

**Proposed New Eileen O'Connor Catholic School
Lot 9 Section 4 DP 3368
84 Gavenlock Road, Mardi
Catholic Schools Broken Bay**

**Environmental Impact Statement
SSD 67173718**

FLOOD EMERGENCY RESPONSE PLAN

June 2025



Eileen O'Connor
Catholic School



Planning Secretary's Environmental Assessment Requirements

Development Details

Application No: SSD-67173718
Project Name: New Eileen O'Connor Catholic School
Location: 84 Gavenlock Road, Mardi NSW 2259
Lot 9 Section 4 DP3368 within Central Coast
Applicant: Catholic Schools Broken Bay

The following documentation has been prepared to support the State Significant Development Application for the above project and in accordance with the Planning Secretary's Environmental Assessment Requirements (SEARS) dated 19th February 2024 as follows:

	Issue and Assessment Requirements	Relevant Section of this Report
14	Flooding Risk: Assess the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions and operational procedures to mitigate flood risk where required.	See Section 1-8 of this report - Flood Emergency Response Plan by Tooker and Associates, Jun 25

1. INTRODUCTION

Construction, subdivision and operation of a new Catholic school for 200 students with special needs, comprising 20 general learning areas, flexible specialist learning areas, administration and staff facilities, library, hall, amenities and associated site preparation works, landscaping, play space and on-site car parking and kiss and drop, together with road upgrades for Keefers Glen.

Tooker and Associates have been engaged to provide a Flood Emergency Response Plan (FERP) for the school based on the findings of the Flood Impact and Risk Management Assessment report, the Central Coast Council's Wyong River Floodplain Risk Management Study and Plan and the Wyong Local Flood Plan.

2. SITE DESCRIPTION

The proposed site is within the north-western corner of the existing St Peter's Catholic School site at 84 Gavenlock Road, Mardi (Lot 9, Section 4 in Deposited Plan (DP) 3368). The proposed Eileen O'Connor Catholic School site (identified in red) will have an area of 1.284 hectares, with frontage to Keefers Glen.



The site is located within the catchments of Mardi Creek and Wyong River.

The site has a frontage to Keefers Glen for vehicular and pedestrian access to and from the site.

3. PROPOSED DEVELOPMENT

Catholic Schools Broken Bay (CSBB) is proposing construction of a new school for students with a disability at the purpose-built K-12 Eileen O'Connor Catholic School using land located in the north-western corner of St Peter's Catholic School at 84 Gavenlock Road, Mardi. The school will have capacity for 200 students and will provide education and allied health facilities.

The proposed development involves:

- Site establishment and benching

- Construction of a part-two, part-three storey school campus comprising 20 General Learning Areas (GLA), flexible specialist learning areas, library, multipurpose hall, administration, staff facilities, storage, landscaping and playspaces
- Construction of two (2) new vehicle accessways from Keefers Glen and at-grade carpark (including bus parking) and covered drop off/pick up area
- Subdivision of land to create a new allotment for the school
- Widening of a portion of Keefers Glen

The proposed development will have a ground floor and first floor at RL 10.7m AHD and RL 14.3m AHD. The lower ground floor will be at RL 7.7m AHD and will be used mainly for infrastructure, storage and maintenance equipment (refer Figures 1 to 3).

The school will have approximately 200 students with a range of disabilities. Approximately 85% of the students (170 students) will take advantage of the Department of Education Assisted School Travel Program involving a range of vehicles typically with an average of 4 students in each (approx. 40 vehicles). The remaining 30 students will be transported to and from the school via private vehicles.

The school will also purchase two 12 seater mini-vans to transport students to various school activities off the site.

4. FLOOD RISKS

The flood certificate provided by Central Coast Council nominates the following maximum flood levels at the site:

PMF	RL 6.49m AHD
1% AEP	RL 4.25m AHD
5% AEP	RL 3.72m AHD

The Council's Wyong River Floodplain Risk Management study and Plan prepared in January 2020 identified that the Wyong River catchment has been subjected to severe flooding since records began in 1949, 1964, 1977 and 2007. The highest peak flood level at Wyong Railway Bridge on the Wyong River occurred in the 1949 flood and was estimated to be RL 4.2m AHD. This was similar to the Council's estimated 1% AEP (on average once every 100 years) for the site. The Council's estimated PMF flood level for the subject site is RL 6.49m AHD which is 2.24m higher than the 1% AEP flood. A PMF flood is very rare with an approximate average occurrence of 100,000 years.

The flood planning level from the flood certificate is RL 4.75m AHD. The flood planning level is the Council recommended minimum floor level for the site however, the proposed development will have floor levels a minimum of 0.9m above the PMF. The development therefore is outside of all the flood risks including climate change effects.

The Council's Wyong River Floodplain Risk Management Study and Plan was prepared by Catchment Simulations Solutions in January 2020 (**the FRMSP report**) and provides all the flood risk and management data required by the Flood Risk Management Guideline LU01.

The proposed Eileen O'Connor Catholic School is located out of the PMF flood lands and as such, will not have any significant impact on the flood behaviour or be inundated by flood waters (refer Figure 4 for the 1% AEP flood plus climate change and Figure 5 for the PMF flood extents).

The flood risk for the site is that it could be isolated for long periods during floods when roads are cut by flooding. It has been classified as "flood isolated elevated" by the FRMSP report.

There are two very different floods which can occur in the Mardi/Tuggerah area and these can impact on vehicular access to and from the proposed development. This is demonstrated by the plots of flood levels for the two very different PMF floods at Wyong Bridge – 2 hr and 24 hr (refer Figure 6). The flood level response times in the 2 hr PMF are much quicker than for the 24 hr PMF flood.

6. FLOOD RISKS AND HAZARDS

The FRMSP report noted that the BoM provide a 6 hour flood warning for minor flooding at the Wyong Bridge which is for flood waters to reach RL 2.8m AHD at the bridge.

The first flood type is a flood in the Mardi Creek catchment which has a relatively small catchment and hence has what is called fast acting floods or flash flooding (PMF 2 hr). These floods occur over a short duration. The draft NSW government Shelter in Place Guidelines indicate that a shelter in place response is appropriate when sheltering in place is no longer than 6 hours. The Mardi Creek flooding falls into this category (PMF 2 hrs).

The PMF 2hrs flood response and hazard times/durations that road access to the school is cut is between 1 and 2 hours. Based on this data, there is no sufficient time for evacuation of the site and the response for the school in the Mardi Creek floods (PMF 2hrs) should be to Shelter in Place at the school.

The flooding in the Wyong River is long duration (PMF 24 hrs) in which road access can be blocked for beyond 20 hrs. This duration is not appropriate for shelter in place at the school. Evacuation of the site is recommended to address the long duration flooding.

The flood hazard is defined as the flood depth multiplied by the flood velocity. Research has established recommended flood hazard values for safe evacuation on foot and in vehicles. The hazard levels are:

H1 – relatively benign flow conditions with no vulnerability constraints;

H2 – unsafe for small vehicles;

H3 – unsafe for all vehicles, children and elderly;

H4 – unsafe for all people and vehicles.

7. FLOOD EMERGENCY RESPONSE PLAN

The current Wyong Local Flood Plan relies heavily on shelter in place as the flood emergency response however there is a potential for roads to remain blocked by flooding for up to 20 hours which would not be a suitable situation for school children. So, the recommended actions for flood response will be governed by whether it will be a short or long duration flood rather than the flood severity. It will be necessary to monitor the flood levels at Wyong Bridge to gauge whether it is a short or long duration flood.

The available flood evacuation refuges mentioned in the Wyong Local Flood Plan and the FRMSP report are the Wyong Golf Club, Wyong RSL Club and Wyong Bowling Club. These refuges would not be accessible from the school due to major flooding on access roads. The report also mentions the Woodbury Park Community Centre as a possible flood refuge. The clubs however, would not be accessible in a severe flood from the proposed school. The Woodbury Park Community Centre would be a suitable refuge for a group of 50 – 90 persons. The community centre is within walking distance of the school however, it is in the same position as the school in that it will become an elevated isolated flood area.

The likely refuge for a larger number of persons with access during floods would be the Westfield Shopping Centre. The evacuation route from the proposed school to the Westfield Shopping Centre would be to exit the school into Keefers Glen, head south along Woodbury Park Drive and turn left into Wyong Rd and then right into the shopping centre (refer Figure 7).

The flood hazard along the route to the school and to the Westfield shopping centre are presented for the locations on Figures 7. The durations until these flood hazard categories are exceeded are presented for Locations A to G in Attachment A. The flood hazard timing along the route from the school to Westfield Shopping Centre is detailed for locations B, C and E with plots of flood hazard in Attachment A.

BoM provide a flood warning 6 hours before the water level reaches RL 2.8m at the Wyong Bridge gauge (<http://www.bom.gov.au/nsw/flood/>). The school needs to arrange for the BoM to include the school on the list of organisations to receive the flood warning alert directly. In order to differentiate between the short and long duration floods, the BOM provide water levels at the Wyong Bridge after the flood warning is given via their web site <http://www.bom.gov.au/nsw/flood/>. Water level information is also available from Manly Hydraulics Lab (<http://www.mhl.nsw.gov.au>) and NSW Office of Water (<http://waterinfo.nsw.gov.au/>).

If then, the water level at Wyong Bridge has risen to around RL 2.5m in the hour after the BOM warning, then the decision should be to shelter in place as the best approach. If there is at least 2 hours until the water level at the Wyong Bridge begins to rise, then an evacuation is considered to be the best response.

Figure 7 Flood Hazard Locations



The recommended flood emergency responses in a long duration flood are to:

1. Non school hours – message all parents and Assisted School Travel Program (ASTP) once the BoM flood warning is provided to keep the school children at home;
2. School hours - message all parents and ASTP once the BoM flood warning is provided to collect the children as soon as possible within three to four hours;
3. School hours – those children remaining after the first two actions above are to be transported to the Westfield Shopping Centre and remain under supervision until collected by their parents or ASTP personnel.

The school will have access to their two 12 seat mini-vans for action 3 above as well as the ASTP which arrive after the decision is made to evacuate the school.

Location A on Figure 7 is at the location of the entry and exit to St Peter's Catholic College. Locations B, C and E is the recommended vehicular route for access from the school to the Westfield shopping centre during duration floods. Locations D and F are related to access to the shopping centre from Tonkiss St.

The school will have a stringent management of students entering and leaving the school mostly by cars and buses. It will have five Drop off and Pick up (DOPU) zones and a queue capacity for eight vehicles at any one time. Staff will meet each vehicle with students and escort them to and from the classrooms. There will be approximately 71 staff at the school to manage any flood response.

Flood wardens will be nominated from the staff and the Principal will designate a chief flood warden who will be responsible for annual training of staff in the flood responses, receiving flood warnings from the BOM, discussion with the senior school management team of the appropriate flood response and management of the flood response.

It is recommended that the chief flood warden and two other senior members of staff would have a direct line to receive the BoM flood warning and SES Commander which would provide a minimum warning time of 6 hours to notify parents and ASTP personnel outside of school times that the school would be closed and children should stay at home and if in school hours, that parents and ASTP personnel should collect their children within three to four hours. For those children remaining, they would be bused to the Westfield Shopping Centre so they could be collected by their parents and ASTP personnel.

The Plan would identify responsible persons and their roles with the evacuation route provided within the document.

8. CONCLUSIONS AND RECOMMENDATIONS

The proposed school is located outside flood affected lands and as such, will not be adversely affected by flood waters and will not adversely impact on flooding behaviour for adjacent sites.

The site has the potential for local roads to be flood affected and be isolated during severe floods. The response will be shelter in place at the school site for short duration flooding where there is limited flood warning time and the roads are cut for less than 6 hours. This is in accord with the NSW Draft Shelter in Place guidelines. BoM will recognise this flooding because the rainfall will be intense and the response at Wyong Bridge will be quick and within 2 hours.

For longer duration floods, the response for the proposed school will be to:

1. Non school hours – message all parents and ASTP personnel once the BoM flood warning is provided to keep the school children at home;
2. School hours - message all parents and ASTP personnel once the BoM flood warning is provided to collect the children as soon as possible within three to four hours;
3. School hours – those children remaining after the first two actions above are to be bused and driven by ASTP personnel to the Westfield Shopping Centre and remain under supervision until collected by their parents.

The access to roads along the evacuation route will be available for up to 5 hours longer than the minimum 6 hours warning time. These warning and road access availability times are the worst case for the most severe PMF flood.

The proposed school needs to prepare and implement a detailed flood evacuation flow chart for emergency responses in a flood event which includes annual training. Summary decision flow charts are attached at Attachment B.

FIGURES

Rev	Issue	Date
P1	Prelim Issue for Co-ord	13/03/2012
P2	Issue to QS	12/04/2012
P3	Revised Design Issued for QS Cost Estimate	03/06/2012
P4	Issue For Co-ordination	01/07/2012
P5	Issue for Client Review & Co-ordination	15/11/2012
P6	Issue for Consultant Co-ordination	19/12/2012
P7	Issue for Consultant Co-ordination	10/03/2013
P8	Issue for EIS Co-ordination & Client Approval	19/03/2013

Amendments

Stanton
Dahl
Architects



Eileen O'Connor
Catholic School

Catholic Schools Broken Bay
(CSBB)
84 Gavenlock Road,
Mardi, NSW 2259

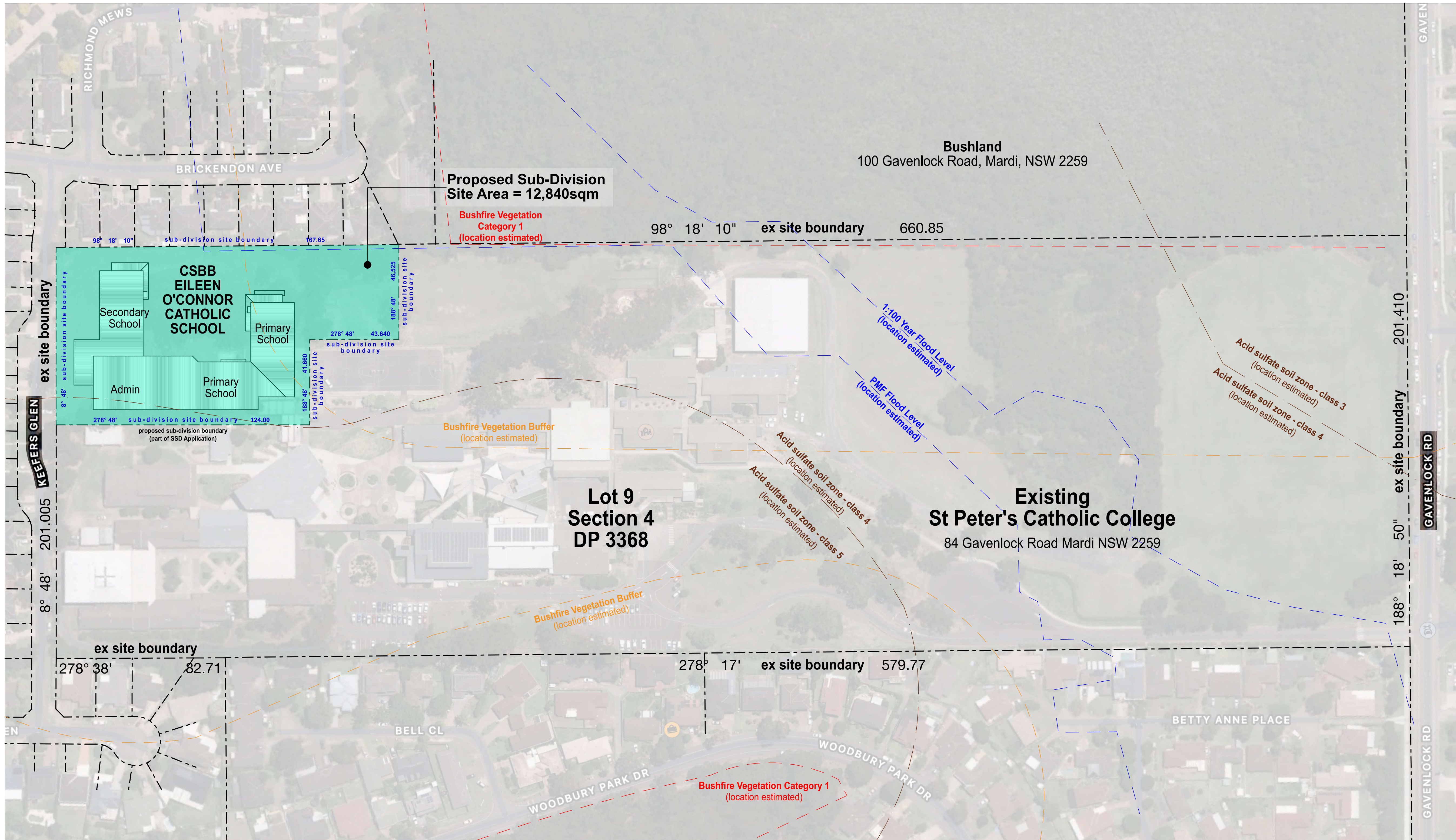
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Plot date; 19/3/2025

Scale;1:1000 as noted @ A1

Project No;
2637.20

Drawing No; Revision#;
A0101 P8

Campus Plan



Rev	Issue	Date
P11	Issue for Consultant Co-ordination	19/12/24
P12	Issue for Consultant Co-ordination	31/01/25
P13	Issue for Consultant Co-ordination	10/03/25
P14	Issue for Consultant Co-ordination	14/03/25
P15	Issue for EIS Co-ordination & Client Approval	19/03/25

Amendments

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Catholic School

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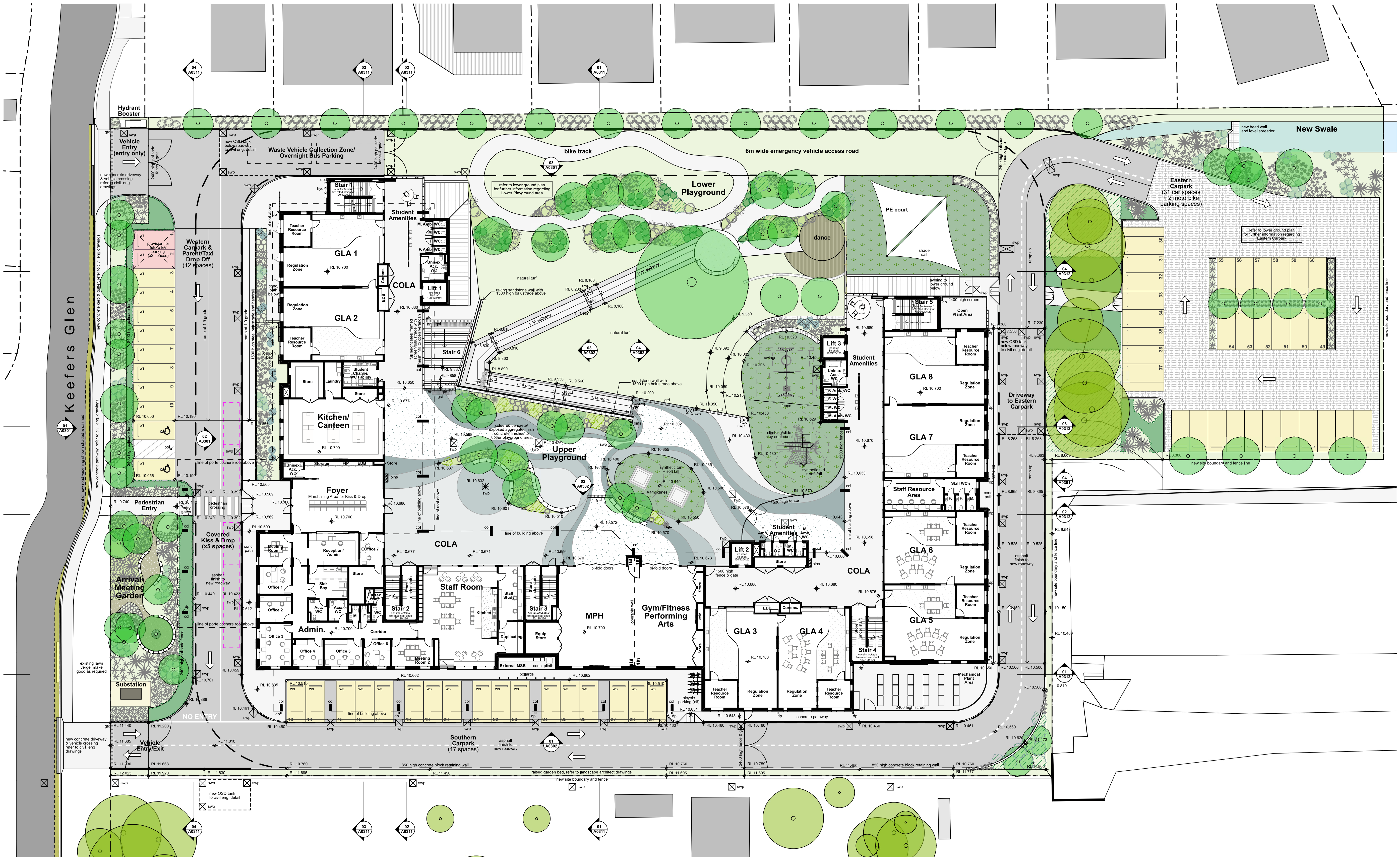
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Scale: 1:250 as noted @ A1

Project No:
2637.20

Drawing No: A0202
Revision#: P15

Floor Plan Ground



01 Floor Plan Ground
1:250

Legend (floor plans)

note: drawing may not contain all items listed below

ac	air conditioner	condenser	fe	fire extinguisher
acc	accessible		flr	finished floor level
adhc	adhc ageing, disability & home care		hyd	hydrant
amb	ambulant		lb	letter box
ap	access panel		lcl	lcl screen (wall mounted)
bal(1)	balustrade (type)		lin	linen cupboard
bic	broom finish concrete		frz	fridge space
bol	bollard		fh	fence
bsn(1)	basin (type)		fw	floor waste
cbus	c-bus control		gb	garbage bin
cfc	compressed fibre cement		gpo	general purpose outlet
cft	ceramic floor tile		gt	gate
cj	control joint		gtd	grated drain
chl	clothes line		hlc	high level cupboard
col	column		hr(1)	handrail (type)
comms	communications		ht	hose tap
conc	concrete		hwu	hot water unit
cpt	copt		hyd	hydrant
ct	cooking		lb	letter box
dgo	double general purpose outlet		lcl	lcl screen (wall mounted)
dp	downpipe		lin	linen cupboard
dsh	dishwasher		frz	fridge space
edb	electrical distribution board		fh	fence
fbx	floor box		fw	floor waste
fip	fire indicator panel		gb	garbage bin
ej	expansion joint		gpo	general purpose outlet
ev	electric vehicle charging station		gt	gate
ex	existing		gtd	grated drain
fb(1)	face brickwork		hlc	high level cupboard
fc	fibre cement		hr(1)	handrail (type)

rw(1)	retaining wall (type)
rwt	rainwater tank
sc	steel column
sfc	steel float concrete
shr	shower
sj	saw cut joint
sp	spoon drain
ssr	safety shower
sv(1)	sheet vinyl (type)
swp	stormwater pit
tfb	timber floorboards
tgsl	tactile ground surface indicator
u/b	under-bench oven
vb	vanity bench

wc	water closet
wm	washing machine
wo	wall oven
ws	wheel stop
wt	wash trough

Rev	Issue	Date
p5	Issue for Client Review & Co-ordination	15/11/24
p6	Issue for Consultant Co-ordination	19/12/24
p7	Issue for Consultant Co-ordination	10/03/25
p8	Issue for EIS Co-ordination & Client Approval	19/03/25

Amendments

Stanton
Dahl
Architects

Eileen O'Connor
Catholic School

CATHOLIC SCHOOLS
Broken Bay

RP INFRASTRUCTURE

Eileen O'Connor
Catholic School

Catholic Schools Broken Bay
(CSBB)
84 Gavenlock Road,
Mardi, NSW 2259

Drawn; RW
Checked; DM
Plot date; 19/3/2025

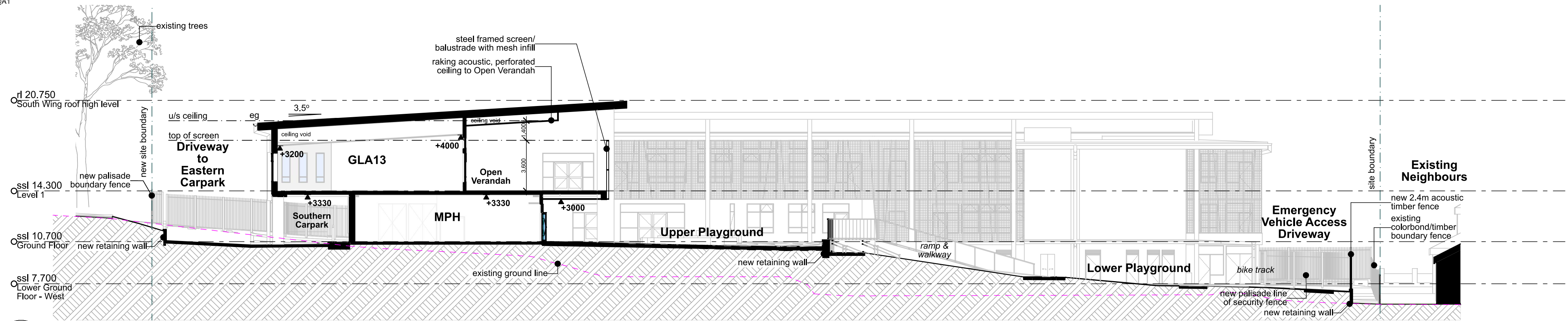
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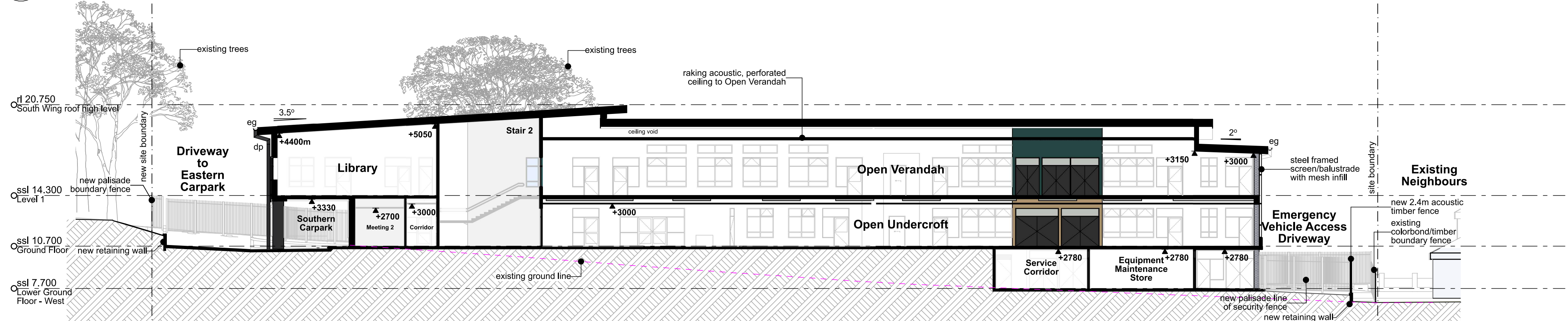
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Revision#;
P8

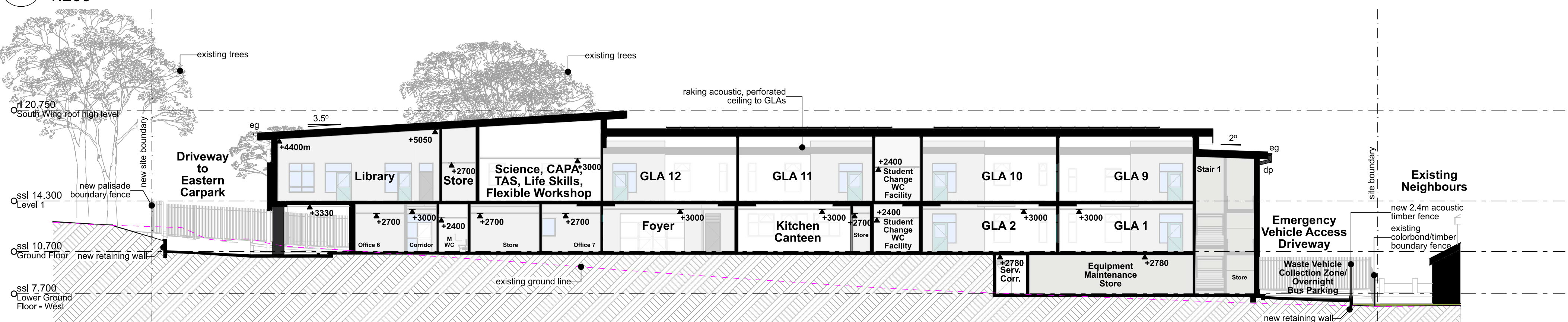
Sections 1



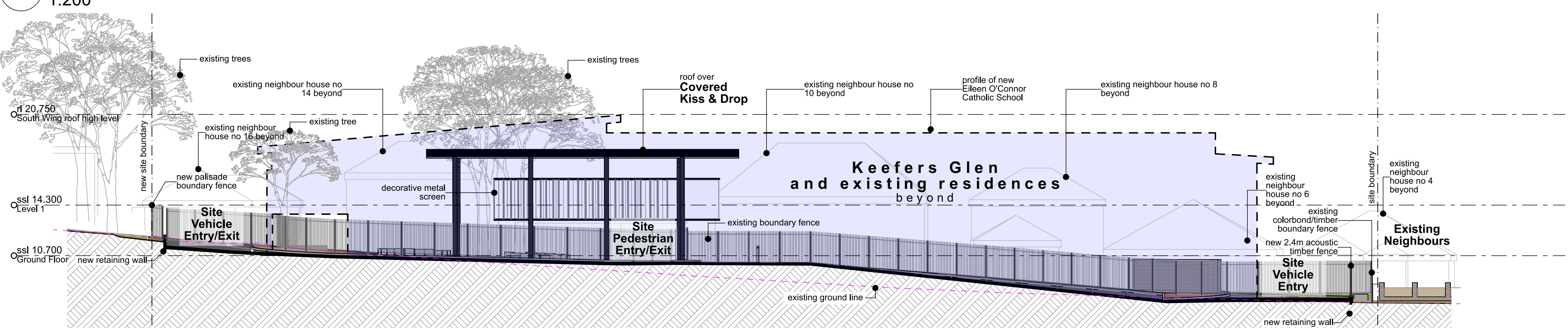
01 Section 01
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02 Section 02
1:200



03 Section 03
1:200



04 Section 04
1:200

- Legend (elevation & sections)
note: drawing may not contain all items listed below
- ald aluminium framed glazed door suite
 - alw aluminium framed window
 - dms decorative metal screen
 - dp downpipe
 - eg eaves gutter
 egl | existing ground line || fb | face brickwork |
| lwc | lightweight cladding |
| mdr | metal deck roof |
| nw | retaining wall |
| wh | window sunhood |

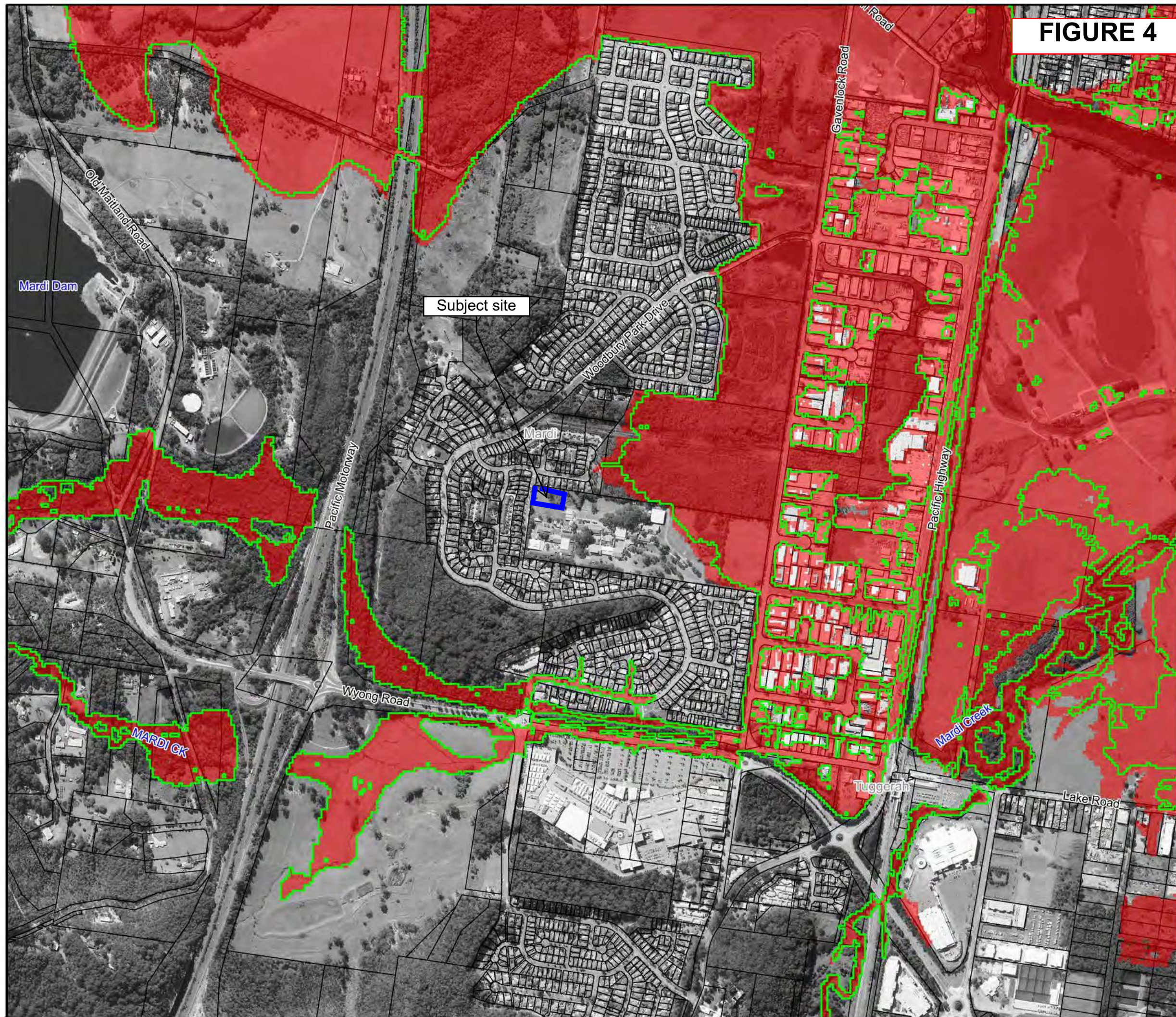
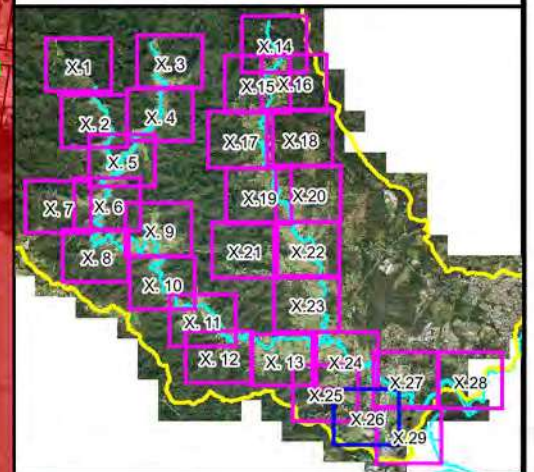


FIGURE 4

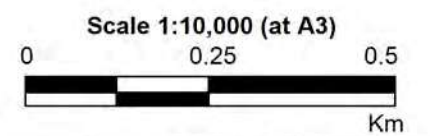
Central Coast Council



LEGEND

- Existing 1% AEP Inundation Extent
- 1% AEP Inundation Extent with 30% Increase in Rainfall and 0.9m Increase in Tuggerah Lake Level

Notes:
Aerial photograph dated 2014



**Figure A17.26:
Peak 1% AEP Flood
Extent 30% increase in
Rainfall & 0.9m Increase
in Tuggerah Lake Level**

Prepared By:
Catchment Simulation Solutions
Suite 2.01, 210 George St
Sydney, NSW 2000

File Name: Figure A17.26 CC30 1% AEP.wor

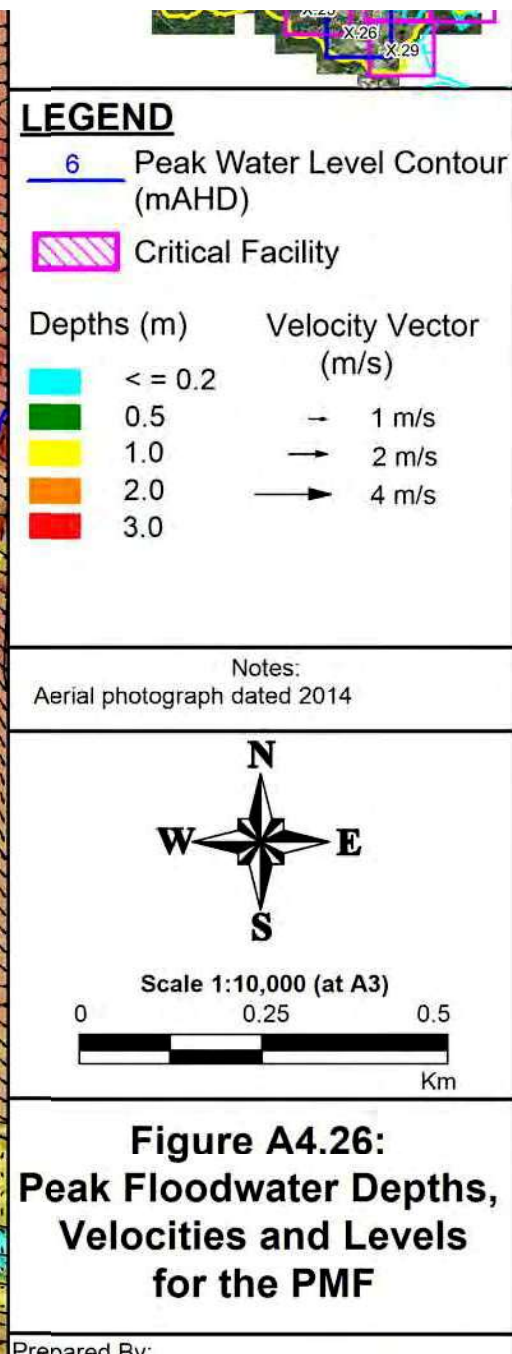
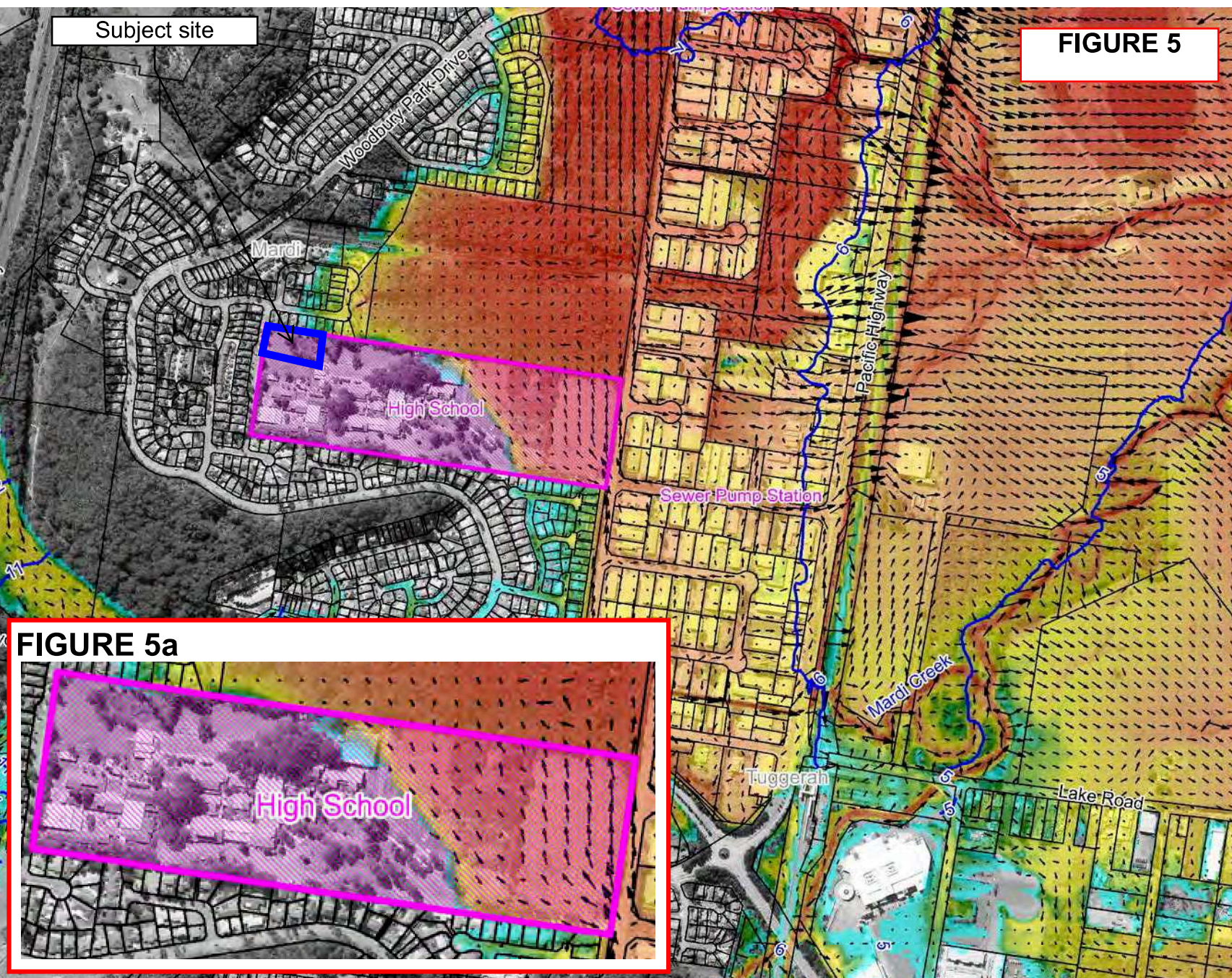
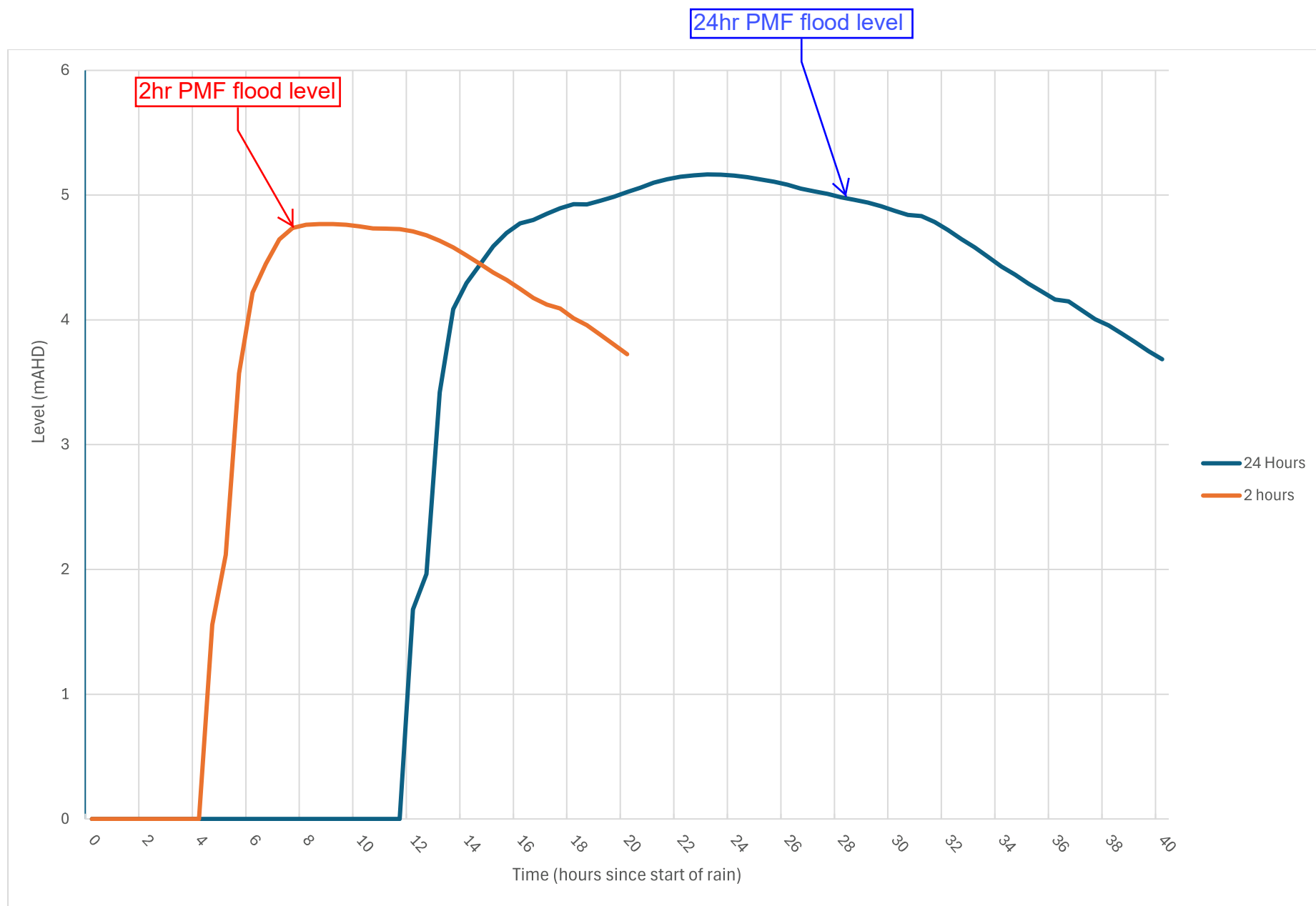
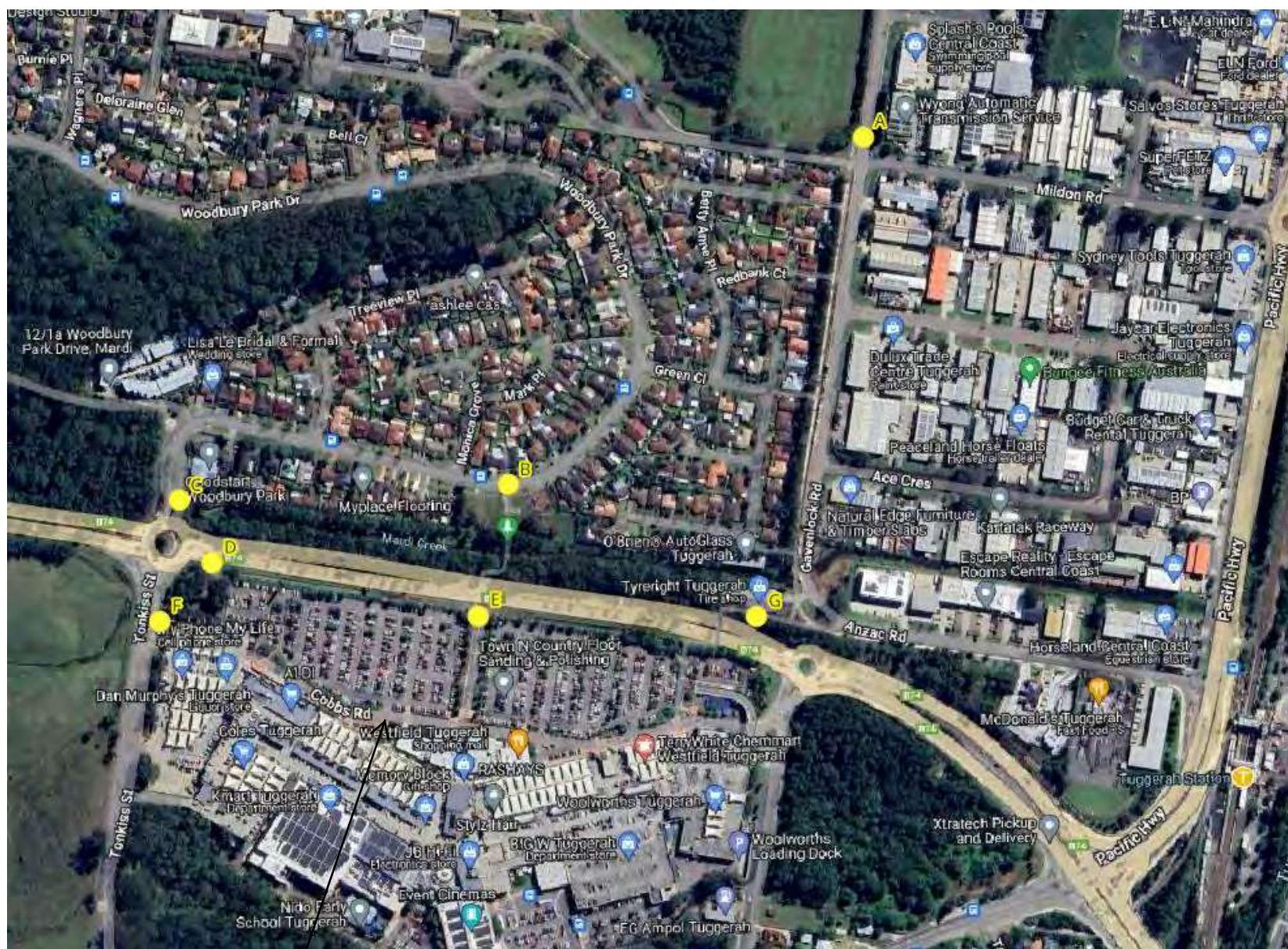


FIGURE 6



Flood Types - Short and Long
Duration Response Times

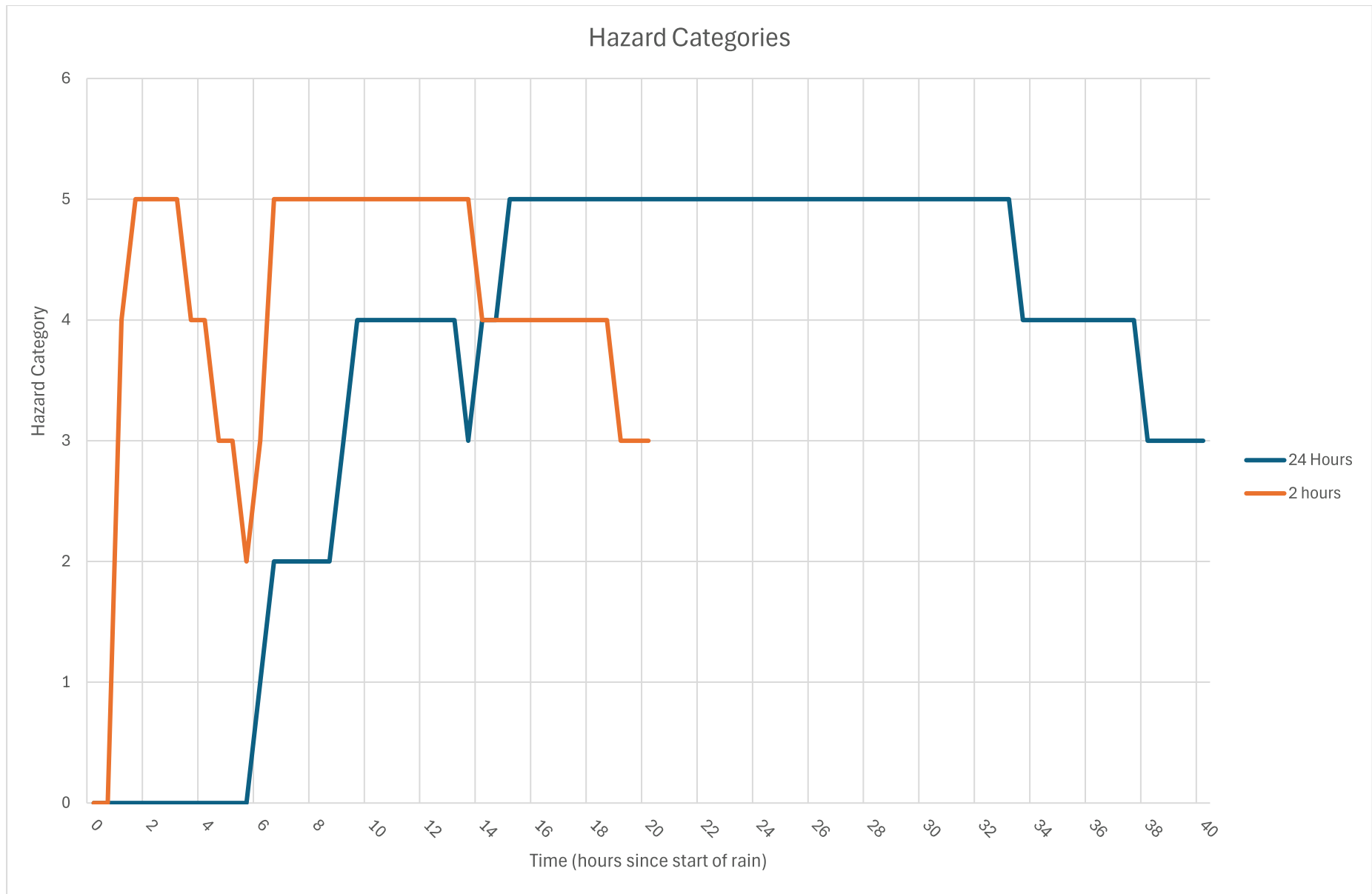
FIGURE 7

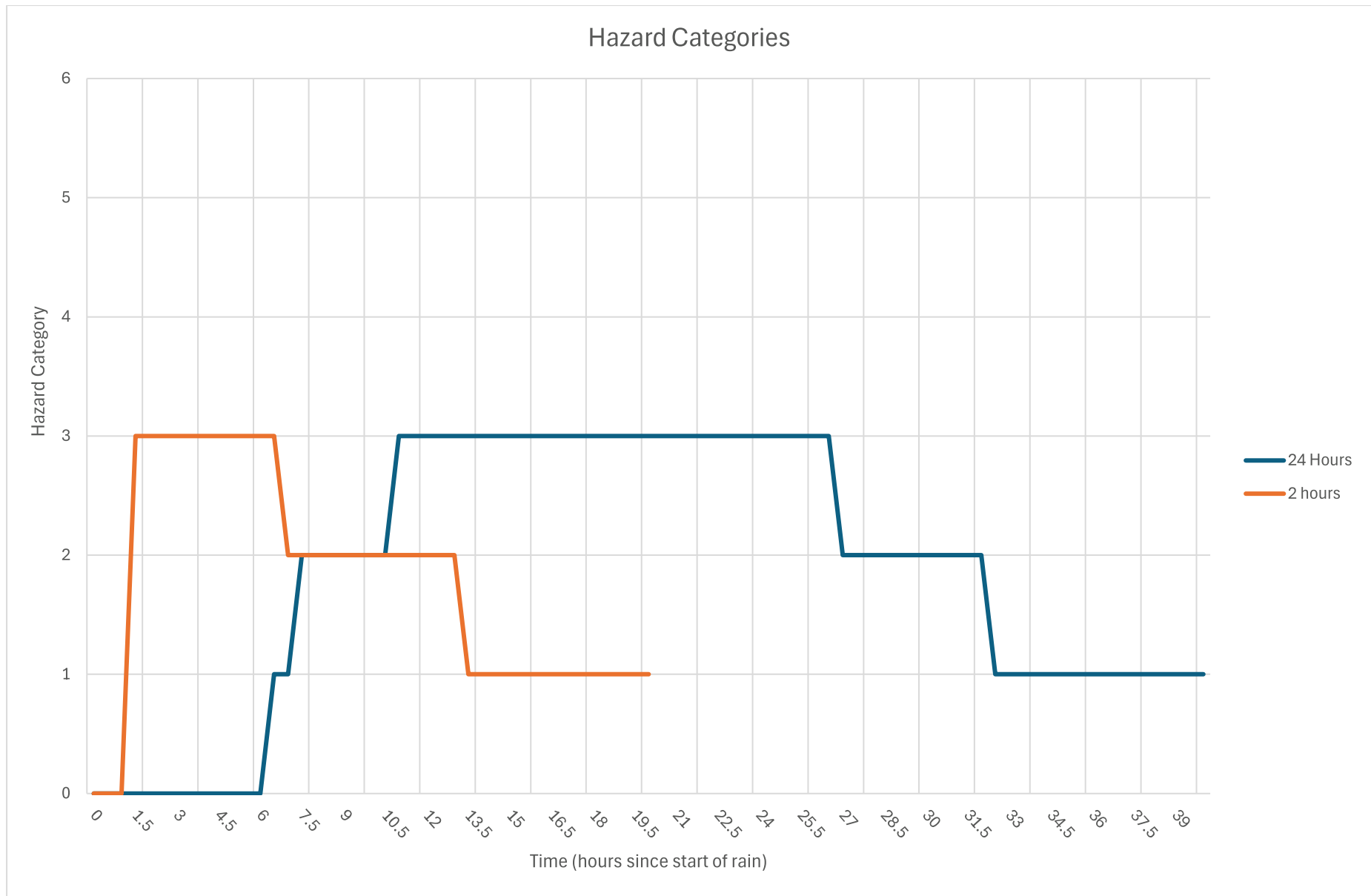


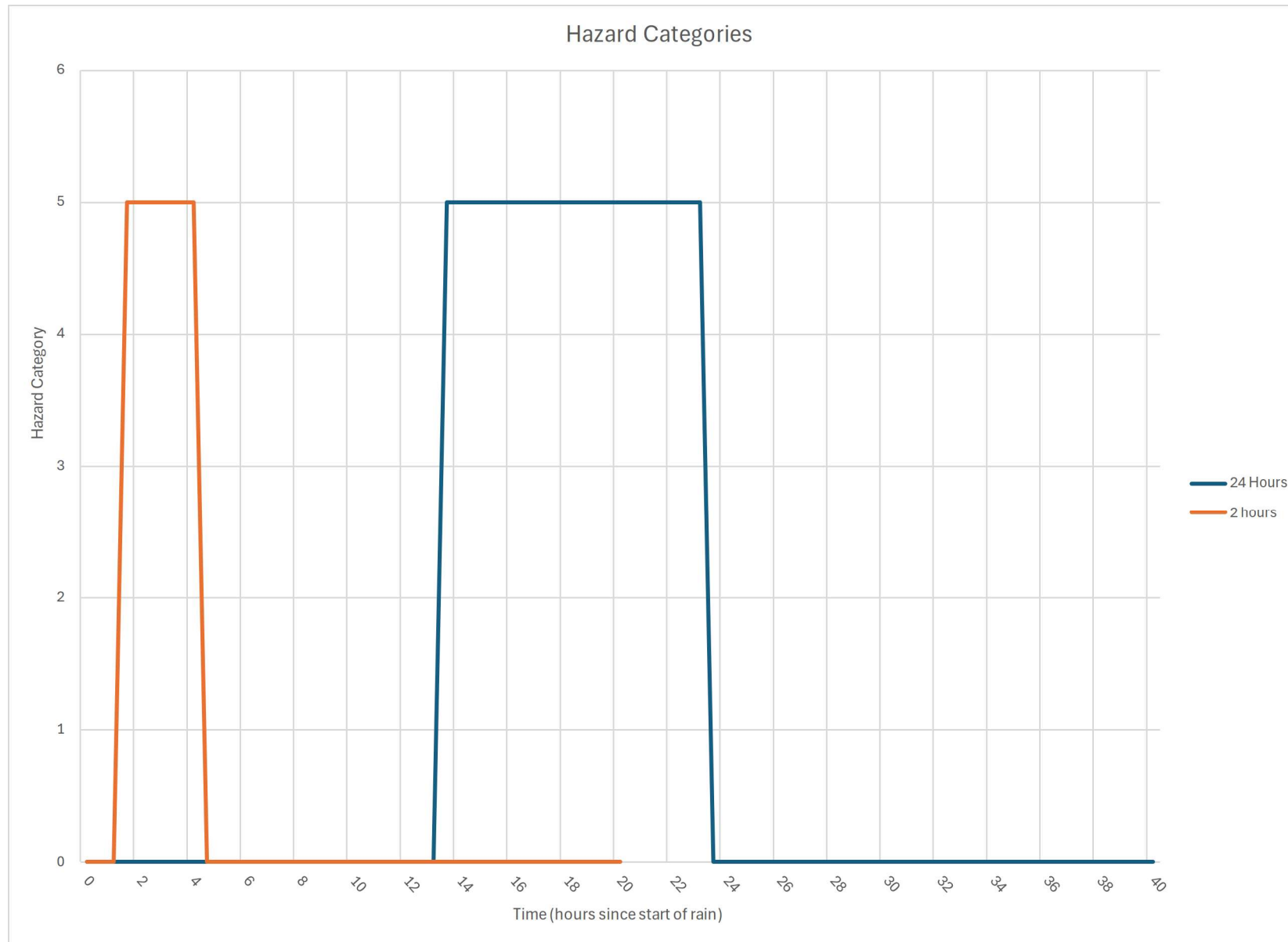
Westfield Shopping Centre Flood Refuge

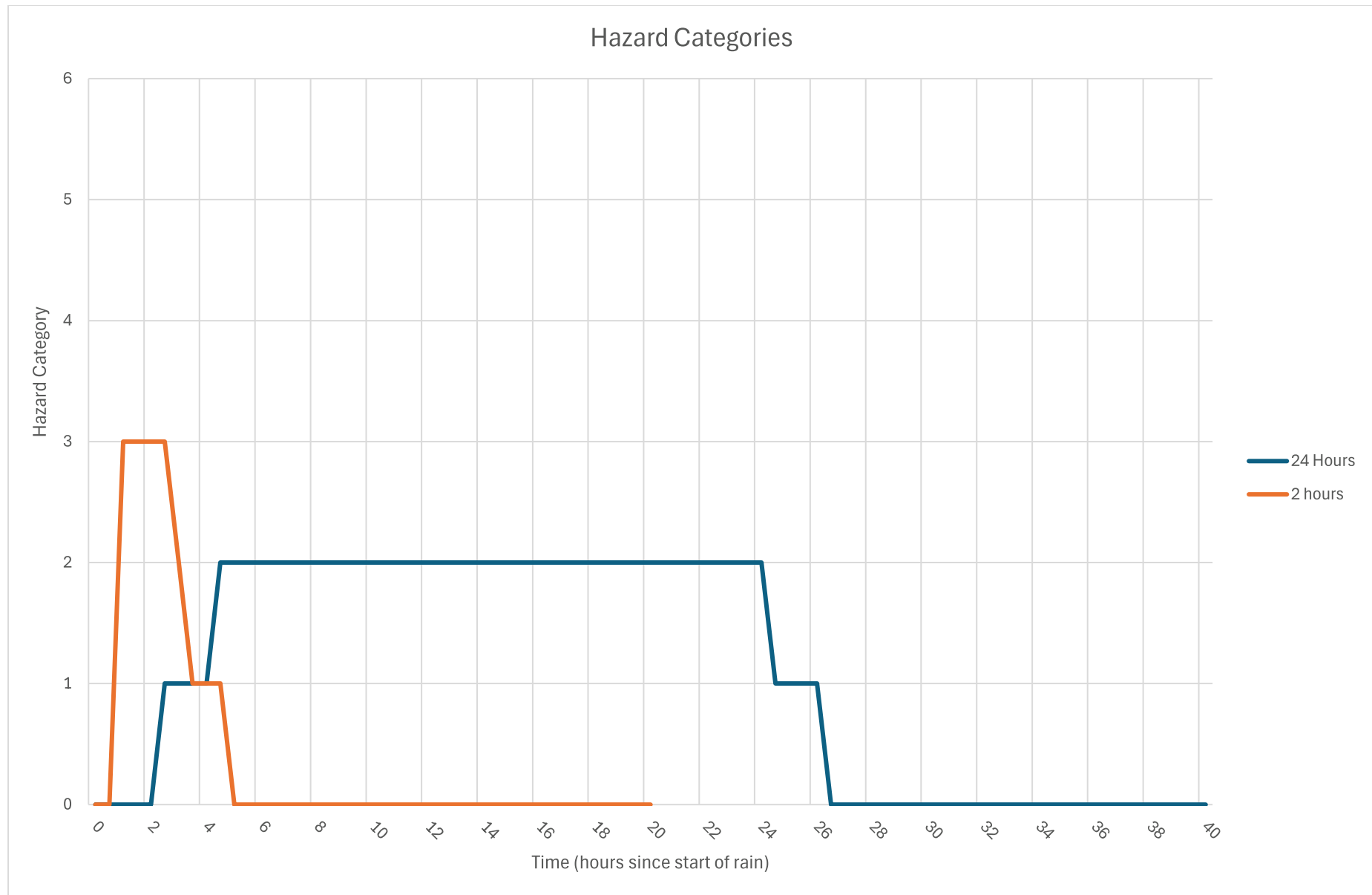
Flood Hazard Locations along Evacuation Route to Westfield Shopping Centre

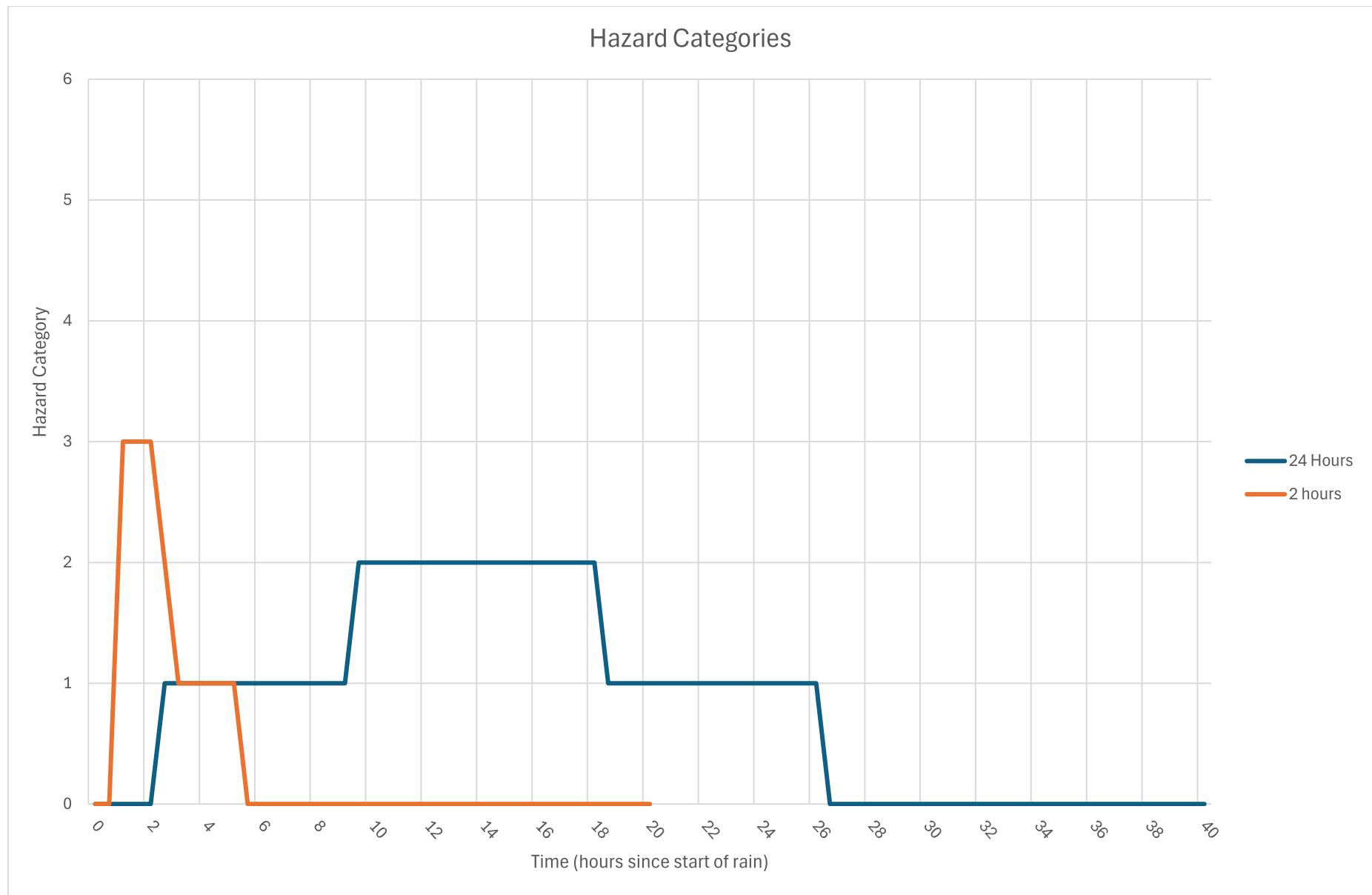
ATTACHMENT A
PMF flood hazard behaviour
Long and short duration floods
Source – Catchment Simulation Solutions Pty Ltd

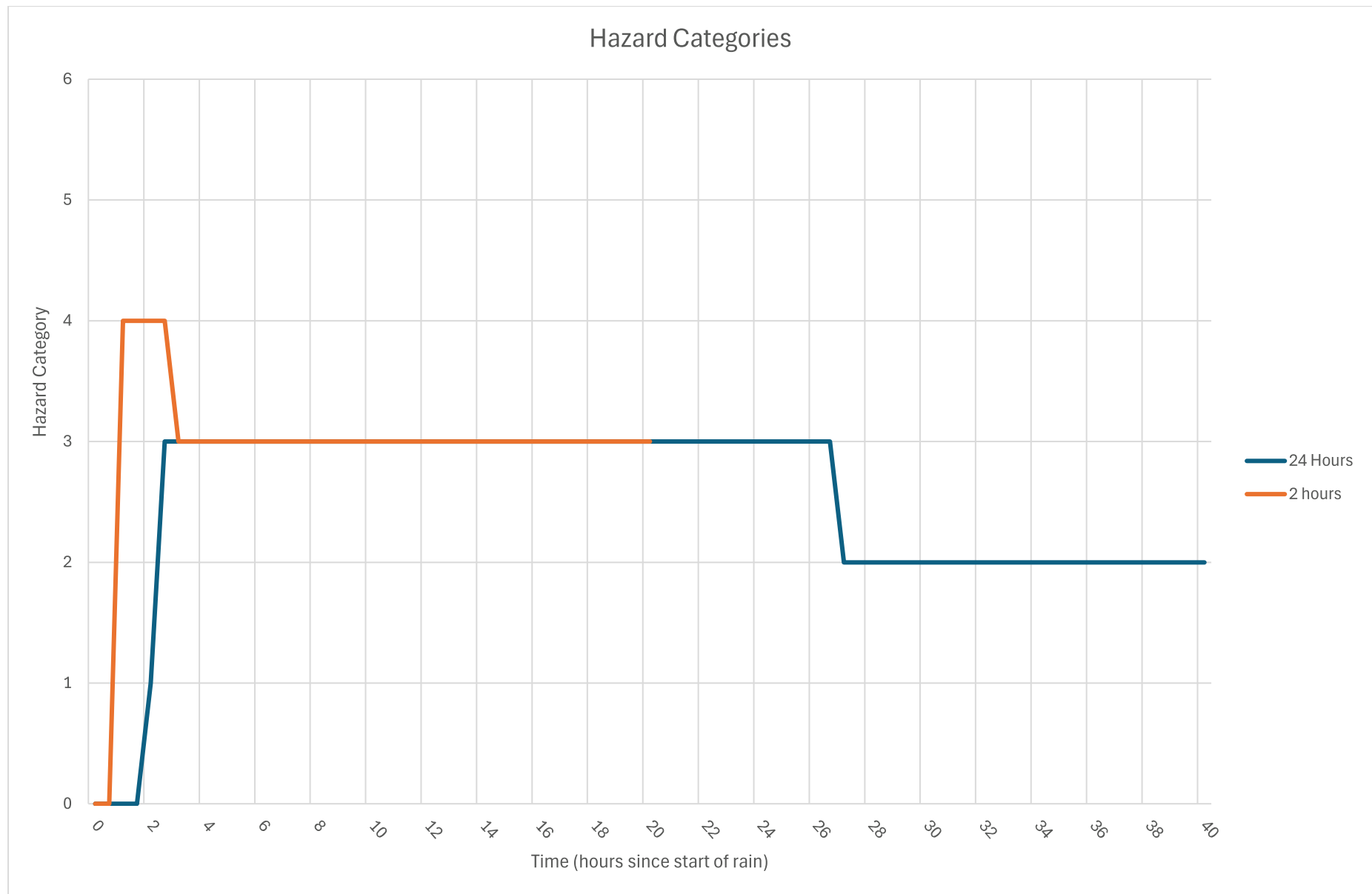


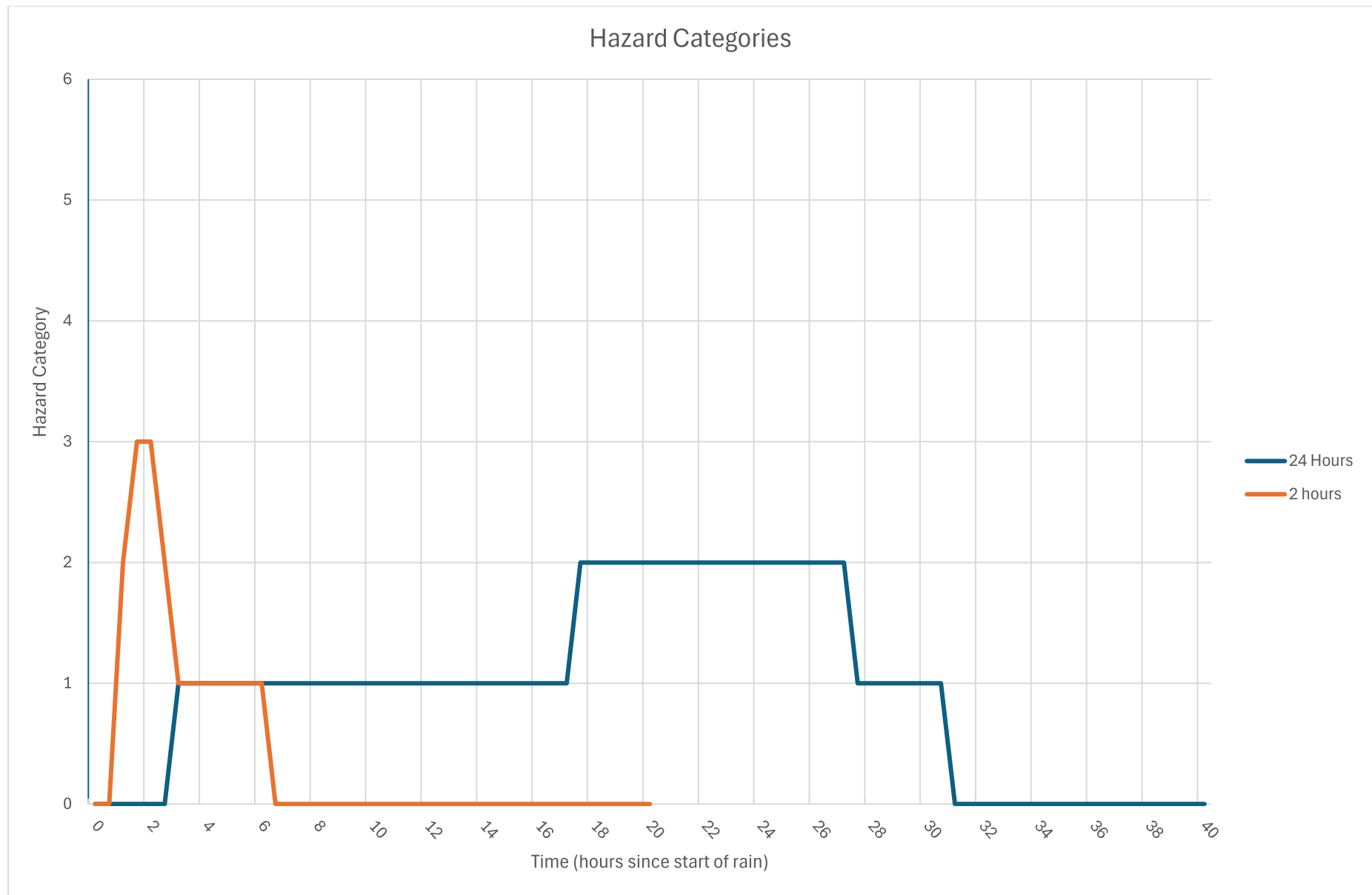








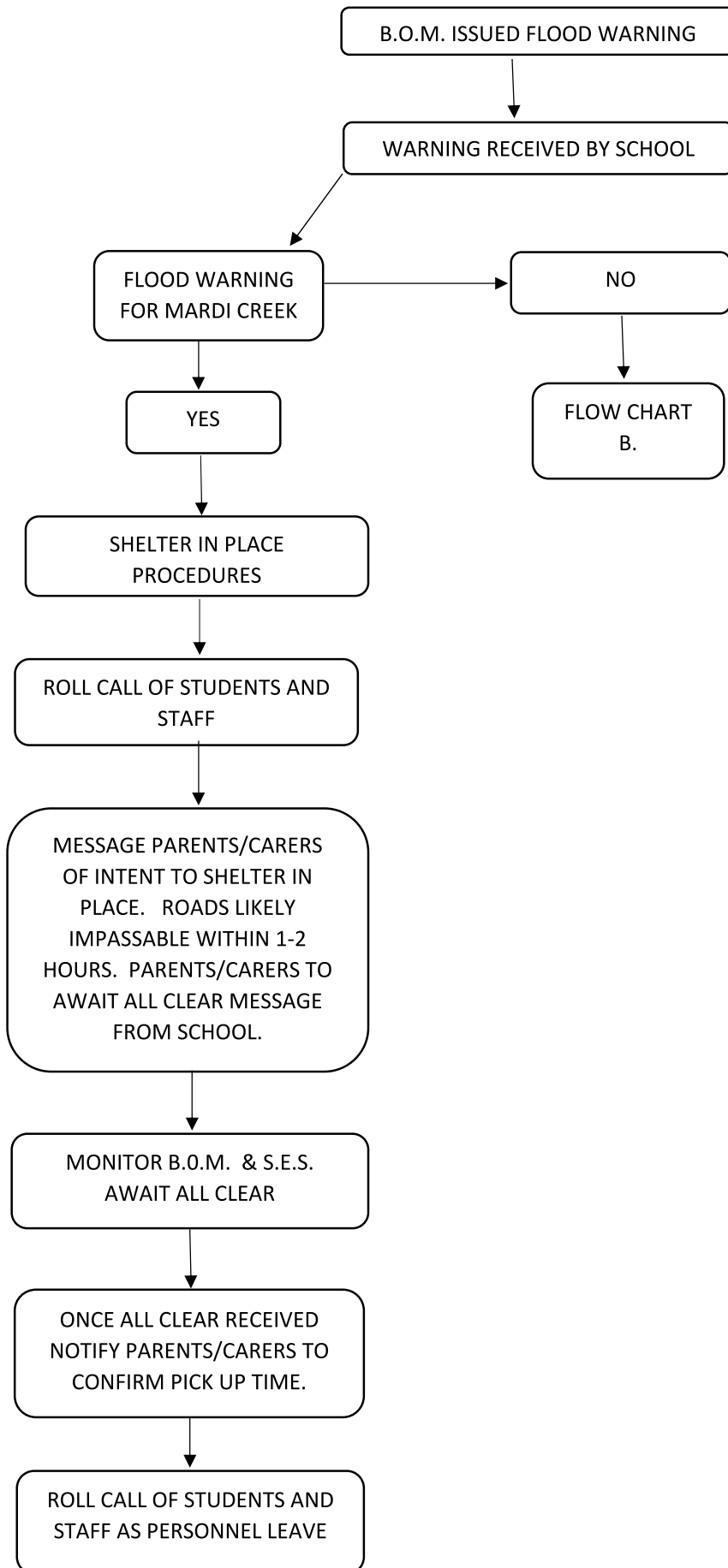




ATTACHMENT B

Flood Emergency Decision Flow Charts

FLOW CHART A



FLOW CHART B.

