Flood Emergency Management Plan (Construction)

Darcy Road Public School

Prepared for School Infrastructure NSW / 28th March 2024

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Your Partner in Engineering

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PREPARED BY	APPROVED BY	STATUS	ISSUE	DATE
Jamie Marshall	Philip McAteer	Draft	1	19 Jan 2024
Jamie Marshall	Philip McAteer	Rev1	1	24 Jan 2024
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Jamie Marshall	Philip McAteer	Rev5	1	28 Mar 2024

1.0 Introduction

Taylor Thomson Whitting (NSW) Pty. Limited has been engaged by Taylor Construction Group (TCG) to prepare a Construction Flood Emergency Management Plan (Construction)(CFEMP) to address the SSDA-49073460 requirements (Items B.20, B.21, and B.22) from the Department of Planning, Housing and Infrastructure (DPHI) (formerly known as the Department of Planning and Environment (DPE) for the proposed development at 98A Darcy Road, Wentworthville, within the Parramatta Local Government Area (The Site). These conditions are as below:

'B20. Prior to the commencement of each construction stage, a Construction Flood Emergency Management Plan, must be prepared by a suitably qualified and experienced person(s) in consultation with NSW State Emergency Services, to the satisfaction of the Planning Secretary, including but not limited to:

(a) detail on triggers, including rainfall and water level, that require closure of the site; (See Section 5.4 and Section 7 of this CFEMP)

(b) detail on how site closure would be communicated to construction workers, before commencement of the work day (See Section 6.2 of this CFEMP);

(c) *details of drills, frequency and record management of the drills (See Section 4.3);*

(d) *a map showing the flood-free pedestrian route from each construction site to a suitable location free of inundation (See Section 6.3 of this CFEMP).*

(e) details of any gauges or warning infrastructure that are to be provided to assist with flood management, including frequency of maintenance, and how these will be monitored (see Section 6.1 and Section 6.2 of this CFEMP);

(f) identification of suitable locations for evacuation that are free of inundation (see section 6.3 of this CFEMP); and

(g) *flood warning signs around the site to identify areas with Category H3 hazard and higher, in accordance with the Flood Hazard Flood Risk Management Guide FB03, NSW Department of Planning and Environment and are within the overland flow path (See Section 6.1 and Section 6.3 of this CFEMP).*

B21. The Construction Flood Emergency Management Plan in condition B20 must be implemented for the duration of that construction stage. (See Section 1 of this CFEMP).

B22. A copy of the most up to date Construction Flood Emergency Management Plan in condition B20, must be made publicly available on the Applicant's website in accordance with condition A25 (see Section 4 of this CFEMP).

Note: Construction Flood Emergency Management Plan must include the recommendations made in Section 10.0 Summary and Recommendations of the Flood Impact Assessment, revision 15, dated 1 February 2024 and prepared by TTW. (See Section 2 of this CFEMP).

It should be noted that that since these initial conditions were set the Flood Impact Assessment has been revised with some minor updates - Flood *Impact Assessment, revision 15, dated 1 February 2024 (FIA).* This CFEMP accompanies this Flood Impact Assessment revision and incorporates the conditions set above.

TTW have been in discussion and communication with NSW SES, and other agencies, regarding the Flood mitigation design and also the operational emergency procedures required on site (see Appendix B). These agencies have made recommendations which have been incorporated into the FIA, considering the sites design and operational emergency management procedures and these are incorporated, where relevant, in this CFEMP.

The proposed development involves upgrades to the Darcy Road Public School (DRPS) which would be flood impacted without mitigation. Detailed hydraulic modelling (as shown in the latest Flood Impact Assessment report (FIA) including flood mitigation structures and infrastructure, have shown that the proposed school upgrade works have minor impacts on the adjacent Olive Street (less than 30mm afflux and low hazard category during the 1%, 1% AEP and blockage and 1% AEP climate change scenarios.

This CFEMP has been submitted prior to initial construction works and incorporates emergency strategies for all stages of construction. A CFEMP will be submitted prior to every construction stage and updated, if necessary, to cover the emergency procedures for that stage as outlined in B20.

This CFEMP has been prepared by suitably qualified and experienced people with several years of experience in flood impact, flood risk, flood hazard assessments and flood emergency procedures and plans (See Appendix A). The site design, including provision for emergency management procedures (which are incorporated into this CFEMP) have been discussed at design stage with SES NSW, City of Paramatta (COP) and DPHI (See Appendix B for Correspondence) and issues resolved and incorporated into the sites design and flood mitigation strategy (see FIA). A response to the initial submissions made by the relevant agencies was sent to DPHI by Ethos Urban (dated 2nd February 2024) which incorporated resolution and agreement of issues raised, which included emergency response strategies.

The conditions set and relevant sections of the report are outlined in the following table.

Table 1 Conditions and Sections of report responded

Condition	Section of this Report
B20. Prior to the commencement of each construction stage, a Construction Flood Emergency Management Plan, must be prepared by a suitably qualified and experienced person(s) in consultation with NSW State Emergency Services, to the satisfaction of the Planning Secretary, including but not limited to:	*See below.*
(a) detail on triggers, including rainfall and water level, that require closure of the site	*See Section 5.4 and Section 7 of this CFEMP*
(b) detail on how site closure would be communicated to construction workers, before commencement of the workday	*See Section 6.2 of this CFEMP*
(c) details of drills, frequency and record management of the drills	*See Section 4.3 of this CFEMP*
(d) a map showing the flood-free pedestrian route from each construction site to a suitable location free of inundation	*See Section 6.3 of this CFEMP*
(e) details of any gauges or warning infrastructure that are to be provided to assist with flood management, including frequency of maintenance, and how these will be monitored	*See Section 6.1 and Section 6.2 of this CFEMP*
(f) identification of suitable locations for evacuation that are free of inundation and	*See section 6.3 of this CFEMP*
(g) flood warning signs around the site to identify areas with Category H3 hazard and higher, in accordance with the Flood Hazard Flood Risk Management Guide FB03, NSW Department of Planning and Environment and are within the overland flow path	*See Section 6.1 and Section 6.3 of this CFEMP*
B21. The Construction Flood Emergency Management Plan in condition B20 must be implemented for the duration of that construction stage.	*See Section 1 of this CFEMP*
B22. A copy of the most up to date Construction Flood Emergency Management Plan in condition B20, must be made publicly available on the Applicant's website in accordance with condition A25	*See Section 4 of this CFEMP.*

1.1 Site

The site is located at 98A Darcy Road, Wentworthville within the Parramatta Local Government Area. Darcy Road Public School comprises 11 separate allotments, which have a combined area of 23,531m^2, forming an irregular and consolidated development parcel (see Figure 1). The legal description is outlined below:

- Lot 6-7 in DP 10955;
- Lot 1 in DP 782155;
- Lot A in DP 383734;
- Lot 1 in DP 122893;
- Lot 1 in DP 160134; and
- Lots 12-16 in DP 16811.

DRPS is bound by Darcy Road to the north, Olive Street to the east and residential housing to the south and west. The site is approximately 4 km northwest of Parramatta CBD and 23 km northwest of Sydney CBD (See Figure 2). The site slopes gently from RL 30.5 in the northwest to RL 24.5 in the southeast. The low point of the site is in the southeastern corner of the lot adjacent to Olive Street. Upstream of the site is a stormwater catchment approximately 30ha in size.

Figure 1 - Darcy Road Public School (Source: Google Earth)

1.2 Proposed Upgrades

Darcy Road Public School is the subject site of this SSDA, however the extent of physical works is limited and is not located across the entire site. The subject site, and the extent of physical works are shown at the proposed site plan in Figure 2.

The project involves the upgrade of Darcy Road Public School to accommodate 1,000 students and 25 new permanent staff. The proposal includes the following:

- Demolition of all buildings associated with the existing school, except for the existing hall which will be retained and refurbished;
- Construction of a new school comprising two new interconnected buildings up to four storeys,
- Construction of new open spaces and landscaping;
- Refurbishment of the existing hall including demolition of existing ancillary features to the eastern side of the building and extension of the hall into the existing covered outdoor learning area; and
- Extension of the existing car park.

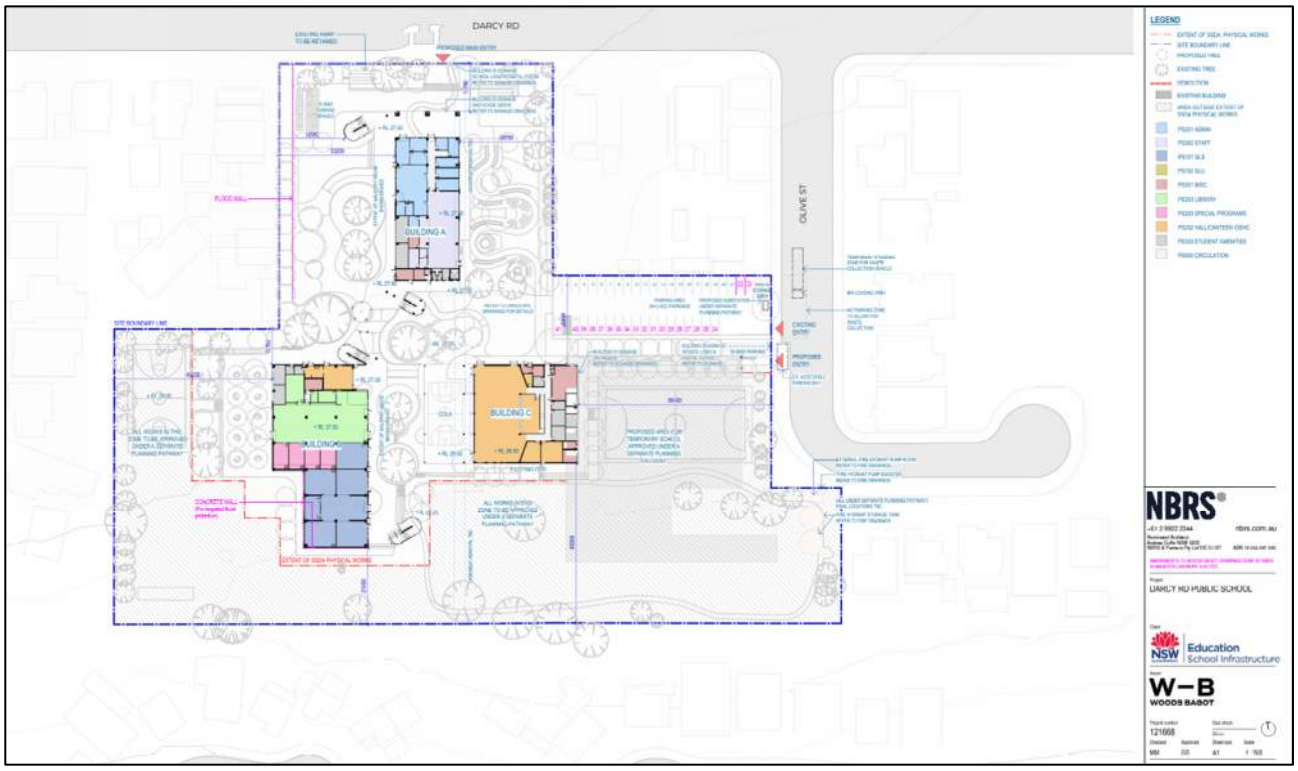


Figure 2 – Site Plan and Extent of Physical works (NRBS, 2024)

1.3 Construction Staging

The project is planned to be undertaken in three (3) main stages to cater for the operational requirements of the school. The following points and plan summarise the proposed staging plan:

1. **Stage 1 – Construction of the Temporary School and Associated Infrastructure**
2. **Stage 2 – Construction of Milestone 1 Permanent School under the SSDA**
3. **Stage 3 – Construction of Milestone 2 Permanent School Under SSDA**

It is important to note that the construction of the proposed works (stages 1, 2 and 3, see Figure 3) will each occur in isolation and therefore cumulative impacts in relation to construction works is not anticipated during any of the three stages proposed. Once the temporary school is completed (Stage 1), the school will decant out of the Stage 2 - Milestone 1 footprint prior to the commencement of Stage 2 works. Once Stage 2 works is complete, the students will be relocated into the new buildings prior to the commencement of demountable building removal. Once the demountable buildings are removed the Stage 3 works will commence.

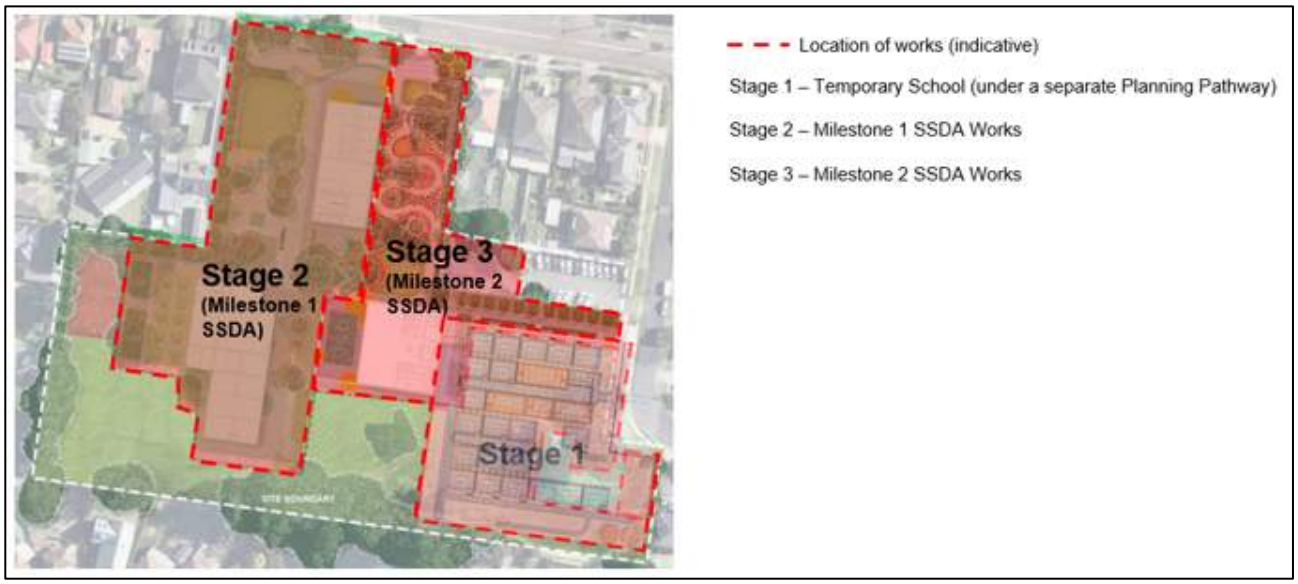


Figure 3 - Development Staging

1.4 Mitigation Infrastructure

In addition, the flood analysis carried out in the Flood Impact Assessment (TTW, 2014) found that it was necessary to mitigate flooding and stormwater flows on the site through additional infrastructure:

- A new 0.5-meter-high wall is placed to the west of the school to prevent water from flowing into the school (refer to Appendix A for details on the design of the wall). The proposed wall does not worsen the upstream or downstream flood conditions within the 5% AEP, 1% AEP, and PMF flood events, nor the 1% AEP Climate Change and 1% AEP Blockage sensitivity scenario. Additionally, a new stormwater pipe is proposed next to the wall to capture this water. This pipe system extends from Darcy Road and connects to the existing trunk drainage system to the south of the school (mitigation measure).
- A new channel, measuring 2 meters in width and 0.5 meters in depth is placed to the west of the school on top of the proposed stormwater.
- A new stormwater pipe is proposed in the schoolyard to capture floodwater flowing in from Darcy Road (this is in addition to the proposed local drainage for the site and it is for mitigation).
- The existing pit on Darcy Road before the road crossing is replaced with two pits, each 2.4 meters in length (mitigation measure).
- Two additional pits of the same type as existing are proposed at the end of Olive Street cul-de-sac (mitigation measure).

This infrastructure is shown in Figure 4.

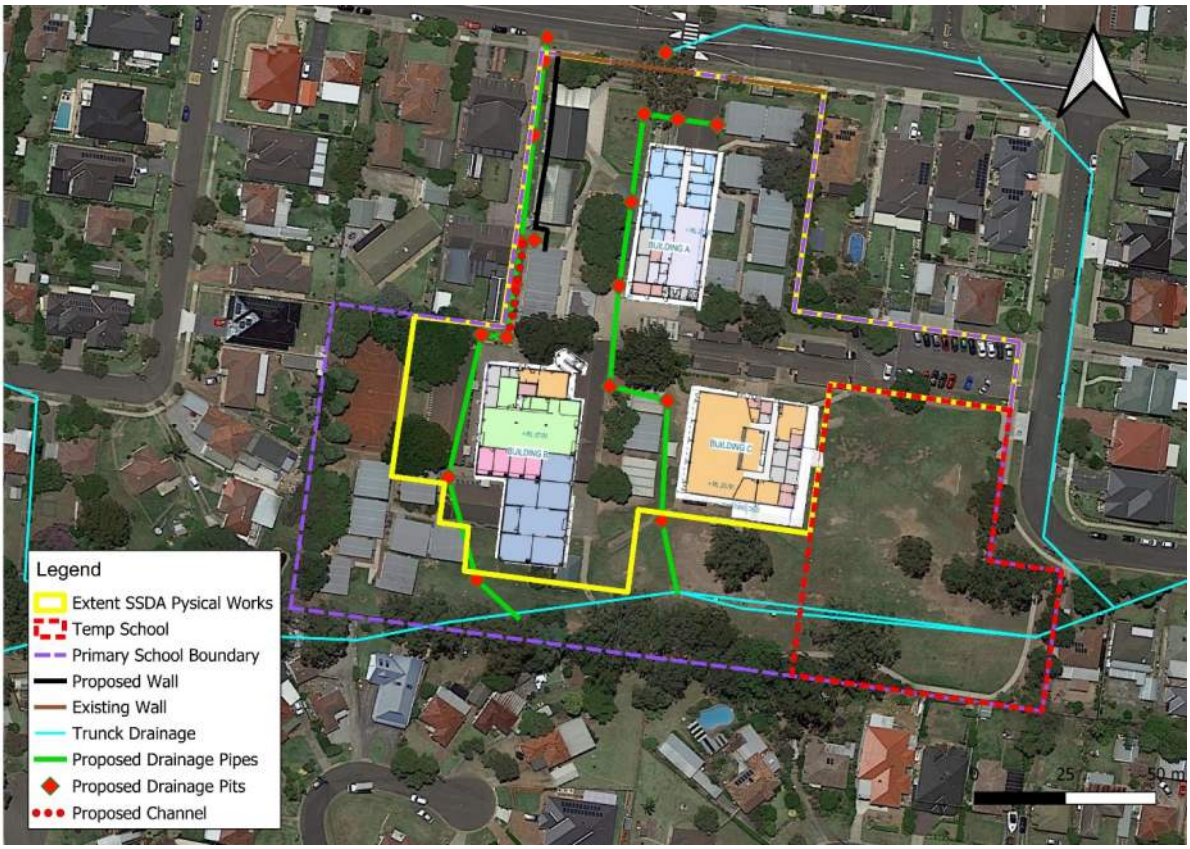


Figure 4 - New proposed Wall and Stormwater pipe.

2.0 Site Flooding

2.1 Site flooding

During construction the site will be initially prone to the existing flood conditions upon the site. The latest Flood Impact Assessment report (FIA) TTW, January 2024, reports on the hydraulic modelling carried out for this assessment and includes the mapping of flood extents, depths and hazards across the site and nearby areas for both the existing and developed scenarios. The existing flood depth and levels, and flood hazard are shown respectively for the PMF event (Figures 5 and 6). The PMF event was used to produce the relevant design floor levels for the site (see FIA).

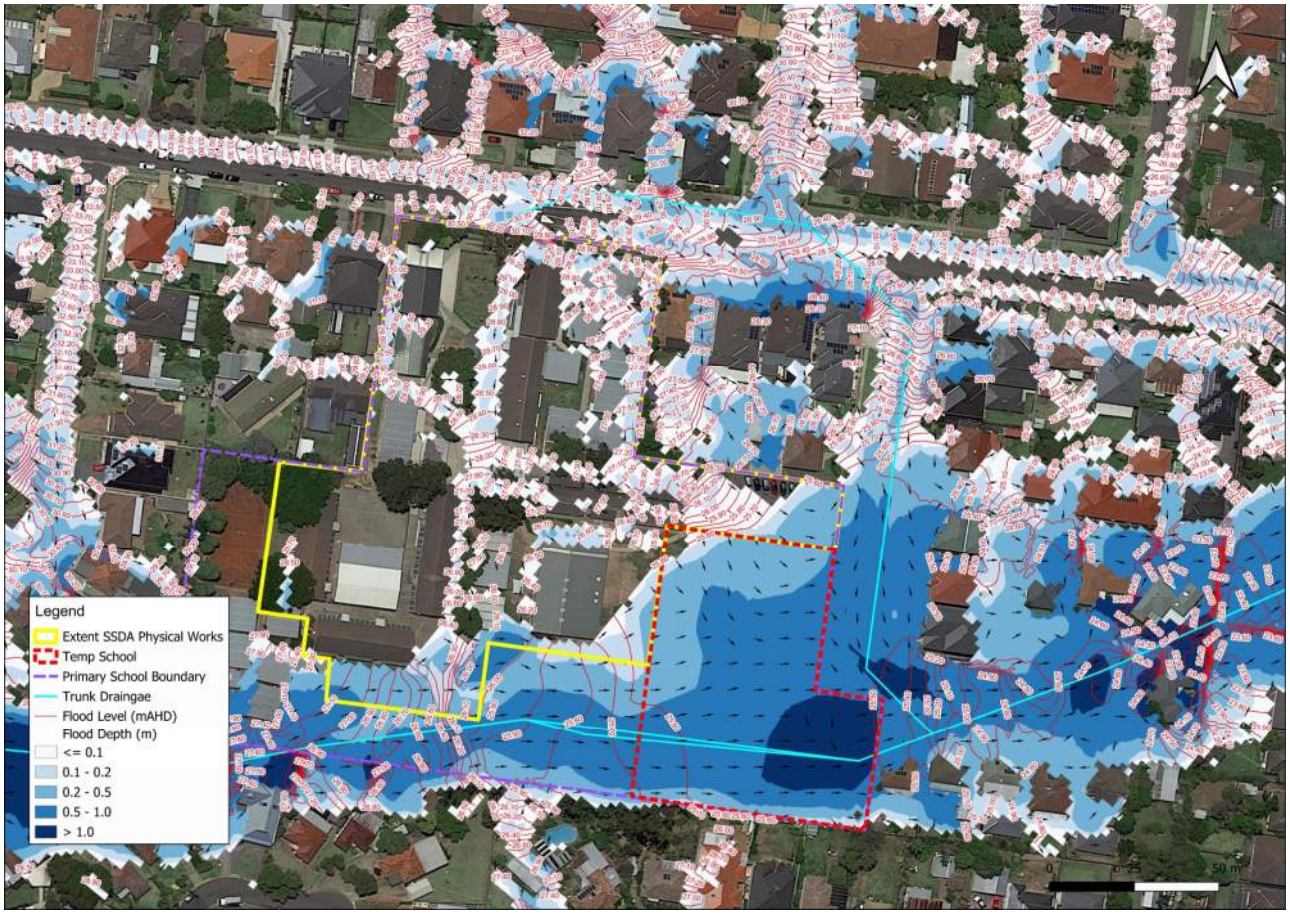
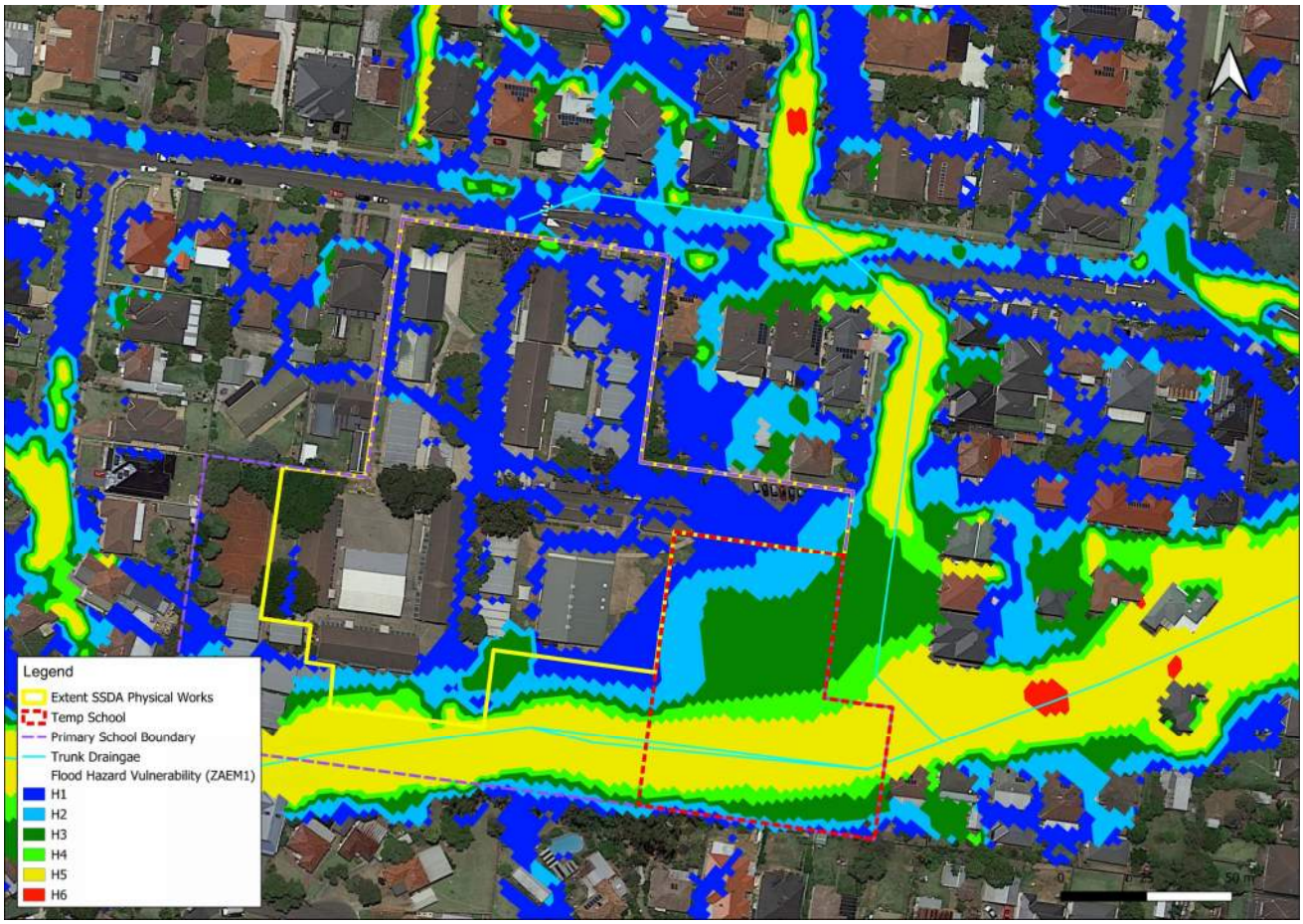


Figure 5 - Existing PMF Flood Depth and level



Hazard Classification	Description
H1	Relatively benign flow conditions. No vulnerability constraints.
H2	Unsafe for small vehicles.
H3	Unsafe for all vehicles, children and the elderly.
H4	Unsafe for all people and all vehicles.
H5	Unsafe for all people and all vehicles. Buildings require special engineering design and construction.
H6	Unconditionally dangerous. Not suitable for any type of development or evacuation access. All building types considered vulnerable to failure.

Figure 6 – Existing PMF Flow Hazard (Flood Hazard Category)

Post development runs (including the new development and mitigation infrastructure outlined in Section 1.4 were simulated in the FIA with new Buildings A and C with an FFL at the same elevation as the PMF flood level. For Building B, the PMF flood level exceeds the FFL but, in this part of the building, there are no openings, preventing floodwater from entering the building.

The Post development flood depth and levels, and flood hazard are shown respectively for the PMF event in Figures 7 and 8.

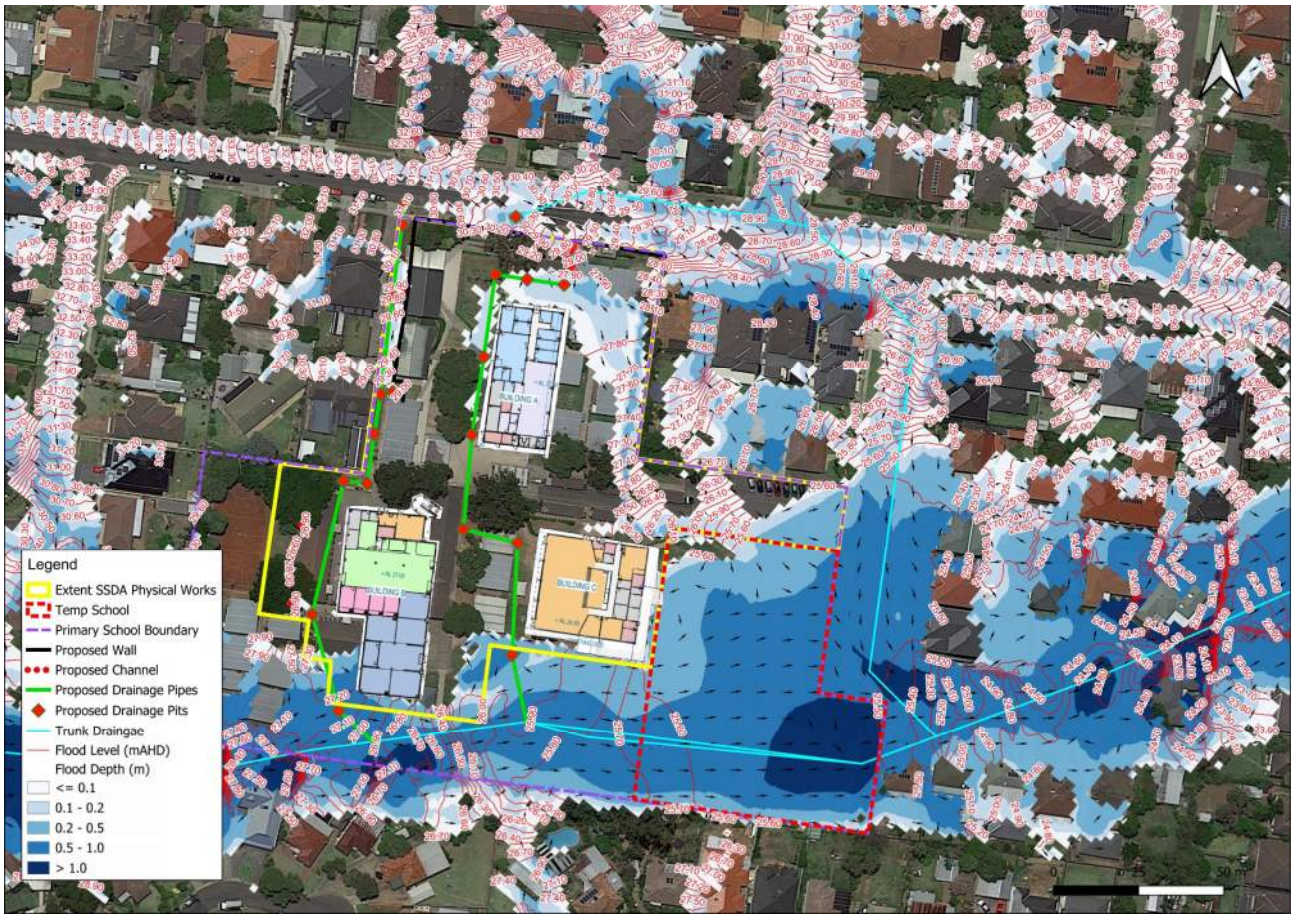


Figure 7 - Developed PMF Flood Depth and level

The results show that the PMF flood level for Buildings A, B and C are 27.90 mAHD, 27.20 mAHD and 26.50 mAHD respectively. For Building A, the maximum flood level is observed to the north of the development. For Building B, this level is observed to the south of the proposed development. For Building C, the maximum flood is observed to the northwest of the development. Additionally, the flood depth is generally less than 200 mm, except in the southern area of the site, where it falls within the range of 0.2 m to 1.0 m.

The existing and proposed PMF flood hazard maps are provided in Figure 6 and Figure 8, respectively. These maps show high hazard areas (H5) to the south of the extent of physical works and north of Olive Street. The results indicate that there is no impact on flood hazard resulting from the proposed development in the PMF event for the adjoining properties.

In summary, during the PMF storm event, the school will experience high hazard overland flood conditions along the southern extent of the development area. Otherwise, flood conditions are typically low hazard. Although hazards are low there are no flood free access or egress routes from the site during the PMF event.

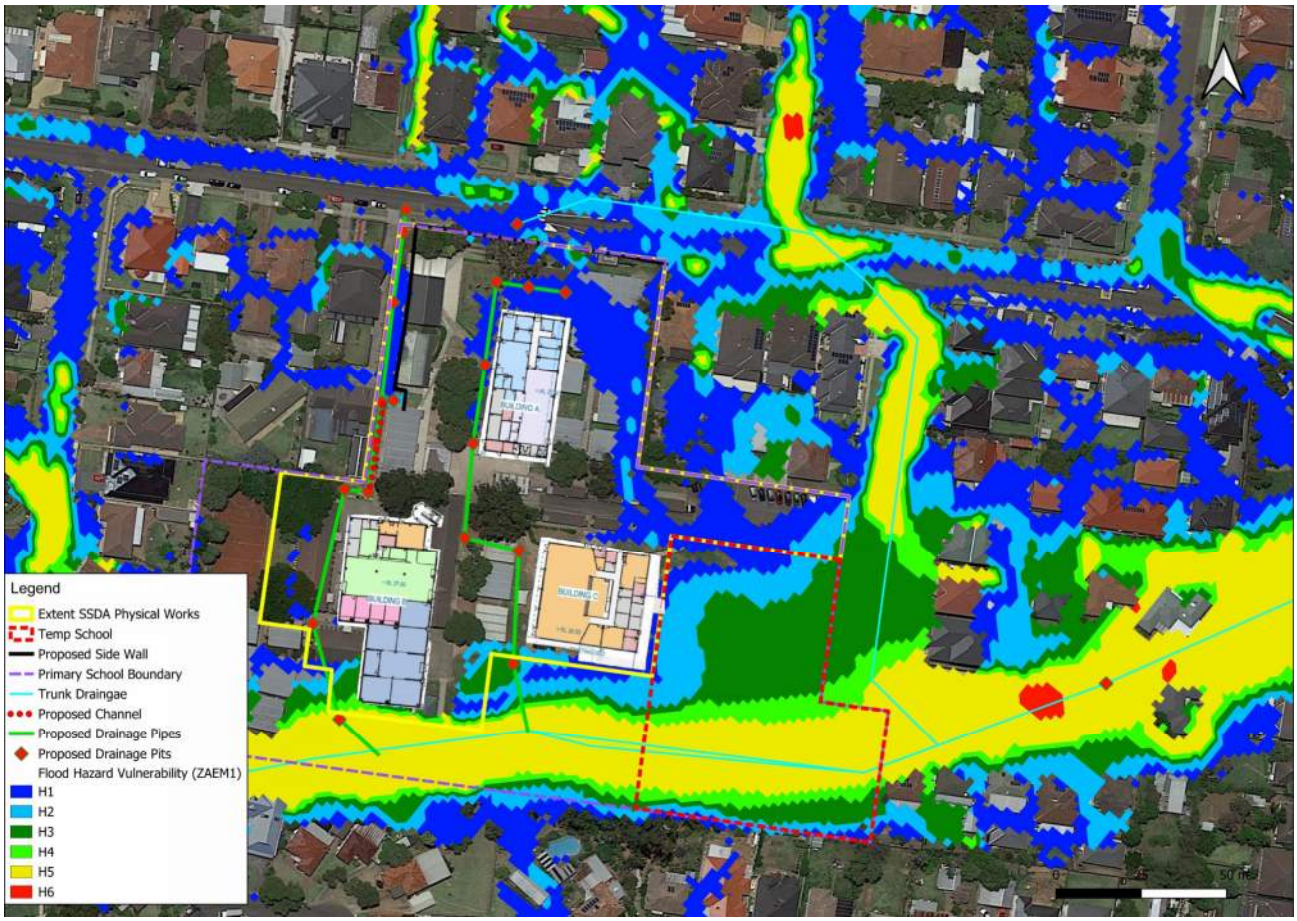


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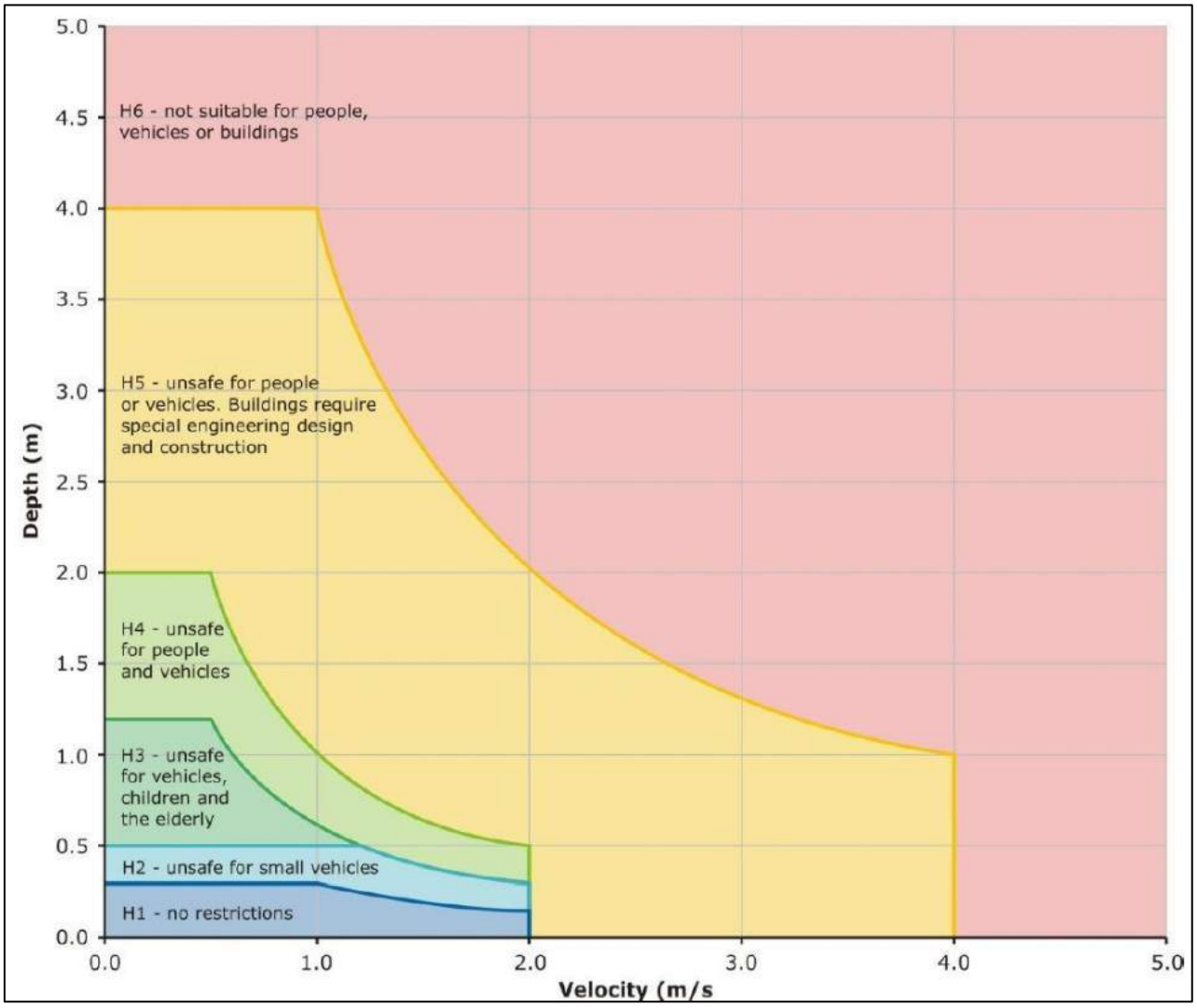
Figure 8 - Developed PMF Flood hazard

3.0 Flood hazard

3.1 Flood hazard vulnerability

Flood hazard vulnerability as presented in AIDR (2017) is based on the combined flood hazard curves (presented in Figure 9) which set hazard thresholds that relate to the vulnerability of the community when interacting with floodwaters. The combined curves are divided into hazard classifications that relate to specific vulnerability thresholds. This classification includes six categories, ranging from H1 (no restrictions) to H6 (not suitable for people, vehicles, or buildings) as described below.



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H6	Unconditionally dangerous. Not suitable for any type of development or evacuation access. All building types considered vulnerable to failure.

Figure 9 - General flood hazard vulnerability curve

3.2 Thresholds for people stability in floods

Vulnerability curves specifically for people stability based on Cox et al. (2010) is shown in Figure 10.

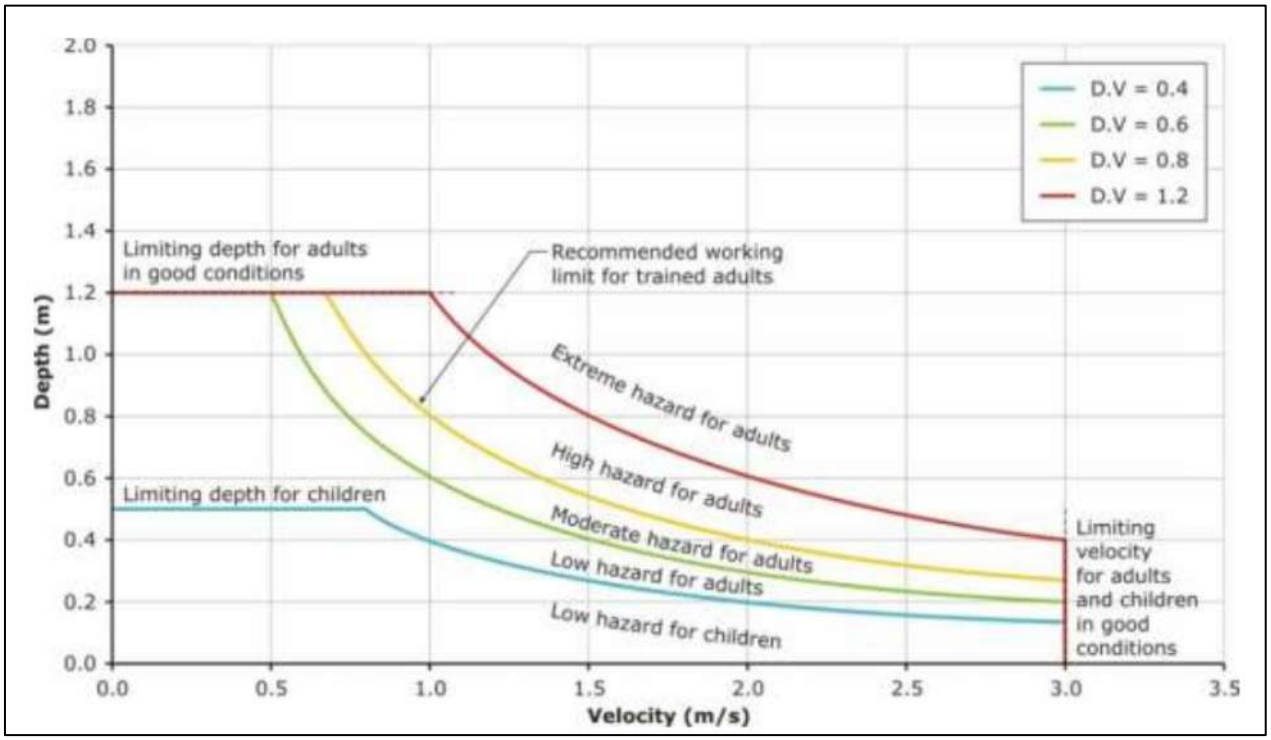

Figure 10 - Thresholds for People Stability in Floods

4.0 Construction Flood Emergency Management Plan – Strategy and Preparedness

This Construction Flood Emergency Response Plan (CFEMP) will include a shelter-in-place plan and elements of the SES Business Flood safe Toolkit. This will include training and drilling for all workers and contractors at the site as well as signage and depth markers, which will also show the 1% AEP and PMF event levels predicted.

This CFEMP will be implemented for the duration of the construction phase of the project. It will be reviewed when there is a triggering event such as an incident, audit or modification inclusive of drills on site (see Section 5.3). This is the responsibility of the Chief Warden. The plan will be practiced, assessed and updated to increase awareness and ensure it remains applicable and consistent with contemporary emergency management arrangements.

Given that the access and egress roads are impacted during the PMF event, and that the response time is too rapid for site evacuation (see Section 5.5), and that the proposed sites are situated above the PMF levels, the plan recommends that site workers shelter in the school buildings during the event. If floodwaters reach the trigger level (1% AEP levels - to be marked on the gauge marker), workers should promptly take refuge in the school buildings as identified as safe locations for each construction stage (see Figure 13). The events are short lived and as such refuge will not be prolonged.

It's important to highlight that the "Shelter in Place" draft guideline, available on the NSW Government Website, used as the basis for preparing this flood emergency response plan. This CFEMP will be made available to all key site personal and will be readily available in the site offices.

It is noted that for all other emergency types (other than flooding) the Taylor Construction Group has its own on-site emergency Management Plan (see Appendix D).

4.1 Emergency Contact Details

In the event of a flood emergency evacuation, it is vital that the key personal and contact details are readily available so that an efficient evacuation can take place. These key contact details will be accessible on site and be updated as necessary. The following personnel are required at a minimum to be identified and trained in the evacuation tasks they need to carry out. External contacts are also listed here and should also be contacted as necessary. It is the responsibility of the Chief Warden to keep this table updated and contact external services as necessary. In the event of flooding, key contact details are included in the table below.

Table 2 Emergency Contact Details

Emergency Coordinator	**Phone Contact**
Chief Warden	Fred Sedighi +61 431 070 846
Deputy Chief Warden	Glenn Harris +61 488 501 340
Safety/First Aid Manager	Fara Alavi +61 406 083 556
Building Wardens	Liam Harvey +61 411 810 750
External Contacts	
Service	**Phone Contact**
Police/Ambulance - Emergency	000
State Emergency Services	132 500
Dept Education – State Office	9836 9000
Dept Education – District Office	4724 8799
Fire and Rescue NSW Wentworthville Fire Station	02 9493 1057
Transport Infoline	131500
Wentworthville Station	02 98589151
Wentworthville Police Station	02 9688 8499
Westmead Hospital	02 8890 5555

4.2 Education

The awareness of flooding is a significant issue within floodplains due to the infrequency of severe floods and the anticipated depths of flooding at the site location.

During the construction phase, as part of the preparation for a flood event, all workers and visitors on site will be made aware of the flood risk and the flood protocols & procedures (including their responsibilities) via briefing and signage. This will form part of the mandatory site inductions that all workers and visitors must undertake prior to gaining access to the site. A copy of this construction FEMP will be made available to all new staff, managers, contractors and site visitors. Completion of site induction and safety training for existing and new workers is the responsibility of the Chief Warden.

4.3 Emergency Response Drills

Emergency response drills will be held prior to construction and every 6 months to ensure all staff and workers are aware of and familiar with their flood response actions, the sound of the alerts and warning systems, and the location of the assembly point. It is the responsibility of the Chief Warden to ensure that Evacuation drills are organised and that any issues with these drills be attended to, and if necessary, rerun. If issues highlight changes that should be made to the response procedure this plan will be reviewed and updated. The Chief Waren will also ensure that all site drills are recorded in an appropriate records book and any non-conformities reported and responded to.

4.4 Flood Emergency Kit

A Flood Emergency Kit will be available prior to a flood event taking place and periodically checked to ensure that supplies within the kit are sufficient and in working condition. This check should also occur after each emergency response drill (to provide a regular schedule) and each evacuation, and the kit should include:

- Radio with spare batteries
- Torch with spare batteries
- First aid kit and other medicines
- Candles and waterproof matches
- Waterproof bags
- A copy of this Flood Emergency Response Plan
- Emergency contact numbers.

This Emergency Kit will be stored in a waterproof container and is the responsibility of the Site Safety Manager/First Aid Officer during the construction phase.

5.0 Flood Emergency Plan - Warnings and Notifications

5.1 BOM Flood Watch and Warnings

It will be the responsibility of the Chief Warden and Deputy Warden to be aware of rainfall and flood warnings in the wider area. Severe weather and thunderstorm warnings are issued by the Bureau of Meteorology (BOM) www.bom.gov.au. These warnings are continually updated with a description of the likely conditions (including predicted extreme rainfall depth). Warnings are issued with varying lead-times, depending on the weather situation, and range from just an hour or two to 24 hours or sometimes more. Although NSW SES don't give warnings for flash flooding and there are no key warning gauges in the close vicinity of the site the wardens should be aware of potential rainfall and flooding in the wider region to allow them to be prepared for such events on site.

- A **Flood Watch** is issued by the BOM up to four days prior to a flood event. A watch is generally updated daily and may be issued before, during or after rainfall has occurred.

- **Flood warnings** are issued by the BOM when flooding is occurring or is expected to occur in a particular area. Warnings may include specific predictions of flood depths dependent on real-time rainfall and river level data. These warnings are distributed to Council, Police, and the relevant local SES, as well as being available on the BOM website through telephone weather warnings and radio broadcasts.

5.2 SES Monitoring

NSW SES advise that NSW SES and BOM do not provide specific flood warning services for the subject area, although the Chief Warden should still be aware of BOM warnings in the surrounding areas, via the BOM site, as they may be indicative of significant events in the site area. BOM radar also gives an indicative waning if heavy rain is likely, and how it may be tracking across the catchment, and will ensure that the Chief Warden is more alert to potential rainfall and overland flows.

NSW SES has recently implemented the **Australian Warning System (AWS)** which replaces their previous evacuation orders and warnings system. The NSW SES utilises a range of sources to build detailed flood intelligence within local communities – including information from flood studies and historical flood data. As part of the transition to the Australian Warning System, the NSW SES has increased flexibility to tailor warnings at the community level, based on the expected consequences of severe weather events.

Again, although NSW SES advise the warnings will not be accessible upon the site area itself, the Chief Warden will keep himself informed of potential hazards in the wider surrounding areas through use of the AWS system and all hazards warning platform, Hazard Watch (and the Hazards Near Me app). This will allow the Chief Warden to assess if there are potential hazards in the wider surrounding aera which may be indicative of significant events at the subject site and allow the Chief Warden to be on a higher alert to potential overland flows upon the site.

Locally impacted communities, and the Chief Warden, will continue to receive flood warnings through the NSW SES website, NSW SES social media channels and by listening to local ABC radio stations. These should all be monitored by the Chief Warden for the wider surrounding area. The NSW SES all-hazards warning platform, Hazard Watch, provides an additional channel for communities to access important warning information.

Australian Warning System (AWS)

NSW SES has recently implemented the Australian Warning System (AWS) which replaces their previous evacuation orders and warnings system. The AWS is a new national approach to information and Calls to Actions for hazards including flooding. The System uses a nationally consistent set of icons, with three warning levels: Advice, Watch and Act, and Emergency Warning. The flood warnings are described in Figure 11. This has been incorporated as advised by the NSW SES.

Figure 11 - Australian Warning System - Three Warning Levels

Each flood warning that may be received in the surrounding areas has three components:

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

5.3 FloodSmart Parramatta

It should be noted that the site is subject to flash flooding, which NSW SES do not provide warnings for. Storm warnings, including flash flooding, are not currently integrated into the Hazard Watch website and Hazards Near Me app. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments. The City of Parramatta Council has developed and maintains a flash flood warning system for Parramatta CBD.

The FloodSmart Parramatta flood warning service was developed to provide early warning messages when flood is likely. There are ten Warning Areas (WA) within the LGA, with the site located just west of the Lower Toongabbie and Wentworthville WA. When a flood warning message is issued by FloodSmart Parramatta, it will outline the expected level of flood severity which could be minor, moderate or major for the area. The varying flood warning severities which may apply to the site are outlined in Table 2.

Table 2- Flood warning severity messages issued by FloodSmart Parramatta flood warning service

Minor Flood Warning ▪ **High risk areas may experience property flooding.**	**Local area conditions** ▪ **Risk to life from fast flowing or deep water near the river or creek** ▪ **Closure of roads most at risk of flooding** ▪ **Flooding of land near rivers, creeks, low spots and recreational areas** ▪ **Water levels may be high for many hours**
Moderate Flood Warning ▪ **High and Medium risk areas may experience property flooding.**	Local area conditions ▪ High risk to life from fast-flowing or deep water near the river or creek ▪ Closure of many bridges and roads ▪ Widespread flooding in areas not necessarily near the river ▪ Water levels may be high for many hours
Major Flood Warning ▪ **High, Medium and Low risk areas may experience property flooding.**	Local area conditions ▪ Damage is possible to buildings and infrastructure ▪ Extreme risk to life from fast-flowing deep water even in areas not necessarily near the river ▪ Water levels may be high for many hours
No Further Impact	Local area conditions The local conditions should now be improving: ▪ No further flooding is expected in the next 12 hours ▪ Flood levels will continue to drop However: ▪ There may still be dangerous fast-flowing water near the river or creek. ▪ Debris and contamination may still cause problems in areas that have been flooded.

As there is currently no formal flood warning system in place for the site, the Chief Warden is to monitor flood warnings from NSW SES, BoM, Parramatta Council, and media outlets (televisions, radio stations) instead as a source of additional flood warning for the site.

5.4 Visual Observation

As SES NSW have informed that there are no specific flood warnings generated in the site area itself, meaning that any of the previously mentioned warnings in the surrounding areas will only be indicative of potential flows in the site area. The primary trigger for an emergency response and evacuation will be through visual observation of flooding onsite.

In addition to lack of specific flood warnings of inundation of the site, the short time between onset of significant events upon the site's catchment, and the need to respond, it will be necessary for site wardens to also be aware of rising waters upon the site and initiate flood response procedures in the event of flood levels approaching significant inundation. Warnings in surrounding areas may not be issued in sufficient time to indicate this type of flooding.

During rainfall events it will be the responsibility of the Chief Warden and other dedicated site managers to visually observe water levels upon the site (via markers/gauges located in prevalent areas) and activate the evacuation procedures when the critical flood level is reached.

Consultation with the NSW SES recommend an alternative monitoring station be established and implemented as a means of monitoring the flood risk and offering a trigger for the implementation of subsequent flood response actions. The installation of a gauge is recommended at the southeastern corner of the site, which is subject to a flow path onsite (see Figure 13). When levels are found to reach the 1% AEP event water level (24.6 m AHD), this should be taken as a trigger for the response actions detailed in the following sections.

5.5 Flood Inundation Time

Peak flood levels are produced during the critical 60 minute storm event, and peak at approximately 30 minutes for the PMF event (FIA, TTW 2014). This high intensity short duration flood behaviour is considered flash flooding and there would be only a short warning time, following the start of the storm event. This short duration 'flash flooding' means that the warning provided would be for immediate safety precautions to be activated, such as evacuation of the hazard areas, and taking temporary refuge, as well as accounting for all people on site. As described in Section 6.1 this warning will come from onsite observations of the localised flood waters rising, due to the low time to inundation from onset of the storm.

Safe vehicular or pedestrian evacuation is not possible for a 1– 2 hour period during the PMF flood currently, and this remains the case following the proposed development. Vehicles and pedestrians should therefore remain onsite until the flooding recedes. Evacuation of the school should only take place in response to a BOM weather warning given in advance of the critical storm (although given the flashy nature of the events it is noted this is unlikely to occur).

It is expected that flood levels would recede after 90 minutes from the start of the storm, however, there still may be areas of deep ponding in trapped low points that may require flood waters to be pumped out. It is the responsibility of the Chief Warden on site to open up areas of the site as they become safe, as flood waters recede. At all times any advice from the SES will take precedence during the evacuation procedure should they provide it.

Due to the construction machinery required, dampness of the site, and potential muddiness and ponding, the site may still not be available for construction purposes for a considerably lengthier time after the flood levels have receded. It is the responsibility of the Chief Warden to assess if the area is suitable for work to recommence.

6.0 Flood Signage, Warnings Apparatus and Evacuation Route

6.1 Signage and Gauges

Flood evacuation signage, similar to that shown in Figure 12 below, must be installed at appropriate places throughout the site during the construction phase to clearly identify the evacuation route from the inundated areas to place of refuge. In addition, depth gauges which will also indicate the 5% AEP, 1% AEP and PMF levels will be installed in areas where flow is predicted. This will allow for visual warnings of required evacuation to be given and will also provide long term education of the potential of flooding at the site to users of the site. The Chief Warden will be responsible for overseeing the installation of the signage and gauges which will occur prior to construction works.

Signs around the site will identify areas with Category H3 hazard and higher, in accordance with the Flood Hazard Flood Risk Management Guide FB03, NSW Department of Planning and Environment that are located within the overland flooding area. This area is highlighted in Figure 13. Other indicative locations for signage and depth gauges are presented in Figure 13. Suitable and exact locations will be established upon site set up to ensure the signage will have optimal impact and that they can be located in a practical place, where they will not cause other hazards themselves and will be able to withstand weather elements. A gauge will be installed as recommended upon consultation with NSW SES in overland flow route at southeastern corner of the site (see Figure 13).

Each refuge assembly area will have a sign indicating the assembly point (see Figure 13). This will be large, and easily visible to site workers. Onsite signs will indicate the direction of the quickest way to these assembly points from each construction area. These locations will be detailed upon layout of the construction site. External flood evacuation signage to the refuge area will be in place along the evacuation routes.

Given the short response time of the significant storms it is proposed that evacuation take place when the gauge level reaches the 1% AEP, which would be marked onto the gauge. This will ensure that the site is not evacuated too frequently (i.e., there will need to be some flow generated upon site – not just very shallow ponding) and will still allow for onsite evacuation and refuge to take place. The gauges will be monitored frequently (half hourly) when Flood warnings are in place for the wider region and when the flood alert has been initiated on site, and every two hours during the course of a 'normal' working day by the dedicated site/building wardens.

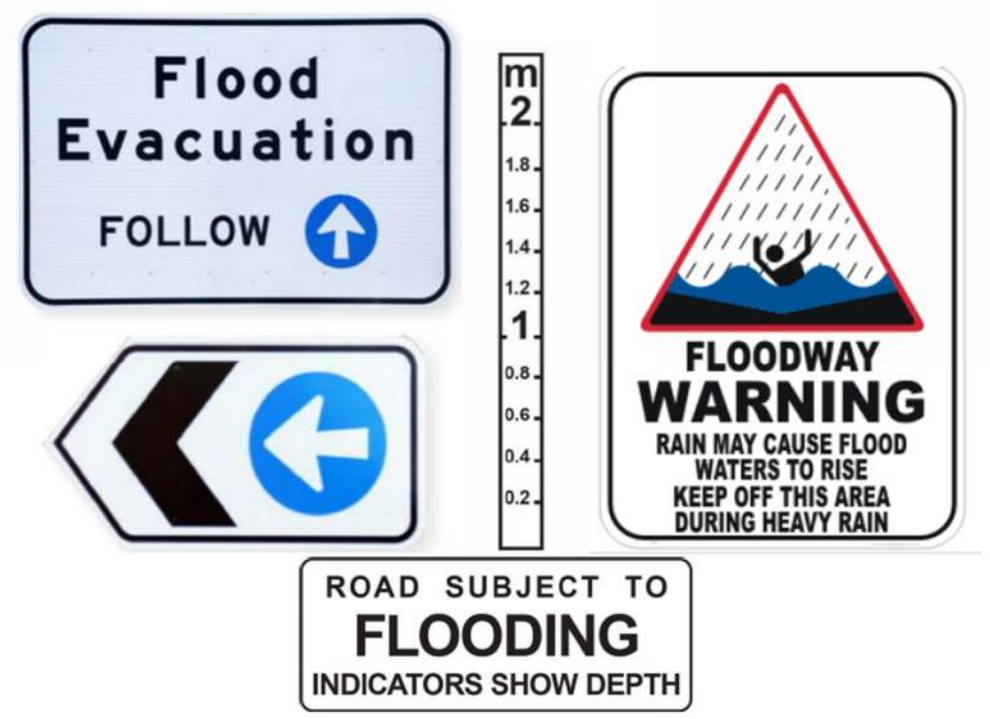

Figure 12 – Signage and Gauges

6.2 Warning Systems

Each separate construction zone will have an audio system which will signal the flood alert once activated by the Chief Warden. All workers on site will be equipped with two-way radio devices so that they can be informed if an alert takes place. All audio equipment will be regularly checked/maintained (weekly) to ensure they are not faulty when required. One of the building wardens will be allocated this responsibility.

If an AWS warning 'prepare to evacuate' is given in a nearby area, or visual observation of inundation has occurred before commencement of the daily work, all workers, contractors and known visitors of the site will be phoned and texted informing of the closure of the site immediately. Contact details will be kept by the Chief Warden who will manage the informing of users of the site with assistance from delegated building wardens.

The Chief Warden will also be responsible for informing workers and users of the site when the warnings have passed or inundation waters have receded, and the site is safe for construction works to recommence. The short warning time available, and short-lived inundation means that such an early closure warning is unlikely. Any AWS or SES advice to evacuate the site will be heeded if given.

6.3 Evacuation from Inundated areas and Short Stay Onsite Refuge Area

Workers and contractors upon the site will evacuate from areas of potential inundation to a short stay refuge place upon the school site, located above the PMF levels as shown in Figure 13 for the very short period of the event, as required by DPE.

Due to the staging of the site the refuge area upon site will be different as construction across the site develops. During Stage 1 and Stage 2 workers and contractors on the site will take refuge in the existing school hall (located on the Stage 3 – Building C site) during triggered events, as Stage 3 will not commence until Stage 1 and 2 are complete. The existing school hall is above the PMF extents (see Figure 13). During Stage 3 construction, the existing school hall will be demolished to allow construction of Building 3. During this period the refuge area will be to one of the larger rooms to the north of the newly constructed building B (see Figure 13). This building is easily accessible from the Stage 3 construction area and is also above the PMF flood extents.

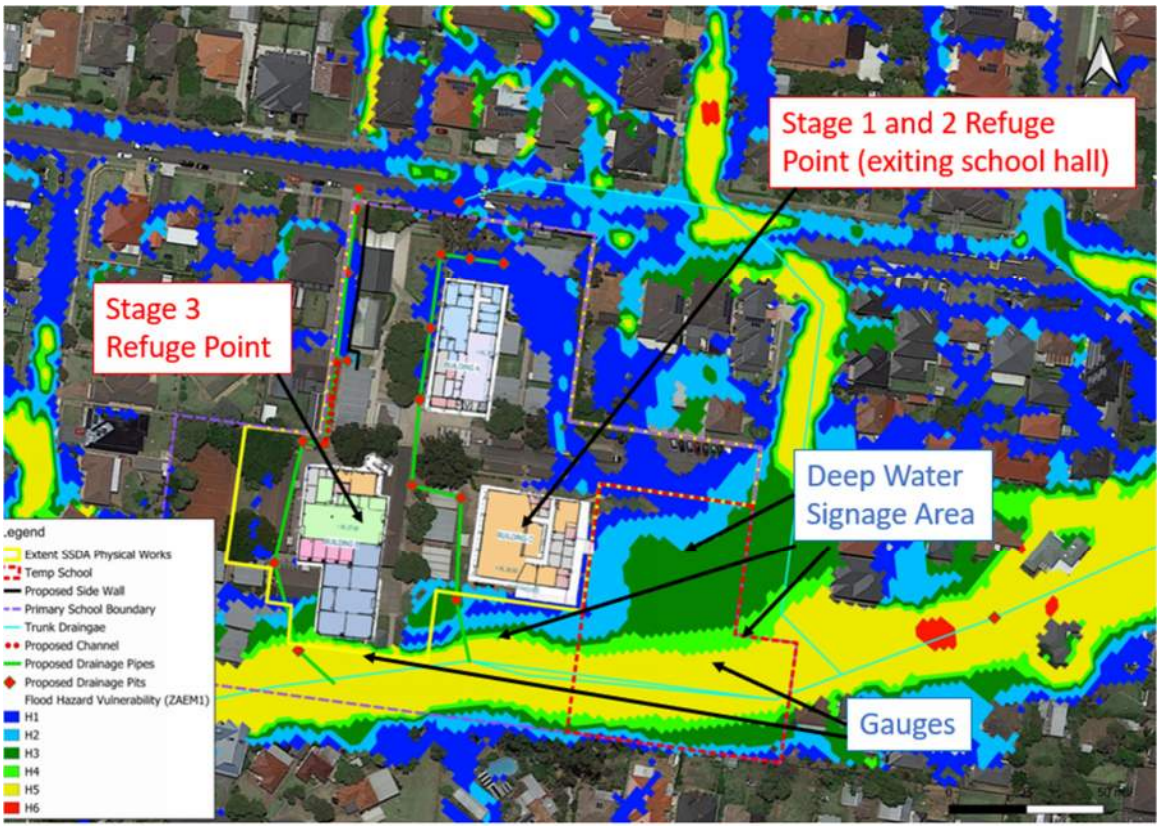

Figure 13 – Evacuation Routes and Refuge Area

As evacuation will only be required in very rare significant events, these short stay refuge areas will not require regular usage. In addition, the duration of the critical events is very short (approximately 1.5 to 2 hours), as flood levels will recede rapidly allowing the construction site to be accessed again. As such relocating to the refuge area will take up a short period of the school day, and school activities will not be impacted greatly.

7.0 Coordination of Flood Evacuation and FEMP

During a flood event, the Chief Warden will be responsible for monitoring information from the SES regarding evacuations required in the wider regional area and evacuation of the site if. The Chief Warden will decide when to initiate the Flood Emergency Management Plan for the site and manage its evacuation. Warnings in surrounding area are unlikely to be given in sufficient time by authorities, and as such the Chief Warden will initiate evacuation when the water depth trigger levels are observed to be reached on site.

Flood Emergency Management Plan – Construction Phase	
Flood Warning and Notification Procedures	**Evacuation and Refuge Protocols**
1) Monitor NSW SES and AWS, Local Council, Floodsmart Parramatta or Bureau of Meteorology (BOM) radar, alerts, advice, or warning in nearby surrounding areas.	If monitoring shows severe events in the surrounding areas **Chief Warden** to be on alert and prepared to activate further sections of the flood management plan. Notify all site workers and planned visitors to be alert to potential flood waters entering the site if monitoring indicates there could be the potential for flows on site.
2) Regularly (half hourly) check-up of relevant authorities to monitor events and anticipated severity as well as onsite gauges. If significant flooding is observed on site, even without authorities' warnings.	If a potential flood event is anticipated to impact the site, the **Chief Warden** is to continue hourly checks and postpone high risk activities. Notify all site workers and planned visitors and deliveries that a Flood alert is in place. If flood event reaches the trigger level on site the site, the Chief Warden will instruct the site to close immediately in coordination with the site emergency response procedures. This will include an alert and warning message over an audio system confirming a significant flood event. All future site visits, deliveries and construction activities are postponed until all flood warnings are lifted. Remove or secure all plant, materials, and equipment ideally above the PMF level if time is available. . The **Chief Warden** is to follow any action statements provided by the SES should they provide any advice and direction. All site workers are to evacuate to the refuge area onsite via the evacuation routes indicated in Section 7.0, under the direction of the **Chief Warden**, until they receive notification that it is safe to return to site. Site should be left secured with signage located above the PMF level explaining the site is closed due to a flood event. Close the entire site as quickly and safely as possible.
3) Flood water have rescinded and any flood event that occurred has passed.	Once it has been confirmed that the water level has reduced to a level that will not produce inundation, and if determined safe, the **Chief Warden** will announce the site can reopen. The **Chief Warden** is to confirm floodwater has subsided below the ground level and that there is no ponding within the site. Flooded areas are to remain off limits until ponding has cleared. Site is to be inspected by the **Chief Warden.** Once it is determined that the site is safe essential workers can return to verify that all plant and services are safe. Following completion of these checks site may reopen with all workers returning to site and construction activities and deliveries recommencing.

Prepared by
TAYLOR THOMSON WHITTING (NSW) PTY LTD
in its capacity as trustee for the
TAYLOR THOMSON WHITTING NSW TRUST

JAMIE MARSHALL
Associate (Flood)

Authorised By
TAYLOR THOMSON WHITTING (NSW) PTY LTD
in its capacity as trustee for the
TAYLOR THOMSON WHITTING NSW TRUST

PHILIP MCATEER
Associate Director

Appendix A – Staff Curriculum Vitae

Jamie Marshall

Associate (Flood)

BSc (hons), MSc enveng)

Jamie.marshall@ttw.com.au

Experience

2023 – Current
Associate (Flood), TTW

2022
Team Lead – Surface Water Group, SLR

2021-2022
Flooding and Stormwater Engineer Covey and Associates

2020 – 2021
Wate Resources Engineer, HEC

2018 – 2019
Senior Flooding and Stormwater Engineer (Team Lead), Cardno

2010 – 2018
Senior Environmental and Hydraulic Consultant, MWA Environmental

2009 – 2010
Team Lead, Environmental and Stormwater Consultant, SSI

2007 – 2009
Hydraulic Engineer, Cardno

2006 – 2007
Drainage and Network Modeller, KBR

2005 – 2006
Drainage and Urban Pollution Management Consultant, Halcrow (UK)

2001 – 2005
Drainage Consultant and Urban Pollution Management Team Lead, WRC (UK)

Jamie has been involved with civil and water engineering projects for 25 years, with experience working in the UK and in Australia. His experience includes flood risk assessments, stormwater and drainage studies, SUDS, stormwater harvesting assessments, CSO design studies and environmental impact assessments.

Jamie is highly motivated and has worked on range of water related projects during his career, ranging from small scale residential developments to larger commercial, industrial, and mining projects, as well as wide scale flood and drainage planning.

Accommodation

Botanica Residential Development – Aria, Stormwater Management Plan, QLD.

Windsor Street Residential Development - Stormwater Management Plan, QLD.

Rothwell, Rothwell Catchment Flood Plan Development, QLD.

Egan Avenue Residential Estate, Flooding and Stormwater Management Plan, QLD.

St Julien Residential Development – Stormwater and Drainage Plan. Qld.

The Melbourne Residences – Stormwater Management Plan. QLD

Commercial

Eagle Farm Flooding, Drainage and Stormwater Study, QLD.

Brisbane Airport, Stormwater Reuse Assessment, QLD.

Mulgowie Goat Farm, Stormwater Management Assessment, QLD.

Wambo Feedlot, Stormwater, Water Resources and Wastewater Assessment, QLD.

Pallara Industrial Estate, Stormwater, Flooding and Evacuation Plans.

Suncorp Brisbane – Stormwater Harvesting and Efficiency Study QLD.

Yore Road Quarries, Flood Impacts Assessment and Mitigation, QLD.

Alex Gow Funeral Parlor, Flooding, Stormwater and Wastewater Management Plan, QLD.

Queens Wharf Development, Flood Impact Study, QLD.

Art + Culture

Brisbane Temple Stormwater Management Plan, QLD.

Dream Centre Carrara - Christian Church Stormwater, Flooding and evacuation Assessment, QLD.

Education

Lutheran School Stormwater Management Plan, QLD.

Cumberland Cluster Schools – Construction Flood Emergency Response Plan - NSW

Wentworth Public School - Flood Emergency Management Plan -NSW

Government + Public

Epping Aquatic Centre - Flood Emergency Management Plan – NSW

McArthur Medical Research Centre Flood Emergency Management Plan - NSW

Lismore High School – Flood Assessment and FloodEmergency Management Plan - NSW

Chatfield Stormwater Harvesting Feasibility Study, NSW.

Brisbane Flooding, Drainage and Backflow Devices Feasibility Study, QLD

Logan Road and Bridge Upgrades Flooding Assessment, QLD.

Small Bridge Structures, Flooding Assessments, PNG.

Birmingham Wide Catchment CSO Designs for UPM Assessment. UK.

Training of EA and Water companies in UPM Procedures and modelling software, UK.

Philip McAteer

Associate Director (Flood)

BA BAI (Hons), MSc, MICE, PGDL (Law)

Philip.mcateer@ttw.com.au

Experience

2023 – current
Associate Director,
TTW Sydney

2021 – 2023
Team Leader Floodplain and Stormwater, Blacktown City Council

2020 – 2021
Team Leader Water Resources
AECOM Sydney

2015 – 2019
Principal Hydrologist
AAH Planning Consultants

2010 – 2015
Principal Hydrologist
OPUS International

2006 – 2009
Principal Hydrologist
RPS

Philip has been involved in civil and water engineering projects for more than 35 years, with experience of working in Europe, Asia, Africa and Australasia. His background includes flood risk and drainage assessments, 2D flood modelling, Environmental Impact Statements and irrigation design and construction supervision.

He has also worked in emergency relief in North Macedonia, East Timor, Kenya and North and South Sudan.

Residential

Bathurst Strategic Land Development Responsible for Flood Risk Assessments, Surface Water Management Plans and Contamination studies for 50 - 60 development sites for private clients.

Commercial & Industrial

Sydney Gateway, Tuflow Modeller

Boral Seven Hills Environmental Impact Statement inc Flood Risk, Drainage and Hydrogeology

Western Power Distribution Substation Flood Impact Assessments – FIA for sixty substations

Lincoln Way Sherburn in Elmet

Titan Trailers Middlesborough

Oakwood Farm Mentmore,

Discharge of Planning Conditions and Detailed Drainage Design for industrial units including preparation of Tender documents

Hameldon Wind Farm

Environmental Impact Assessment inc Flood Risk, Drainage and Hydrogeology

River Severn 2D Modelling - 2D flood model of the River Severn Estuary

Sutton Courtenay EfW facility - Environmental Impact Assessment to assess the hydrology and flood risk effects of an Energy from Waste Facility.

Stubb's Bridge wind farm Environmental Impact Assessment to assess the hydrology and flood risk effects

Darrington Quarry EIA - Environmental Impact Assessment to assess the hydrology and flood risk effects

Education

St Johns College, Sydney University Flood Study, Integrated Water Management Plan

UNE Tamworth Redevelopment Flood Impact Assessment

Hospitals

Royal Prince Alfred Hospital Redevelopment 2D modelling NSW

Wyong Hospital Redevelopment Flood Impact Assessment NSW

Government + Public

Blacktown City Council Floodplain and Stormwater Team Leader.

East of England Regional Spatial Strategy Hydrology Assessment - Appropriate Assessment under the Habitats Regulations for waterways in the East of England.

Jumeira Garden City 2D model, Dubai 2D model to predict the effects of climate change on sea level in the Persian Gulf

Canvey Island LNG Terminal Public Inquiry

Aged Care

59-67 Karne Street, Narwee NSW (SSDA)

Flood Evacuation Management Plans

Darcy Road Public School, Parramatta

Cumberland Schools, Carlingford

Edmondson Park High School,

Richmond River High School

Lismore South Public School

Appendix B – Consultation and Advisement

Our Ref: ID2315
Your Ref: SSD-49073460

1 March 2024

Philip McAteer
TTW Engineers
Level 6, 73 Miller Street
North Sydney NSW 2060

email: Philip.mcateer@ttw.com.au
CC: kemal.ozsayin@rpinfrastructure.com.au, shelly.stingmore@one.ses.nsw.gov.au

Dear Philip,

Flood Emergency Management Plan for Darcy Road Public School

Thank you for the opportunity to provide comment on the Flood Emergency Response Plan (FERP) for the proposed development at Darcy Road Public School, 98A Darcy Road Wentworthville.

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami in NSW. This role includes, planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

It is the preference of NSW SES that all schools follow the application of sound land use planning and flood risk management in accordance with the Flood Prone Land Policy, the Flood Risk Management Manual 2023 (the Manual) and supporting guidelines. This includes site design and stormwater management measures that minimise any risk to the community. Furthermore, schools or sections of schools that are at known risk of flooding or isolation are closed prior to flooding commencing and when there is an indication that flooding is likely, for example, when there is a flood warning.

The NSW SES has reviewed the proposed FEMP and the flood risk information available to the NSW SES (e.g. Paramatta LGA Flood Emergency Sub Plan, Parramatta Draft Flood Study 2023 etc.). We note the proposed development is at risk of flooding due to overland flows as frequently as a 20% Annual Exceedance Probability (AEP) event[1] and inundated during a Probable Maximum Flood (PMF) event with flood water reaching depths >1m[2]. Darcy Road

[1] Stantec, 2023, Draft Parramatta River Flood Study, Appendix F(1) Flood Level and Depth Maps, Figure F2.14 Flood Depth 20% AEP, Page 16
[2] TTW, 2024, Flood Emergency Management Plan (Construction), 2.1 Site Flooding, Figure 5 Existing PMF Flood Level and Depth, Page 8

and other adjacent roads are cut by high hazard flood water[3] leading to the site becoming isolated.

As detailed in the Support for Emergency Management Planning, the NSW SES is opposed to the imposition of development consent conditions requiring private flood evacuation plans rather than the application of sound land use planning and flood risk management.

Further, the NSW SES does not have statutory authority to endorse or approve flood emergency response plans, however we provide the following advice based on the principles outlined in the Guidelines as detailed in Attachment A.

In summary we:

- **Recommend** the early closure of the site prior to school and work commencing. The triggers should be clearly articulated, reasonable to implement and clearly communicated to users of the site.
- **Note** and appreciate the inclusion in the Flood Emergency Management Plan (FEMP) of previous advice including details of the Australia Warning System and other triggers, timelines for exercising and reviewing the FEMP and durations of isolation.
- **Note** the clarification that "*It is important to note that the construction of the proposed works (stages 1, 2 and 3, see Figure 3) will each occur in isolation and therefore cumulative impacts in relation to construction works is not anticipated during any of the three stages proposed.*"

Please feel free to contact Kate Dawes via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

Yours sincerely

Elspeth O'Shannessy
Manager Emergency Risk Management
NSW State Emergency Service

[3] Stantec, 2023, Draft Parramatta River Flood Study, Appendix H(3) Flood Level and Depth Maps, Figure H6.21, Flood Vulnerability Classification (PMF), Page 21

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline[4]

Principle 1 Any proposed Emergency Management strategy should be compatible with any existing community Emergency Management strategy.

Any proposed Emergency Management strategy for an area should be compatible with the evacuation strategies identified in the relevant local or state flood plan or by the NSW SES. Development strategies relying on deliberate isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation.

Acknowledging the existing use, tt is noted that the site is impacted by "*high intensity short duration flood behaviour is considered flash flooding and there would be only a short warning time, following the start of the storm event*[5]" with flooding most likely to occur as a result of overhead rainfall on the site itself, it is likely to be safer to remain in the buildings if flooding occurs after the commencement of the work day, particularly the as buildings proposed as temporary shelter are not situated on land subject to flooding.

Sheltering in buildings while entrances and exits to the site may become flooded in the larger floods may result in isolation, it is therefore recommended that weather warnings from the BOM are monitored prior to the start of the working day and the site closed before work commences at times when these have been issued.

Principle 2 Decisions should be informed by understanding the full range of risks to the community.

Decisions relating to future development should be risk-based and ensure Emergency Management risks to the community of the full range of floods are effectively understood and managed.

The site is impacted by overland flows as frequently as a 20% AEP event[6] and inundated by flood water during a PMF event, reaching depths >1m[7]. Areas of the site are impacted by

[4] NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline
[5] TTW, 2024, Flood Emergency Management Plan (Construction), Section 5.5 Flood Inundation Time, Page 19
[6] Stantec, 2023, Draft Parramatta River Flood Study, Appendix F(1) Flood Level and Depth Maps, Figure F2.14 Flood Depth 20% AEP, Page 16
[7] TTW, 2024, Flood Emergency Management Plan (Construction), 2.1 Site Flooding, Figure 5 Existing PMF Flood Level and Depth, Page 8

Hazard Level 5 (H5) flooding[8], this level of hazard is unsafe for all people and vehicles with building requiring special engineering design and construction[9].

Additionally Darcy Road and other adjacent streets are inundated with high hazard flood water during a PMF event. As noted in the FEMP "*there are no flood free access or egress routes from the site during the PMF event*[10]".

Principle 3 Development of the floodplain does not impact on the ability of the existing community to safely and effectively respond to a flood.

The ability of the existing community to effectively respond (including self-evacuating) within the available timeframe on available infrastructure is to be maintained. It is not to be impacted on by the cumulative impact of new development.

We would like to reiterate that while we appreciate this is an existing location careful consideration should be given to the location and operation of the temporary school site as the flood modelling shows the flood depth in a PMF for this site would be greater than 1 metre depth[11].

Principle 4 Decisions on redevelopment within the floodplain does not increase risk to life from flooding.

Managing risks associated with Low Flood Islands requires careful consideration of development type, likely users, and their ability respond to minimise their risks. This includes consideration of:

- Isolation – There is no known safe period of isolation in a flood, the longer the period of isolation the greater the risk to occupants who are isolated.
- Secondary risks – This includes fire and medical emergencies that can impact on the safety of people isolated by floodwater. The potential risk to occupants needs to be considered and managed in decision-making.
- Consideration of human behaviour – The behaviour of individuals such as choosing not to remain isolated from their family or social network in a building on a floor above the PMF for an extended flood duration or attempting to return to a building during a flood, needs to be considered.

Principle 5 Risks faced by the itinerant population need to be managed.

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[8] TTW, 2024, Flood Emergency Management Plan (Construction), 2.1 Site Flooding, Figure 6 Existing PMF Flow Hazard (Flood Hazard Category), Page 9
[9] Department of Planning and Environment, 2023, Flood Hazard, Figure 1 General flood hazard vulnerability curve
[10] TTW, 2024, Flood Emergency Management Plan (Construction), 2.1 Site Flooding, Page 10
[11] TTW, 2024, Flood Emergency Management Plan (Construction), 2.1 Site Flooding, Figure 5 Existing PMF Flood Level and Depth, Page 8

Any Emergency Management strategy needs to consider people visiting the area or using a development. There is a significant risk that carers will attempt to enter flood water to collect their children. This risk needs to be managed.

Principle 6 Recognise the need for effective flood warning and associated limitations.

An effective flood warning strategy with clear and concise messaging understood by the community is key to providing the community an opportunity to respond to a flood threat in an appropriate and timely manner.

As the site is subject to flash flooding, there is little to no warning time available for the school community or workers onsite to respond to flooding. Checking for any Severe Weather warnings issued by the BOM prior to the start of the work and school day and closing the site early to reduce the risk to life is recommended where feasible.

Principle 7 Ongoing community awareness of flooding is critical to assist effective emergency response.

The flood risk at the site and actions that should be undertaken to reduce the potential risk to life should be clearly communicated to all site users, for example through signage and emergency drills, during and after the construction phase for the lifespan of the development.

07 March 2024

Our Ref: SSD-49073460

Your Ref: ID2315

NSW State Emergency Service

93-99 Burelli St.

Wollongong

NSW 2500

Att: Elspeth O'Shannessy

Manager Emergency Risk Management

NSW State Emergency Service

Dear Elspeth,

With reference to the letter provided to Mr. Philip McAteer from TTW Engineers. I would like to confirm that I am Taylor Construction Group (TCG) Senior Project Manager responsible for overseeing the construction project at 98A Darcy Road, Wentworthville

I acknowledge the receipt of the aforementioned letter, dated 1 March 2024, reference ID2315.

I confirm that I have reviewed the recommendations and accompanying notes provided within.

Please find enclosed a matrix addressing the recommendations outlined in the letter, along with our responses and actions taken accordingly.

SES Recommendations	**TCG Response**
Recommend the early closure of the site prior to school and work commencing. The triggers should be clearly articulated, reasonable to implement and clearly communicated to users of the site.	According to the TTW Flood Emergency Management Plan (FEMP), section 5.3, the Emergency Coordinator (chief warden) should monitor flood warnings provided by NSW SES, BoM, Parramatta Council, and various media outlets such as television and radio stations to obtain supplementary flood warnings for the site. The processes outlined have been included in Taylor Project Emergency Control Management Plan including attachment of the TTW Flood Emergency Management Plan (FEMP) under Annexure 4).
Note and appreciate the inclusion in the Flood Emergency Management Plan (FEMP) of previous advice including details of the Australia Warning System and other triggers, timelines for exercising and reviewing the FEMP and durations of isolation.	I can confirm that our Site induction has provided the necessary information concerning flood emergency warnings for all site attendees. From a safety standpoint, the emergency coordinator is organizing a drill in the upcoming months as part of our Taylor Project Emergency Control Management Plan requirements.
Note the clarification that "It is important to note that the construction of the proposed works (stages 1, 2 and 3, see Figure 3) will each occur in isolation and therefore cumulative impacts in relation to construction works is not anticipated during any of the three stages proposed."	The Darcy Road Public School project is regulated by the approved SSD-49073460, which encompasses a staging report prepared by RPI. This report outlines the stages involved in constructing the project and their correlation with the school's operation. Any changes to the consideration of the Construction Flood Emergency Management Plans strategy and preparedness will be reviewed and updated if required.

Taylor Construction Group Pty Ltd
ABN 25 067 428 344

L16 100 Pacific Hwy, North Sydney NSW 2060
T 02 8736 9000 W **taylorau.com.au**

Kind regards,

Fred Sedighi
Senior Project Manager

Appendix C – On Site Emergency Control Plan

Taylor Construction Group Pty Ltd ABN 25 067 428 344
Level 13, 157 Walker St, North Sydney NSW 2060
T 02 8736 9000 F 02 8736 9090 taylorau.com.au

ON-SITE EMERGENCY CONTROL PLAN

SE-F-06

In case of emergency at this site, Taylor Construction Group employees and subcontractors will observe the following emergency response guidelines.

Nurse call activated: FIRST AID REQUIRED

Megaphone blasts: EVACUATE SITE

What to do in the event of an emergency:

1. Check and ensure the safety of fellow workers and yourself;
2. Inform the closest Taylor Construction Group employee of the nature of the emergency, location on site and potential hazards/ injuries;
3. Ensure that the site office is informed so that relevant emergency services can be contacted;
4. Stay calm and obey all directions given by the Taylor Construction Group employee in charge;
5. Do not leave the site until cleared to do so by your Taylor Construction Group senior site representative;
6. Initiate emergency response procedures (as applicable).

1. SITE EMERGENCY COMMANDER (SEC): Fred Sedighi (Glenn Harris in time of absence)

The site emergency commander (SEC) will be the **project manager**. In the event that the project manager is unavailable at the time of an emergency, emergency control will be the responsibility of the **site manager**.

The SEC will take responsibility for control of on-site emergencies and will direct the emergency response until the arrival of the State Emergency Service (SES); the SEC will then hand control over to the State Emergency Service commander.

2. EMERGENCY COORDINATOR (ECO): Glenn Harris (Fred Sedighi in time of absence)

The emergency coordinator will be the **site manager**, who will be responsible to oversee and manage all field operations in the event of an emergency. All emergency response personnel will operate under the direct control of the ECO.

It will be the ECO's responsibility to coordinate initial response to emergencies and to advise the SEC of the nature of the emergency and if total or partial site evacuation is warranted.

3. EVACUATION OFFICER (EO): Liam Harvey/ Ryan Madandar

A person who is responsible for gaining access to all daily sign-on registers required to conduct a roll call and report the results of the roll call to the ECO. The EO must also ensure all persons remain at assembled location while waiting for further directions from the SEC.

4. COMMUNICATIONS OFFICER (CO): Glen Harris

Shall be responsible for contacting emergency services and informing them of the nature of the emergency and its location. It will be the communications officer's responsibility to ensure that they are made aware of the nature of the emergency and its location prior to contacting required State Emergency Service.

5. WARDENS: Fara Alavi / Kevin Kim/ Dorna Faghireh

Persons responsible for cooperating with the emergency coordinator through assisting in the management of an emergency, until it is under control. Each warden will be assigned a specific location of the project and shall be responsible for ensuring that all employees in that location are made aware of the situation and evacuate to the assembly point in a timely manner.

6. TRAFFIC CONTROLLER (TC): Commercial TC

A person who is responsible for managing the entrance gate and directing all response groups to the emergency location zone. Traffic controllers are responsible for informing all response groups on arrival if they are required to enter exclusion zones to deal with emergency.

For more information please refer to **SE-P-07 Project Emergency Control Management Plan.**