MOTT MACDONALD

Design Report

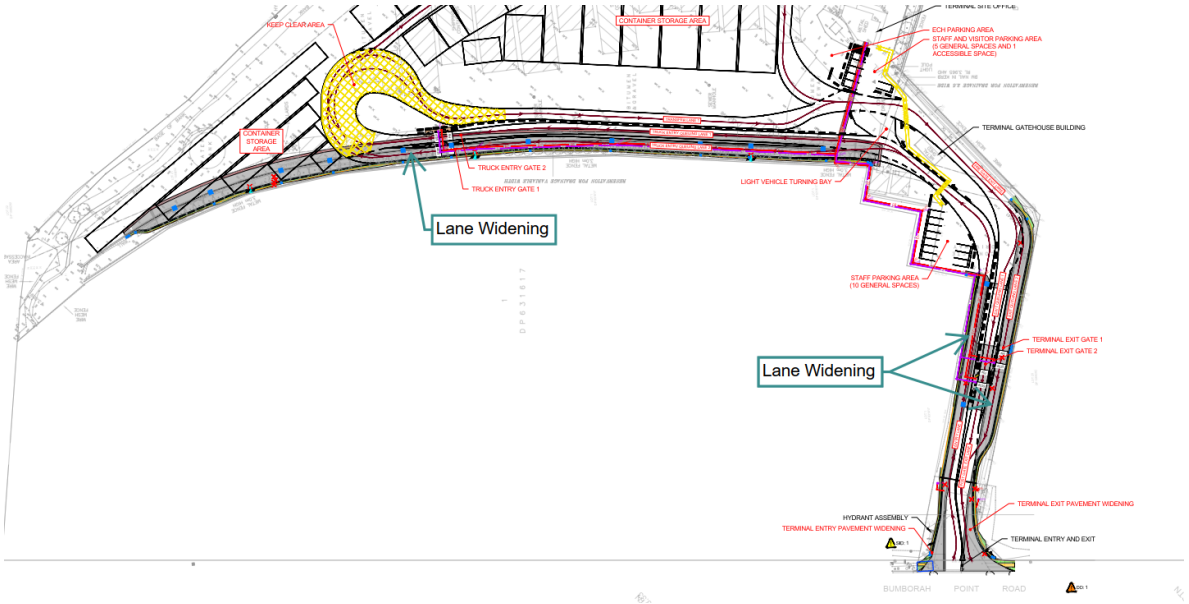
Project:	Tyne ACFS Bumborah Point Terminal Redevelopment		
Our reference:	703100695-MMD-01-XX-TN-C-0002	**Your reference:**	-
Prepared by:	T. Sanchez-Bayo	**Date:**	24/08/23
Approved by:	S. Freeman	**Checked by:**	J. Mail
Subject:	Desktop Flooding Report, Proposed modification to existing drainage infrastructure at 9 Bumborah Point Road, Matraville		

1 Introduction

Tyne ACFS has commissioned Mott MacDonald (MM) to undertake the design of the civil engineering elements of the Tyne ACFS Bumborah Point Road Terminal Redevelopment (the Project).

As a part of the Project, lane widening is proposed around the site as shown in Figure 1 within the lease area of 9 Bumborah Point Road (the Terminal).

Figure 1: Lane Widening Locations



Source: Mott MacDonald

MM previously prepared a Design Report (Design Report, ref: 703100695-MMD-01-XX-TN-C-0001) which described the lane widening work including modification to the existing drainage infrastructure to ensure ponding does not occur within the proposed area of work. This document supports the Design Report by presenting the Desktop Flooding Report (Flooding Report), with the purpose of this Flooding Report to:

- Document the existing flooding conditions to which the Basis of Design (BoD) provides the civil engineering design response.
- Provide responses to the requirements of the NSW Department of Planning and Environment (DPE) as described in summary letter of the DPE preliminary assessment of the Project (ref: PAN-353180), dated 3rd August 2023.

This Flooding Report presents information considered valid and appropriate when preparing the current revision.

2 General

The following sections provide details on general items relevant to the Project.

2.1 Datums and Coordinates

The datums and coordinate system adopted for the Project are:

- Vertical Datum: Australian Height Datum (AHD)
- Horizontal Datum: Geocentric Datum of Australia 2020 Map Grid of Australia Zone 56

2.2 NSW Ports Agreement for Lease

The Project is required to be developed in accordance with the Minimum Design Requirements as set out in the Agreement for Lease and Lease (AFL) between Port Botany Operations Pty Ltd (NSW Ports) and Tyne ACFS. MM has reviewed "Schedule 2 – Minimum Design Requirements" and "Schedule 3 – Works" of the AFL version 3450-4878-2872v10, which was provided by Global Projects (former project manager) on behalf of Tyne ACFS to MM. A summary of the Minimum Design Requirements for the Terminal from the AFL applicable to the scope of this Report are provided in Table 2.1.

Table 2.1: Summary of AFL Requirements

AFL Requirement	Notes
Make Good Scope: 2 Stormwater The existing in-ground stormwater network and open channel is to be retained except for modification required to facilitate the new roundabout. Make good works are expected to incorporate a visual inspection of all pits to repair or replace any damaged covers only	● As a part of the Project development. A roundabout is no longer proposed to be constructed as shown in the AFL. Modifications works are relative to the agreed lane widening activities agreed with NSW Ports.
Improvement Works: 2 Stormwater The existing in-ground stormwater network and open channel is to be retained except for modification required to facilitate the new roundabout. Make good works are expected to incorporate a visual inspection of all pits to repair or replace any damaged covers only.	● The improvement works text in the AFL matches the Make Good scope noted above. ● As a part of the Project development. A roundabout is no longer proposed to be constructed as shown in the AFL. Modifications works are relative to the agreed lane widening activities agreed with NSW Ports.

Source: Agreement for Lease and Lease 3450-4878-2872v10

2.3 DPE Requested Information

The table below includes the flooding related requests for further information made by DPE after the preliminary assessment of The Project. The relevant sections of this Flooding Report where the information is provided has been noted adjacent to each sub-item.

Table 2.2: Summary of DPE Requests for Further Information

DPE Request		Refer Flooding Report section
4. Changes to flood behaviour during construction and operation for a full range of flood events up to the probable maximum flood (taking into account sea level rise and storm intensity due to climate change) including:		Section 3.4
a.	details and mapping of flood prone land, flood planning (area below the flood planning level) and flood management objectives, hydraulic categorisation (floodway and flood storage areas), and flood hazards	Section 3.4
b.	potential changes in flooding arising from the proposed development	Section 4.3.1
c.	potential impacts upon existing community emergency management arrangements for flooding, such as evacuation and access, and contingency measures	Section 4.3.2
d.	consistency (or inconsistency) with applicable Council floodplain risk management plans	Section 4.4.1
e.	compatibility with the flood hazard of the land	Section 4.4.2
f.	the effects of coastal processes and coastal hazards including the effects of sea level rise and climate change on the, and arising from, the proposed development	Section 3.4.5
5. Consideration of flood management objectives and outcomes and details of relevant flood management mitigation measures		Section 4.4

Source: DPE response letter PAN-353180, 3rd August 2023

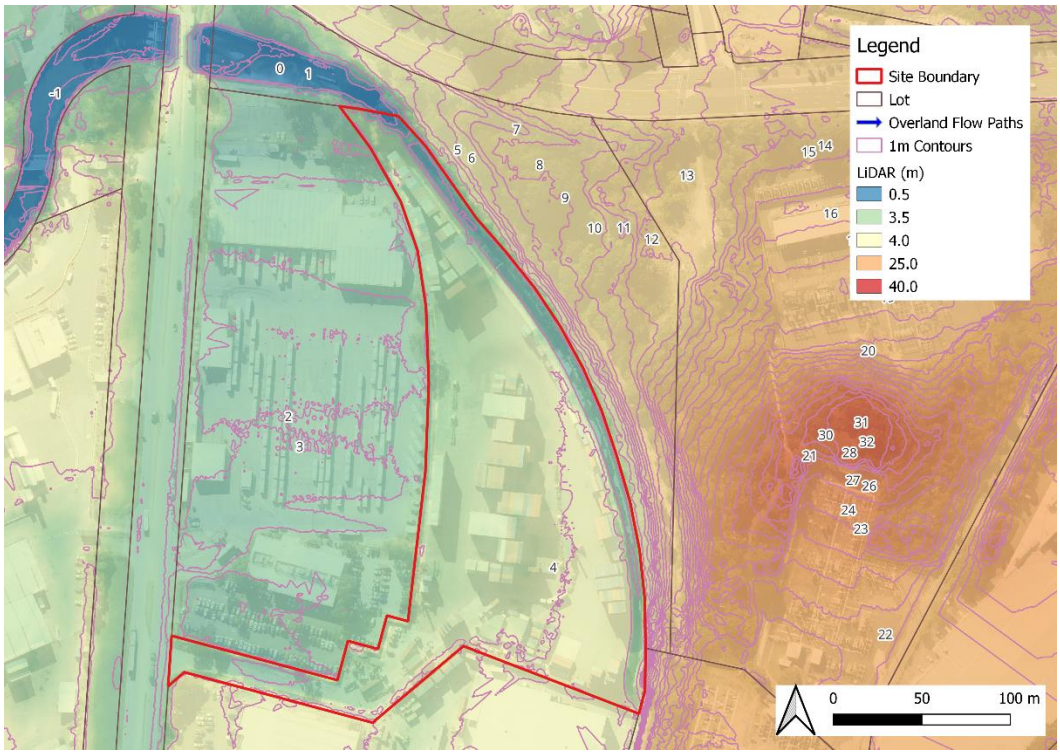
3 Site Description

This section includes desktop research of prior stormwater and flood studies to summarise the existing Terminal conditions, flood risks and stormwater infrastructure at the property. Information on zoning and land use has not been discussed in this Report as the Terminal's function has not changed as a result of the proposed works.

3.1 Site Topography

Inspection of LiDAR survey shows the subject Terminal situated within a low-lying area which naturally slopes from east to west (see Figure 2). The Terminal is positioned on a relative high point to its neighbouring properties to the west and south, with internal elevation ranging from 2.7m AHD in the Terminal entrance driveway sag point to 5m AHD at the eastern boundary. Along the eastern perimeter of the Terminal is a stormwater channel that drains into Bunnerong Canal, eventually discharging into Botany Bay.

Figure 2: Site topography



Source: NSW Government Spatial Services

3.2 Existing Drainage Infrastructure

NSW Ports provided the existing drainage conditions for the Terminal to MM which included the following plans and models:

- Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23
- DRAINS model associated with the Existing Stormwater Layout and Catchment Plan, file reference PB Site 5_STN-230131 provided 31/01/23

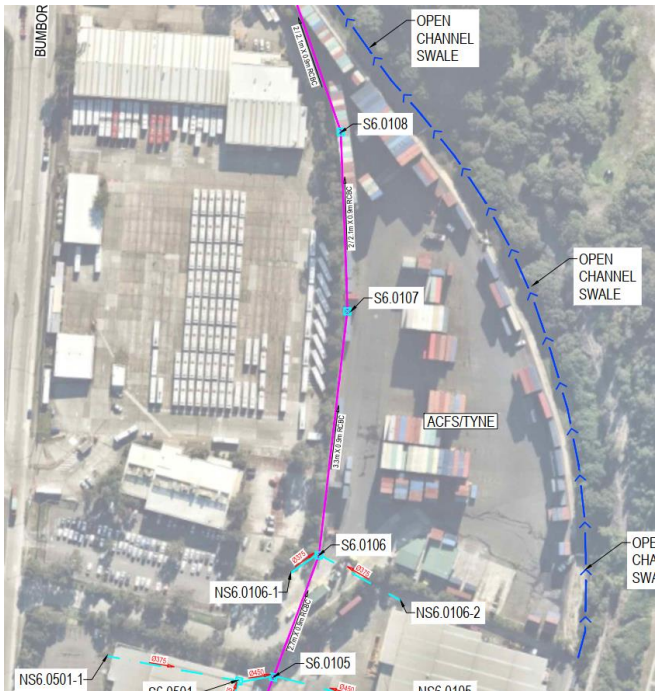
A copy of the Existing Stormwater Layout and Catchment Plan is included in 703100695-MMD-01-XX-TN-C-0001-Tyne ACFS Bumborah Drainage Design Report (Drainage Design Report). Along with details regarding the existing drainage conditions.

In summary, the existing stormwater network for the Terminal consists of a number of inlet pits on the incoming access road and western boundary, these drain to an existing Reinforced Concrete Box Culvert (RCBC) which is varies in size from a single culvert 3.3m wide and 1m high, to further downstream, twin culverts 2.1m wide and 1m high. The culvert then discharges into Bunnerong Canal, an open concrete lined channel.

Upstream of the Terminal the culvert also drains a number of lots that have been developed for industrial use.

The existing stormwater network for the Terminal is shown in Figure 3.

Figure 3: Existing Stormwater Layout

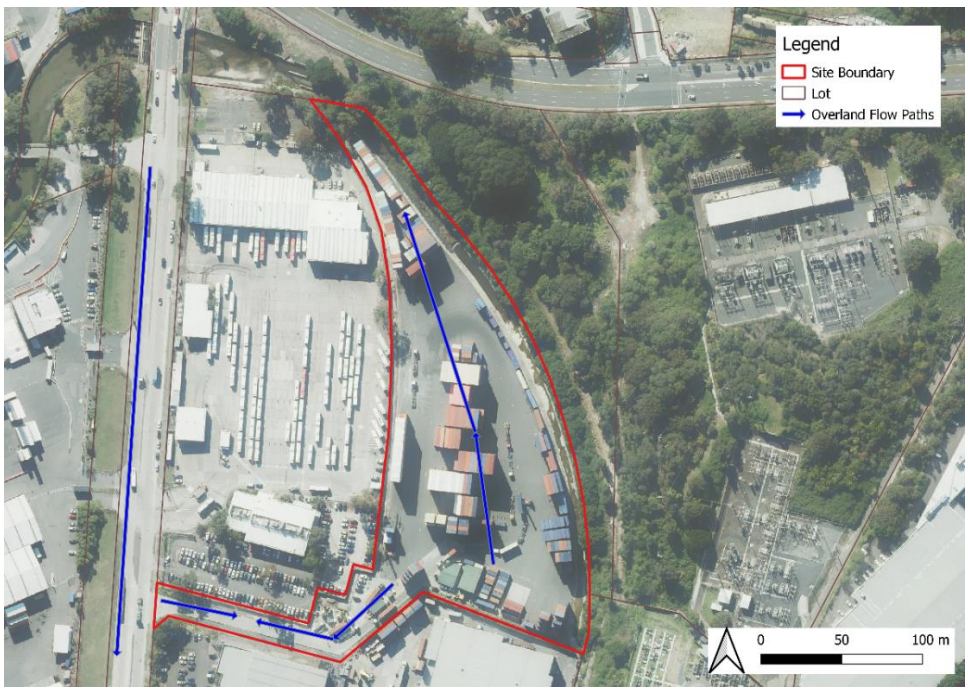


Source: Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23

3.3 Overland Flow Paths and Ponding

Overland flow paths were identified with the use of aerial imagery in conjunction with a LiDAR derived digital elevation model. Figure 4 identifies the key flow paths around the Terminal.

Figure 4: Overland flow paths



Source: ©MetroMap aerial imagery 2023-07-26

In the Terminal surroundings, it is expected that overland flows originating along Bumborah Point Road mostly travel south. Within the Terminal boundary, runoff is generally expected to discharge to two points, either draining north towards Bunnerong Canal, directed by the existing driveway grading, or collecting in the Terminal entrance driveway low point located at the southwest corner of the Terminal.

3.4 Regional Flood Study

This section includes desktop research of prior stormwater and flood studies to summarise the existing Terminal conditions, flood risks and stormwater infrastructure at the Terminal.

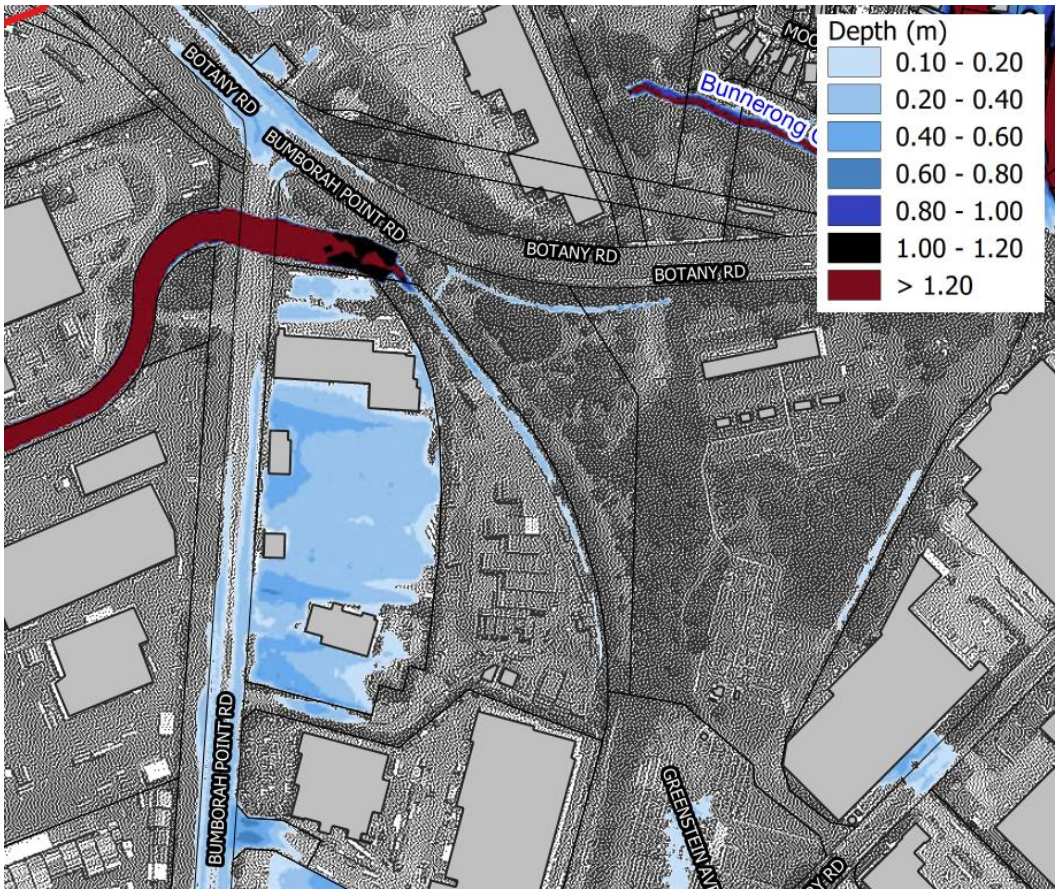
The Terminal falls within the Matraville Catchment area, assessed in the Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021) prepared by Catchment Simulation Solutions for Randwick City Council. The regional flood study discusses flood levels, velocities and flows for a range of Annual Exceedance Probability (AEP) events and the Probable Maximum Flood (PMF) event. The PMF is the largest flood that could conceivably occur at a location and defines the extent of flood prone land. These results have been reviewed to provide insight into existing flood behaviour, identify flood risk areas and to inform planning decisions.

The flood extents for the subject site have been extracted from the catchment wide mapping extent, and key findings for the 1% AEP and PMF events are detailed in the following sections.

3.4.1 Flood Extents and Depths

The 1% AEP flood extent shown in Figure 5 indicates that the subject site experiences localised ponding up to a depth of 0.6m in the Terminal entrance driveway low point. The canal also shows some inundation with depths ranging from up to 0.4m in most of the extent to a very small area of up to 1.0m at the north boundary.

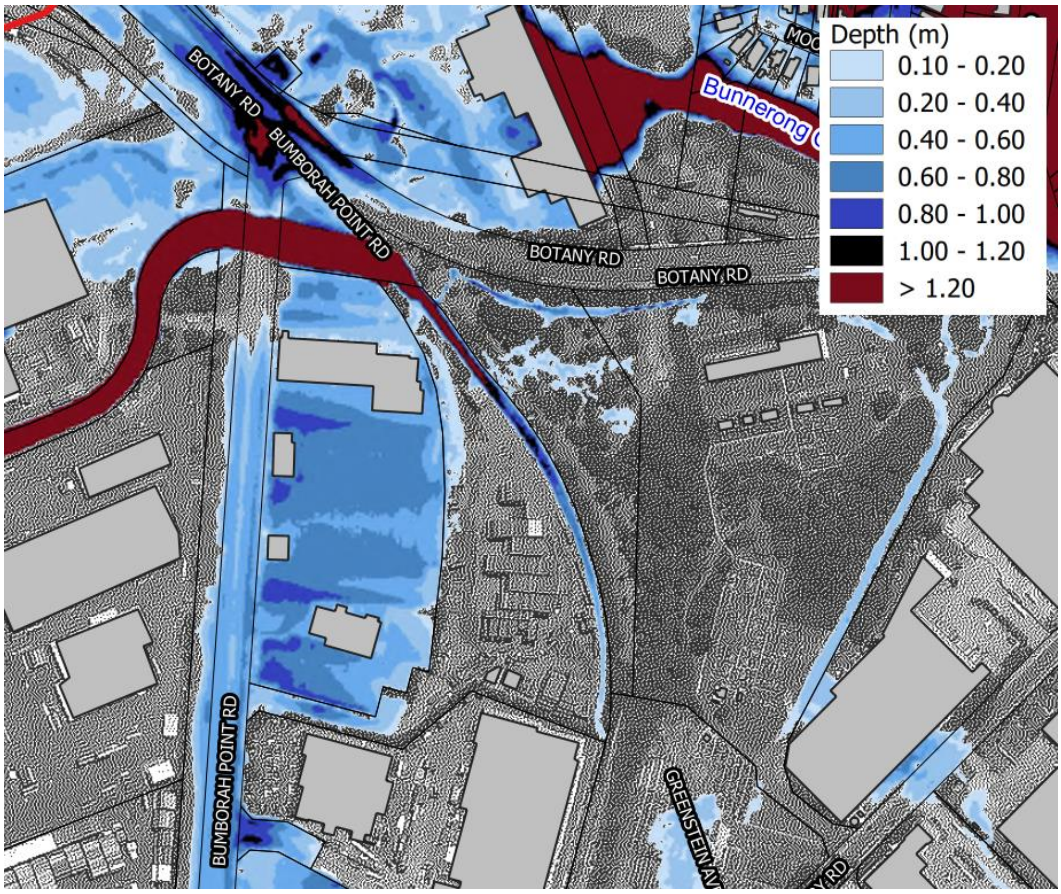
Figure 5: 1% AEP flood depth map



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

The PMF flood extent shown in Figure 6 shows a greater extent of inundation in the Terminal entrance driveway, with ponding reaching depths up to 1.0m. An additional area of localised ponding within the Terminal is also observed along the northwest boundary, with depths reaching 0.4m. Along the canal, inundation is present along the entire length, including an area where depth exceeds 1.2m adjacent the Terminal, extending upstream from Bunnerong Canal.

Figure 6: PMF flood depth map



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

3.4.2 Hydraulic Categorisation

Flood hydraulic category informs floodplain risk management in an affected area by dividing flood affected areas into 3 categories to indicate different characteristics of the floodwater.

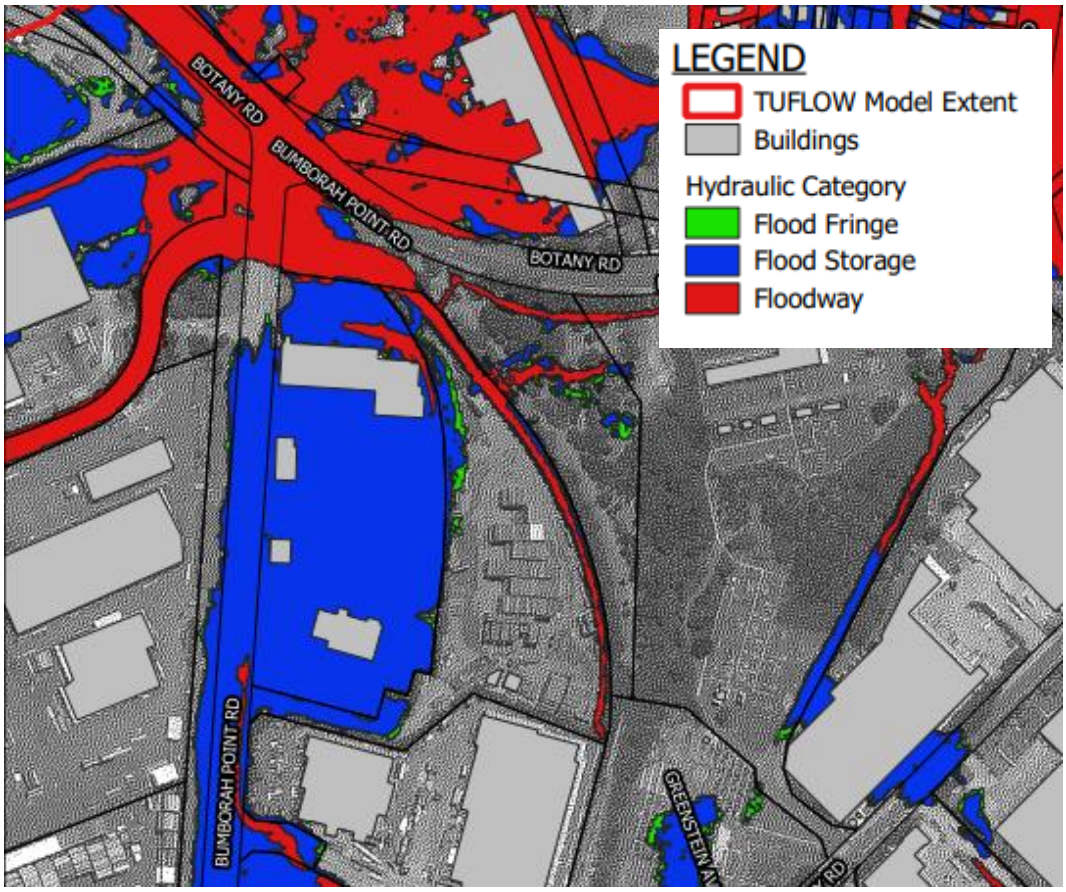
Flood fringe – residual areas not classified as flood storage or floodway

Flood storage – important for temporary ponding to provide attenuation of flows

Floodway – important as active flow area of the floodplain for conveying flood volumes

Largely due to the topography of the Terminal, only minimal areas of the Terminal are categorised into the defined areas above. The channel which conveys stormwater east of the Terminal is classified as floodway, with the lowest driveway areas classified as flood storage in the PMF event. In the 1% and 0.2% AEP events only the Terminal entrance driveway sag point is classified as flood storage.

Figure 7: PMF flood hydraulic category



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

3.4.3 Hazard

The hazard classification in the regional flood study is divided into 6 categories to indicate different restrictions required for people, buildings, and vehicles.

H1 – Generally safe

H2 – Unsafe for small vehicles

H3 – Unsafe for vehicles, children, and elderly

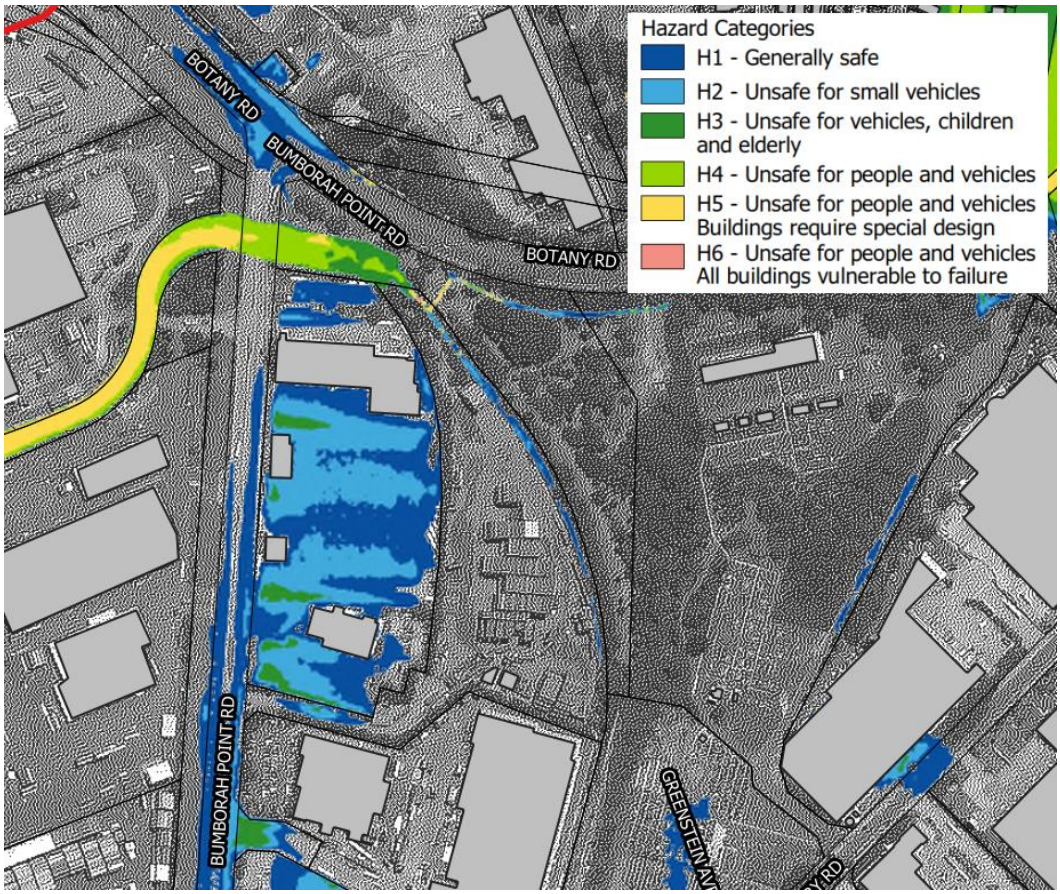
H4 – Unsafe for people and vehicles

H5 – Unsafe for people and vehicles. Buildings require special design.

H6 – Unsafe for people and vehicles. All buildings vulnerable to failure

In the 1% AEP flood event, hazard categories are identified within two localised areas of the subject site, see Figure 8. The Terminal entrance driveway low point to the south mostly has a hazard category of H1 to H2, indicating low hazard. The canal along the eastern boundary is mostly classified as safe with a category of H1, with a small, localised area ranging from H4 to H6 where it discharges to Bunnerong Canal.

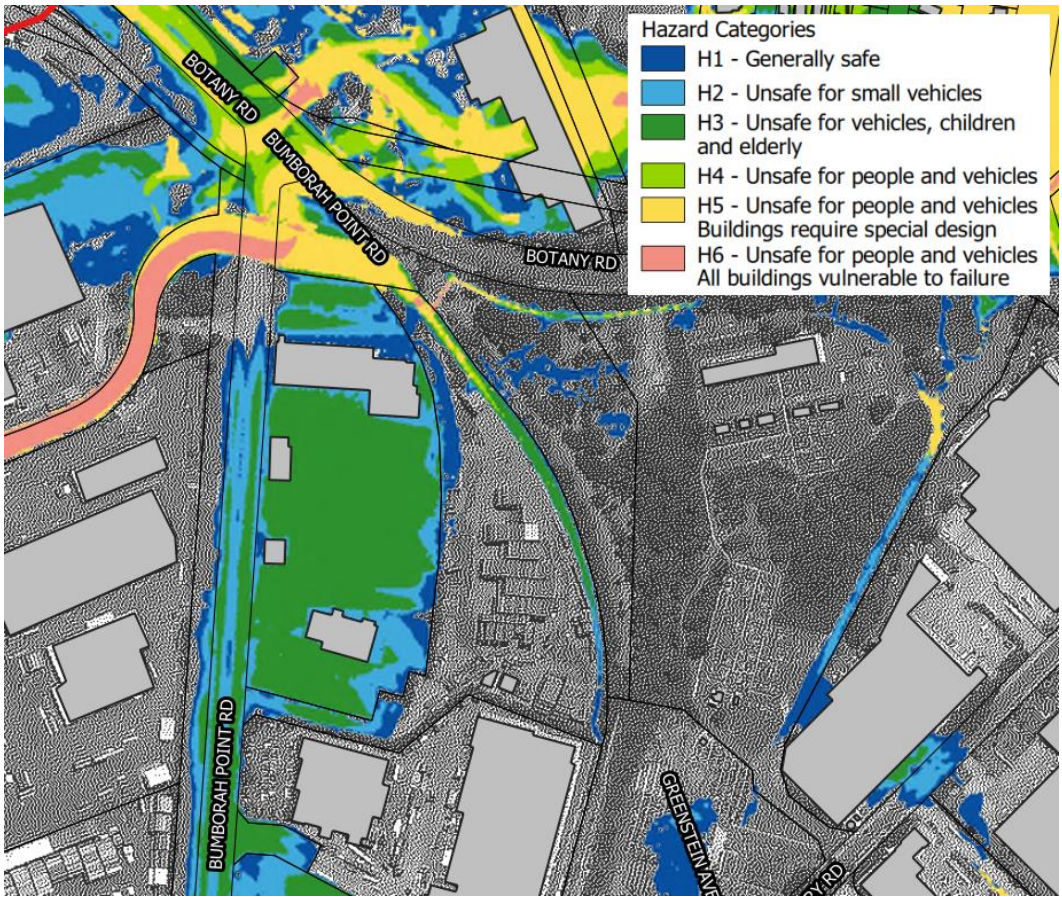
Figure 8: 1% AEP flood hazard map



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

In the PMF event (see Figure 9), the hazard category for the Terminal entrance driveway low point is raised to H3, indicating moderate hazard. There is also an additional localised area of low flood hazard identified along the northwest boundary with a category of H1. The canal along the eastern boundary is mostly raised to H3, with a larger area of hazard ranging from H5 to H6 at the downstream connection with Bunnerong Canal.

Figure 9: PMF flood hazard map



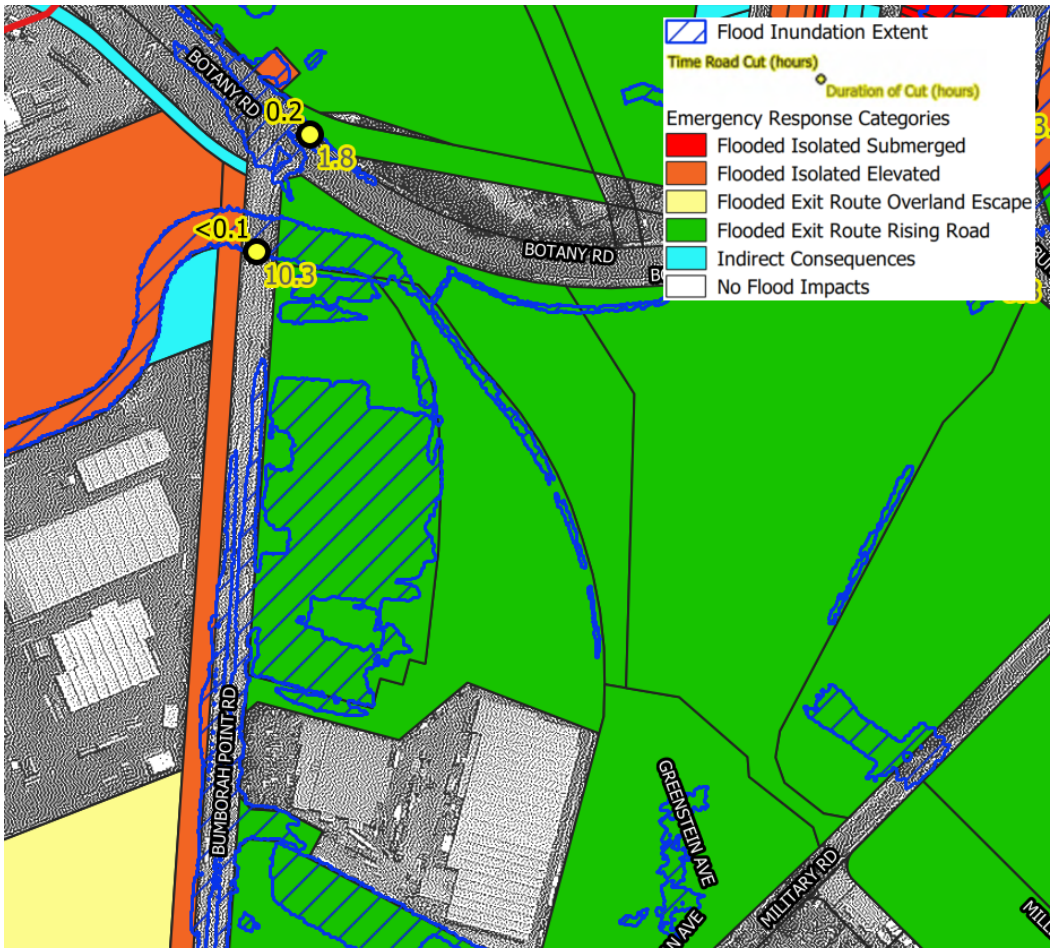
Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

3.4.4 Evacuation

Flood emergency response classifications in the regional flood study are derived from the Australian Emergency Management Institute. The classifications provide an indication of areas which may be inundated and/or isolated during floods and can be used to quantify the type of emergency response for planning.

In the 1% AEP event, the entire site is categorised as a “flooded exit route rising road area” (see Figure 10). This indicates that the property is flooded but the main evacuation roadway continuously grades up and out of the flood waters.

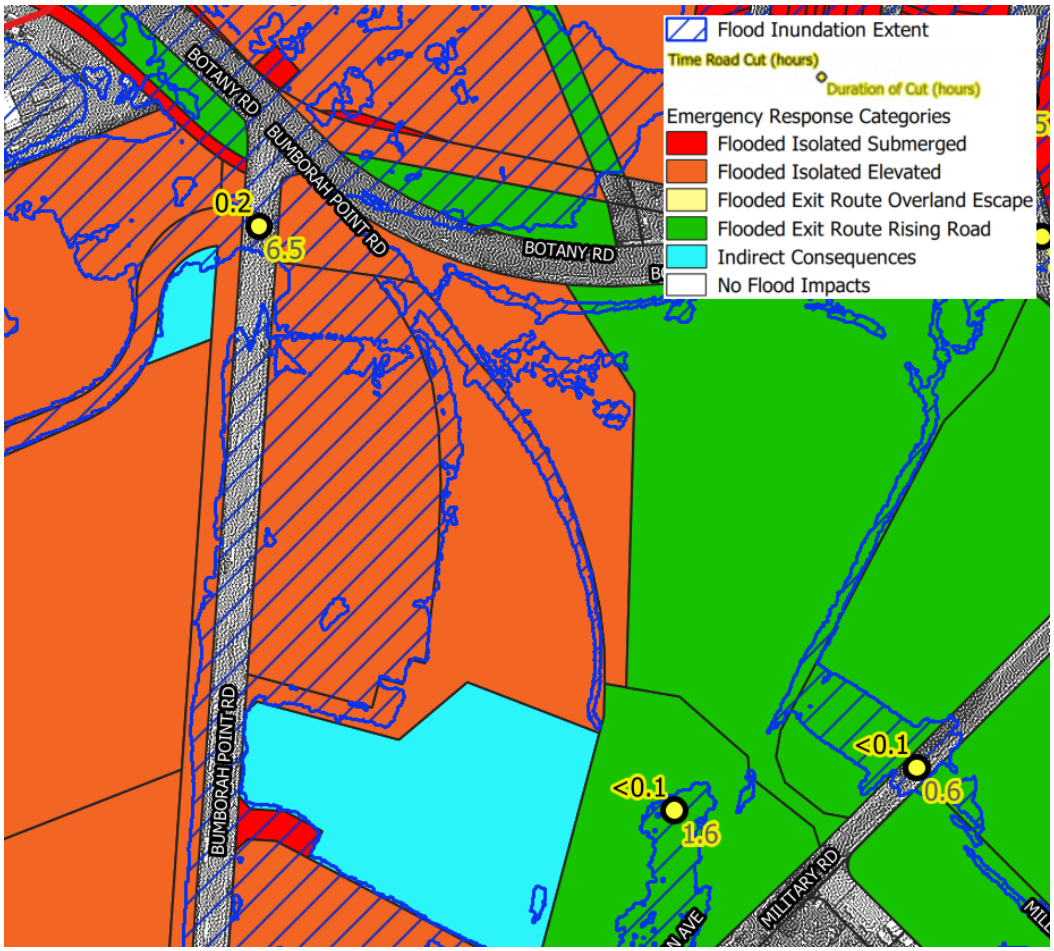
Figure 10: 1% AEP flood emergency response classification map



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

In the PMF event, the Terminal is categorised as a “flooded isolated elevated area” (see Figure 11). This indicates that evacuation routes are likely to be cut before the peak of the flood and the property will be isolated.

Figure 11: PMF flood emergency response classification map



Source: Lurline Bay, Matraville, Malabar & Yarra Bay Flood Study (2021)

3.4.5 Effects of Sea Level Rise and Climate Change

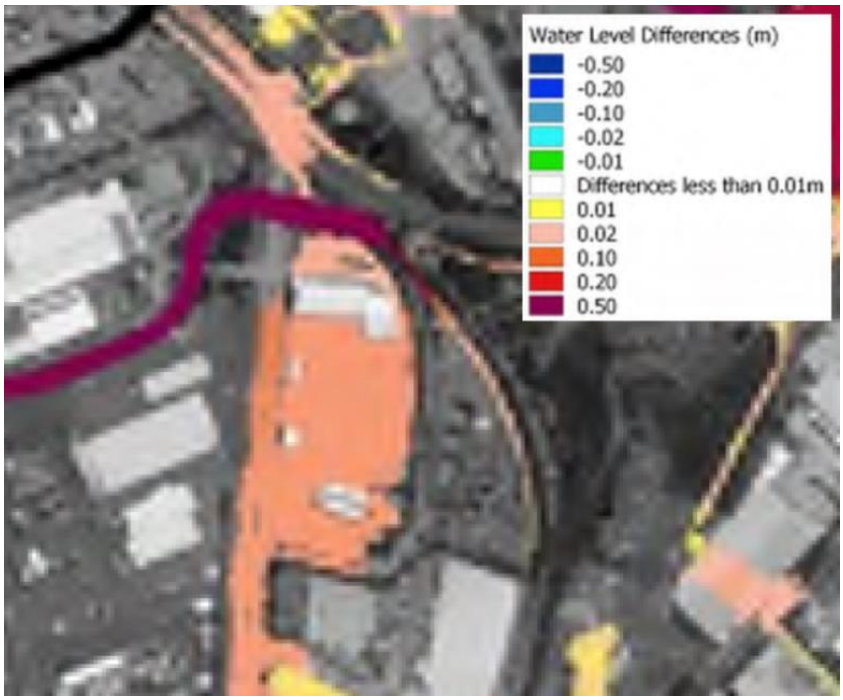
The NSW Sea Level Rise Policy Statement (2009) states that that ocean level increases of 0.4m could be expected by 2050 and a 0.9m increase could occur by 2100. Information provided on the ARR2019 data hub indicates that a 9% increase in rainfall is roughly equivalent to projected Representative Concentration Pathway (RCP) 4.5 conditions for a 2090 planning horizon, and a 19% increase in rainfall is roughly equivalent to project RCP 8.5 conditions for 2090. The Regional Flood Study's climate change simulations considered the following scenarios for increases in sea level rise and rainfall intensity:

- 1% AEP flood with 9% increase in rainfall intensity and 0.4m increase in sea level (2050)
- 1% AEP flood with 23% increase in rainfall intensity and 0.9m increase in sea level (2100). Although a 23% increase in rainfall is greater than RCP8.5 conditions for 2090, climate change is unlikely to "stop" so adopted rainfall increases are useful in understanding potential impacts of climate change beyond 2090.

The 2050 climate change scenario indicates a water level difference of +0.02m within the Terminal (see Figure 12). The 2100 climate change scenario indicates a water level difference of +0.1m within the Terminal (see Figure 13).

Figure 12: 9% rainfall increase with 0.4m sea level rise (2050 climate change scenario)

Figure 13: 23% rainfall increase with 0.9m sea level rise (2100 climate change scenario)



4 Proposed Works

4.1 Civil Works

The Project does not propose to change the overall site grading or increase the effective impervious area based on the existing detailed drainage model that assumes the Terminal is 100% impervious. Therefore, the change in drainage conditions as a result of The Project only considered the modifications to the culvert and the impacts this has on properties upstream of the Terminal. It should also be noted that MM requested a wider survey of the Terminal. However, this has not been supplied to MM. Therefore, the catchment areas of each pit have been assumed based on LiDAR data.

4.2 Stormwater Modelling

As a result of the proposed blade walls to be constructed into the existing RCBCs to support the proposed stormwater pits, the capacity of the existing RCBC to convey stormwater will be reduced and the risk of flooding impacts upstream of the Terminal was identified. Details regarding the assessment methodology and impact on the stormwater network are provided in the Drainage Design Report.

A summary of the Drainage Design Report is that the DRAINS model results show that changes to the RCBC sizes in the models does reduce the capacity of the RCBCs to convey stormwater and raises the Hydraulic Grade Line (HGL). However, the locations in the existing stormwater network that experience upwelling and freeboard issues are upstream in smaller 375 diameter pipes with a vertical drop into the existing RCBC. This results in upwelling and freeboard issues at these pits being largely independent of the proposed rise in HGL of the RCBC.

The Drainage Design Report demonstrated that the proposed modification works do not result in creating additional upwelling or reduced freeboard below 0.15m in upstream pits.

4.3 Changes to Flooding

4.3.1 Depth and Extent

Based on the regional flood study's 1% AEP and PMF flood depth maps, the Project is not expected to cause any worsening of flooding to neighbouring properties, with only minor changes anticipated within the subject site since there is no overall change to grading or effective impervious area. The area of ponding within the Terminal entrance driveway (see Figure 14) may change locally as the new kerb at the entrance will more effectively contain water within the roadway. This effective collection of surface runoff, and general widening of the entrance driveway serves to increase the capacity of the sag point to temporarily store water. Any effects to flood levels within the vicinity of the Terminal are therefore anticipated to be beneficial, or a lowering flood levels.

Similarly, potential detrimental effects to existing flood conditions arising from the proposed development under climate change (caused by sea level rise and increased rainfall intensity) are not expected.

Figure 14: Ponding in Terminal entrance driveway

Source: Google Street view 2020

4.3.2 Emergency Management Arrangements (evacuation) & Mitigation Measures

Since the Project is not expected to cause any worsening of flooding impact and is not changing the existing land use including population and traffic within the Terminal, development will not prompt changes to the emergency management arrangements identified by the regional flood study in Section 3.4.4. Similarly, mitigation measures are expected to remain unchanged with The Project's proposed changes.

4.4 Flood Planning Requirements

4.4.1 Consistency with Council FRMS+P

The subject site is located within the 1% AEP and PMF flood extent, so redevelopment of the Terminal will require compliance with Randwick City Council's flood planning controls, including:

- Randwick Local Environmental Plan 2012 (LEP)
- Randwick Development Control Plan 2013 (DCP)
- NSW Flood risk management manual 2023 (formerly NSW Floodplain Development Manual 2005)
- NSW State Governments Flood Prone Land Policy

Specified flood planning controls are required for land that is at or below the flood planning level requirements (ie. Minimum allowable building floor levels). The relevant development and planning controls for the Terminal are as follows in Table 3. Given the proposed works generally include minor ground level changes within the Terminal adjacent to the existing driveway kerbs and adjacent verge areas, the works are in accordance with the controls which aim to minimise impacts to existing and adjacent development.

It should be noted that works are not proposed to boundary threshold levels where overland flow crosses between adjacent lots once driveway/carparking ponding has filled in the depression storage.

Table 3: Randwick DCP (2013) Flooding Objectives and Controls

	Objective	Controls
5.1 Flood studies and Plans	• To ensure that development addresses any relevant flood studies and is consistent with the requirements of any floodplain risk management studies or plans.	i) DAs are to identify any flood related information including flood levels, locations of floodways or overland flow paths impacting the site. ii) Submit a site-specific flood study or other calculations to demonstrate there is no adverse impact on flooding if a flood study for the catchment has not been prepared. iii) Comply with any catchment-specific controls in an adopted Floodplain Risk Management Plan in addition to the controls in this section.
5.2 Flood effects	• To ensure that development, either individually or cumulatively, minimises adverse impacts on flooding, conveyance of floodwaters and floodplain storage volume. • To ensure that floodways and overland flow paths are not obstructed by development.	i) The development shall not increase flood effects elsewhere, having regard to loss of flood storage, changes in flood levels and velocities and the cumulative impact of multiple potential developments, for floods up to and including the 1% AEP flood. ii) Floodways and overland flow paths must not be obstructed or diverted onto adjoining properties. iii) Areas identified as flood storage areas must not be filled unless compensatory excavation is provided to ensure that there will be no net loss of floodplain storage volume below the 1% AEP flood.
5.3 Floor levels	• To ensure that floor levels are set at an appropriate height to reduce the frequency of inundation of structures and floors to an acceptable probability.	i) Building floor levels shall comply with the Table A – Floor Levels for Buildings, with exceptions noted below: A single (once only) addition at the existing lowest habitable floor level may be permitted after a flood study has been prepared. Such an addition will be limited to: a. A maximum 10 square metres for existing single and dual occupancy dwellings, b. up to 10 percent of the existing gross floor area for all other development (note for large buildings, this increase may be limited to a lower amount) ii) A certificate by a registered surveyor shall certify that the floor levels are not less than the required level. iii) Where the lowest habitable floor area is elevated more than 1.5m above ground level, a restriction is to be placed on the title of the land confirming that the sub-floor area is not to be enclosed.

Table A - Floor Levels for Buildings

Scenario	Floor level
Habitable Floors - all development (excluding critical facilities)	
Inundated by flooding	1% AEP + 0.5m freeboard
Inundated by overland flow path	Two times the depth of flow in the 1% AEP flood with a minimum of 0.3m above the surrounding surface
Habitable floors - Critical facilities	
Inundated by flooding	PMF + 0.5m freeboard
Inundated by overland flow path	Two times the depth of flow in the PMF with a minimum of 0.3m above the surrounding surface
Non-habitable floors – residential outbuildings (excluding garages) *	
Gross floor area less than or equal to 10 square metres.	1% AEP but not less than 0.15m above surrounding ground level
Gross floor area greater than 10 square meters.	The applicable habitable floor level
Non-habitable floors – Industrial and commercial	
Located on flooding or overland flow path	1% AEP but not less than 0.15m above surrounding ground level
Material storage locations – all development	
Materials sensitive to flood damage, or which may cause pollution or be potentially hazardous during flooding	1% AEP + 0.5m freeboard

* Note: floor levels for car parking are covered in 5.5

<table>
<tr><th></th><th>Objective</th><th>Controls</th></tr>
<tr><td>5.4 Building components</td><td>• To ensure the structure and construction of development is compatible with flooding up to the applicable floor level.</td><td>i) All development shall have flood compatible building components below the floor levels identified in Table A.
ii) All structures shall be constructed to withstand the forces of floodwater, debris and buoyancy up to and including the floor levels identified in Table A</td></tr>
<tr><td>5.5 Driveway access and car parking</td><td>• To ensure car parking and site access is constructed to an acceptable flood standard.
• To require appropriate protection measures for warning and safe evacuation from basement car parking.
• To minimise the likelihood of cars or other objects becoming floating debris during a flood.</td><td>i) Car parking floor levels shall comply with Table B – Floor Levels for Car Parking.
ii) Locate vehicular access where the road level is greater than or equal to the required floor level for the car park. Where road access above the required floor level is not available, locate vehicular access at the highest feasible location.
iii) The level of the driveway between the road and car park shall be no lower than 0.3m below the 1% AEP flood or such that the depth of inundation during the 1% AEP flood is not greater than the depth of flooding at either the car park or the road where the site is accessed.
iv) Underground car parking accommodating more than three vehicles shall have warning systems signage and exits to ensure adequate warning and safe evacuation.
v) Barriers shall be provided to prevent floating vehicles leaving the site during the 1% AEP flood if the depth of flooding at the car space exceeds 0.3m.
vi) Vehicle access to critical facilities that have an emergency function must be achieved for floods up to the PMF.
Table B - Floor Levels for Car Parking
<table>
<tr><th>Scenario</th><th>Floor Level</th></tr>
<tr><td colspan="2">Above ground level open car parking, car ports and garages</td></tr>
<tr><td>Open car parking spaces and car ports</td><td>5% AEP flood</td></tr>
<tr><td>Residential garages with up to two spaces</td><td>1% AEP but not less than 0.15m above surrounding ground level</td></tr>
<tr><td>Residential garages with more than two spaces</td><td>Applicable residential habitable floor level requirement (Table A)</td></tr>
<tr><td>Enclosed industrial/ Commercial parking spaces</td><td>Applicable industrial/commercial floor level requirement (Table A)</td></tr>
<tr><td colspan="2">Underground car park (where floor level is more than 0.8m below surrounding ground level)</td></tr>
<tr><td>All driveways</td><td>1% AEP plus 0.3m freeboard at its highest point</td></tr>
<tr><td>All emergency exits</td><td>All underground garages and car parks to have emergency exits protected from inundation up to the 1% AEP flood plus 0.5m freeboard with a minimum of 0.2m freeboard from vehicle entry point.</td></tr>
<tr><td>All other openings inundated by flooding or local overland flow path</td><td>All openings to be sealed up to 1% AEP + 0.5m freeboard with a minimum of 0.3m above the surrounding ground level</td></tr>
</table></td></tr>
<tr><td>5.6 Safety and evacuation</td><td>• To ensure development provides for the safety of persons and emergency access during a flood.</td><td>i) Include a description of the safety and evacuation methodology with all DAs, including:
ii) a) the provision of reliable and safe egress for inhabitants from the lowest habitable floor level to a publicly accessible location above the PMF level.
iii) b) the method of access for emergency personnel.</td></tr>
<tr><td>5.7 Management and design</td><td>• To ensure stored materials do not become hazardous during a flood.
• To ensure land subdivisions have suitable potential to be developed in</td><td>i) Land shall not be subdivided unless it is demonstrated that the newly created parcels of land can be developed in accordance with the flooding requirements of this DCP. Parcels created for the specific purpose of being transferred to Council ownership are exempt from this requirement.</td></tr>
</table>

	Objective	Controls
	accordance with the flooding requirements of this DCP. • To ensure development does not increase erosion, siltation, or destruction of natural or modified watercourses, wetlands, or coastal areas. • To ensure fencing does not obstruct the flow of flood waters, become unsafe during times of flood, or become moving debris	ii) The development shall not cause or increase erosion, siltation or destruction of natural or modified watercourses, wetlands or coastal areas. iii) Fencing within a floodway or overland flow path shall be of permeable open type design and be constructed to withstand the forces of floodwaters or to collapse in a controlled manner. iv) Any proposed storage area shall be constructed and located to prevent stored materials or goods becoming hazardous during a flood.

4.4.2 Compatibility with Flood Hazard

The proposed development does not change the existing land use category of the subject site or increase traffic and population within the Terminal. Given that the proposed works will have minimal impact on the existing flooding conditions for all events up to the worst-case flooding event (see Figure 11), the emergency response category will remain unchanged from “flooded isolated elevated” under the most extreme flooding conditions and The Project is compatible with current flood risk management measures.

5 Construction Requirements

Specific construction requirements in respect to Randwick City Council’s flooding controls outlined in Table 3 for the proposed development are not required based on the minimal changes to flood extent and hazard as well as the unchanged land use.