Busways West Gosford

Racecourse Road, West Gosford

Flood Emergency Response Plan

Waluya PTY LTD

18/07/2024

22-1063

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Document Registration

Document Title	Busways West Gosford
Document File Name	REP004-01-22-1063-Flood Emergency Response Plan.docx
Section	Civil / Urban Water Management
Document Author	Abrar Alttahir / Tim Michel

Issue	Description	Date	Author	Checked	Approved
01	Issue for Approval	18/03/24	AA / TM	☒	☒
02	Minor amendments	18/07/24	AA / TM	☒	☒
				☐	☐
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				☐	☐

Contents

1. INTRODUCTION

This **Flood Emergency Response Plan (FERP)** has been prepared to outline emergency planning, response measures and procedures that shall be implemented in the event of flood inundation of the proposed development site at 7A-11 Racecourse Road, 5-9 Faunce Street and 38-50 Young Street, West Gosford (herein referred to as **the Site**).

The Site has a total area of approximately 2.12 hectares and comprises the following allotments:

- 6/DP801261 (1-3 Faunce Street, West Gosford)
- 71/DP810836 and 72/DP810836 (9A-11 Racecourse Road, West Gosford)
- 73/DP810836 (9 Racecourse Road, West Gosford)
- 74/DP810836 (7A Racecourse Road, West Gosford)
- 20/82/DP758466 and 18/DP1100223 (50 Young Street, West Gosford),
- 1/DP651249, 11/82/DP758466, 12/DP110010, 13/DP1100206, 14/DP1100206, 15/DP1100206 and 16/DP1079150 (38 Young Street, West Gosford).

The FERP outlines a strategic approach detailing necessary actions once the imminent risk of flooding is recognised. This encompasses provisions for evacuation and prepares for scenarios surpassing the intensities used to establish the Flood Planning Level, specifically, events exceeding the 1% Annual Exceedance Probability (AEP), also known as the 100-year flood.

Tailored to the particular conditions of the site, this site-specific FERP augments the overarching guidelines set by the *Central Coast Local Flood Emergency Sub-Plan*, which was ratified by the Central Coast Local Emergency Management Committee on 30th September 2021 and is enforced by the NSW State Emergency Service (SES).

2. DEVELOPMENT DESCRIPTION

2.1. Site Location

The Site Location is presented below as **Figure 1**.

Figure 1: Site extent (imagery from Planning Portal, dated 13 December 2022)

Vehicular access to the site will be limited to Racecourse Road. Due to topographic constraints, no vehicular or pedestrian access will be provided from Faunce Street or Young Street.

2.2. Site Plan and Levels

A proposed site development layout is shown below in **Figure 2** and includes:

- The creation of two buildings for offices, maintenance and washing.
- Proposed building with a floor level of RL9.00.
- Proposed office with a floor level of RL8.10.
- A bus parking lot for approximately 94 vehicles.
- A car parking lot for approximately 119 cars.
- A landscape buffer surrounding the property.
- On-site Detention (OSD) designed to attenuate flows for all storms up to and including the 1% AEP in accordance with Councils specifications.
- A pit and pipe network to convey local flows in accordance with Council specifications.

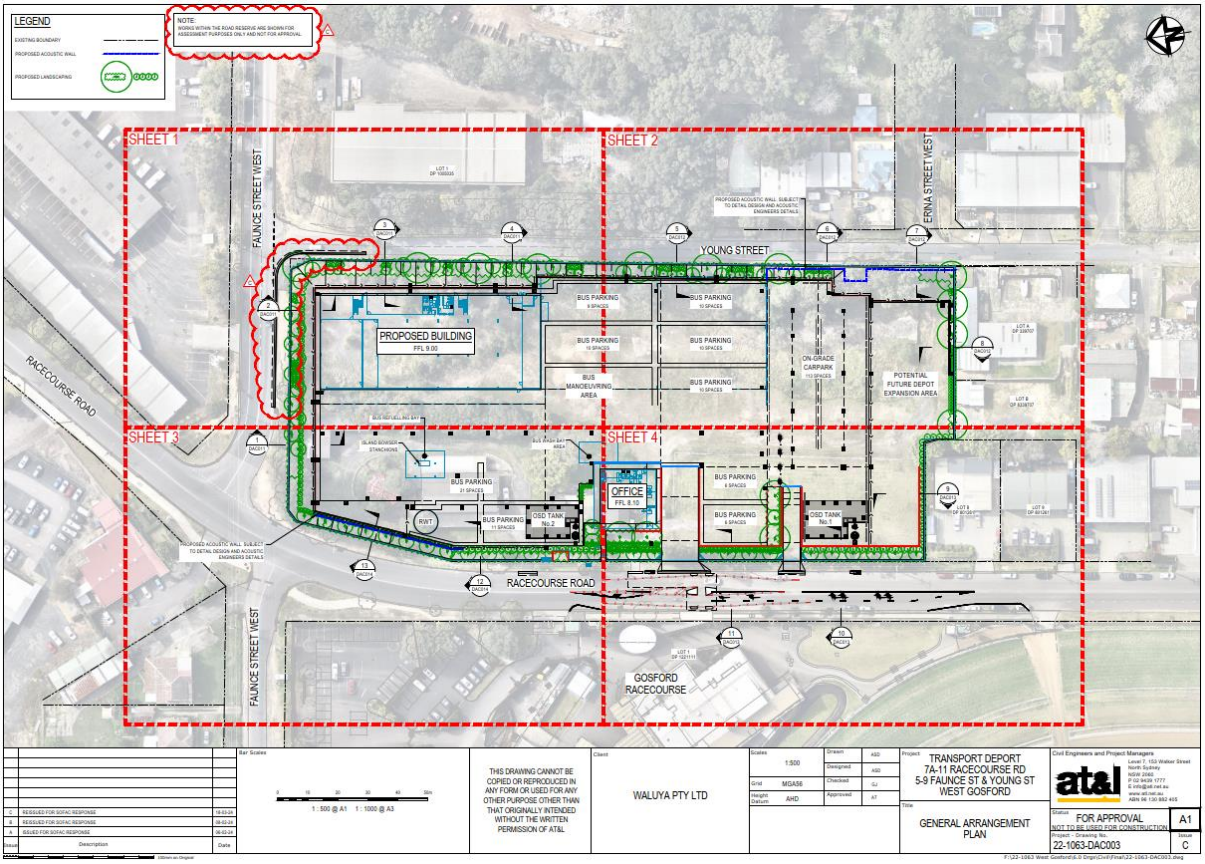

Figure 2: General arrangement plan for Site

2.3. Hydrological Context

The Site is located in the Narara Creek catchment. The Site is located about 320 metres from the eastern bank of Narara Creek at its nearest point (adjacent to the intersection of Racecourse Road and Faunce Street). Narara Creek discharges into Brisbane Water approximately 1.1km south of the Site. A Plan showing the location of the Site relative to Narara Creek and Brisbane Water is presented as **Figure 3**.

Figure 3: Location of the Site relative to Narara Creek and Brisbane Water

The upstream catchment to the east of the site is around 4 hectares and comprises residential development, warehouse spaces and dense bushland within Waterview Park on steep inclines greater than 15%. This context is essential for understanding the hydrological dynamics affecting the site, as depicted in the provided catchment plan.

3. POLICY AND GUIDELINES FRAMEWORK

3.1. Principles

Key principles that are applied to emergency management in New South Wales are:

- **Prevention:** to eliminate or reduce the level of the risk or severity of emergencies;
- **Preparedness:** to enhance capacity of agencies and communities to cope with the consequences of emergencies;
- **Response:** to ensure the immediate consequences of emergencies to communities are minimised; and
- **Recovery:** measures which support individuals and communities affected by emergencies in the reconstruction of physical infrastructure and restoration of physical, emotional, environmental, and economic well-being.

3.2. Central Coast Local Environmental Plan

The Central Coast Local Environmental Plan (LEP) designates zoning within the Central Coast LGA and sets forth standards to govern development in alignment with state or local policy objectives. This LEP delineates criteria that must be met to the satisfaction of the consenting authority before granting development approval:

The LEP is designed to ensure that any development:

- Aligns with the flood hazard characteristics of the land;
- Does not negatively impact flood behaviour, flow distribution, or velocities in a manner that could increase flood risk to other developments, properties, or the environment, including but not limited to the stability of watercourses and riparian zones;
- Will not compromise the safe and efficient evacuation of individuals from the premises and surrounding areas during a flood event;
- Will not lead to unsustainable social and economic costs for the community due to flooding.

3.2.1. Central Coast Local Emergency Sub Plan

The *Central Coast Flood Emergency Sub Plan* is an integral component of the Central Coast Local Emergency Management Plan (EMPLAN). Crafted in alignment with the *State Emergency Service Act 1989 (NSW)*, this document has received approval from the Local Emergency Management Committee as per the requirements of the *State Emergency and Rescue Management Act 1989 (NSW)*.

This plan delineates the local strategies for prevention, preparedness, response, and initial recovery stages specific to flood scenarios within the Central Coast Local Government Area (LGA).

Prevention/Mitigation

The *NSW Flood Risk Management Manual* establishes a framework for incorporation of floodplain risk management into land use planning as one of the key means to limit exposure to flood risk.

Flood risk at the site is minimised by:

- Situating the development in an area elevated above the estimated Probable Maximum Flood (PMF) level.
- Raising the floor levels of structures above the estimated PMF event.

Preparedness

Preparedness encompasses making arrangements or plans to address an emergency or its consequences.

- The NSW State Emergency Service (SES) is tasked with developing, reviewing, and maintaining Flood Sub Plans;
- This Flood Emergency Response Plan (FERP) for the site will be developed and periodically reviewed. Local Flood Plans specify the particular strategies for flood event management;

- Conducting awareness training for personnel at the site regarding flood-related risks.

Response

Communicating Information and Warnings to the Community – Signals to begin preparations for a flood event

The Bureau of Meteorology issues public weather and flood warnings in advance of and during flood conditions.

The NSW SES communicates through:

- Local Flood Advice and Bulletins;
- NSW SES Evacuation Warning;
- NSW SES Evacuation Order;
- NSW SES All Clear notice.

To disseminate alerts and flood information, the NSW SES employs various communication methods, including:

- Emergency Alert (SMS and voice message alerting system);
- Door-to-door notifications;
- Variable message signs.

Information on road closures is made available through Council websites and the Road and Maritime Services 'Live Traffic' website (www.livetraffic.com) or the Transport InfoLine at 131500.

Floodplain Risk Management Guideline (CCLESP 2021)

The NSW State Emergency Service (SES) plays a pivotal role in incorporating emergency management perspectives within the flood risk management framework.

Key initiatives include:

- Offering coordinated and consistent advice on emergency management to local councils and other entities regarding land management practices in flood or coastal inundation prone areas;
- Supplying comprehensive support, advice, and technical resources to enable NSW SES representatives to make meaningful contributions to local Floodplain Management Committees. These efforts are part of a broader strategy to enhance flood risk management practices in 2023, ensuring communities are better prepared for and resilient to flooding events.

Australian Rainfall & Runoff 2019

While acknowledging the advancements in flood estimation methodologies presented by AR&R2016, including the consideration of climate change impacts, the development approval for the site is predicated on flood studies employing rainfall temporal patterns from AR&R 1987.

Given the critical nature of flooding at this site (i.e., the developed site is affected in a Probable Maximum Flood (PMF) event), it is advised that a review of this FERP be undertaken upon the availability of updated flood level data. A maximum review period of 10 years is recommended to ensure that the plan remains effective and reflective of the latest hydrological insights and climate projections.

4. FLOOD BEHAVIOUR

4.1. Flooding Abbreviations / Terminology

FPL – Flood Planning Level – For the site, this refers to the 1% Annual Exceedance Probability (AEP) flood level plus an additional safety margin, which is typically established based on local guidelines or specific site assessments.

PMF – The Probable Maximum Flood – This represents the most extreme flood event that is theoretically possible at a given location, considering the most severe combination of meteorological and hydrological conditions.

1% AEP – The 1 Percentile Annual Exceedance Probability – This denotes a flood event that has a 1% chance of being surpassed in any given year. It is synonymous with what was previously known as the '100-year flood' event, a term used to describe its statistical recurrence interval.

4.2. Flooding and Local Watercourses / Overland Flow

4.2.1. Mainstream flooding of Narara Creek

The *Updated Narara Creek Flood Study* (Golder Associates, 2018) presents the extents of flooding from Narara Creek in the 1% AEP and PMF (refer to **Figure 4** and **Figure 5**).

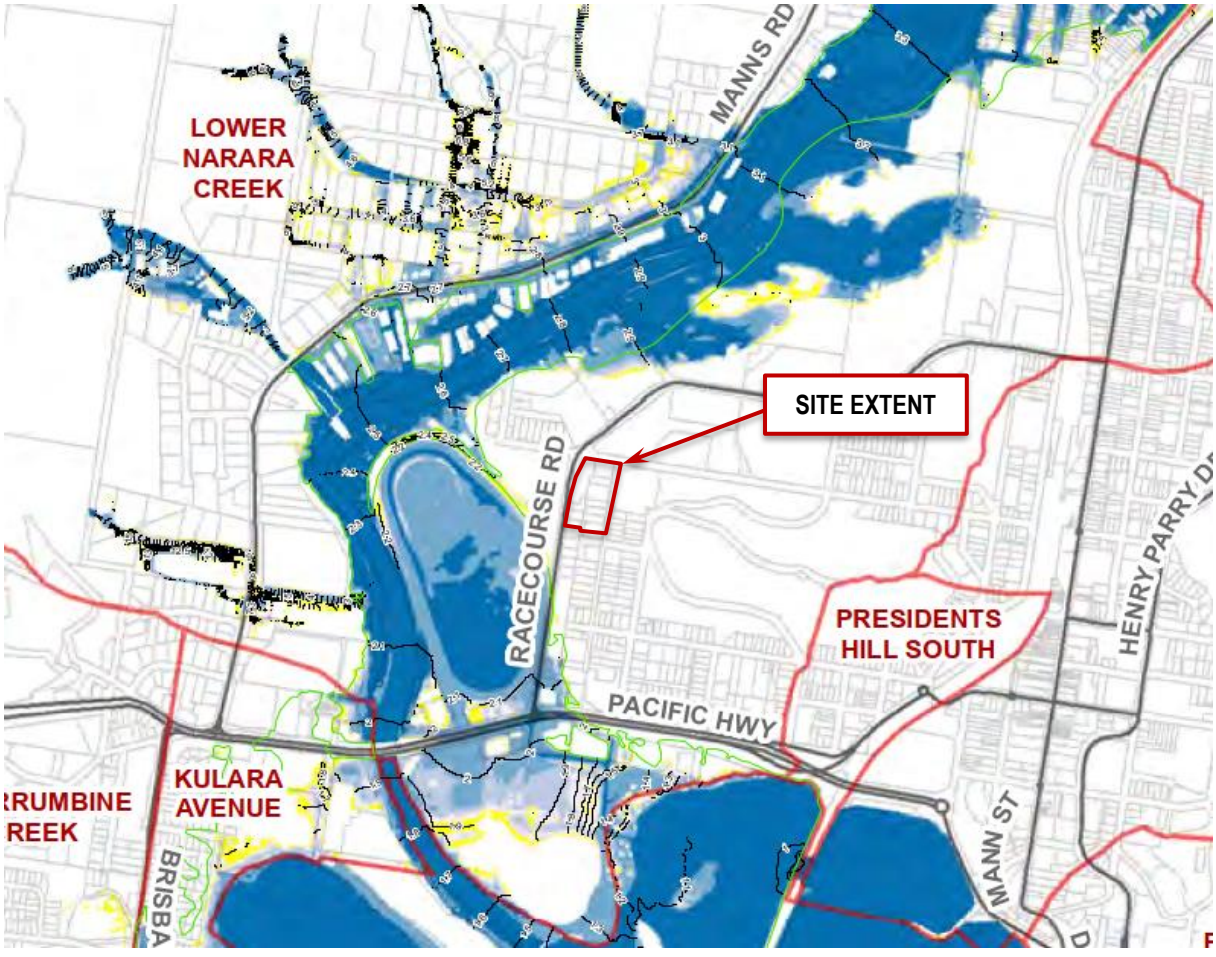

Figure 4: 1% AEP flooding from Narara Creek relative to the site (Golder Associates, 2018)

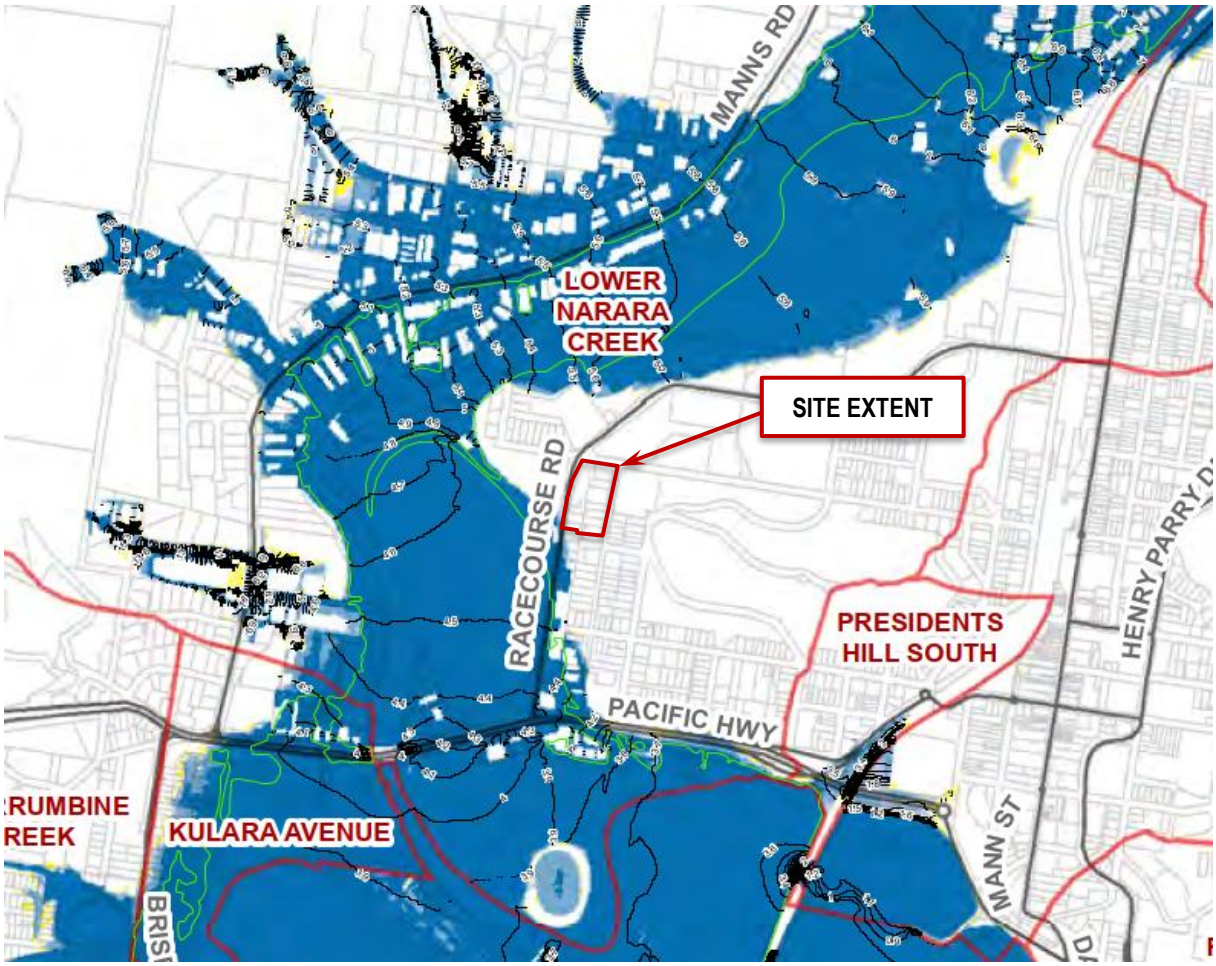

Figure 5: PMF flooding from Narara Creek relative to the site (Golder Associates, 2018)

In summary:

- The site is not prone to flooding from Narara Creek in the 1% AEP event. However, flooding of Racecourse Road south of the site would occur in a 1% AEP event.
- The majority of the site is above the level of the mainstream (Narara Creek) PMF.

4.2.2. Overland flow from local catchment

Flooding at the site primarily stems from overland flows originating in the catchments to the north and east, notably starting from Waterview Park. These flows move through residential zones before overflowing onto Young Street and subsequently entering the site. Modelling of existing conditions does not indicate the site is influenced by tidal tailwater conditions or mainstream flooding from Narara Creek.

The site is observed to discharge uncontrolled flows onto Racecourse Road during the Probable Maximum Flood (PMF) event. These flows breach the road's confines and extend towards The Entertainment Grounds west of Racecourse Road. Racecourse Road, located to the west of the site, is prone to high hazard flooding in a PMF event, attributed to the northern upstream catchment.

AT&L has prepared a Flood Assessment to support the proposed development of the site. This Assessment presents the results of TUFLOW modelling undertaken to assess flood behaviour under existing conditions and proposed development conditions. The extents of flooding within and adjacent to the site in the 1% AEP event and PMF are presented as

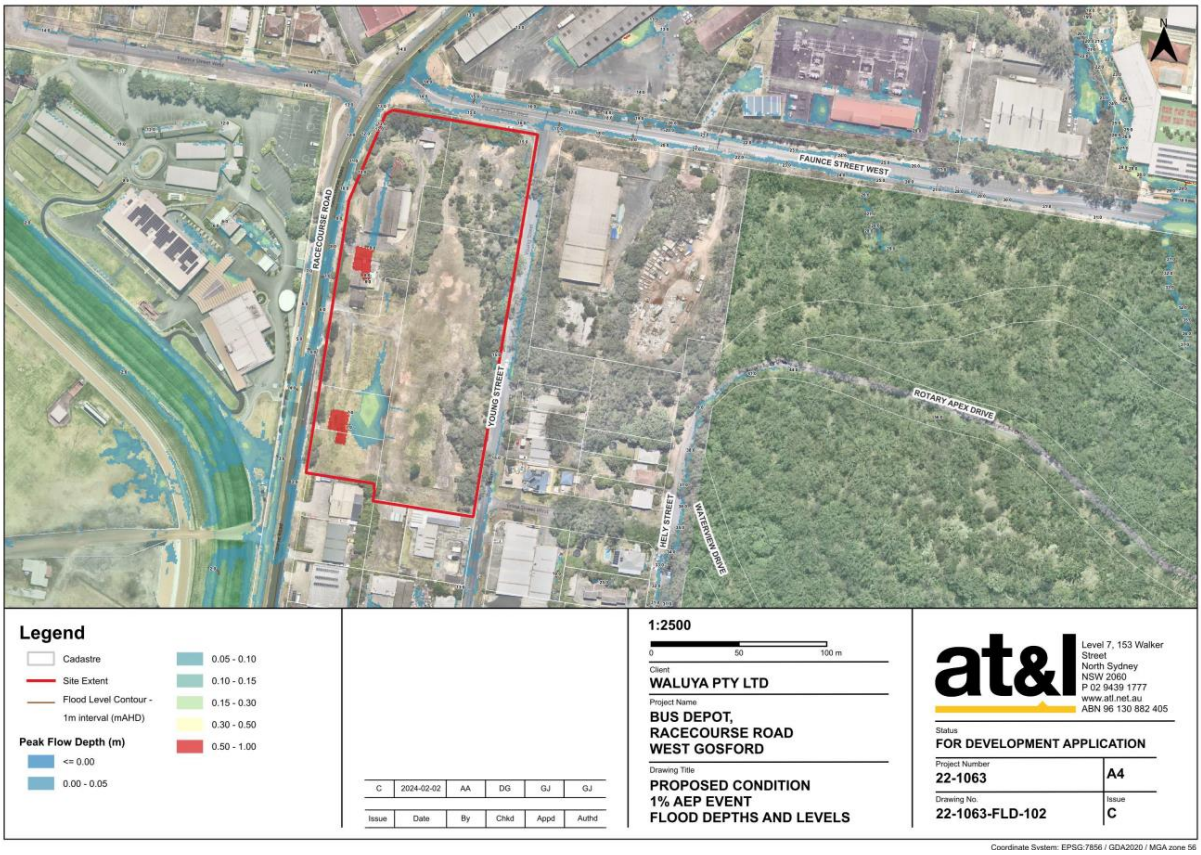

Figure 6: 1% AEP flooding from local catchment east of the site (AT&L, 2024)

Figure 7: PMF flooding from local catchment east of the site (AT&L, 2024)

4.3. Flood Warning

4.3.1. Racecourse Road Area

The site's quick response to heavy rain, due to steep upstream catchment slopes, necessitates prompt flood warnings. The key storm event for local flooding is identified as the 15-minute duration for both 1% AEP and PMF events.

4.3.2. Racecourse Road (Evacuation Route)

Racecourse Road may face localised flooding, impacting evacuation routes without a reliable warning system. Flood Wardens should monitor Bureau of Meteorology alerts for early signs of potential flooding, ensuring readiness for quick action and alternative evacuation strategies.

5. FLOOD EMERGENCY RESPONSE PLAN FOR SITE – OPERATIONAL PHASE

5.1. Use approved version

During the operational phase, it is essential to *'always implement the most recent version of the Flood Emergency Response Plan that has been approved by the Planning Secretary, for the entire duration of the development'*.

5.2. Prevention

The flood risk at the site has been significantly reduced through careful land planning, ensuring that the site is situated above the Flood Planning Level (FPL). Additionally, the site is susceptible to flooding, even during extreme flood events, including the estimated Probable Maximum Flood (PMF) event.

5.3. Preparation/training

As part of the site induction process, site occupants should receive flood awareness training to enhance their preparedness. Essential elements of the training should cover:

- Familiarity with the FERP and its location;
- Understanding that the facility is not prone to flooding;
- Awareness of the potential proximity of floodwaters to the site;
- Identification of the muster area in case of a flood, marked by a red dot in **Figure 8** (Muster Location);
- Knowledge of the recommended safe exit route, including the risks associated with crossing floodwaters;
- The importance of following instructions from the Flood Warden.
- For individuals with disabilities, identify and arrange for a care or support person, if necessary, to assist them during flood events.

Additionally, facility management must ensure the presence of a Flood Warden (or their delegate) on-site at all times during active flood warnings to coordinate response and safety measures.

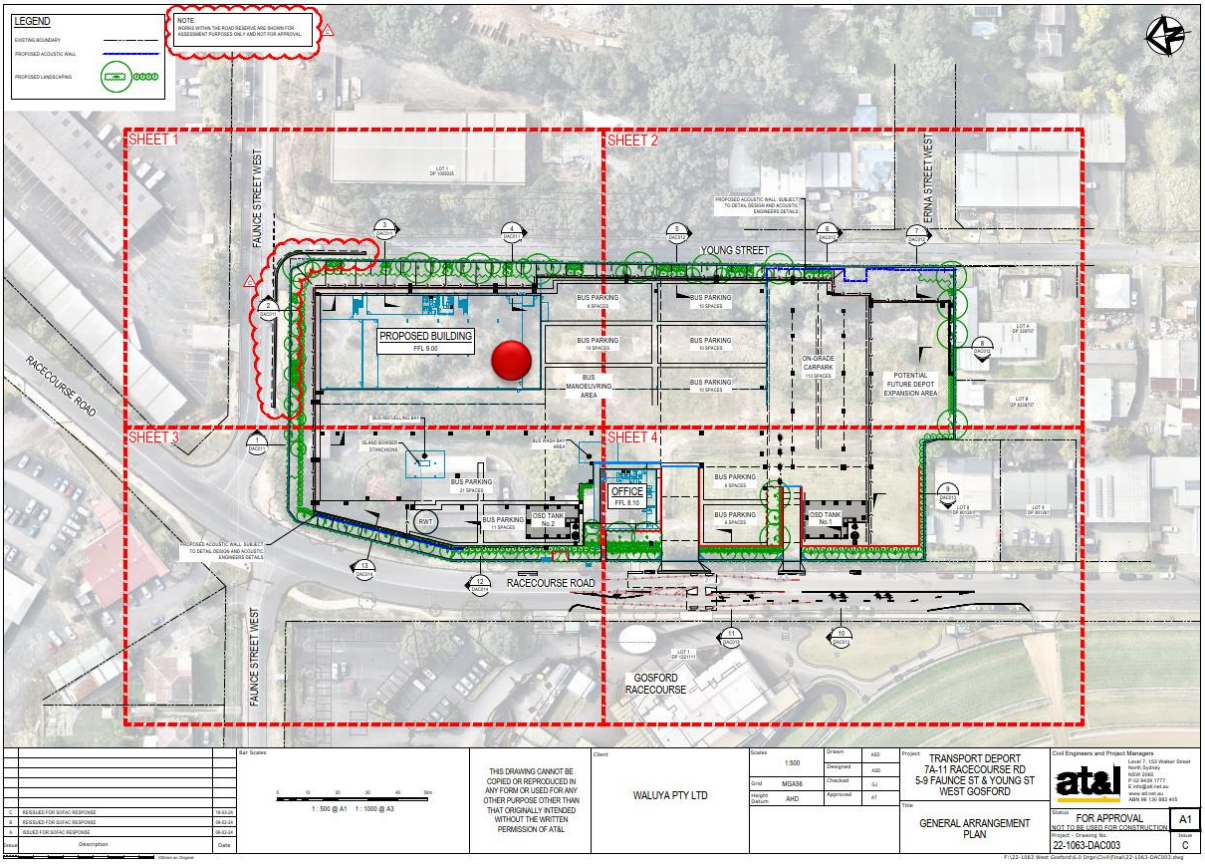

Figure 8: Muster Location (red dot)

5.4. Response

In the event that a major flood is anticipated, either from specific forecasts for localised areas or more widespread predictions impacting the Central Coast region, the Flood Warden is tasked with closely monitoring the situation and informing site occupants as necessary. Key resources for flood-related information include:

- NSW SES Website for Flood Bulletins: (http://www.ses.nsw.gov.au);
- Contact the NSW SES Gosford Unit for localized advice, including river heights, flood behaviour, and road closures at 132 500;
- The Bureau of Meteorology website for the latest Flood Forecasts and Warnings: (http://bom.gov.au/nsw/);
- Live Traffic for up-to-date Road Closures: (http://livetraffic.com.au).

Additionally, ensure awareness of:

- The Safe Way-Out Route specifically designated for the site;
- Local radio stations which broadcast warnings, updates, and essential information for the Central Coast Council area.

Given the site is subject to local catchment (overland flow) flooding in a PMF event, it is critical to establish clear procedures for evacuation or refuge, prioritising the safety of all site occupants against 'threat to life' flooding scenarios.

Should unforeseen flood events surpass the estimated PMF levels, site occupants are to gather at the Muster Point, following instructions from the Flood Warden. The Flood Warden will direct occupants to the safest refuge location to wait until the floodwaters recede. Occupants must remain in refuge until the Flood Warden advises it's safe to leave. The Flood Warden is tasked with monitoring road closures via the (http://livetraffic.com.au) website.

An egress route is depicted in **Figure 9**. However, this route may not be safe from floodwaters in a 100-year flood event or during localised overland flow events of shorter duration. In anticipation of flooding or extreme weather, the Flood Warden must decide:

- Whether safe egress from the site is feasible before the onset of flooding; or
- If occupants should seek refuge within the facility.

The Flood Warden's decision on whether it's safe to exit the site will be based on road closure information from Council websites, the Roads and Maritime Services 'Live Traffic' website (http://www.livetraffic.com) or the Transport InfoLine at 131500.

In situations of uncertainty, seeking refuge is recommended. The most significant threat to life comes from attempts to cross flooded roads unnecessarily.

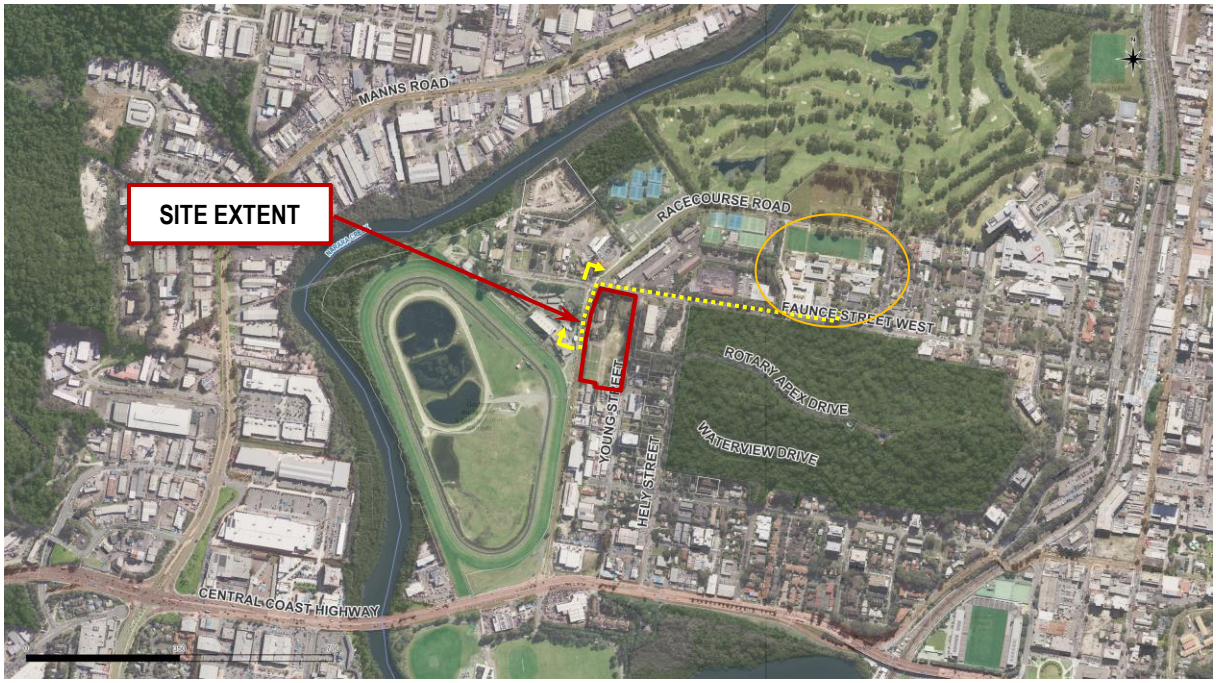

Figure 9: Evacuation Route

Emergency phone contacts:

- Police/Ambulance 000
- SES (for life threatening situations call 000) 132 500

5.5. Recovery

Recovery entails restoring a community impacted by an emergency back to its standard level of functioning. This process typically begins in tandem with the Response phase.

Recovery efforts will kick off and proceed in accordance with the guidelines set out in the NSW State Emergency Management Plan (EMPLAN) and will be further elaborated upon in the NSW Recovery Supporting Plan.

6. FLOOD EMERGENCY RESPONSE PLAN FOR FACILITY – CONSTRUCTION PHASE

The construction phase must adhere to the same requirements set for the operational phase.

7. REVIEW OF THIS PLAN

This FERP requires periodic review to ensure its effectiveness and relevance.

An initial assessment is to be conducted once the design floor levels are finalised and again before the site becomes operational. Reviews should occur at least every 10 years or earlier if new flood studies significantly alter the understanding of the site's flood risk.

These evaluations must take into account any new flood data for the area, potentially sourced from Central Coast Council. Additionally, the plan's efficacy should be reassessed after any significant flood incidents, with adjustments made to incorporate lessons learned and enhance future responses.

Consistently during the operational phase, the latest version of the Flood Emergency Response Plan, as sanctioned by the Planning Secretary, should be in force throughout the lifespan of the development.

8. PLAN PREPARATION BY SUITABLY QUALIFIED AND EXPERIENCED PERSONS

This FERP was developed by Tim Michel (BE BA DipEngPrac, CPEng NER), an Associate Civil Engineer with over 17 years of experience in stormwater management, flood assessment, hydrology, and surface water evaluations.

9. REFERENCES

AT&L, *Flood Impact Assessment; Racecourse Road, West Gosford* (reference: REP002-01-22-1063), Issue 02, February 2024)

NSW Flood Risk Management Manual, 2023

SES CENTRAL COAST Local Emergency Management Plan, 2021

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