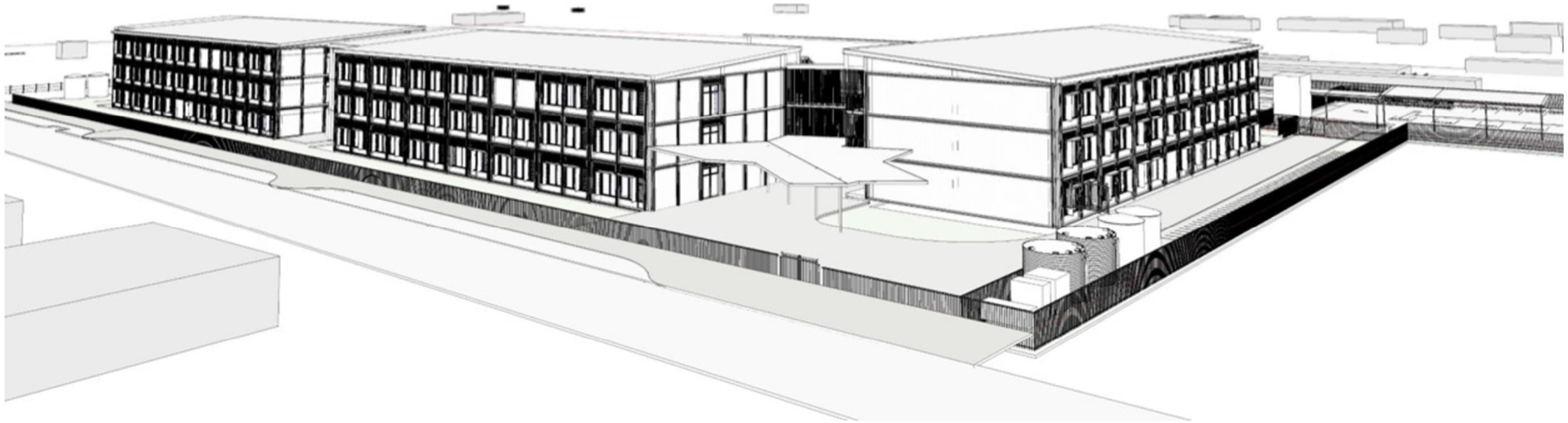
NEW HIGH SCHOOL FOR MEDOWIE

FLOOD IMPACT RISK ASSESSMENT



Prepared for: SINSW
By: **en**struct group pty ltd
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NEW HIGH SCHOOL FOR MEDOWIE

FLOOD IMPACT RISK ASSESSMENT

ISSUE AUTHORISATION

PROJECT: New High School for Medowie
Project No: 140220

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorise by
A	26/11/2024	DRAFT	T Henderson		
B	29/11/2024	For REF	T Henderson		
C	30/01/2025	Issue for REF	T Henderson	P Lambley	P Lambley
D	31/01/2025	Issue for REF	T Henderson	P Lambley	P Lambley
E	5/02/2025	Issue for REF	T Henderson	P Lambley	P Lambley
F	21/04/2025	Updated REF	T Henerson		

Executive Summary

enstruct have been engaged by SINSW to provide civil engineering flooding advice for the New High School for Medowie at Abundance Road, Medowie (**the site**). This report meets the requirements of a Flood Impact and Risk Assessment – Flood Risk Management Guide LU01 (NSW Department of Planning and Environment), and relates to the flooding characteristics relevant to the site. It considers the flood impact of the activity and addresses flood risk management.

The TUFLOW model indicates that the proposed school site is subject to flooding during a PMF. To mitigate the flood planning levels, the ground floors are above the flood planning level.

The proposed development has some localised impact on flooding with respect to flood depths and levels, during the 1% AEP event. These impacts are generally limited to the school site, with an improvement to flooding conditions on Abundance Road as stormwater infrastructure is installed under the proposed works in the public domain. Furthermore, the proposed OSD tanks help to minimise the impact of the activity on flooding, however in the interest of conservatism, these have been excluded from the flood model.

Overall, the proposed activity will not generate any significant negative impact from a flooding perspective. The inclusion of a subsurface stormwater network in Abundance Road, along with OSD tanks on the site help to minimise any impact.

This report includes the PMF event and shows that the site may be isolated for a short period time. A separate Flood Emergency Response Plan has been prepared.

enstruct

Contents

1 Introduction

This Flood Impact and Risk Assessment (FIRA) has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The activity will be carried out at 6 Abundance Road, Medowie (the site). The purpose of this report is to establish a flood emergency preparations and procedures for the site.

1.1 Site Description

The site has a street address of 6 Abundance Road, Medowie. It is 6.51ha in area, and comprises one allotment, legally described as Lot 3 in DP788451.

A large proportion of the site is currently unused and vacant. A small shed structure and caravan are located adjacent to the northern boundary. A cluster of buildings including a single storey dwelling, an outhouse/shed structure and temporary greenhouse are located within the south eastern corner.

The site contains a largely vegetated area to the south west corner. The site is relatively flat with a gradual fall from west to east toward Abundance Road.

The site has a primary frontage to Abundance Road to the east and Ferodale Road to the north. Abundance Road and Ferodale Road are both classified Local Roads. Medowie Road, approximately 1km east of the site, is a classified Regional Road.

The area surrounding the site mostly consists of industrial, rural residential, educational, and agricultural lands. Adjacent to the north western boundary is a Shell petrol station and mechanic garage. Adjacent to the north eastern boundary is a medical health clinic. Across Abundance Road along the eastern boundary are a number of warehouse and light industrial developments. Directly north of the site across Ferodale Road are large lots used for agricultural purposes. Medowie Public School is located on Ferodale Road, to the north west of the site, opposite the Shell petrol station.

Figure 1 **Site aerial photo (Nearmap)**

The site's topography generally slopes down from the west of the site at a relative constant slope of approximately 1:100. The maximum level is approximately RL 16.3 (m AHD) on the western boundary, and the minimum level is approximately RL 14.1 (m AHD) along the boundary with Abundance Road.

Site survey of the existing site is shown in Figure 2.

Figure 2 **Site Survey (SDG pty ltd)**

1.2 Existing Stormwater

The existing stormwater infrastructure servicing the site consists of a roadside swale along the length of Abundance Road. This swale discharges to the north and to the south, following the road gradient. The part flowing to the north discharges to a stormwater pit at the intersection with Ferodale Road.

The southern part of the swale continues south, ultimately discharging to the Campvale Drain.

The site frontage on Ferodale Road is serviced by the stormwater system in Ferodale Road, which includes a 525mm diameter pipe on the north side of the road.

1.3 Existing Public Infrastructure

The public domain along Abundance Road consists of kerb and gutter with a grass verge on the east side of the road, while the west side fronting the subject site has no kerb and an open swale in the grass verge.

1.4 Available Information

Medowie Drainage and Flood Study was prepared in May 2012 by WMA Water for Port Stephens Council. The report provides flood modelling for the Campvale Drain and Moffats Swamp catchments.

Medowie Floodplain Risk Management Study and Plan was prepared in April 2016 by WMA Water for Port Stephens Council. This report includes an update of the flood model prepared for the Medowie Drainage Flood Study.

Port Stephens Council has provided the TUFLOW model to enstruct for the purpose of this report. The model was found to be suitable for the Medowie Floodplain Risk Management Study and Plan when it was prepared in 2016, however numerous advancements have been made over the past 8 years in both hydrology and hydraulics.

- The model hydrology is based on Australian Rainfall and Runoff (ARR) 1997, while significant updates to both method and rainfall intensities have been made in ARR 2016 and subsequently ARR 2019
- The existing TUFLOW model is based on a 10m grid spacing, while current day models typically adopt a 2m grid spacing. Modern computers allow for a finer grid and without extensive simulations times.
- TUFLOW has continuously been updated between the 2013 version used to prepare the flood model, and the 2023 version used today. Advancements in the software reduces the risk of model instabilities and includes optimisations for modern computer hardware, reducing run times.

While the council provided model suitable for the regional flood analysis, a site specific model for the subject site using modern methods and software is considered to be more appropriate for this project.

Flood Assessment for New Medowie High School Site prepared by BMT 9/08/2024 provides flood advice for the proposed school based on existing flood information from the above flood study. It sets building FFLs based on predicted PMF flood levels and relevant sections of Council's DCP.

Correspondence with SES. Consultation with the SES on both this FIRA and the separate Flood Emergency Response Plan (FERP) has been undertaken, including a meeting on 8/01/2025. Correspondence is included as an appendix to this report, with response to specific comments summarised in Section 7.

Flood Emergency Response Plan prepared by enstruct. The findings of this report along with feedback from the SES has been used to prepare a FERP for the proposed activity. It provides detail on the emergency response and procedures touched on in this report.

Other relevant documents include:

- Flood Risk Management Manual 2023
- DPHI Planning Circular PS24-001
- Port Stephens Council DCP

2 *Project Description*

The proposed activity involves the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area.

29 permanent teaching spaces including 3 support teaching spaces, to accommodate 640 students, and school hall to accommodate 1,000 students. Approximately 10,500 sqm of GFA is proposed.

- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (6 x parallel spaces).
- New pedestrian wombat crossing to Abundance Road
- Approximately 55 x car parking spaces and 3 x accessible car parking spaces.
- Approximately 70 x bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Foodtech/Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1,000 students.
- Central quad, 1 playing field, and 1 sports courtyard.

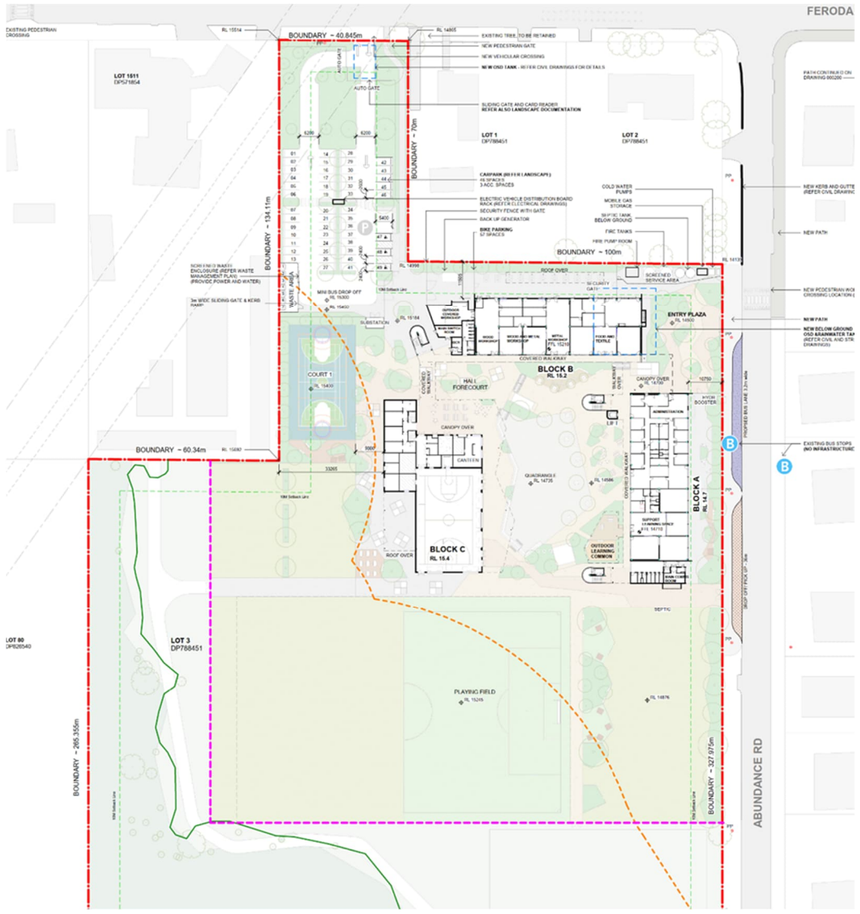

Figure 3 **Site Plan (NBRS)**

Additional public domain infrastructure has been proposed as a part of this design development. This infrastructure includes:

- Upgrade of Abundance Road with kerb and gutter, indented bus bays and kiss and ride bay, concrete footpath and underground stormwater.
- New pedestrian crossing on Abundance Road
- A continuation of the concrete footpath on Ferodale Road along the subject site frontage.

3 Flood Modelling

The flood model provided by Council as outlined in section 1.4 of this report was found to be not suitable for the purpose of a site-specific flood impact and risk assessment. A TUFLOW flood model was developed by enstruct using publicly available Digital Terrain Models (DTMs) from LIDAR survey data for the catchment area surrounding the site. The terrain at the site was based on field survey data.

The enstruct TUFLOW model utilises some information from the model provided by Council:

- Surface roughness data
- Pipe network information in Ferodale Road.
- Tailwater conditions in Campvale Drain.

3.1 Model extents and Hydrology

To improve model run times and enable the use of a finer (2m) grid, the modelled extents only include the local catchment containing the proposed school, upstream to Mahogany Place north west of the site, down to Campvale Drain to the east of the site (refer to Figure 4). While the Council provided model covers 2,100 ha, the local model developed for this report covers 84 ha.

A hydrologic model was developed using DRAINS software utilising Council's recommended Horton infiltration parameters. The catchment was discretised into a number of sub-catchments as shown in Figure 4. Procedures outlined in ARR2019 were adopted. The Estimation of Probable Maximum Precipitation in Australia: Generalised Short-Duration Method, published by the Bureau of Meteorology to calculate the Probable Maximum Flood (PMF) was used to estimate hydrographs for the PMF event.

3.2 TUFLOW Model Setup

DTM surface levels and terrain data was retrieved from the ICSM Elvis Elevation and Depth – Foundation Spatial Data website for the area surrounding the site, ensuring the upstream stormwater catchment area that drains towards the site is included. The DEMs were provided in grid sizes of 1m. This elevation data was then imported into QGIS, an open source Geographic Information System, whereby an accurate catchment plan could be produced for site.

Figure 4: Catchment Map

3.2.1 Model Topography

The model topography is based on a 1m DTM derived from LiDAR data, and the field survey within the site extent. The model has a 2m regular grid which is considered adequate to represent flood behaviour for this flood assessment.

For the proposed conditions model, the design surface grading for both the public domain on Abundance drive, and the subject site were added to the model, along with building outlines and the proposed pipe network in Abundance Drive.

3.2.2 Surface Hydraulic Roughness

Manning's 'n' values were applied to represent the roughness of the various land uses in the model domain, with the model provided by Council used as a starting point. The aerial photographs were used to define spatial extent and type of land use in the study area. Adopted Manning's n values in the TUFLOW model were 0.015 for roads and other paved areas, and 0.04 for other areas representing grass verges, gardens, lawns and the like.

3.2.3 Pipe Networks

Subsurface stormwater networks have been included in the model, sourcing information from the site survey and Council supplied model and design information from the proposed activity. Note that for the purposes of preparing the flood model, the OSD tanks have not been accounted for. While these tanks will have some impact in reducing flooding downstream of the site, a conservative approach has been taken by excluding this impact in the model.

3.2.4 Downstream Boundary

The downstream boundary was set as the flood levels in Campvale Drain based on the Council model for both the 1% AEP event and the PMF. Campvale Drain is sufficiently downstream to not have an impact on the flood levels at the subject site.

3.3 Flood Model Results

A range of storms and temporal patterns were run through the model in order to establish the critical duration storm. At the subject site, the critical duration 1% Average Exceedance Probability (1% AEP) storm is a 20 minute duration storm.

Also included in the below maps is the 5% AEP event, 1 in 500 year event and PMF event.

Flood depths less than 100mm have been excluded from the plots. Inaccuracies in the lidar data results in "rough" terrain that holds more floodwater than would be expected on a smoother terrain. Excluding depths less than 100mm provides an estimate of flood extents that is more representative.

Figure 5 **1% AEP existing conditions flood results**

Figure 6 **1% AEP proposed conditions result**

The proposed condition result shows less flood extent as the new pipe networks capture surface water. Flooding on part of the subject site to the south of the proposed works shows an increase in flood affectation. This is limited to the site so is not considered to be a negative impact on surrounding properties.

Figure 7 **Flood impact – 1% AEP flood event**

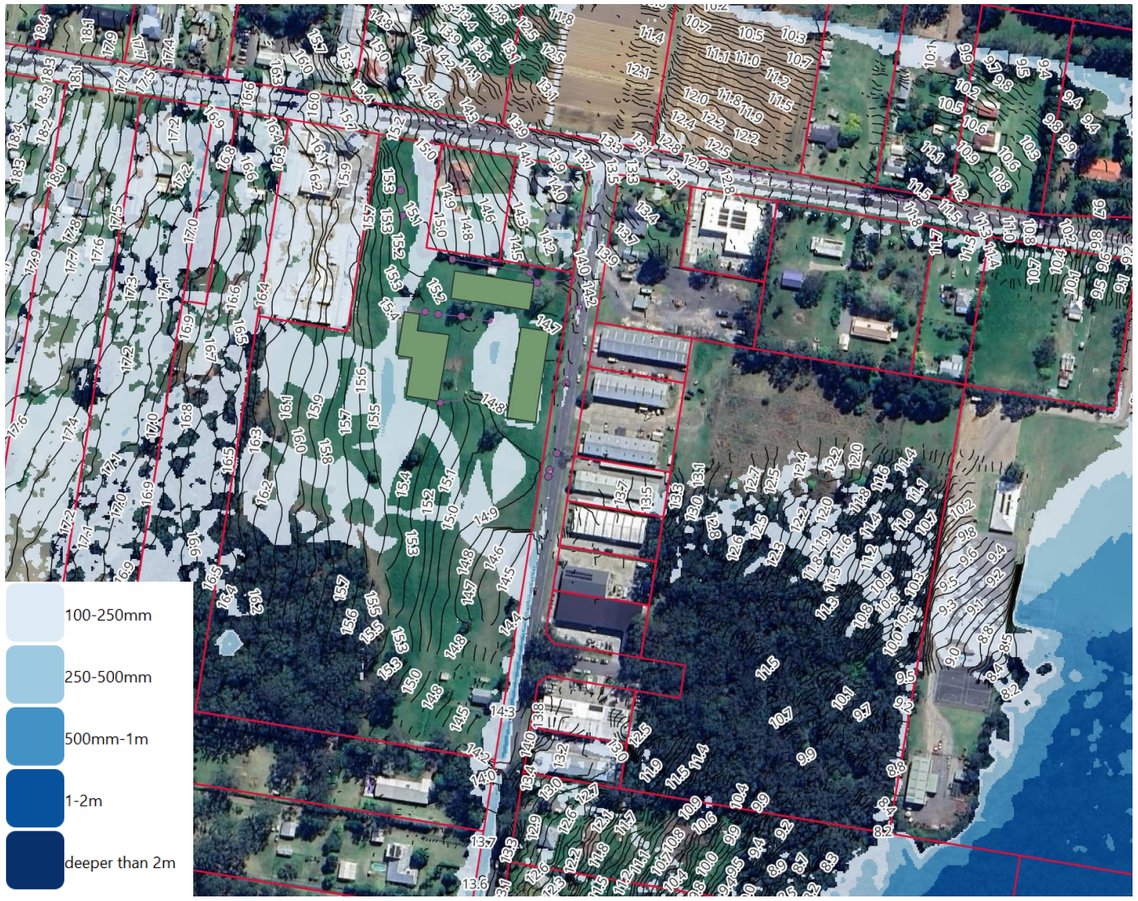

Figure 8 **1% AEP with climate change**

The proposed activity results in some localised increases in flood levels. On the subject site, this can be attributed to rising of the ground levels. While the depth of flooding across the site does not change significantly, the ground levels have increased, and therefore flood levels increase.

Some reduction in flood extents on Abundance Road is the result of the swale drain on Ferodale Road being filled and replaced with a pipe network. Vegetated areas to the east of Abundance Road also experience an increase in flood extents compared to existing conditions, which is not considered to be a significant impact.

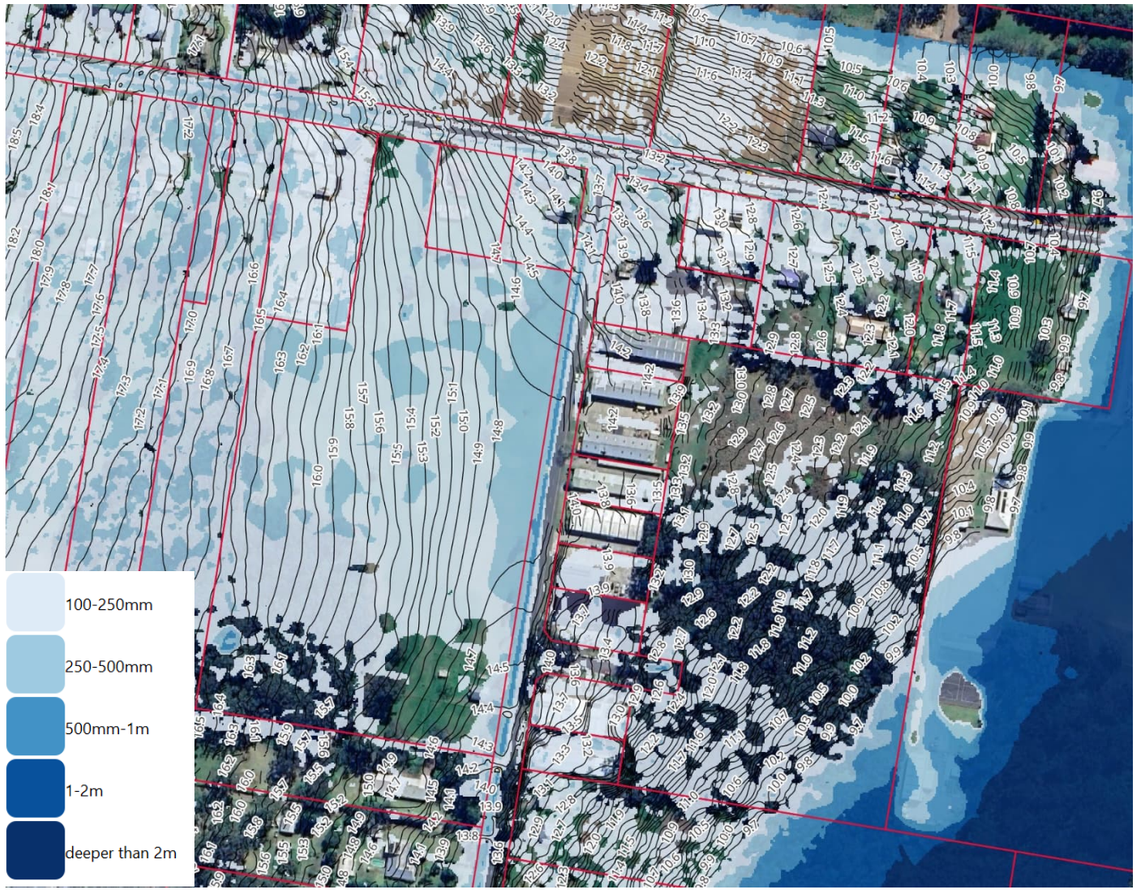

Figure 9 **PMF existing conditions result**

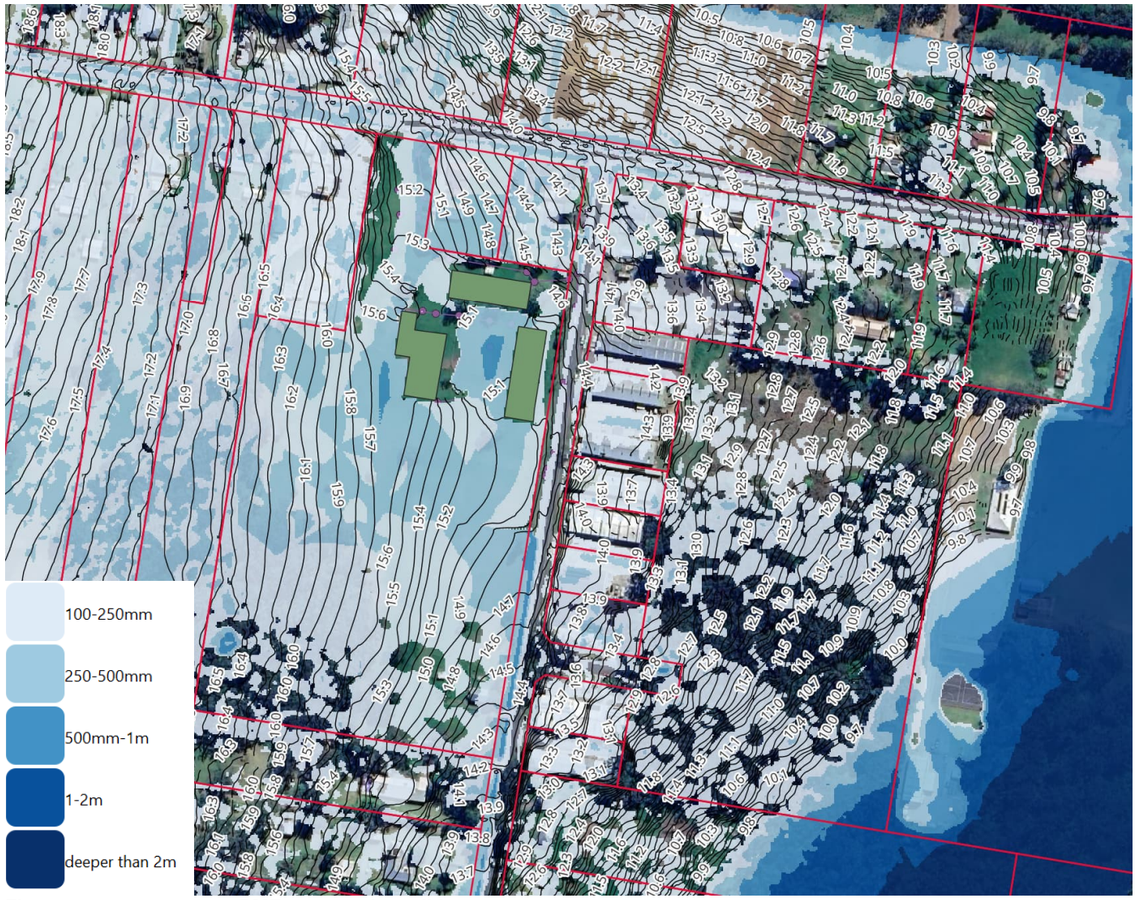

Figure 10 **PMF proposed conditions**

The PMF shows that part of the site is flood affected in the extreme rainfall events.

Figure 11 5% AEP proposed conditions

Figure 12 1 in 500 AEP proposed conditions

4 Flood Planning

4.1 Flood Conditions and Requirements

Section B5.3 of the DCP outlines flood planning level requirements. The flood planning level for a school is the PMF level with no requirement for freeboard above this extreme flood event. Flood Planning Levels (FPLs) for each building are shown in Figure 13 and Table 1.

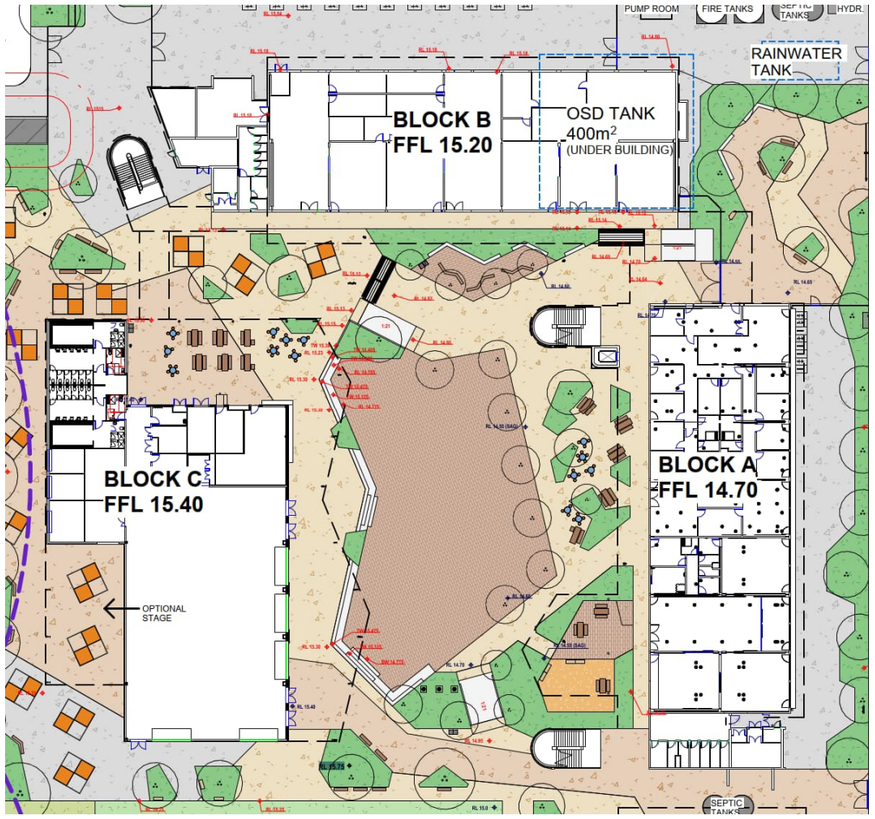

Figure 13 Flood Planning Levels (NBRS)

Table 1 Flood planning levels

Location	PMF level (mAHD)	Flood Planning Level (mAHD)	Proposed Finished Floor Level (mAHD)
Block C	15.40	15.40	15.40
Block B	15.20	15.20	15.21
Block A	14.70	14.70	14.71

4.2 Climate Change

The proposed activity has adopted flood planning levels based on the PMF as required by Council's flood policy. Climate change was initially not considered when determining PMF, so no changes to the site planning were affected in this respect.

The Request to Consider Submissions Memo (DOC/367344, 4/04/2025) notes

> *FPLs have been based on the PMF, for which climate change is not considered. It is understood that the updated approach in Australian Rainfall and Runoff (Commonwealth of Australia Geoscience Australia 2019, Version 4.2) requires scaling of a PMF to take into account climate change. This has been the practice on other Education projects.*

ARR version 4.2 was released in late 2024, with general adoption by the industry some months later, after the body of work discussed in this report. This updated report includes modelling for the PMF with climate change based on the methods of ARR 4.2.

The climate change scenario selected for the PMF analysis is the Shared Socioeconomic Pathway 3 with a 7W/m^2 in 2090 (SSP3-7.0 2090). This is a high emissions scenario with an estimated global warming of 3.6°C. For the critical 30 minute PMF event, the resultant rainfall multiplier is 1.59.

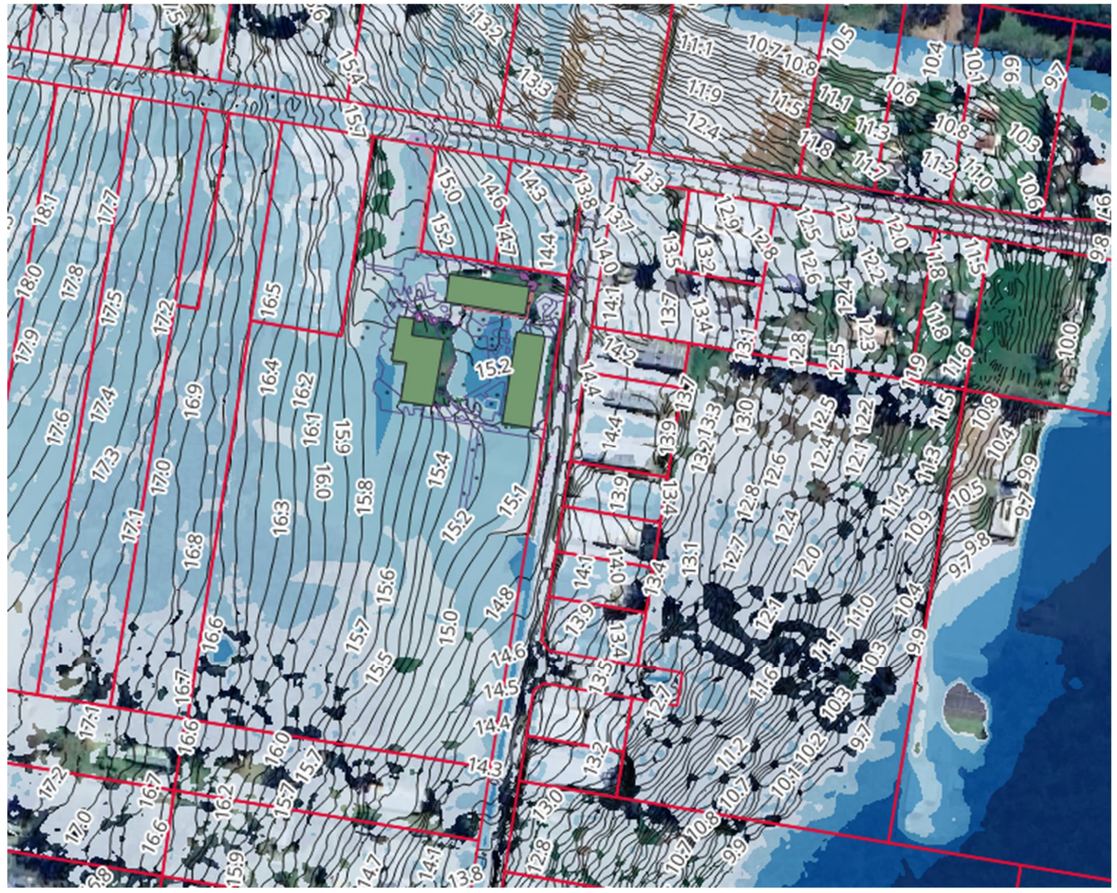

Figure 14 **PMF with climate change (SSP3-7.0 2090) proposed conditions**

Comparing the climate change scenario with the existing scenario sees an increase in PMF levels of approximately 100mm across the site, with localised impacts behind buildings. The resultant FPLs therefore increase by more than 100mm. Rather than raising floor levels, alternate mitigation measures should be considered to minimise the localised impacts, such as allowing flood water under the buildings.

Table 2 **PMF levels with Climate Change**

Location	PMF level (mAHD)	Flood Planning Level (mAHD)	Proposed Finished Floor Level (mAHD)
Block C	15.70	15.70	15.40
Block B	15.30	15.30	15.21
Block A	15.10	15.10	14.71

When considering climate change for events other than the PMF, this report has adopted a Representative Concentration Pathway climate change scenario of 8.5 W/m^2, often referred to as RCP8.5. This represents a 'worst case' climate outcome where greenhouse gas emissions continue to rise throughout the 21st century. This is now considered an unlikely scenario, however with uncertainty over the complex climate models it has been adopted for this report as a conservative approach. The impact of RCP8.5 is a 19.7% increase rainfall intensity in 2090.

The flood modelling has included the climate change flood event of the 1% AEP storm with an increase in rainfall intensity of 20%. Under this modelling scenario, the flood level in Abundance Road and Ferodale Road increase by approximately 25-50mm.

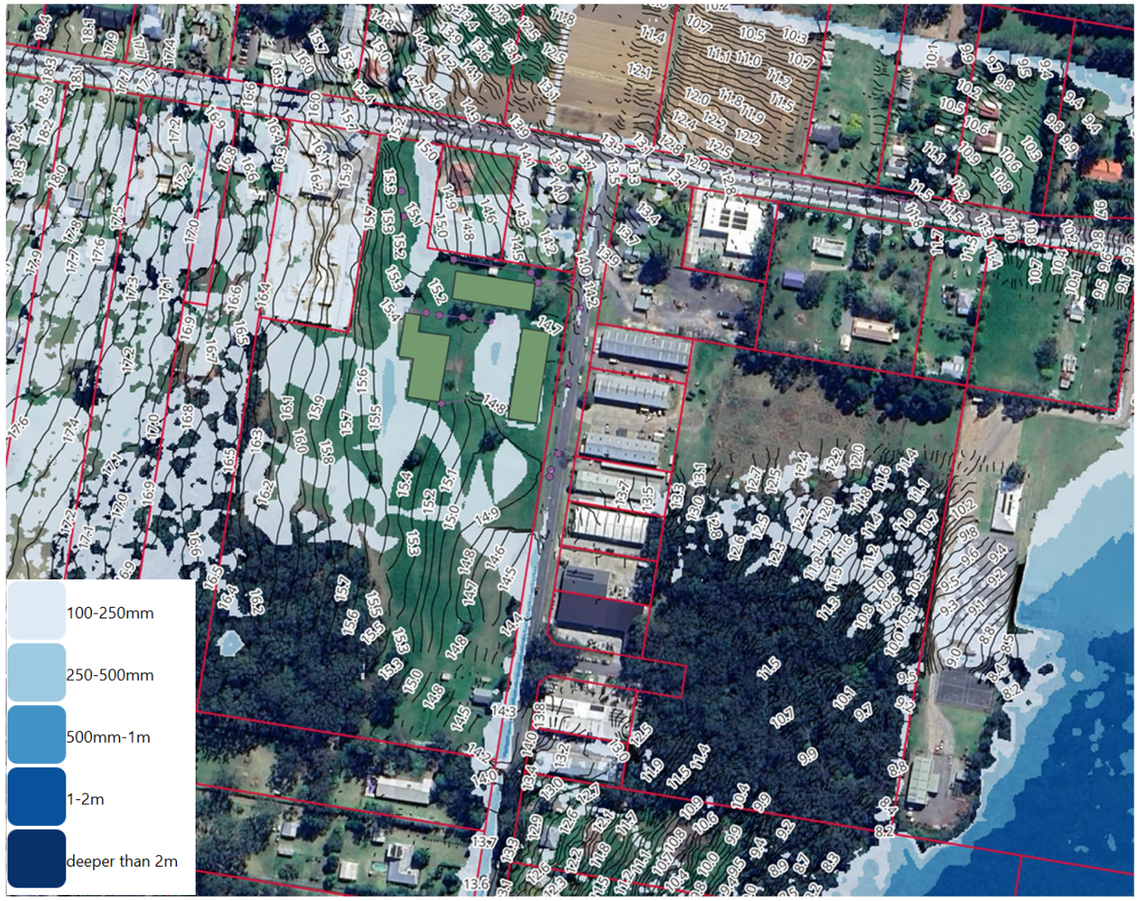

Figure 15 **1% AEP with climate change (proposed conditions)**

The site is resilient to increased rainfall intensity due to climate change given the flood planning level for the site is based on the PMF level which exceeds the levels shown in the climate change analysis.

5 Flood Risk: Access, Egress and Isolation

5.1 Site Use

The site will be used as a high school 5 days per week for approximately 40 weeks per year.

The proposed new school will accommodate 640 students in 29 permanent teaching spaces including 3 support teaching spaces across 3-storeys of buildings on the site, and school hall to accommodate 1,000 students.

It is understood that the school may be used as community facility outside of school hours, on weekends and during the school holidays on an ad hoc basis.

5.2 Site Access and Egress

Ferodale Road is the main link from the subject site to Medowie Town Centre and Medowie Road. During a 1% AEP flood event (or larger), Ferodale Road will be flood affected at Campvale Drain (Brad's Bridge), cutting off this access route. Alternative access and egress is available to the west via Ferodale Road, Fairlands Road, and on to Grahamstown Road, ultimately linking to the Pacific Highway at Raymond Terrace to the west. Refer to Figure 16. It should be noted that Fairlands road may be subject to overland flow with up to 100mm depth during a 1% AEP event and 250mm depth during a PMF. This overland flow from a catchment in the order of 15 ha, so is likely subside shortly after a storm peak.

Notably, this access route is flood affected and considered unsafe for small vehicles during the 1 in 500 AEP flood event, and unsafe for all vehicles during the peak of a PMF event. While the site will be closed down if extreme weather is forecast, any persons at the site during a flood event should shelter in place until flood waters recede. This is in accordance with DPHI's "Shelter in Place Guidelines for Flash Flooding" by meeting these key objectives

- Off site evacuation is the primary emergency response. In this instance, shelter in place is a last resort measure for anyone remaining on site when access is restricted by flooding.
- Flooding occurs within 6 hours of the onset of causative rain and duration of shelter in place is less than 12 hours.
- The development is not subject to high hazard flooding (H5 or H6); and
- There is adequate floor space above the PMF to allow a shelter in place strategy.

Further information regarding emergency response is available in the separate FERP.

Figure 16 **PMF flood extents and potential access/egress route**

5.3 Flood Hazard

Flood hazard in and around the site has been mapped in the following figures. The flood hazard categories shown in Figure 17 below and plotted on the hazard maps.

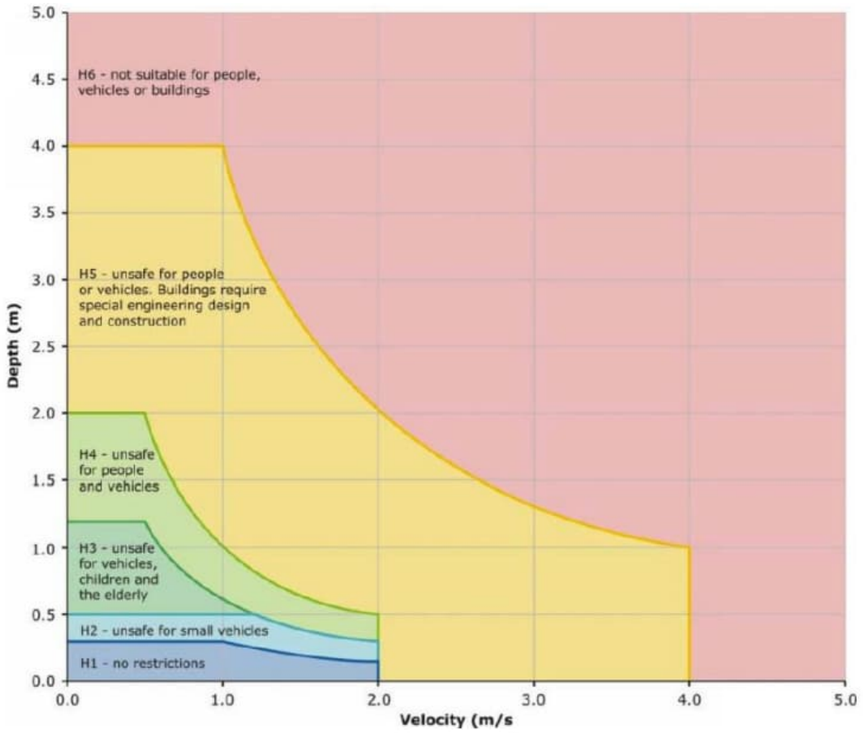

Figure 17 **Flood hazard categories (Australian Rainfall and Runnoff)**

Figure 18 **5% AEP Flood Hazard**

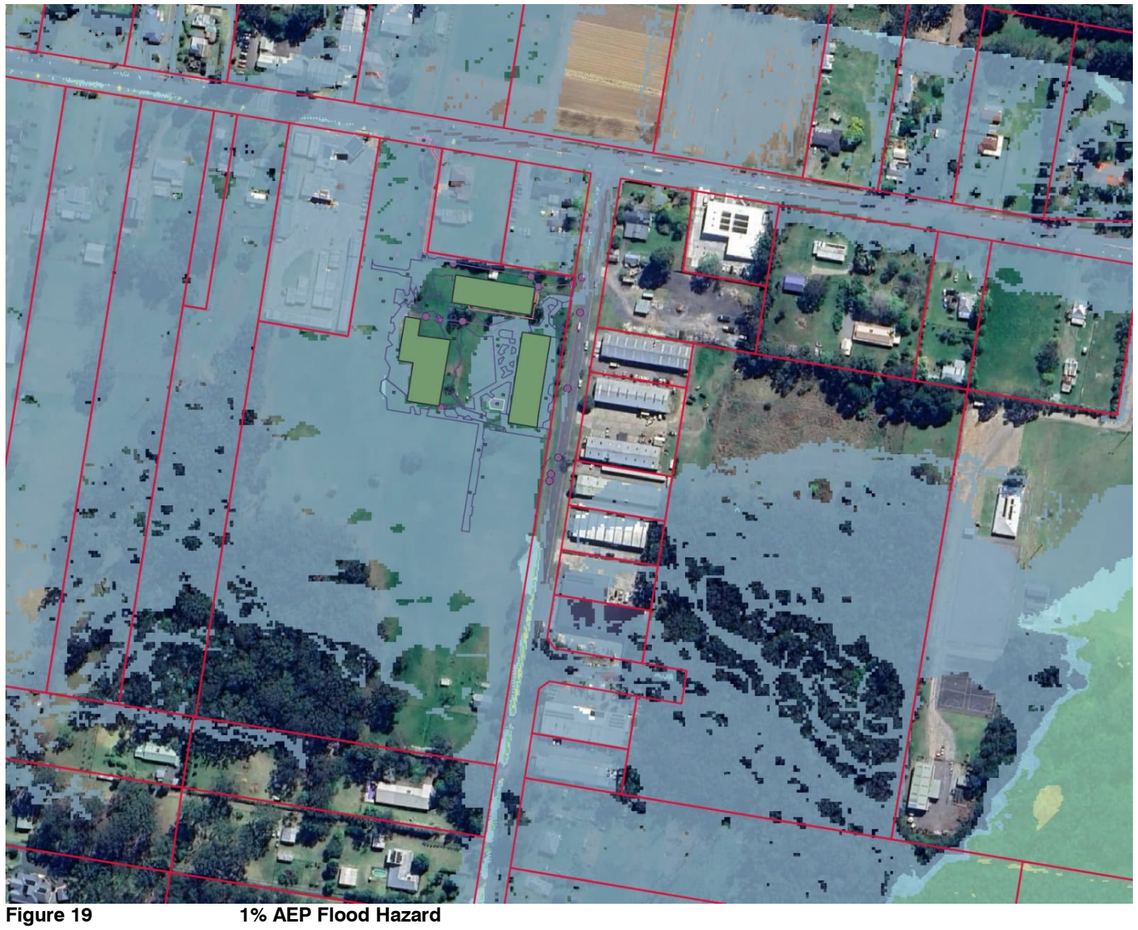

Figure 19 **1% AEP Flood Hazard**

Flood Hazard around the subject site is generally low (category H1) during a 1% AEP flood event. This can be attributed to the low flood depths over flat terrain with low flow velocities. There are some localised spots of H2 flood hazard in the kerbs on Ferodale Road west of the site during the peak of the flood event. While it is recommended to not enter flood waters, the H1 flood hazard can be traversed by emergency vehicles if required.

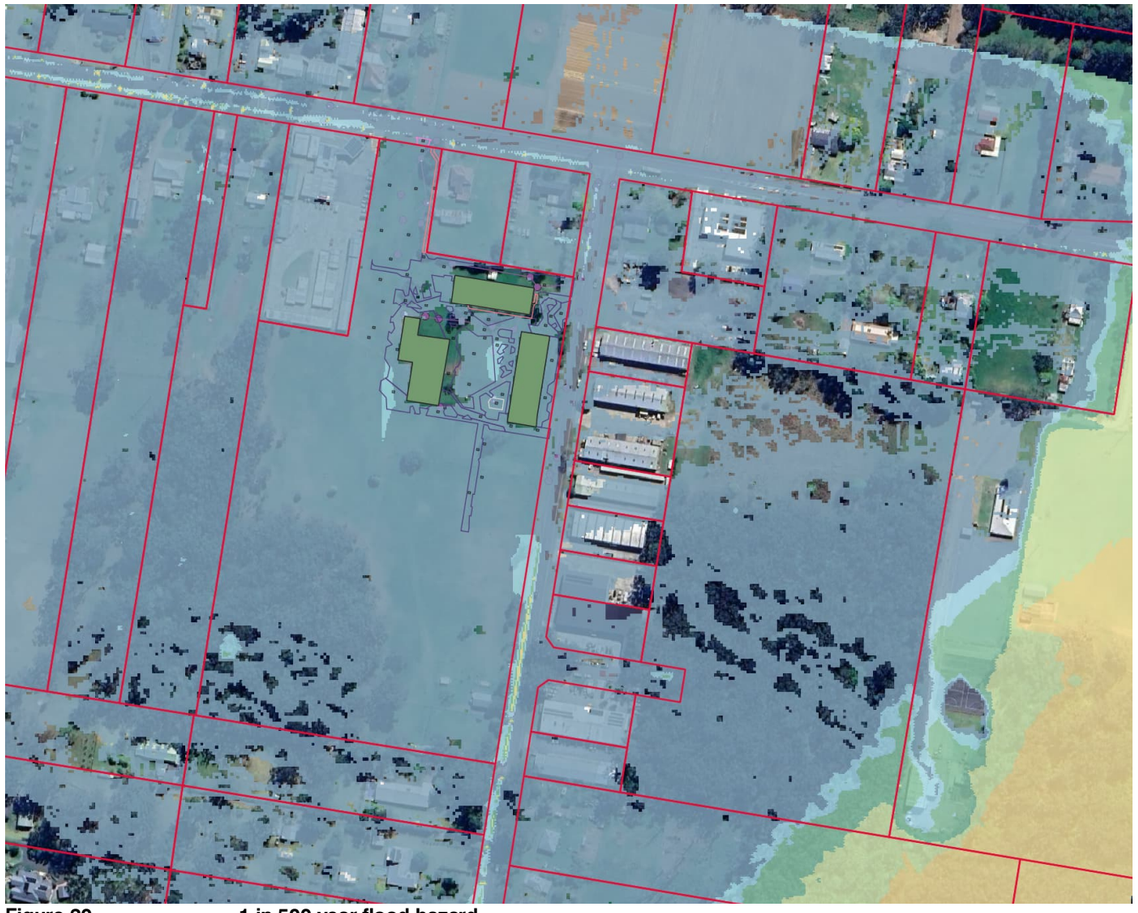

Figure 20 **1 in 500 year flood hazard**

The extent of the H2 hazard increases during a 1 in 500 year flood event, but Ferodale Road west of the site remains trafficable for emergency vehicles if required.

Figure 21 PMF flood hazard

During a PMF, Ferodale Road is unsafe for people and vehicles. While the flood depth remains less than 500mm, increased velocities raise the risk to users of the road.

It is also noted that during a PMF event, part of the central courtyard is an H3 category – unsafe for vehicles, children and the elderly. There is no need for vehicles or people to enter this zone during this extreme flood event so this is not considered to be a significant issue.

5.4 Isolation management

During a PMF storm event, the site may be isolated for a period of time. The critical duration storm event for the PMF is 30 minutes. This gives little to no time to evacuate the site, but the short duration storm limits any isolation period. As per the Flood Risk Management Guideline EM01 (NSW Department of Planning and Environment), there is no "safe" period of isolation. When considering flood emergency management in activities such as proposed for the subject site, the self sufficiency of occupants is a factor in determining the risk factor for the activity.

It is recommended that the site is closed down if extreme weather is predicted. This should be communicated to staff, students and parents through regular school communication channels (school app, sms, email, etc).

In the event that the site is occupied and becomes isolated due to flooding, staff and students, as well as any visitors will remain on site for the duration of the flood event. This may include other itinerant population such as pedestrians in the local area. Typically, students will have a packed lunch, or rely on the canteen for food supply. Water can be stored on site (2L per person to be stored on site) for the isolation period.

Refer to the separately prepared Flood Emergency Response Plan (FERP) for additional information on emergency and isolation management.

It is worth noting that a PMF event has a likelihood in the order of 1 in 1,000,000 years.

6 2022 Flood Inquiry

NSW experienced major flooding in February, March and, most recently, July 2022. In March 2022, the NSW Premier established a Flood Inquiry. The 2022 Flood Inquiry was published on 29 July 2022.

Relevant findings and recommendations of the Inquiry are presented below:

W. Finding – essential services and floodplain infrastructure

- Essential services disruption in the floods was exacerbated by critical infrastructure being situated in low-lying areas and consequently being flooded.
- Many hospitals, medical centres, nursing homes, aged care facilities and police stations are situated below the flood planning level. Several of these were affected in the recent floods.
- Some detrimental impacts of floods come from built structures which are supposed to provide flood mitigation not being maintained and consequently malfunctioning after heavy rain, making floods worse at a local level. Many are the responsibility of several agencies and are maintained by none.

28. Recommendation – essential services and floodplain infrastructure

That, to minimise disruption to essential services (power, communications, water, sewerage) and to ensure flood infrastructure is fully serviceable before flooding, Government ensure:

- essential services infrastructure (communications, water, power and sewerage) is situated as much as possible above the flood planning level. And to minimise disruption to medical services, aged care services and the police, Government ensure hospitals, medical centres, nursing homes, aged care facilities and police stations are situated above the probable maximum flood level
- floodplain infrastructure (drains, levees, flood gates) items are all assigned to an appropriate lead agency which has responsibility for ensuring they are fully maintained and functioning especially when floods are likely.

The proposed activity responds to these findings. The potential disruption to essential services has been considered:

- The local sewerage system is typically designed to overflow to the stormwater system in the event this is inundated by flooding, and not back up into properties.
- Water supply will continue to operate during flood events.
- The proposed activity has diesel a generator backup system to supply electricity in the event the local distribution network is not operating due to flooding, with substation and backup generator located above the PMF.

7 SES correspondence

In response to feedback from the SES (Appendix A), the following information has been added to this FIRA:

- Post-development PMF flood mapping has been provided (Figure 10).
- To provide additional information on flooding between the 1% AEP event the PMF event, the 1 in 500 AEP flood event has been included in the analysis (Figure 12 and Figure 20). Furthermore, the 5% AEP event has been included to show the potential flood hazard and extents (Figure 11 and Figure 18). Hazard maps have been included for all events.
- It is noted that there are no official flood warnings available for flash flooding at the site. To minimise the risk of isolation during a flood, the separately prepared FERP contains a staged approach to flood response. In the event that severe weather conditions are forecast, the school should be closed down before the start of the school day, and evacuated if safe to do so (refer to Section 5.2 and 5.4). Shelter in place is available as a last possible option for anyone remaining on site at the onset of flooding.

8 Conclusion

This report has identified and analysed the impact of the proposed activity, the risks to the proposed activity and its users, and outlined how these risks can be managed. Thus it meets the requirements of a Flood Impact and Risk Assessment (FIRA) as outlined in the Flood Impact and Risk Assessment – Flood Risk Management Guide LU01.

The TUFLOW model indicates that the proposed school site is subject to low level flooding typically up to 250mm during flood the 1% AEP flood event. Flood hazard is limited to H1 across the site during a 1% AEP event, with a small area of H2 during a 1 in 500 AEP event, and some areas of H2 and H3 during a PMF.

The proposed development has some localised impact on flooding with respect to flood depths and levels, during the 1% AEP event. These impacts are generally limited to the school site, with an improvement to flooding conditions on Abundance Road as stormwater infrastructure is installed under the proposed works in the public domain. Furthermore, the proposed OSD tanks help to minimise the impact of the activity on flooding, however in the interest of conservatism, these have been excluded from the flood model.

Site access and egress is limited during the peak of storm events rarer than a 1 in 500 AEP flood event. Site access and egress is closed for a short period during a PMF event. A separate Flood Emergency Response Plan has prepared to manage flood risks to users of the site. The FERP seeks to minimise risk to site occupants by closing down the school when severe weather conditions are forecast. Generally, students, parents and teachers should not enter flood waters in any flood event. In the scenario where people are on site in during a flood event where access and egress is restricted by floodwaters (1% AEP and larger), those on site should shelter in place until flood water recede.

Overall, the proposed activity will not generate any significant negative impact from a flooding perspective. The inclusion of a subsurface stormwater network in Abundance Road, along with OSD tanks on the site help to minimise any impact.

APPENDIX A: Correspondence with SES