of all departments and if services need amendment, delay or cancellation. Notify relevant parties of change of service status.
- Ascertain appropriate level of service available and treat accordingly.
- Delay, amend or cancel operating theatre services are required. Endeavour to protect sterile equipment where able.
- Ascertain alternative delivery areas and notify necessary companies of alterations. Ascertain stores in place and duration of supply.
- Identify patients for transfer or discharge where hospital service capacity is decreased.

## Cancellation of Operations

In order to minimise the risk to life, it is recommended the hospital be closed if a **threshold based alert is issued by the Early Warning Network** with nominated rainfall depth greater than a 5% AEP flood event as presented in the following Table 12.

Table 12 - Rainfall triggers for cancellation

Likelihood	Trigger
50%	Chance of rainfall > 15 minute 5% AEP
50%	Chance of rainfall > 1 hour 5% AEP
50%	Amount of daily rainfall up to 250mm

**Evacuation and closure should be undertaken well in advance of rainfall occurring.** Once rainfall has commenced, refuge is to be sought on-site as discussed overleaf.

The aim is to eliminate/reduce the risk to life by removing as many staff, patients and visitors from the floodplain prior to the commencement of rainfall, provided there is enough time for them to return home or to a safe place of residence.

The Chief Flood Warden is responsible for reviewing the weather forecasts daily and notifying facility users and staff of the decision to close the facility or seek refuge on-site.

When a warning is received, consideration should be given to:

- Cancelling services and appointments for the day of the event.
- Blocking floor wastes and toilets.
- Securing objects that are likely to float and cause damage.
- Turning off mains power, water and gas and other hazardous materials.

- Relocating chemicals above the predicted water level.
- Moving vehicles away from the site where possible.

If time permits the evacuation procedure should generally as follow:

- **Sound** alarm on PA system/ air horn.
- **Chief Flood Warden** to the **Emergency Assembly Point**.
- **Flood Wardens and Staff direct and assist** all patients and visitors to the **Emergency Assembly Point**.
- **Chief Flood Warden** to contact the **Ambulance Service**.
- **Flood Wardens** clear all buildings.
- **Roll call** to ensure everyone is accounted for.
- **Return home** if it is safe to do so and wait out the storm event.
- **If unable to return home, Chief Flood Warden to call Bar Beach Bowling Club** to ensure the nominated off-site refuge facility is able to accept evacuees.
- **Control** evacuation to **Bar Beach Bowling and Sporting Club**, located at **29 Kilgour Avenue, Merewether**.
- **If evacuating the facility, leave signage undercover** and notify **Ambulance Service/Police/ SES** that evacuation has occurred, and to where.
- **If rainfall has commenced or if it is deemed impossible to seek refuge at the designated off-site refuge point**, refuge may be sort on-site at the designated on-site refuge point as a means of last resort.
- **Wait it out** at the designated refuge points.

If the facility is to be evacuated, the Chief or Deputy Chief flood warden is to alert the Ambulance Service as per the Lingard Private Hospital – Emergency – Code Orange – Evacuation (LNG111) policy. The service will then notify the State Health Services Functional Area Coordinator (State HSFAC) who will notify the Area HSFAC. The Ambulance Service has the primary role to assist with the transfer of patients from a hospital that is/has been evacuated.

#### **TRIGGERS FOR EVACUATION:**

- Weather forecast with a **rainfall likelihood per the below:**
  - **50% chance rainfall > 15min 5% AEP**
  - **50% chance rainfall > 1hour 5% AEP**
  - **50% chance daily rainfall > up to 250mm**

**RESPONSIBLE FOR THE DECISION:** Chief Flood Warden

#### **Refuge On-Site**

In the event where rainfall has commenced and it is determined that staff, patients and visitors cannot return home or seek refuge at the designated off-site refuge facility, refuge may be sort on-site as a means of last resort. The procedure for refuge on site should be carried out as the following:

- Sound air horn;
- Direct everyone to Emergency Assembly Point.
- Roll call to ensure everyone is accounted for.
- Confirm in-ability for evacuation and off-site refuge.
- 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 ONSITE**

- **Commencement of rainfall** in event when a **Severe Weather Warning** or **Generalised Flood Warning** is current; and
- **Evacuation and off-site refuge is deemed impossible**

**RESPONSIBLE FOR THE DECISION:** Chief Flood Warden

#### **Emergency Services Attending Site**

It is noted self-motivated evacuation, such as that proposed in this plan, reduces strain on emergency services. 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.
- Advice should be sought from a suitably qualified engineer as to the structural integrity of buildings prior to their use.
- 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 should be revised prior to Construction Certificate phase.

Furthermore, this plan should be revised if there are further revisions to the flood study for Throsby, Cottage and CBD Flood Study is reviewed to capture changes in the catchment since the last study.

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 and it was concluded that:

- **Nominated flood wardens** will provide adequate direction in flood emergencies.
- **Cancellation of operations** is preferable prior to major and extreme events to eliminate community exposure to flood hazards.
- If operations have commenced for the day, **evacuation well in advance of a predicted major or extreme event** is preferable with staff, patients and visitors recommended to return home and wait out the flood event.
- If staff and visitors are unable to return home, an **off-site refuge point is recommended as the Bar Beach Bowling and Sporting Club**. This facility is located outside the extent of a predicted PMF flood level and has been identified as a community refuge point by the Newcastle DISPLAN (2012).
- If rainfall has commenced for a predicted major or extreme event, **shelter in place on-site**, refuge is available on Level 1 of the facility.
- Through adoption of this plan, the proposed development adequately minimises the flood risks 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.

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BMT WBM	(2008)	Throsby, Cottage and CBD Flood Study from: <a href="http://www.newcastle.nsw.gov.au/Newcastle/media/Documents/environment/Flooding/BMT-(2008)-Report-Throsby-Cottage-CBD-Flood-Study_reduced.pdf">http://www.newcastle.nsw.gov.au/Newcastle/media/Documents/environment/Flooding/BMT-(2008)-Report-Throsby-Cottage-CBD-Flood-Study_reduced.pdf</a> 4 October 2024	accessed
Lingard Private	(2019)	Emergency - Code Orange – Evacuation. number: LNG111 2019	Policy Provided: 14 August

# Appendix A

## Site Signage

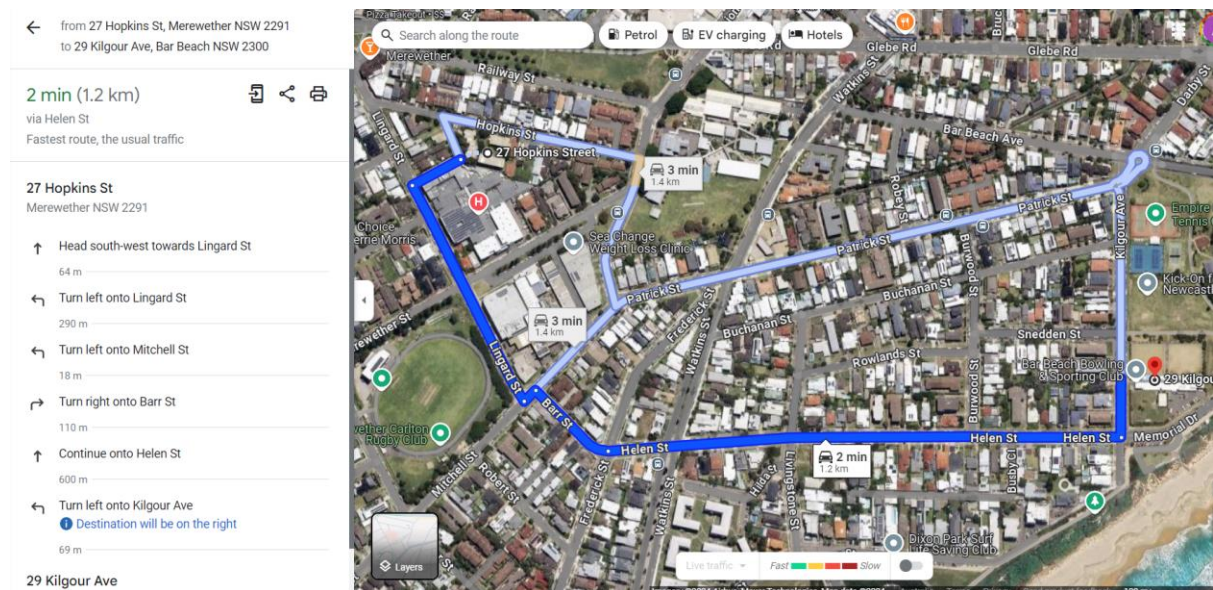
### Flood Evacuation Route to Bar Beach Bowling and Sporting Club (Offsite Refuge Point)

This property is flood prone with predicted depths in adjacent roadways above **one and a half metres**.

**Evacuation should be taken prior to rainfall commencing.** The nominated evacuation site is **Bar Beach Bowling and Sporting Club** located at 29 Kilgour Avenue, Merewether.

Once rainfall has commenced, **refuge is available in the Level 1 Lounge** and no attempt should be made to evacuate elsewhere through floodwater by foot or vehicle.

Follow the direction of Flood Wardens and staff at all times. If assistance is required ask a member of the staff. If in a life-threatening situation, call 000.



## Flood Emergency Assembly Point/ On-site Refuge

This property is flood prone with predicted depths above **two metres**.

**Evacuation should be taken prior to rainfall commencing.** The nominated evacuation site is **Bar Beach Bowling and Sporting Club at 29 Kilgour Avenue, Merewether.**

Once rainfall has commenced, **refuge is available in the Level 1 Waiting Room** and no attempt should be made to evacuate elsewhere through floodwater by foot or vehicle.

Follow the direction of Flood Wardens and staff at all times. If no staff are present, use the intercom to call Storage King's base. If assistance is required, call the SES on 132 500. If in a life-threatening situation, call 000.

