BESIX Watpac

Flood Emergency Management Plan

N230

New Shellharbour Hospital

14 August 2024

Revision History

Version	Date	Revision Description	Project/Site Manager Sign off
REV 00	14/08/24	Initial Revision	Claire Moran Ilse Luypaert

Contents

Flood Emergency Management Plan

1 Purpose

The purpose of this management plan is to address conditions B21 and B26 of the development approval SSD-57064458 for the New Shellharbour Hospital. Responses to these conditions are outlined within this plan as noted below in **Table 1**.

Table 1 SSD Requirements

SSD 57064458 requirements		Reference
B21	**Construction Flood Emergency Management Sub-Plan** The Construction Flood Emergency Management Sub-Plan must address, but not be limited to, the following:	
	a. be prepared by a suitably qualified and experienced person(s);	New Shellharbour Hospital SSDA Report – Civil Prepared by Enstruct Revision F - August 2023
	b. address the provisions of the Floodplain Risk Management Guidelines.	
	c. include details of:	
	i. the flood emergency responses for both construction phases of the development.	Section 2.2
	ii. predicted flood levels.	Section 2.1
	iii. flood warning time and flood notification.	Section 3
	iv. assembly points and evacuation routes.	Appendix B
	v. evacuation and refuge protocols; and	Section 7
	vi. awareness training for employees and contractors, and users/visitors	Section 2.3
B26	**Flood Management** Prior to the commencement of construction, the Applicant must prepare and implement for the duration of construction:	
	a. flood warning and notification procedures for construction workers on site; and	Section 3
	b. evacuation and refuge protocols.	Section 7 Appendix B

2 Flood Plain Risk Assessment

2.1 Predicted Flood Level

Section 6 of the Enstruct Report (**Appendix A Flood Reports**) provides a summary of the predicted peak flood levels as follows:

Table 2 - Predicted Flood Levels

	1% AEP Flood Level	PMF Level
Proposed hospital site	3.80 mAHD	6.10 mAHD

The proposed hospital has been designed to be above the probable maximum flood (PMF) level to comply with the requirements of the Shellharbour DCP and NSW Flood Risk Manual 2023.

The lowest floor level of the proposed new hospital has a finished floor level of 8.20 mAHD (Level 0), with the loading dock at 7.00 mAHD. These levels are well above the PMF so the hospital construction site will not be impacted even during an extreme flood event.

2.2 Construction Flood Emergency Response

Sections 6.2 to 6.4 of the Enstruct (**Appendix A Flood Reports**) report addresses flood emergency response. Enstruct consulted with the SES during the preparation of their report and have confirmed the following:

- During an extreme flood event, the proposed buildings **are not impacted by flooding**.
- External paths to the west of the hospital buildings may be flood affected in an extreme flood event.

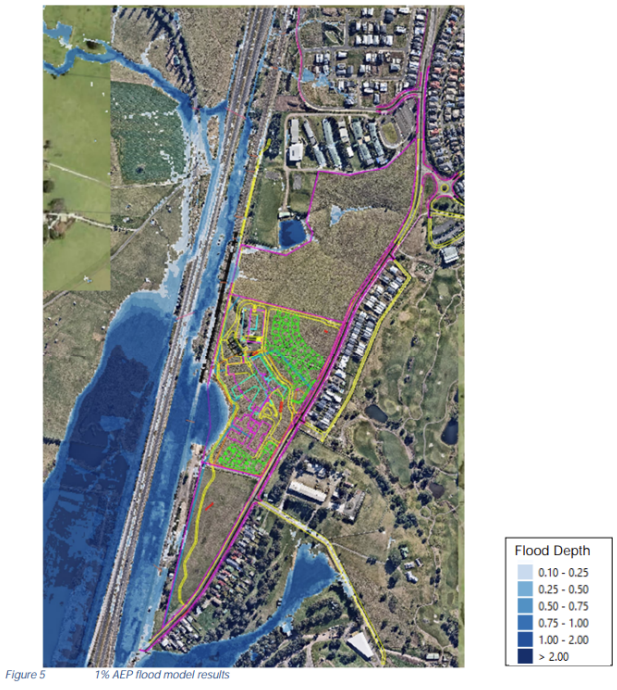


Figure 5 1% AEP flood model results

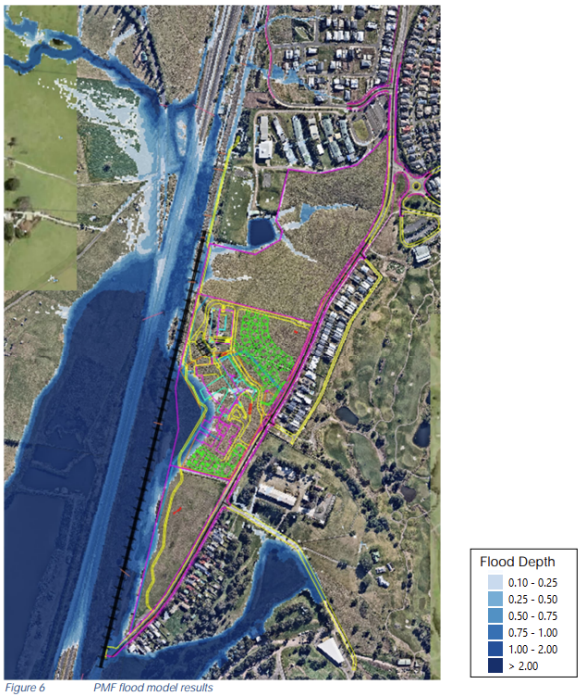


Figure 6 PMF flood model results

Figure 1 Flood Model Results

- During a 1% AEP flood event, all weather access is available along the fire access path on the west side of the hospital buildings.
- **Dunmore Road is not flood affected**. Hospital access and egress is not impacted by flooding. It is expected that there will be no impact on the operation of the hospital as a result of flooding.
- The risk of flooding affecting construction activities is therefore considered to be very low.

However, when there is an expectation of extreme rainfall such as >100mm, all construction activities will be stopped, and all material will be removed from the area located within the 1% AEP.

The 1% AEP is a small slither of the western verge of the site that is outside of the main construction activities. See **Figure 2** below.

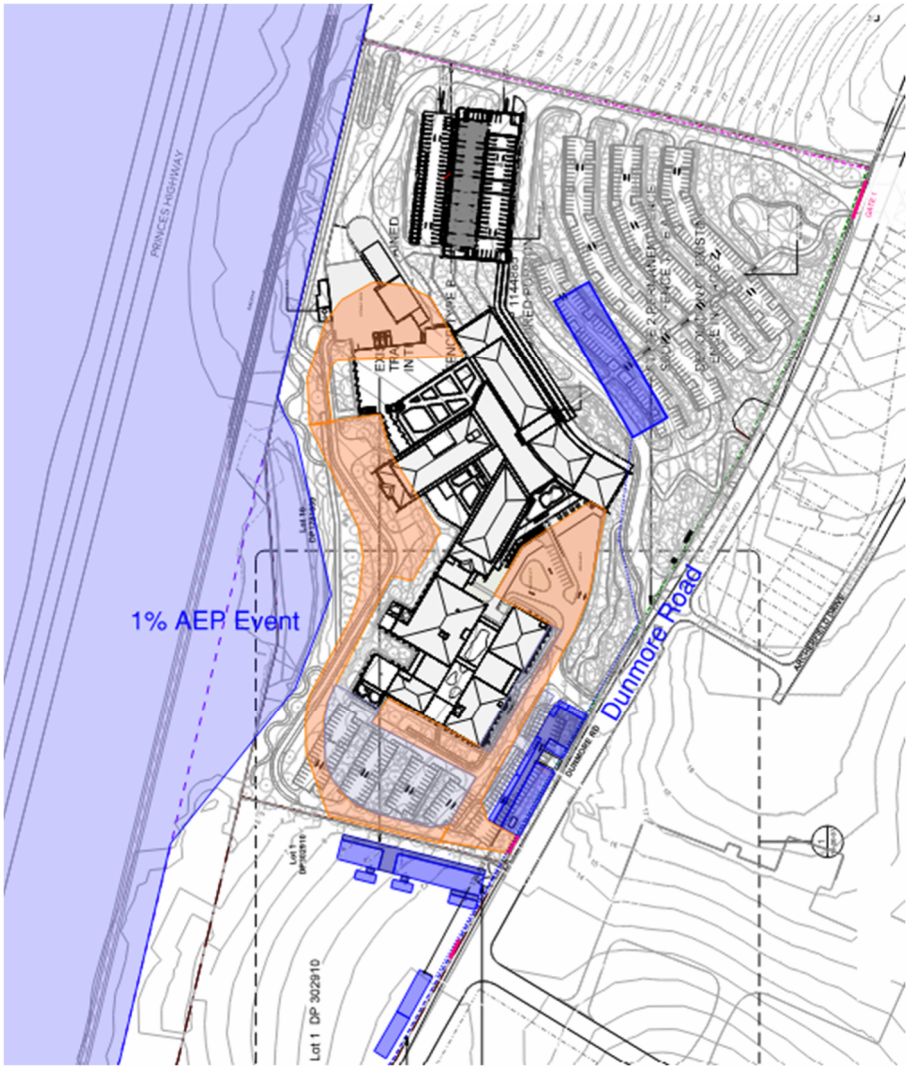


Figure 2: 1% AEP Flood Level

2.3 Awareness Training

BESIX Watpac will ensure all construction personnel working within the 1% AEP area will receive awareness training about flood controls. Information on the flooding risks and mitigations to the site will be disseminated during worker inductions prior to commencement of workers starting on site.

3 Flood Warning

3.1 Weather and Flood Warning Products

The Early Warning Alert Service provides severe weather event notification for the local area. Alerts can cover severe thunderstorms, hail, destructive winds, cyclones and flooding. Register to receive early warning alerts by email, SMS or phone.

3.2 Bureau of Meteorology Flood Warning

Flood Warnings are issued by the Bureau to advise that flooding is occurring or expected to occur in a geographical area based on defined criteria. Flood Warnings may include either qualitative or quantitative predictions or may include a statement about future flooding that is more generalised. The type of prediction provided depends on the quality of real-time rainfall and river level data, the capability of rainfall and hydrological forecast models and the level of service required.

A quantitative or qualitative flood warning of Minor, Moderate or Major flooding is provided in areas where the Bureau has specialised warning systems. They provide advanced warning about the locations along river valleys where flooding is expected, the likely class of flooding and when it is likely to occur. Predictions of expected water levels and the timing of flood peaks are provided at key forecast locations.

The Bureau also provides generalised flood warnings when there is not enough data to make specific predictions or in the developing stages of a flood. They typically rely on forecast rainfall and knowledge of historical flood response. Generalised warnings contain statements advising that flooding is expected in particular river valleys but do not provide information about flood class nor precise locations.

As part of its Severe Weather Warning Service, the Bureau also provides warnings for severe weather that may cause flash flooding. State emergency services or local authorities may provide flash flood warnings in some locations.

Flood Warnings, Flood Watches and general information are available directly from the Bureau of Meteorology at www.bom.gov.au/australia/warnings, or 1900 926 114.

3.3 Flood Warning Time and Notifications

The TUFLOW flood model undertaken by Enstruct (**Appendix A Flood Reports**) shows that the catchment zone is on the Eastern side of the escarpment and limited to a relatively small local area.

Therefore, a Flood event will be synonymous with an extreme rainfall observed on the construction site.

When there is an expectation of extreme rainfall such as >100mm, all construction activities will be stopped immediately, and all people, equipment or material will be removed out of the 1%AEP zone and people will be evacuated to Assembly point located at Dunmore Road – see Evacuation Plan in **Appendix B Evacuation Plan**.

Figure 3 Catchment Zone Map

4 Flood Preparation

If the warnings don't indicate flash floods, which require immediate evacuation, the following preparations can be made to make the site as safe as possible and protect valuable equipment or products.

4.1 Electrical Hazards

If the Electrical services plant is below the flood level, the electrical services contractor should be contacted to isolate the building.

If the sheds are in the basement and below the flood level, the temporary boards should be switched off on the way out and emergency lighting should be used to exit the site.

Do not resume on site without approval from licenced electrical contractor after they've checked the site for any further electrical hazards.

4.2 Chemical Hazards

Secure any gas bottles. Ensure the caps of all chemical containers are screwed on tight and lock up the chemical storage sheds. Empty freezers and refrigerators, leaving doors open. Put sandbags in toilet bowls to prevent sewage back-flow.

4.3 Materials

Any materials that may be susceptible to water damage should be removed from site or relocated to a materials lay-down area located at a high-point of the site or at an upper floor (depending on what's available).

4.4 Deliveries

Inform any critical deliveries due that day to avoid the area.

4.5 Critical Equipment and Goods

If it is safe to do, prioritise the recovery of expensive goods or those which require a long lead time (e.g. light fittings). Consider moving them to higher ground or off the site. Recover laptops and any other expensive IT equipment.

4.6 Erosion and Sediment Control

Ensure run-off control overflows are functional and ensure water has a clear path of exit as much as possible.

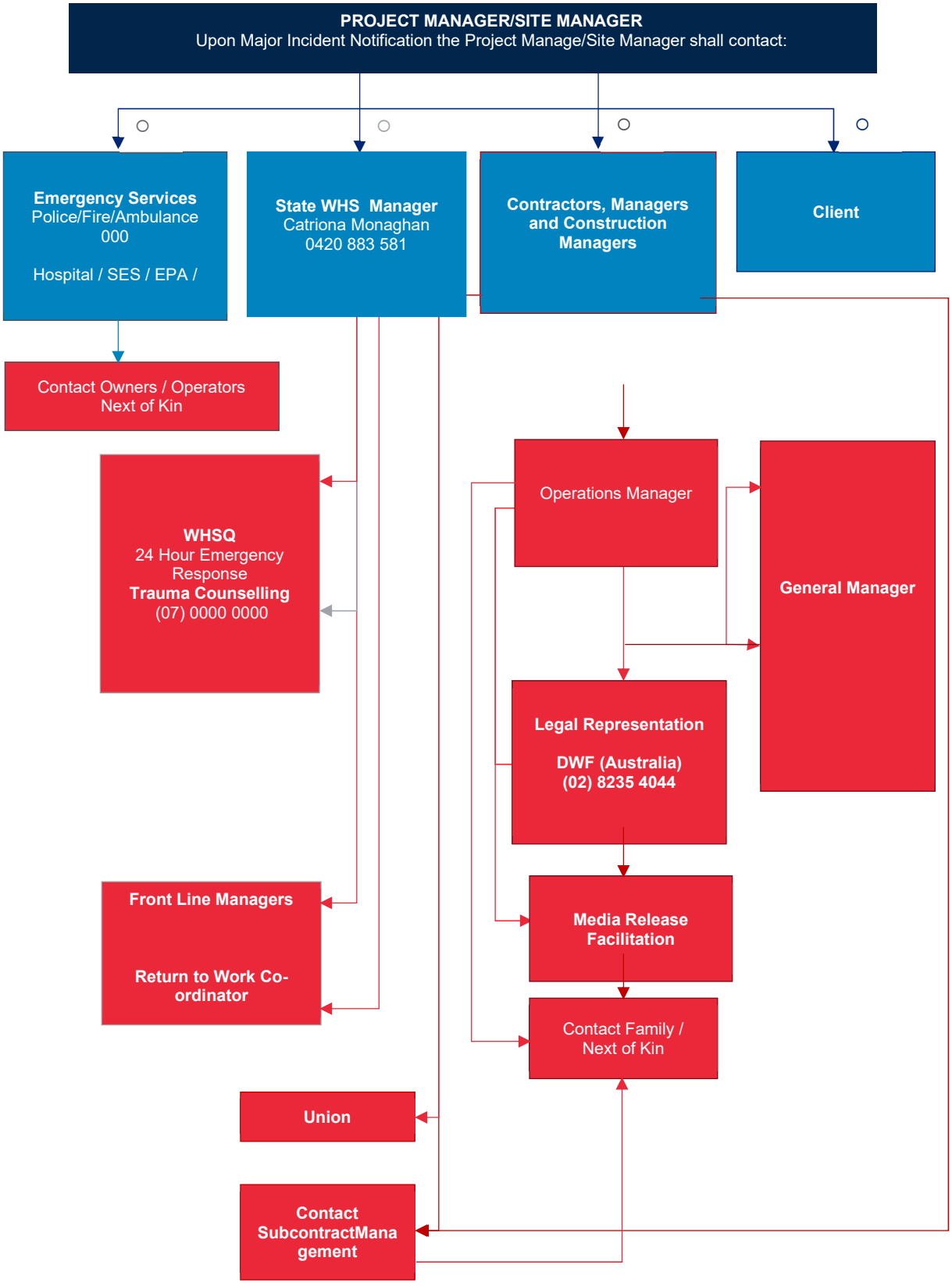
4.7 Flood Defence

If possible with advance notice, consider installing flood defences, such as sandbagging entries. Contact www.floodcontrolinternational.com for advice.

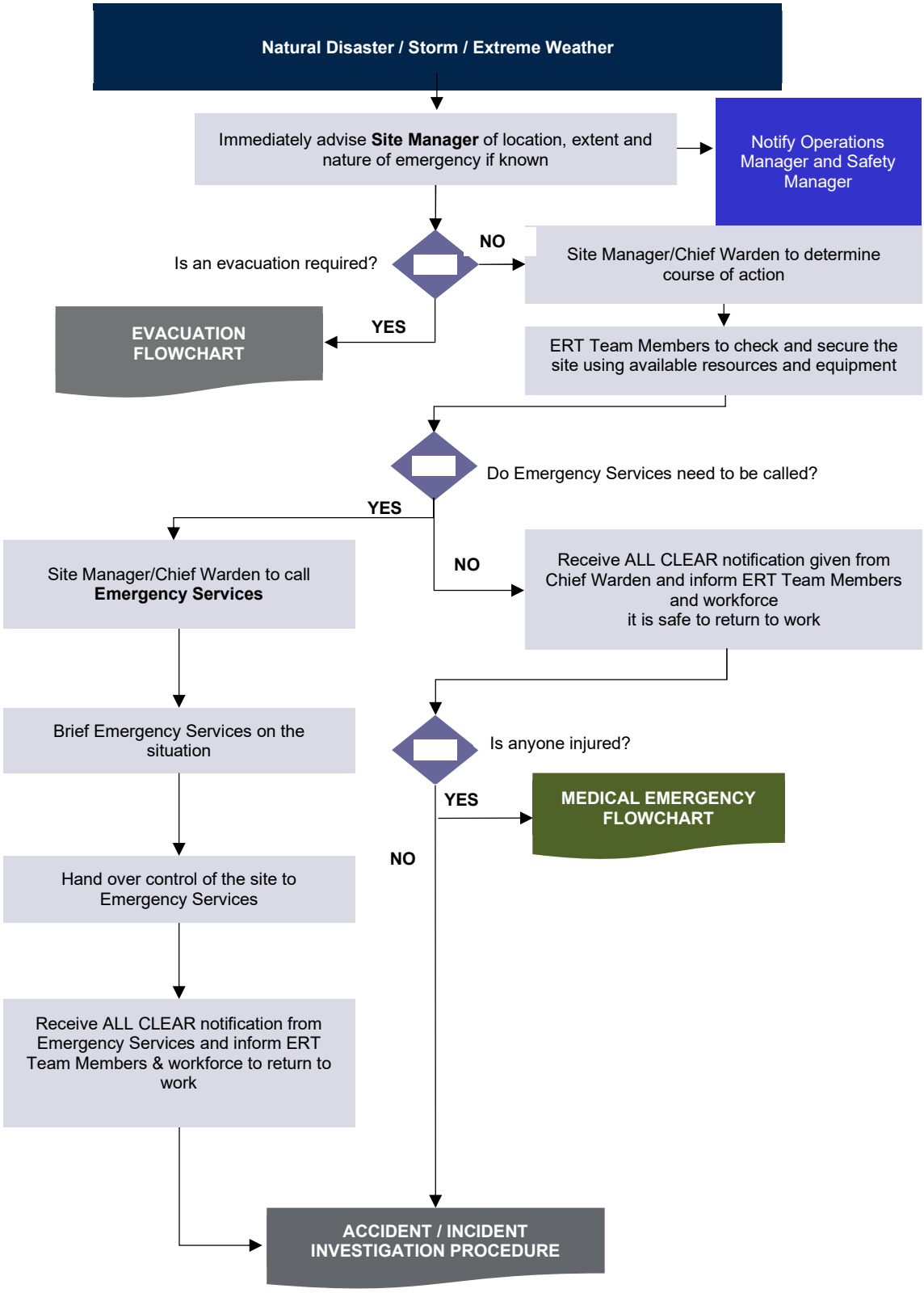
4.8 Site Safety

Secure the site after exiting.

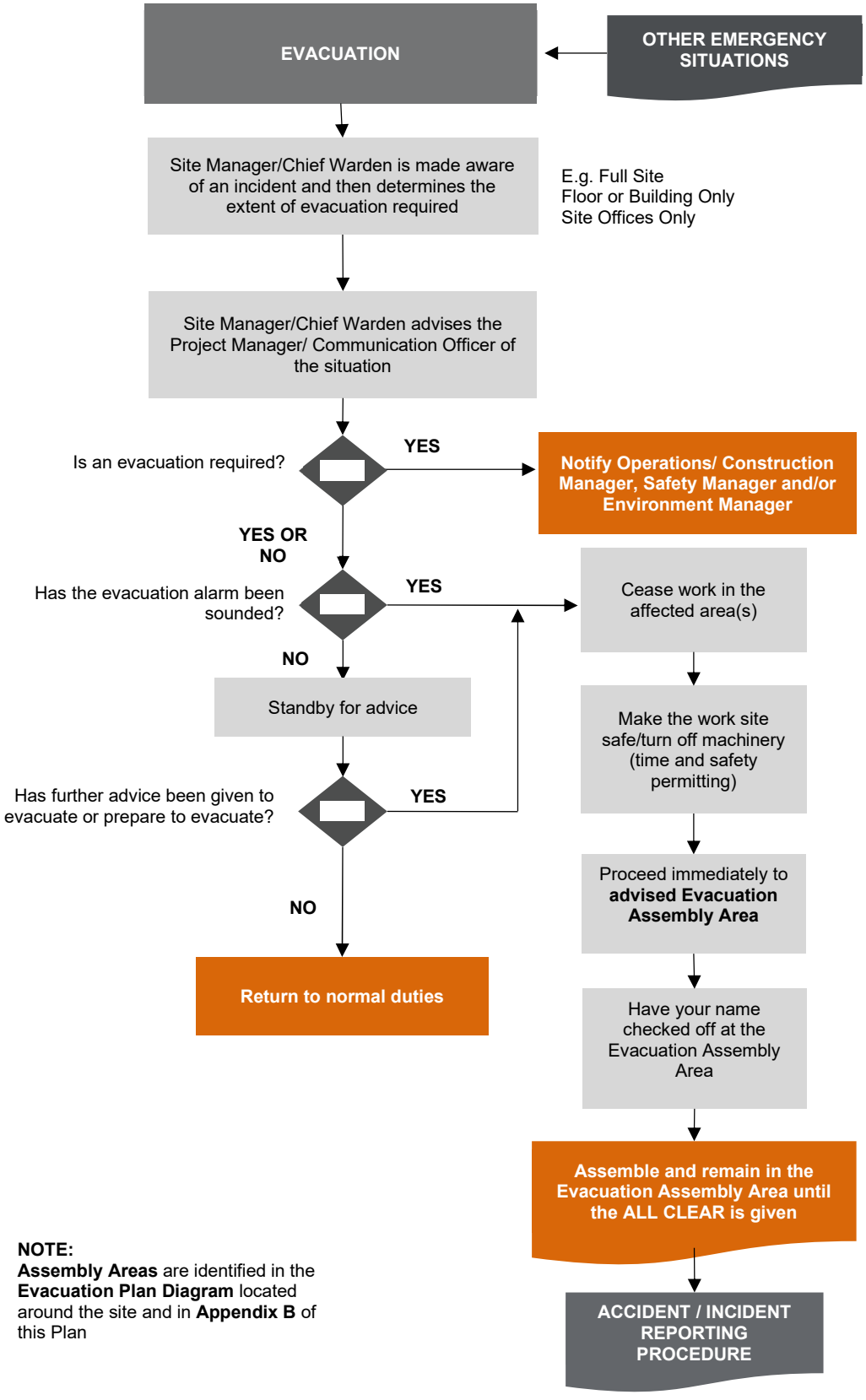
5 Notification Contact Flowchart



6 Natural Disaster / Storm / Extreme Weather



7 Emergency Evacuation Flowchart



NOTE:
Assembly Areas are identified in the **Evacuation Plan Diagram** located around the site and in **Appendix B** of this Plan

8 Responsibilities

Role	Position
Field Controller **(Chief Warden)** **(Deputy Chief Warden)**	Site Manager Senior Site Manager
Emergency Response Coordinator **(Communication Officer)**	Project Manager
Emergency Wardens **(Area Wardens)**	Safety Advisor
Evacuation Warden **(Wardens)**	Site supervisor

8.1.1 Field Controller – CHIEF WARDEN/DEPUTY CHIEF WARDEN

The Field Controller/Chief Warden/Deputy Chief Warden responsibilities include:

- To respond immediately and proceed to the emergency area and assess the type of emergency and the appropriate response required in the situation
- Determine if evacuation of the work area is required
- If required issue instruction for emergency evacuation and the sounding of the emergency siren
- Communicate assessment of the situation to the Emergency Response Coordinator
- Provide instruction to the Communication Officer for Emergency Services assistance, if required
- Communicate and coordinate the response of relevant work crews in consultation with Emergency Wardens
- Provide instruction to BESIX Watpac Emergency Warden
- Inspect adjacent work areas to confirm if work can continue safely
- Instruct and coordinate clean-up crews; and
- Make sure the area is not interfered with unless necessary to assist an injured person, remove a deceased person, make the site safe or prevent a further incident, assist with a police investigation or as permitted by the regulator.

8.1.2 Emergency Response Coordinator – COMMUNICATION OFFICER

The Emergency Response Coordinator/Communication Officer role is designated to the **Project Manager**. In an emergency the Coordinator will remain at the site office and carry out the following duties:

- Communicate with the Field Controller/Chief Warden
- Communicate with the BESIX Watpac Emergency Response Team
- Monitor the response to check that correct procedures are followed
- Communicate with Emergency Services
- Confirm evacuation is satisfactorily completed
- Follow the BESIX Watpac Emergency Reporting Protocol matrix
- Coordinate with host premises emergency requirements

NOTE: As some project works will be undertaken within the live operational environment coordination of additional emergency procedures are required.

8.1.3 Evacuation Wardens – WARDENS

The Evacuation Wardens responsibilities include:

- Contact Emergency Wardens and have them proceed to the Field Controller to receive further instructions
- Collect the site visitors register and advise the Emergency Response Coordinator of visitors on site
- Coordinate with the Emergency Wardens to determine if all visitors are accounted for
- Communicate with the Emergency Response Coordinator and Field Controller to locate any missing visitors if any
- Ensure workers remain in the evacuation area until further instructions are received from the Emergency Response Coordinator.

8.1.4 Subcontractor Supervisors

- Designated subcontractor's supervisors may be members of the Emergency Response Team.

8.1.5 Hoist Operator

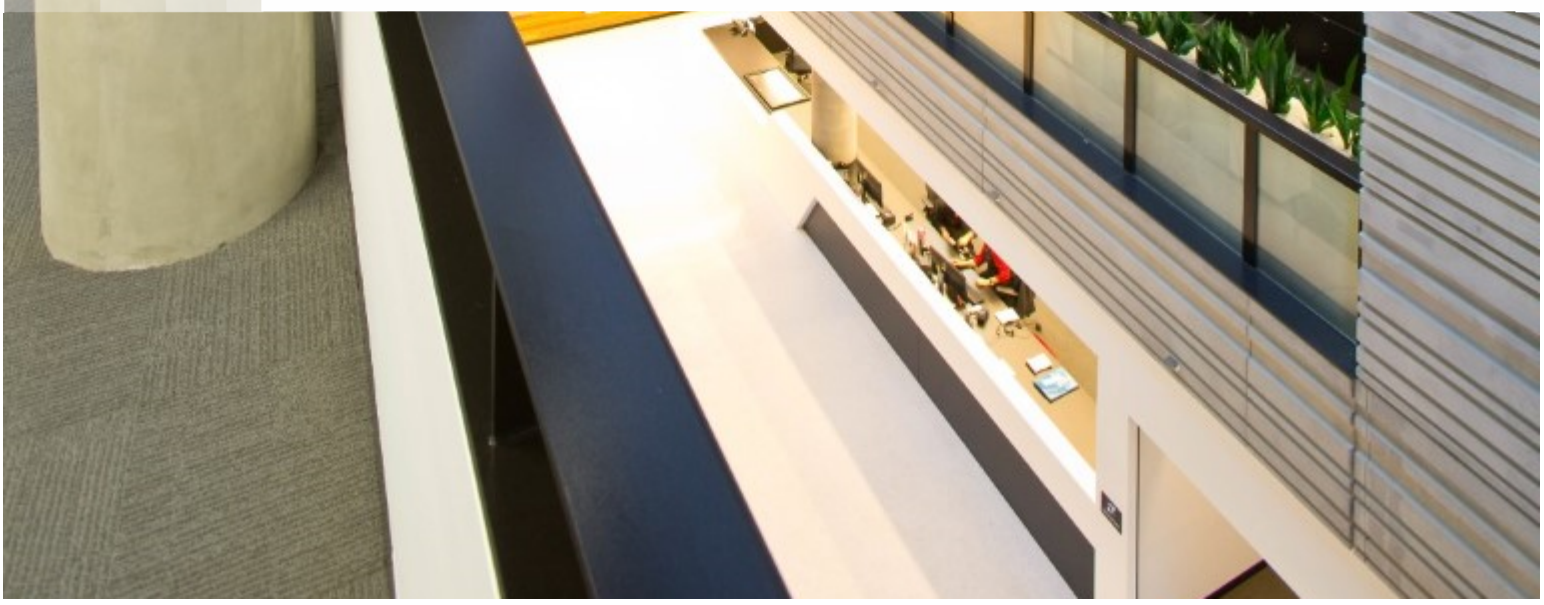
In the event of any emergency where exiting via hoist is appropriate, the Hoist Operator is required to respond in the following way:

- Disembark all passengers at the quickest safe exit
- Unload any materials in the hoist
- Stand-by for instructions from the Field Coordinator
- Where it is not appropriate/possible to exit via hoist, workers should use alternate exists as directed.

9 Returning to Work

- Wait for the ‘all clear’ from emergency services before going into an affected area.
- Do not resume on site without approval from licenced electrical contractor after they’ve checked the site for any further electrical hazards. Get all electrical appliances checked by an electrician before using.
- Watch for potential dangers such as snakes, spiders and other animals.
- Avoid using oxy-torches or flames until the area has been checked for flammable gas leakage.
- Throw away any food or medication that may be contaminated through contact with floodwater.
- Wear rubber soled shoes and rubber or leather gloves.
- Remember that water may be contaminated. Try to avoid contact and import clean fresh water to drink until such time that water is confirmed to be clean.

Appendix A
Flood Reports



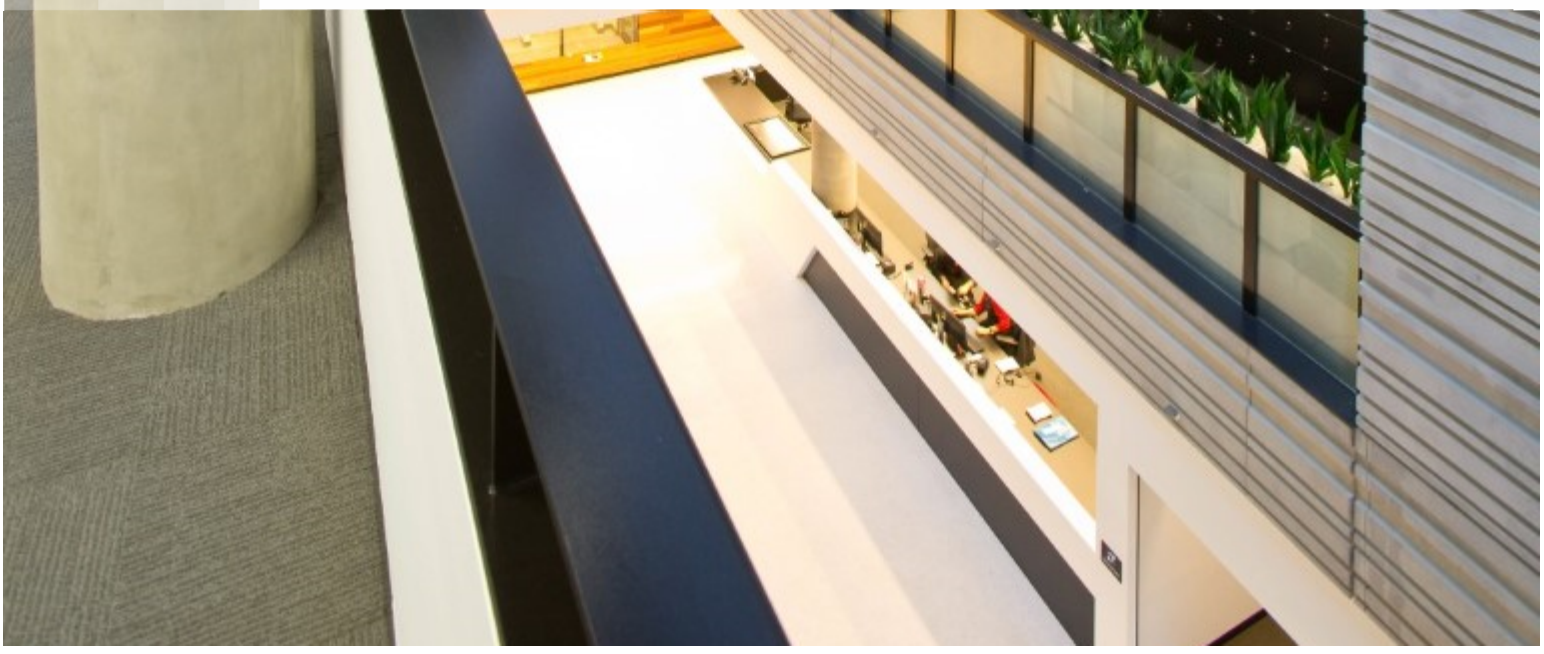
New Shellharbour Hospital

SSDA Report – Civil

Prepared by Enstruct

Revision F - August 2023

Appendix B
Evacuation Plan



EVACUATION PROCEDURE

1. Any site worker discovering a potentially dangerous or emergency situation is to immediately report the nature of the emergency to a BESIX Watpac management representative and/or team member immediately.
2. If an evacuation is required, the nominated person will activate the evacuation alarm/horn/siren.
3. If the evacuation alarm is sounded:
   - 3.1. Persons are to remain calm
   - 3.2. Stop work immediately
   - 3.3. Turn off any tools/equipment if safe to do so
   - 3.4. All hoist's/lifts are to stop at the next landing and keys removed (if applicable)
   - 3.5. Exit the construction zone/building in an orderly manner via nearest safe exit advised by Wardens
   - 3.6. Proceed in an orderly manner to the evacuation assembly area
   - 3.7. Advise any other personnel encountered during your exit of the emergency and the requirement to exit to evacuation assembly area
   - 3.8. All personnel will proceed directly to the site evacuation assembly point following the specified safe evacuation route. You must not leave or proceed to any location other than the nominated Evacuation Assembly Area. If you do leave the assembly area prior to being released, you could be placing other persons at risk that may be looking for you.
   - 3.9. Once assembled in the evacuation assembly area, remain calm
   - 3.10. Seek assistance from the First Aider if required
   - 3.11. A head count should be done by foreman/wardens to ensure that no persons are left on site/in the building.
   - 3.12. The Chief Warden will advise if site is safe to resume or suspend works for the balance of the day.

IN AN EMERGENCY

Ambulance	**000**
Fire Brigade	**000**
Police	**000**

WHEN YOU DIAL 000

If or when calling emergency services, ask for the relevant service operator (Fire, Police or Ambulance) and provide the following information:

- **WHAT** the emergency is:
  - Type/nature of emergency
  - Your Name
- **WHERE** the emergency is:
  - Street name & number
  - Nearest cross street
  - Suburb
  - Melway reference

(if known)

- **WHAT** is being done:
  - Evacuation
  - Trapped persons requiring assistance
  - First Aid
  - Fighting fire
- **WAIT** to be told what to do before hanging up

KNOW YOUR EXITS

EXIT

For your safety make sure you know the location of the nearest emergency exit

LEGEND

Evacuation Assembly Area
Dry Chemical Powder Fire Extinguisher
FIRST AID ROOM
First Aid Shed
First Aid Kit
Defibrillator
Emergency Spill Kit
Spill Kit
Site Shed Complex
Evacuation Route
Site Boundary
Pedestrian Gate/ Walkway