

Thank you,
 Emily



Emily Morrow
 Design Manager
 M 0436 911 399

F 02 6247 8898
 Level 27, 100 Miller St, North Sydney NSW 2060 Australia
emily.morrow@hindmarsh.com.au
www.hindmarsh.com.au



From: Derek Tooth <Derek.Tooth@qprc.nsw.gov.au>
Sent: Friday, 5 August 2022 2:45 PM
To: Emily Morrow <Emily.Morrow@hindmarsh.com.au>; Andrew Lissenden <andrew.lissenden@transport.nsw.gov.au>; development.southern@rms.nsw.gov.au
Cc: Stefan Szyzew <Stefan.Szyzew@hindmarsh.com.au>; Nick Valois <Nick.Valois@hindmarsh.com.au>
Subject: RE: JHS: SSD Condition B14 - CTPMSP

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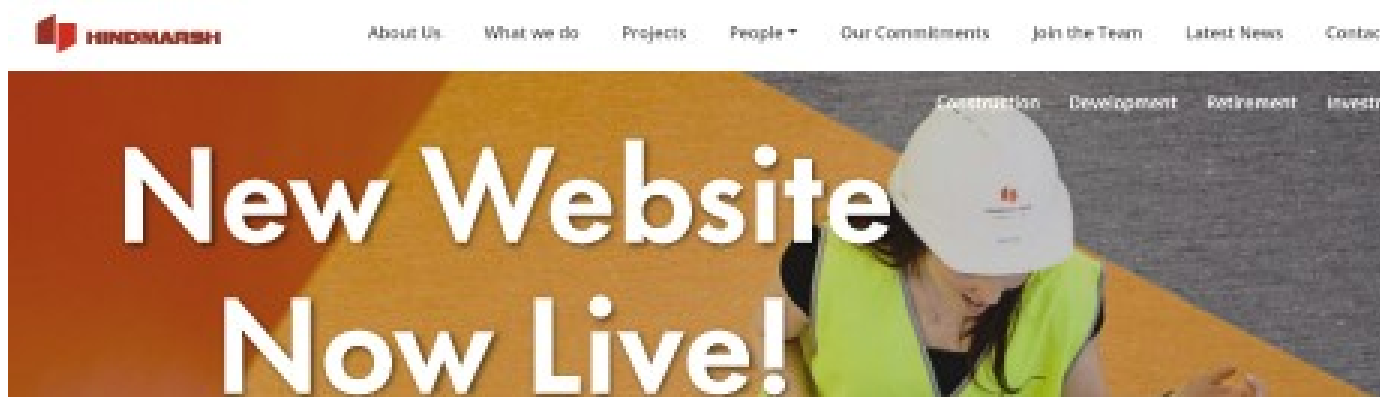
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Attachments: Appendix E 12548316 Jerrabomberra CTPMSP Rev 3 - 5.8.22.pdf; 234021_C-PRE-M009 Temporary Traffic Management Plan (TTMP) Rev A FINAL - 02.08.22 NV.docx

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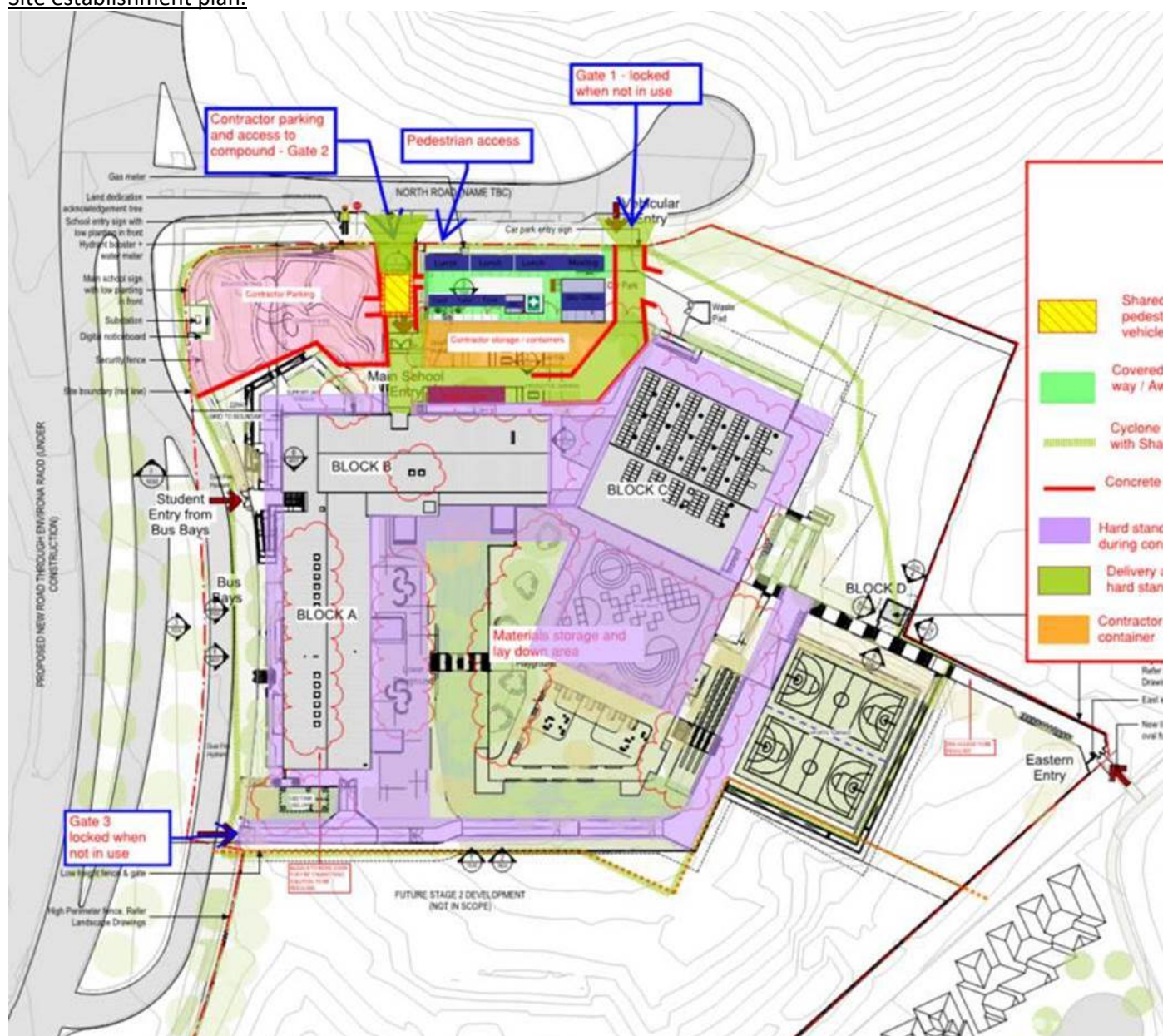
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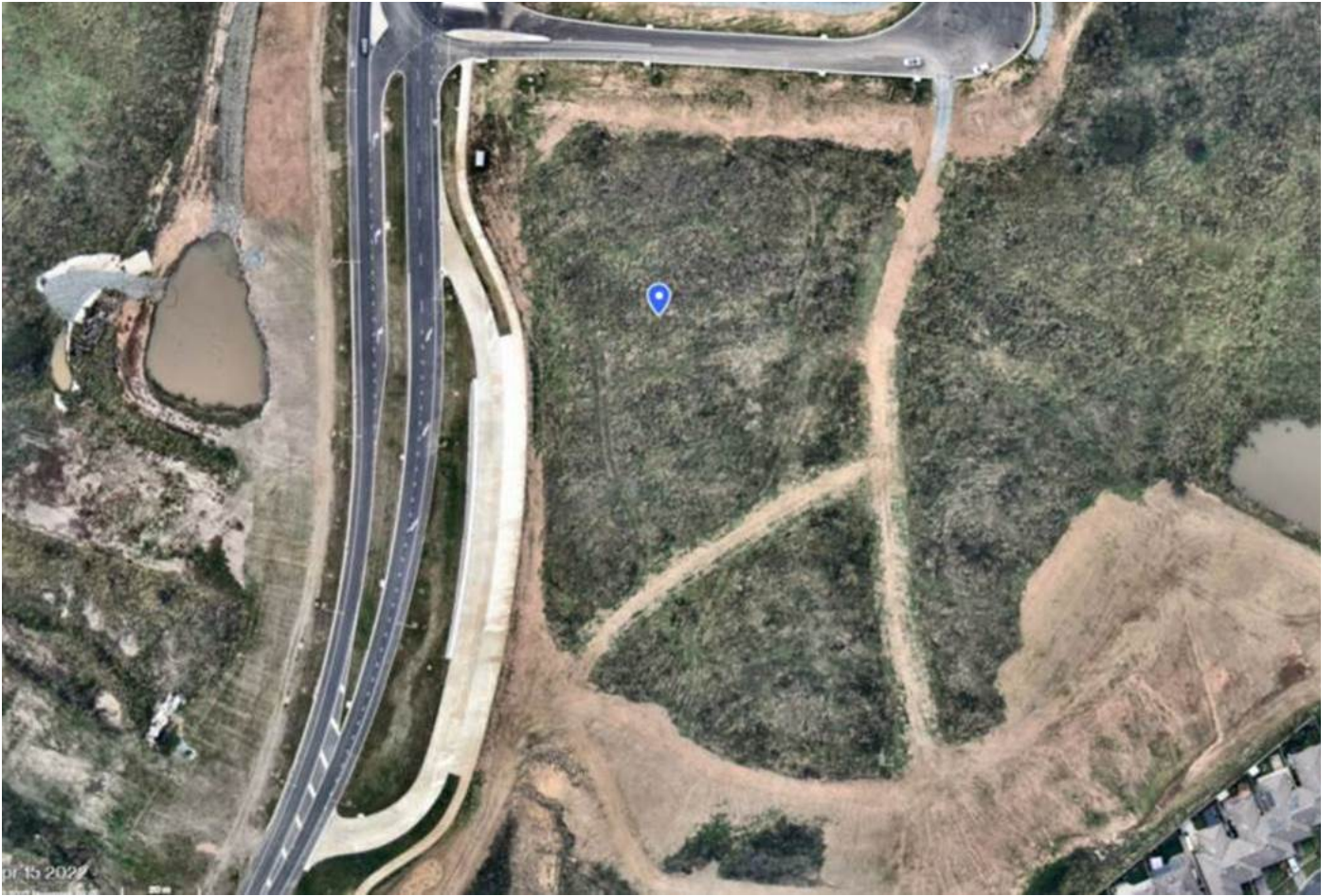
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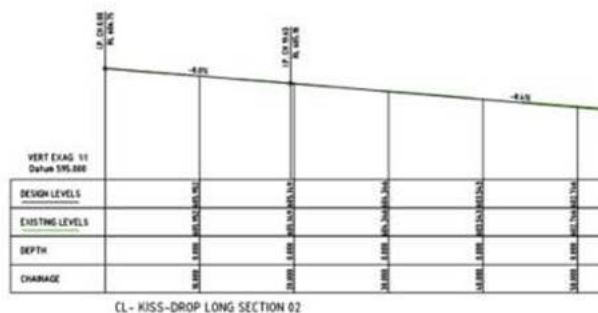
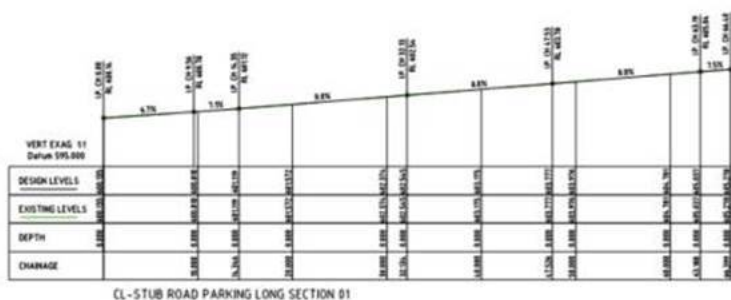
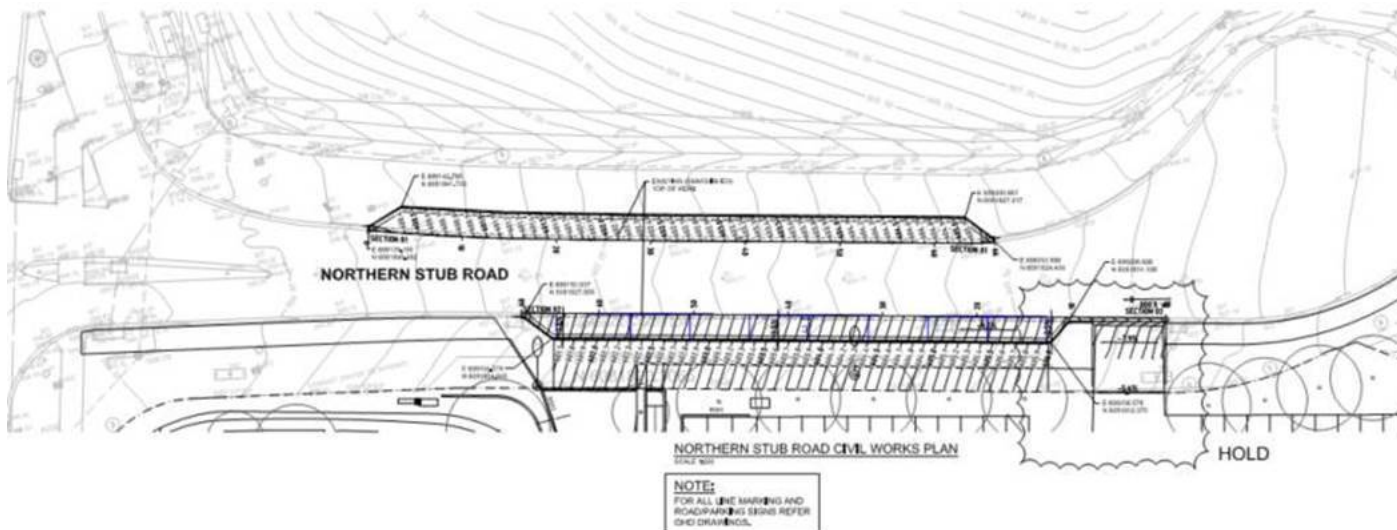
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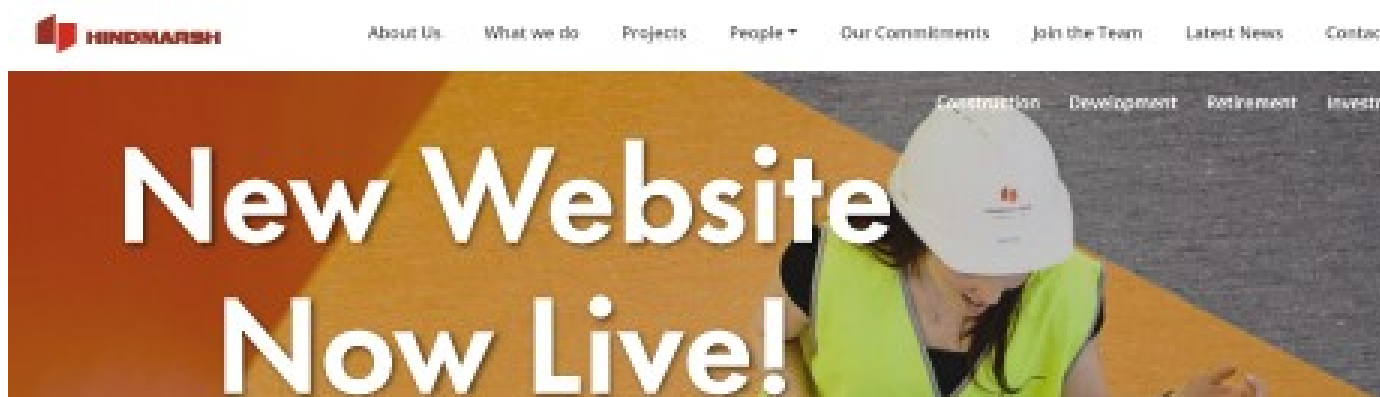
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Sent: Tuesday, 9 August 2022 8:30 AM
To: Emily Morrow
Cc: Stefan Szyczew; Nick Valois; Robert McKnight; mitchell.beattie@tsamgt.com; Derek.Tooth@qprc.nsw.gov.au
Subject: TfNSW comments on 'Temporary Traffic Management Plan' and 'Preliminary Construction Traffic and Pedestrian Management Sub-Plan' (TfNSW Ref: STH18/00025/11)
Attachments: Appendix E 12548316 Jerrabomberra CTPMSP Rev 3 - 5.8.22.pdf; 234021_C-PRE-M009 Temporary Traffic Management Plan (TTMP) Rev A FINAL - 02.08.22 NV.docx
Follow Up Flag: Follow up
Flag Status: Flagged

Hi Emily,

Further to your emails below, the following comments are provided by Transport for NSW (TfNSW) on the 'Temporary Traffic Management Plan' and the 'Preliminary Construction Traffic and Pedestrian Management Sub-Plan' attached to this email.

1. Temporary Traffic Management Plan (Rev A Final dated 2/08/22):

TfNSW is supportive of the comments provided by Queanbeyan-Palerang Regional Council (email below from Derek Tooth dated 5 August 2022). TfNSW notes that the works, noting their location and the information provided to date, will have no impacts on state classified roads (i.e. Lanyon Drive) or existing traffic signals on any road, and as such has no additional comments subject to the submitted/final Traffic Management Plan having been prepared by a suitably qualified person.

2. Preliminary Construction Traffic and Pedestrian Management Sub-Plan (Revision 2 dated 4/08/22):

TfNSW notes the requirements of Part B, Condition B14 of the Development Consent issued for SSD-24461956 and advises that it has no objection to the Preliminary Construction Traffic and Pedestrian Management Sub-Plan (Revision 2 dated 4/08/22) subject to any over sized over mass (OSOM) loads that are required having obtained a National Heavy Vehicle Regulator (NHVR) OSOM permit for each OSOM load (this is obtained from the NHVR and not TfNSW as noted in Section 2.1.3). This will include demonstrating to NHVR that the arrangements for the route are acceptable.

Should works be required within a state classified road reserve to facilitate OSOM loads, then a Works Authorisation Deed (WAD) with TfNSW, or another suitable arrangement as agreed to by TfNSW, for the works will be required to be in place and any required works completed to the satisfaction of TfNSW before the movement of that load commences. The final Construction Traffic and Pedestrian Management Sub-Plan shall be prepared by a suitably qualified person.

Regards

Andrew Lissenden
Development Services, South
Regional and Outer Metropolitan
Transport for NSW

P 0418 962 703 E andrew.lissenden@transport.nsw.gov.au

transport.nsw.gov.au
Level 4, 90 Crown Street
Wollongong NSW 2500



Transport
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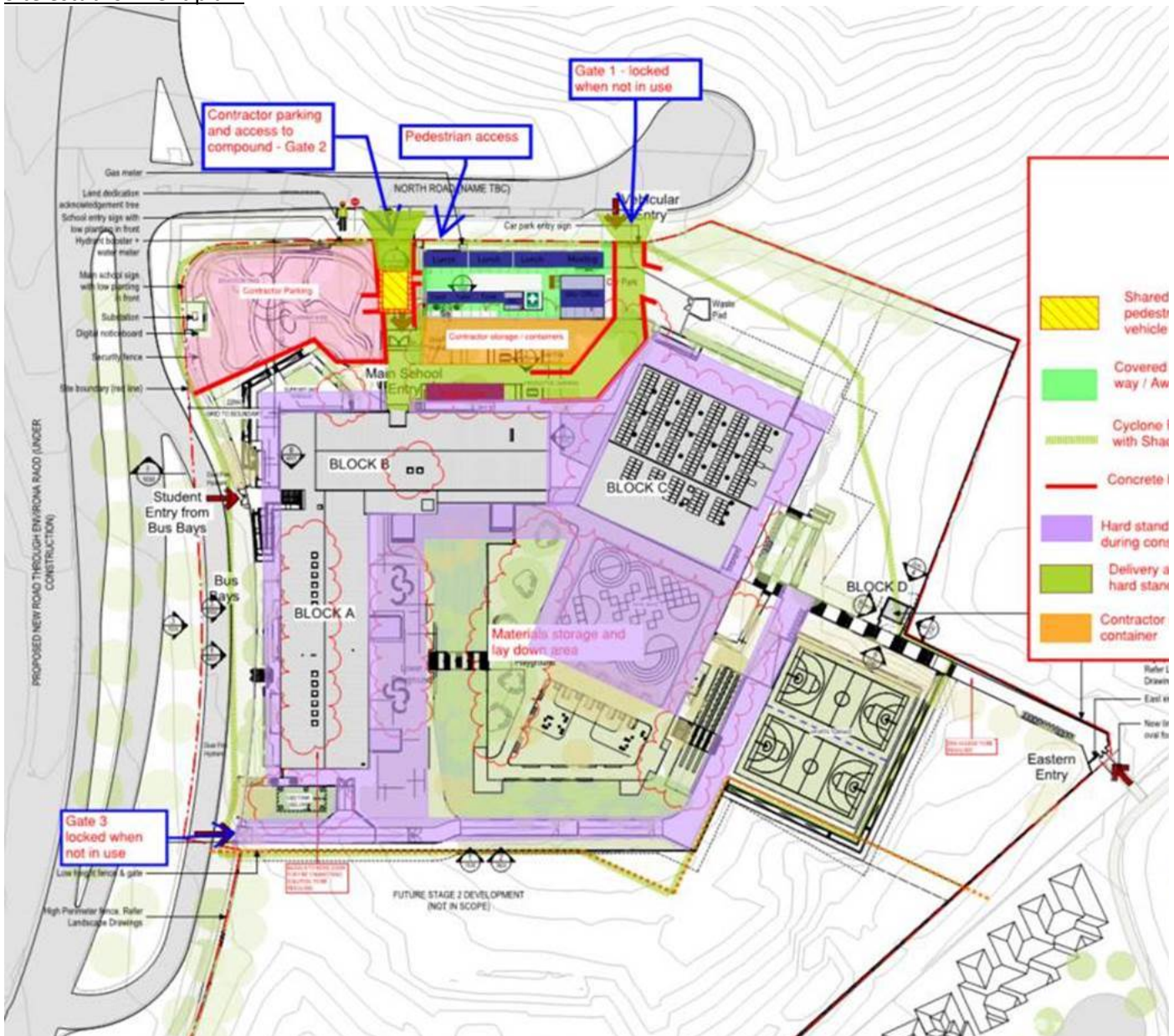
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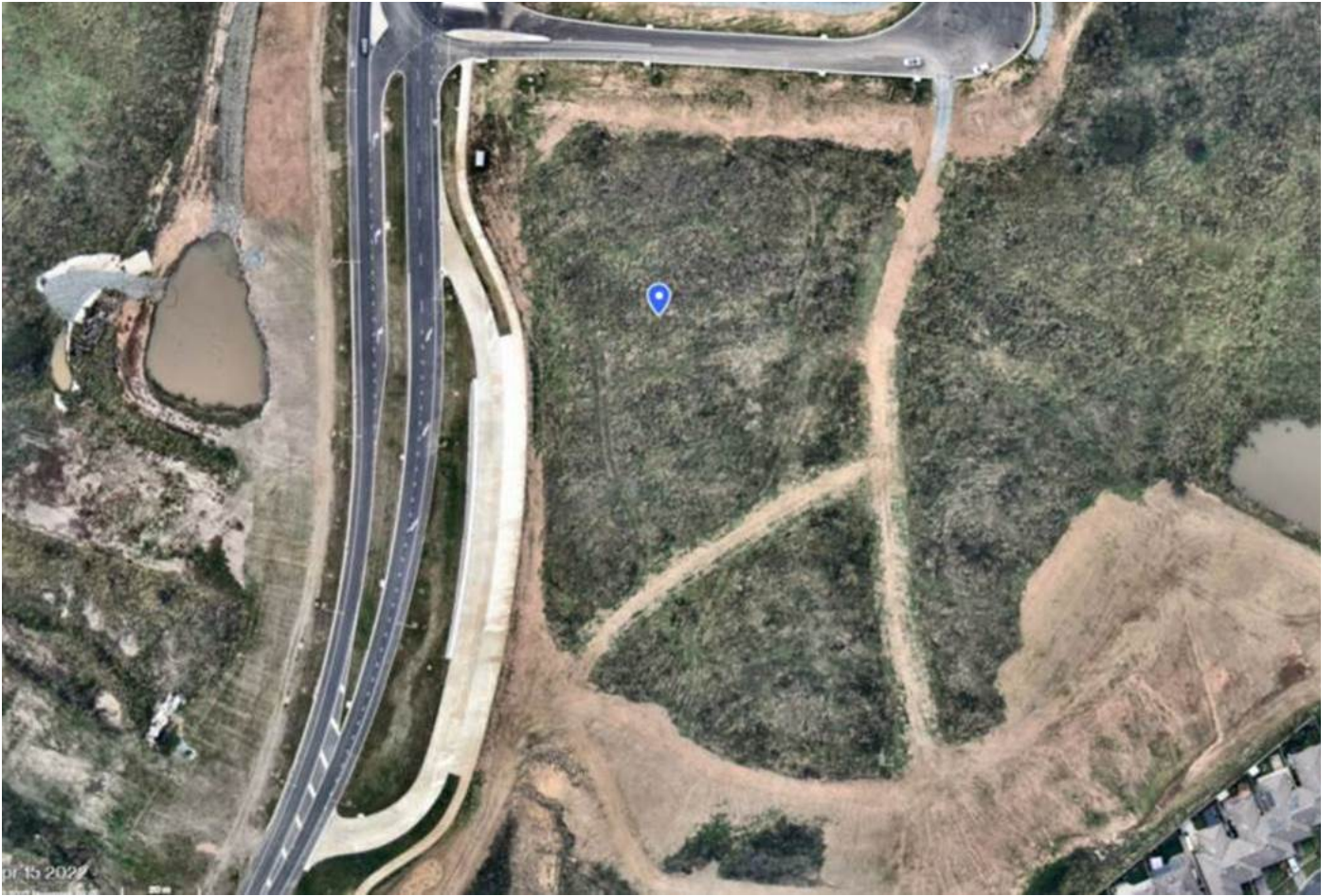
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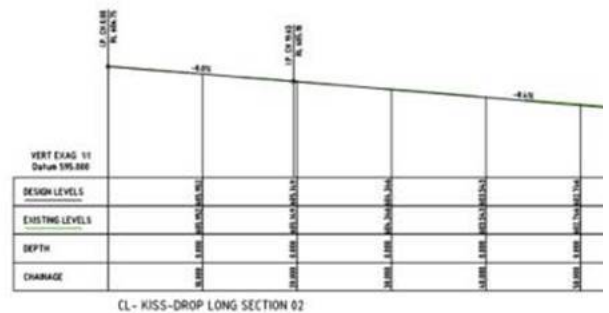
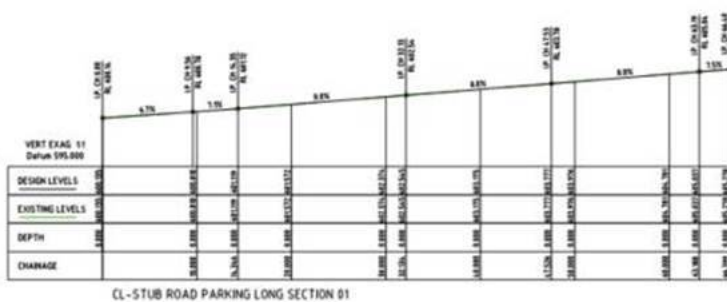
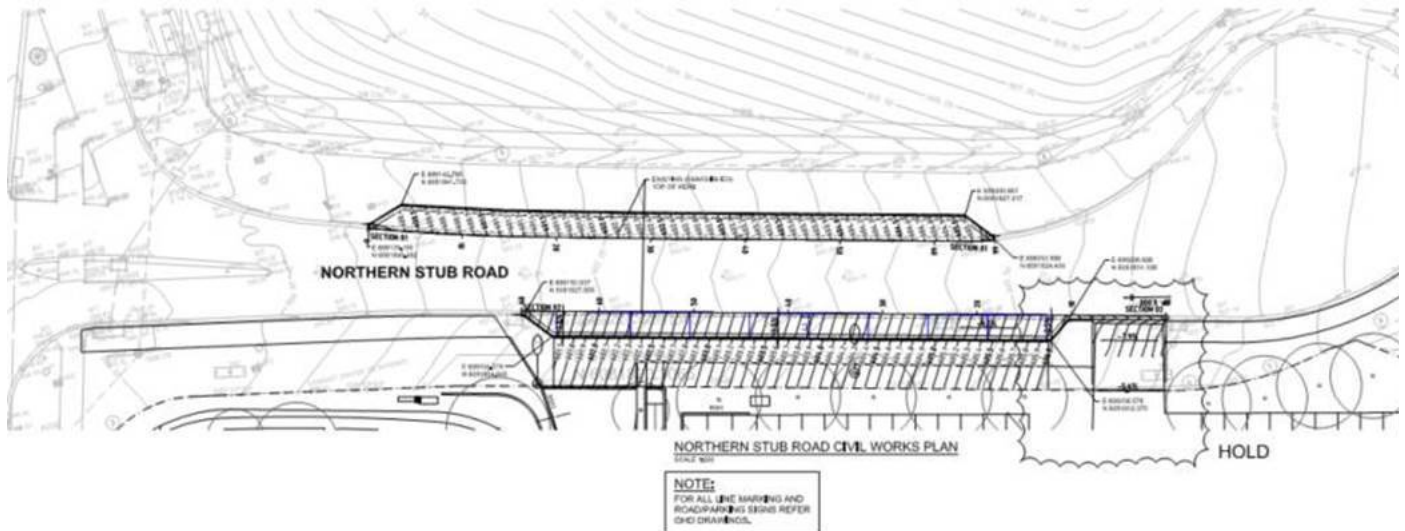
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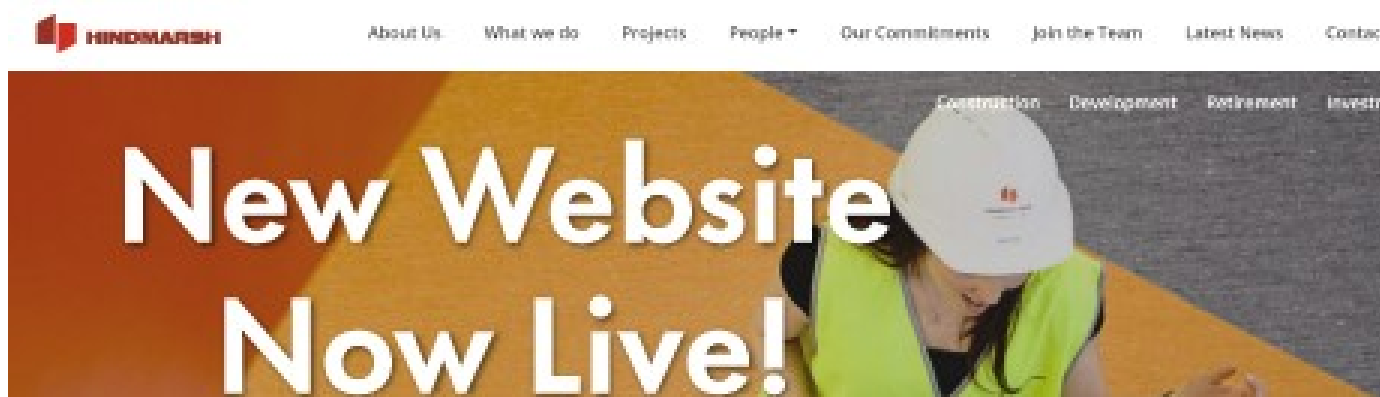
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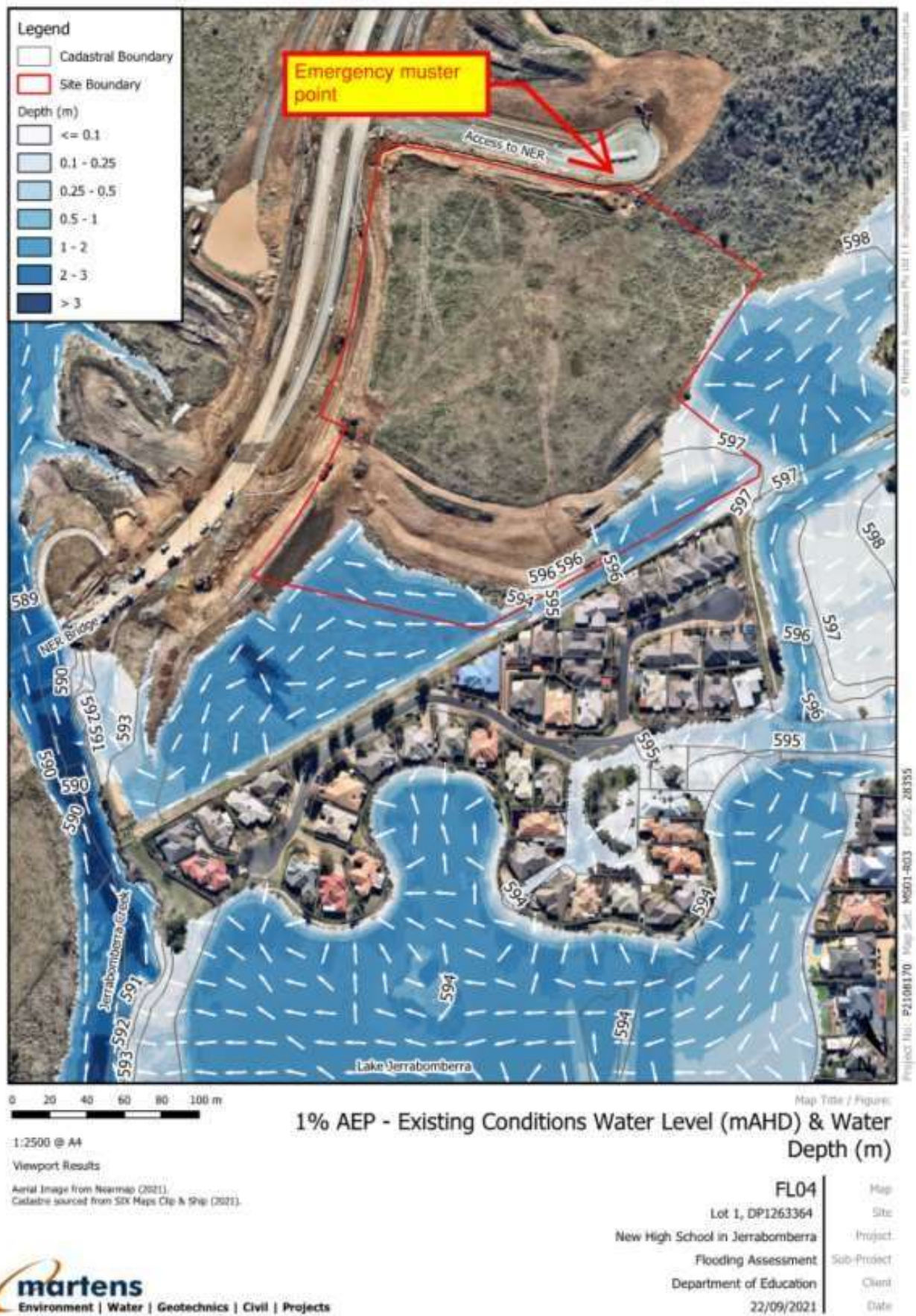
→ **The Power of Commitment**

APPENDIX F – Flood Emergency Response

See attached full sub-plan prepared by Martens.

Condition	Document / Sub-Plan Reference		Document / Sub-Plan Reference
B18	The Construction Flood Emergency Management Sub-Plan must address, but not be limited to, the following:		-
	(a)	be prepared by a suitably qualified and experienced person(s);	Page 3 Document authors
	(b)	address the provisions of the Floodplain Risk Management Guidelines (EHG);	Section 1.1 Page 6
	(c)	include details of:	
	(i)	the flood emergency responses for the construction phase of the development;	Section 3.4 – 3.7 Page 13 - 16
	(ii)	predicted flood levels;	Flood mapset page 28
	(iii)	flood warning time and flood notification;	Section 3.2 page 11 Section 3.7 page 16
	(iv)	assembly points and evacuation routes;	Section 6 Page 21
	(v)	evacuation and refuge protocols; and	Section 3.5 Page 15
	(vi)	awareness training for employees and contractors, and users/visitors.	Section 3.8 Page 17

- HCA induction for contractors includes an introduction to the emergency procedures specific to the Jerrabomberra High School site. This includes the location of the emergency muster point located in the newly constructed cul-de-sac near the gate 1 entry. This location as shown on the below diagram taken from the full appendixes report is free from flooding risk and was chosen with this in mind. Any flood or emergency evacuation requirements will be conveyed through the onsite nurse call system.
- Monitoring of weather is undertaken daily by the HCA site team to identify upcoming severe events and this information is communicated to subcontractors on site via the daily pre start and high risk construction notice board.



Department of Education



Construction Stage Flood Emergency Response Plan (FERP): New High School in Jerrabomberra

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P2108170JR02V03
August 2022

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Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to provide a Construction Stage Flood Emergency Response Plan (FERP) at the subject site in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Department of Education (hereafter known as the Client). That scope of works and services were defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

Martens & Associates Pty Ltd derived the data in this report primarily from a number of sources which included site inspections, correspondence regarding the proposal, examination of records in the public domain, interviews with individuals with information about the site or the project, and field explorations conducted on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further examination / exploration of the site and subsequent data analyses, together with a re-evaluation of the findings, observations and conclusions expressed in this report.


In preparing this report, Martens & Associates Pty Ltd may have relied upon and presumed accurate certain information (or absence thereof) relative to the site. Except as otherwise stated in the report, Martens & Associates Pty Ltd has not attempted to verify the accuracy of completeness of any such information (including for example survey data supplied by others).

The findings, observations and conclusions expressed by Martens & Associates Pty Ltd in this report are not, and should not be considered an opinion concerning the completeness and accuracy of information supplied by others. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings and conclusions are based solely upon site conditions, information and drawings supplied by the Client *etc.* in existence at the time of the investigation.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between Martens & Associates Pty Ltd and the Client. Martens & Associates Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

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All enquiries regarding this project are to be directed to the Project Manager.

Executive Summary

Martens & Associates Pty Ltd (MA) have prepared this construction stage flood emergency response plan (FERP) for a proposed State Significant Development at Jerrabomberra (the site) for a new high school.

Review of MA flood modelling results found that:

1. In both existing and proposed conditions site flooding is limited to the drainage line on the eastern and southern site boundaries, and the proposed fill pad and buildings are flood free in all events up and including the PMF.
2. The only part of the proposed development that is affected by flooding is the eastern site entry.
3. 1% AEP flood and PMF levels for the sports courts fill pad are 597.4 mAHD and 598.2 mAHD respectively. The fill pad is at least 2.8 m above the PMF level.
4. According to Queanbeyan DCP 2012, the flood planning level (FPL) is the 1% AEP flood level plus 0.5 metre freeboard. All proposed building finished floor levels are above the FPL and PMF levels.
5. Proposed conditions site flood hazards within the drainage line are H1-H5 in the 1% AEP event, and H1-H6 in the PMF event, based on ARR hazard definitions.

This site specific FERP has been prepared to ensure that the site can operate safely in the floodplain environment. Whilst the proposed fill pad and buildings are not directly affected by flooding, part of the site is inundated and likely experiences high flood hazards during the PMF event. In summary:

1. Subscription to a number of warning systems will significantly reduce the likelihood of persons on site during a major flood event.
2. The only high flood risk area on site is located in the depression along the south-eastern site boundary, and affects the proposed eastern entry. Access to these areas should be restricted on wet days with appropriate signage along the footpath to warn of the associated flood risk.
3. In the unlikely scenario that persons are on-site during an unanticipated major flood event, risk to persons is managed through a shelter-in-place strategy. Evacuation can also be carried out if advised by NSW SES.
4. With the implementation of the FERP procedures the risk to life is reduced to acceptable levels.

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1 Introduction

1.1 Overview

Martens & Associates Pty Ltd (MA) have prepared this construction stage flood emergency response plan (FERP) for a proposed State Significant Development at Jerrabomberra (the site) for a new high school. Refer to Attachment A for proposed site layout.

This report should be read in conjunction with the site-specific flood assessment report prepared by MA (September 2021, REF: P2108170JR01V03, hereafter referred to as 'MA flood assessment').

This report has been prepared, supervised and reviewed by suitably qualified flood engineers. Please refer to Attachment E for the company profile and CVs of persons who prepared this report.

Project Scope and Objectives

1.2

Project scope and objectives are:

1. Summarise local flood characteristics from the MA flood assessment report.
2. Prepare a flood emergency response plan (FERP) that assists the construction phase of the proposed new high school at Jerrabomberra.
3. Recommend engineering controls to improve safety in case of the site flooding.

Relevant Guidelines

1.3

This report and the MA flood assessment have been prepared in accordance with the following guidelines and policies:

1. Commonwealth of Australia (2019), *Australian Rainfall and Runoff – A Guide to Flood Estimation*.
2. NSW Department of Infrastructure, Planning and Natural Resources (2005), *Floodplain Development Manual*.
3. State of NSW and Office of Environment and Heritage, *Floodplain Risk Management Guide* (2019). Also known as *Floodplain Risk Management Guide EHG* (2019).

4. Queanbeyan-Palerang Regional Council (2013), *Queanbeyan Local Environmental Plan (West Jerrabomberra) (LEP)*.
5. Queanbeyan-Palerang Regional Council (2012), *Queanbeyan Development Control Plan (DCP)*.

1.4 Definitions

AEP	Annual exceedance probability: the probability of a flood event occurring within a year. A 1% AEP flood has a 1% chance of occurring in any given year.
ARI	Average recurrence interval: the average time between flood events occurring. A 1 in 100 year ARI flood occurs on average once every 100 years.
ARR	Australian Rainfall & Runoff
BOM	Bureau of Meteorology
Council	Queanbeyan-Palerang Regional Council (QPRC)
FERP	Flood emergency response plan
FPL	Flood planning level
MA	Martens & Associates Pty Ltd
PMF	Probable maximum flood: the most extreme flood event possible for a certain location, with an approximate ARI of 100,000 to 10,000,000 years.

2 Site Flooding Characteristics

Flood maps have been prepared for the site based on the MA flood assessment for the 1% annual exceedance probability (AEP) with and without climate change and probable maximum flood (PMF) events, and are reproduced in Attachment C.

Site flood conditions and modelling setup are discussed in further detail in the MA flood assessment. We note the following pertinent flood information:

1. In both existing and proposed conditions site flooding is limited to the drainage line on the eastern and southern site boundaries, and the proposed fill pad and buildings are flood free in all events up and including the PMF.
2. The only part of the proposed development that is affected by flooding is the eastern site entry (refer Attachment A).
3. 1% AEP flood and PMF levels for the sports courts fill pad are 597.4 mAHD and 598.2 mAHD respectively. The fill pad is at least 2.8 m above the PMF level.
4. According to Queanbeyan DCP 2012, the flood planning level (FPL) is the 1% AEP flood level plus 0.5 metre freeboard. All proposed building finished floor levels are above the FPL and PMF levels.
5. Proposed conditions site flood hazards within the drainage line are H1-H5 in the 1% AEP event, and H1-H6 in the PMF event, based on ARR hazard definitions (refer Figure 1).

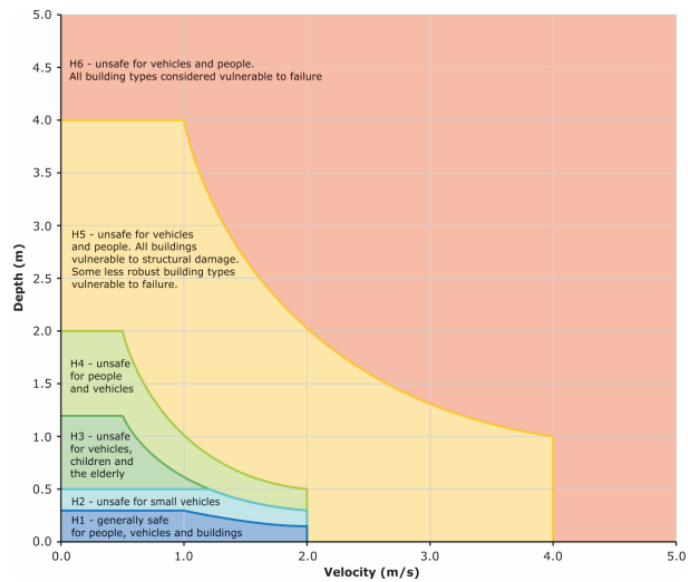


Figure 1: Flood Hazard Curves (Geoscience Australia, 2019).

3 Construction Stage Flood Emergency Response Plan

3.1 Overview

This FERP makes recommendations to ensure that in the event of a flood at the site during the construction stage, risk to personal safety and the environment is appropriately managed. It should be noted that it is highly unlikely that a major flood event will occur while the site is occupied during the construction stage, which we assume will take 2-5 years, in particular because it is typical for construction sites to cease works when heavy rainfall is anticipated.

The proposed development area is flood free in events up to and including the PMF, and therefore the primary response is to shelter-in-place on the fill pad inside any temporary structures, or within the school buildings when constructed. The secondary response would be to evacuate the site if ordered to do so by SES.

The high flood risk area is located in the depression along the south-eastern site boundary and affects the proposed eastern entry. Access to these areas should be restricted on wet days with appropriate signage along the footpath to warn of the associated flood risk.

3.2 Flood Warning Mechanisms

Monitoring weather forecasts and conditions near the site will help to manage the flood risk. A number of methods to monitor the risk of flooding are detailed in the following sections.

3.2.1 Bureau of Meteorology

The Bureau of Meteorology (BoM) generates a number of information sources useful for monitoring the weather forecast and conditions near the site:

1. Rainfall maps (<http://www.bom.gov.au/jsp/watl/rainfall/pme.jsp>) can be used to estimate the daily rainfall expected to occur over the next 24, 48, 72, and 96 hours as well as the total rainfall for the next 4 and 8 days.
2. Occasionally BoM issues Weather Warnings for NSW and ACT via their website (<http://www.bom.gov.au/nsw/warnings/> and <http://www.bom.gov.au/act/warnings/>). These warnings provide both general warnings across NSW and ACT, and warnings for more specific locations. There are two types of warnings that may indicate that flooding is imminent on the site: Severe

Weather Warnings and Severe Thunderstorm Warnings. Specifically, these warnings should be monitored for references to flash flooding in the Queanbeyan or Canberra areas. Warnings are generally issued with up to 60 minutes notice however for very large events (i.e. east coast lows), warnings may be issued with 24 hours notice or more.

3. The radar service operated by BoM shows current rainfall location and intensity for the Canberra area (<http://www.bom.gov.au/products/IDR404.loop.shtml>).

3.2.2 Other Warnings

Site management may also be alerted to flood warnings via the following mechanisms:

- The QPRC's 'Disaster Dashboards' warning system includes flood warnings (<https://queanbeyanpalerang.disasterdashboards.com/light/dashboard/overview>). Storm events that generate flood warnings can potentially cause flooding adjacent to the site.
- SES emergency alert telephone warning system.
- Media warnings (TV, radio, internet etc.).
- Police and / or SES door knocking.
- Weather apps (e.g. 'Early Warning Network').
- Visual observation of flood waters in the depression along the south-eastern site boundary.

If site management or occupants receive a flood warning via any of the mechanisms described above, they should undertake the shelter-in-place procedure immediately as described in Section 3.6, or evacuate the site if instructed to do so, as described in Section 3.5.

3.3 Roles and Responsibilities

3.3.1 Site Management

The managers of the site have the responsibility to implement and maintain the requirements of this FERP. Specifically, they are to ensure that:

- Flood related signage is maintained and legible at all times.

- A suitable number of flood kits are kept on the premises which are to include a first aid kit, portable radio and spare batteries, megaphone, torch and spare batteries, hi-vis vests.
- A Chief Flood Warden is appointed.
- The Chief Flood Warden and all other Flood Wardens are trained in the application of the FERP and the interpretation of rainfall and weather warning information published by BoM and QPRC.
- All staff are to be trained in their respective roles and responsibilities in relation to this FERP.
- The FERP is kept up to date.
- The site is cleaned and checked following a flood event.
- In the event of a flood at the site, all loose materials within the PMF extents are to be moved to higher ground in adequate time to do so safely.
- Sufficient financial resources are provided for the above.

Site management, at its discretion may delegate some of the above tasks to the Chief Flood Warden or others. Site Management will however remain legally responsible to ensure that these tasks are occurring.

3.3.2 Chief Flood Warden

The Chief Flood Warden will report to site management. It is anticipated that the site construction manager or similar will be the Chief Flood Warden. The Chief Flood Warden will:

- Familiarise themselves with the FERP procedures.
- Appoint Flood Wardens such that the Chief Flood Warden or a Flood Warden is always on duty.
- Organise training for themselves and the Flood Wardens in the ongoing maintenance of the flood warning system and implementation of the procedures detailed in this FERP.
- Monitor weather forecasts and flood warnings daily.
- Ensure any alerts received from the flood warning system, Early Warning Network app, BoM, or otherwise are issued directly to the Flood Warden via phone call or text message to all site occupants.

- Ensure the flood response kits are equipped with all required equipment.
- Keep hard copies of the FERP on site and accessible to all staff.
- Implement the procedures in this FERP in the event of a flood, including evacuating and closing the site if instructed to do so.
- Liaise with emergency services in the event of a flood.
- Review the FERP following flood events which trigger an emergency response.

3.3.3 Flood Wardens

The Flood Wardens will:

- Familiarise themselves with this FERP and the procedures within it.
- Follow the procedure within this FERP in the event of a flood.
- Follow the directions of the Chief Flood Warden.
- Fulfil the role of the Chief Flood Warden in their absence.
- Monitor weather forecasts and flood levels on site during operational hours in the absence of the Chief Flood Warden.

3.3.4 Occupants & Visitors

Occupants and visitors of the premises are to follow the directions of site management, the Chief and/or Flood Wardens and signage related to flooding during a flood event on site.

3.4 Flood Response Phases and Triggers

3.4.1 Overview

There are four flood response phases for flooding on the site:

- **Prepared** – will apply at all times when the other phases do not apply.
- **Alert** – this is triggered when heavy rainfall is forecast or a severe weather warning is issued indicating potential flooding at the site.

- **Respond** – this occurs when a flood response is triggered by one of several means indicating a flood is occurring or is likely to occur at the premises.
- **Recover** – this occurs following a flood response operation of any scale and lasts until operations have returned to normal, after which the 'Prepare' phase applies.

Refer to Attachment B for the Flood Actions Checklist which details the four phases, actions and responsibilities.

3.4.2 Prepared

During the prepared phase, weather forecasts and warnings are checked daily and the flood emergency response plan arrangements are maintained.

3.4.3 Alert

The alert phase is triggered by any of the following:

- Heavy rainfall forecast is (\geq 50 mm in the next 24 hours).
- BoM issues a severe weather warning for the Queanbeyan or Canberra area with a chance of flash flooding.

In the alert phase, the rain forecast, warnings and the eastern drainage channel are monitored every 2 hours until BoM advise that heavy rainfall has passed.

3.4.4 Respond

The respond phase is triggered by any of the following:

- SES issues an evacuation order which covers the site.
- The QPRC's 'Disaster Dashboards' warning system issues a flood alert for the area.
- Floodwaters are observed at the depression along the south-eastern boundary or the proposed eastern entry.

In the respond phase, the Chief flood warden or Flood Warden will:

- Keep the site closed if not yet open.
- Relocate all loose materials within the PMF extents to higher ground if safe to do so.

- Ensure that site occupants are notified to shelter-in-place on the fill pad inside any temporary structures, or on the Building A ground floor if constructed.
- Evacuate and lockdown the site if instructed by SES.
- Determine how many occupants are currently on site.
- Notify the SES and site management that there are occupants sheltering-in-place.

If site occupants have sheltered-in-place, once emergency services advise that the flood has receded, occupants will evacuate and the site will be locked down until cleaning and any repairs can be made.

3.4.5 Recover

The recovery phase occurs once the flood situation has ended. If flood waters reached the vicinity of the site, the site should be thoroughly cleaned and repaired if necessary.

In any flood event affecting the site, a debrief should be held with site management and all Flood Wardens, and the FERP should be reviewed.

3.5 Shelter-in-Place Details

The majority of the proposed development area, including the fill pad and ground floor level of the proposed buildings, are located above the PMF level, which enables safe shelter-in-place. Appropriate places to safely shelter-in-place are on the fill pad inside any temporary structures, or on the Building A ground floor if constructed, as shown in and Attachment A.

The shelter-in-place duration would be around 5 hours based on the critical duration PMF (refer to the MA flood assessment report). It is possible that longer duration PMF events will cause a longer isolation time, however we expect this will be less than 8 hours, which is considered an acceptable duration to shelter-in-place.

The following is to be provided to enable safe shelter-in-place:

1. PMF refuge is to be available on the ground floor of proposed Building A block or inside any temporary structures.
2. All Flood Wardens on duty will remain with people who shelter-in-place.

3. Emergency kit including torch with spare batteries, portable radio with spare batteries, first aid kit, high visibility vest, drinking water, non-slip foot ware and megaphone in public areas with proper signage.
4. Any persons sheltering-in-place will not leave the site until SES or the on-site Flood Wardens instructs to do so.

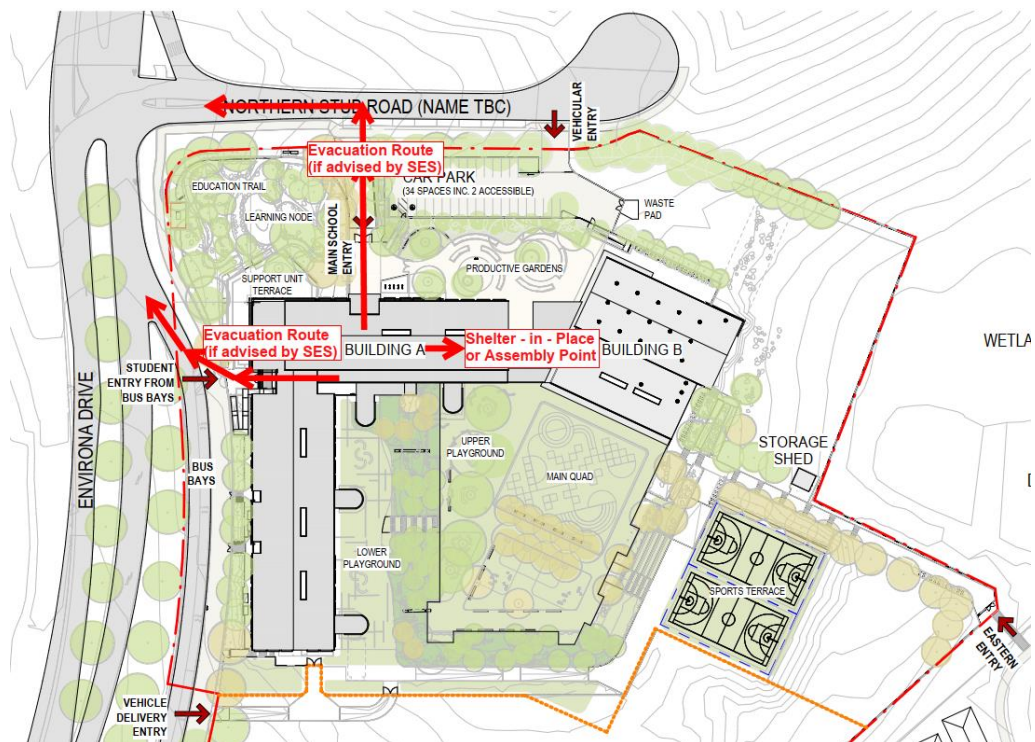


Figure 2: Adopted evacuation route (background architectural from TKD Architects).

3.6 Evacuation Details

The MA flood assessment demonstrates that Environs Drive immediately north of the site and Northern Stub Road is located outside the PMF extents. Therefore, the evacuation route is to travel north from the site via Northern Stub Road and Environs Drive. From there, evacuees can proceed to their own homes if advised by SES to be safe. The evacuation route can be accessed within minutes, and is shown in and Attachment A.

However, as the MA flood assessment does not extend further north, it is uncertain whether Environs Drive or Tomsitt Drive north of the site are affected by hazardous flood waters. Therefore, evacuation during a flood event should only be undertaken if advised by SES.

3.7 Flood Warning Times

Site flood model results indicate that the south eastern portion of the site is affected by high hazard flood waters (> H2) within 25 minutes and 20 minutes after the start of extreme rainfall in the 1% AEP and PMF events respectively. This is the worst-case timing, and smaller flood events would allow for longer lead times before hazardous flood waters affect the site.

The warning mechanisms described in Section 3.2, plus the additional 20-25 minutes between the start of extreme rainfall and site affectation with hazardous flood waters, will allow sufficient time for site occupants to follow this FERP and shelter-in-place or evacuate the site if advised by SES to do so.

3.8 Flood Awareness Training

Flood awareness training should be provided to employees, contractors, site users and visitors to understand site flood behaviour, which will help to prepare site occupants and reduce flooding risks. Training with respect to site flood hazards and emergency procedures should be provided for all staff as part of the site induction process, and yearly flood awareness training is to be provided for all staff.

3.9 Emergency Contact List

NSW SES can be contacted during a flood emergency if required on 132 500. In a life-threatening situation it is advised to call triple zero (000) for assistance from police, ambulance or the fire brigade.

The following are the key points that need to be followed after logging a call with NSW SES in case of an emergency:

1. Keeping phones nearby so that it is easy for SES to make contact after assistance request call.
2. Stay away from power lines and fallen trees during the storm period.
3. Follow directions given by SES staff.
4. SES attends to requests for assistance in a priority-based order. Therefore, it is necessary to outline the priority of the call.
5. Cancel the call request if help is not needed anymore stating the reference number given prior.

See Attachment D for full details of emergency contact list for SES and other emergency services during flooding.

4 Summary

This site specific FERP has been prepared to ensure that the site can operate safely in the floodplain environment. Whilst the proposed fill pad and buildings are not directly affected by flooding, part of the site is inundated and likely experiences high flood hazards during the PMF event. In summary:

5. Subscription to a number of warning systems will significantly reduce the likelihood of persons on site during a major flood event.
6. The only high flood risk area on site is located in the depression along the south-eastern site boundary, and affects the proposed eastern entry. Access to these areas should be restricted on wet days with appropriate signage along the footpath to warn of the associated flood risk.
7. In the unlikely scenario that persons are on-site during an unanticipated major flood event, risk to persons is managed through a shelter-in-place strategy. Evacuation can also be carried out if advised by NSW SES.
8. With the implementation of the FERP procedures the risk to life is reduced to acceptable levels.

5 References

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) (2019), *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia.

Martens and Associates (September 2021), *Flood Assessment: New High School in Jerrabomberra (P2108170JR01V03)*.

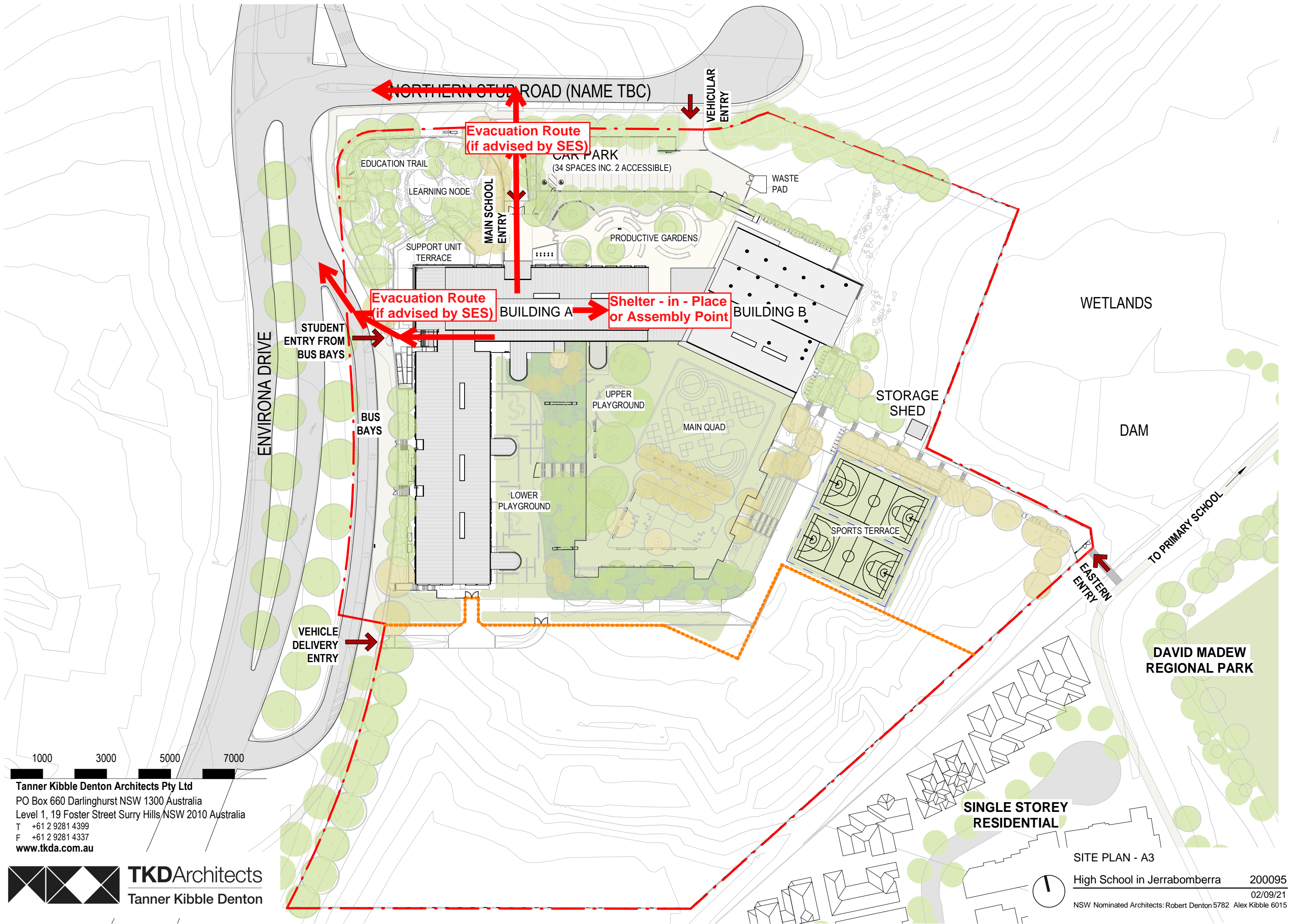
NSW Department of Infrastructure, Planning and Natural Resources (2005), *Floodplain Development Manual*.

Queanbeyan-Palerang Regional Council (2013), *Queanbeyan Local Environmental Plan (West Jerrabomberra) (LEP)*.

Queanbeyan-Palerang Regional Council (2012), *Queanbeyan Development Control Plan (DCP)*.

State of NSW and Office of Environment and Heritage, *Floodplain Risk Management Guide* (2019).

6 **Attachment A: Proposed Site Layout**



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SITE PLAN - A3

High School in Jerrabomberra

200095

02/09/21
NSW Nominated Architects: Robert Denton 5782 Alex Kibble 6015

7 **Attachment B: Flood Actions Checklist**

Prepared – Before A Flood			
Trigger	Action	Responsibility	Requirements
Always	Install and maintain legible signs at the eastern entry and adjacent footpath advising not to enter the premises if heavy rainfall is forecast.	Site Management	Informative signs
	Appoint a Chief Flood Warden and ensure that there is always someone in this role.	Site Management	FERP
	Subscribe Chief Flood Warden and the Flood Wardens to a warning alert service so that they receive BOM severe weather warnings direct to their mobile phone.	Site Management	FERP, subscription to service, mobile device, access to BOM website and QPRC Disaster Dashboards website
	Supply and maintain all of the equipment necessary to implement the FERP.	Site Management	Flood response kits including first aid kits, portable radio and megaphone, sufficient torches and hi-vis vests for all Flood Warden, spare batteries for all of the above
	Ensure the Chief Flood Warden and Flood Wardens are trained in the implementation of the FERP and interpretation of the rainfall, flood information and warning information published by BoM.	Site Management	FERP, training resources
	Keep this FERP up to date and review it following a flood emergency.	Site Management	FERP
	Appoint sufficient Flood Wardens such that there will be a Flood Warden on duty (not necessarily on site) at all times, and on site during opening hours.	Chief Flood Warden	FERP
	Appoint sufficient Flood Wardens for the implementation of the FERP in any event.	Chief Flood Warden	FERP
	Monitor BoM weather forecasts and flood warnings daily.	Chief or Flood Warden	Mobile or computer with internet connection
	A database of Site Management, Chief Flood Warden, and Warden mobile phone numbers will be maintained and kept up to date.	Site Management	Phone Numbers
	A list of emergency contacts will be maintained which will include emergency services and utility providers.	Chief Flood Warden	Emergency contact list
	This FERP and the list of contacts will be kept on site in electronic and hard copy.	Chief Flood Warden	Electronic and hard copy of FERP

Alert – When a Flood is Possible

Trigger	Action	Responsibility	Requirements
-BoM forecasts heavy rainfall (50 mm or more in the next 24 hours). - BoM issues a severe weather warning for the Queanbeyan or Canberra area with a chance of flash flooding.	Check BoM severe weather warnings for flash flooding in the Queanbeyan or Canberra area and BoM radar service every 2 hours while the site is open, and 2 hours before opening.	All Flood Wardens	Mobile or computer with internet connection
	Monitor the flood level visually at the eastern entrance and adjacent footpaths during rainfall events.	All Flood Wardens	FERP

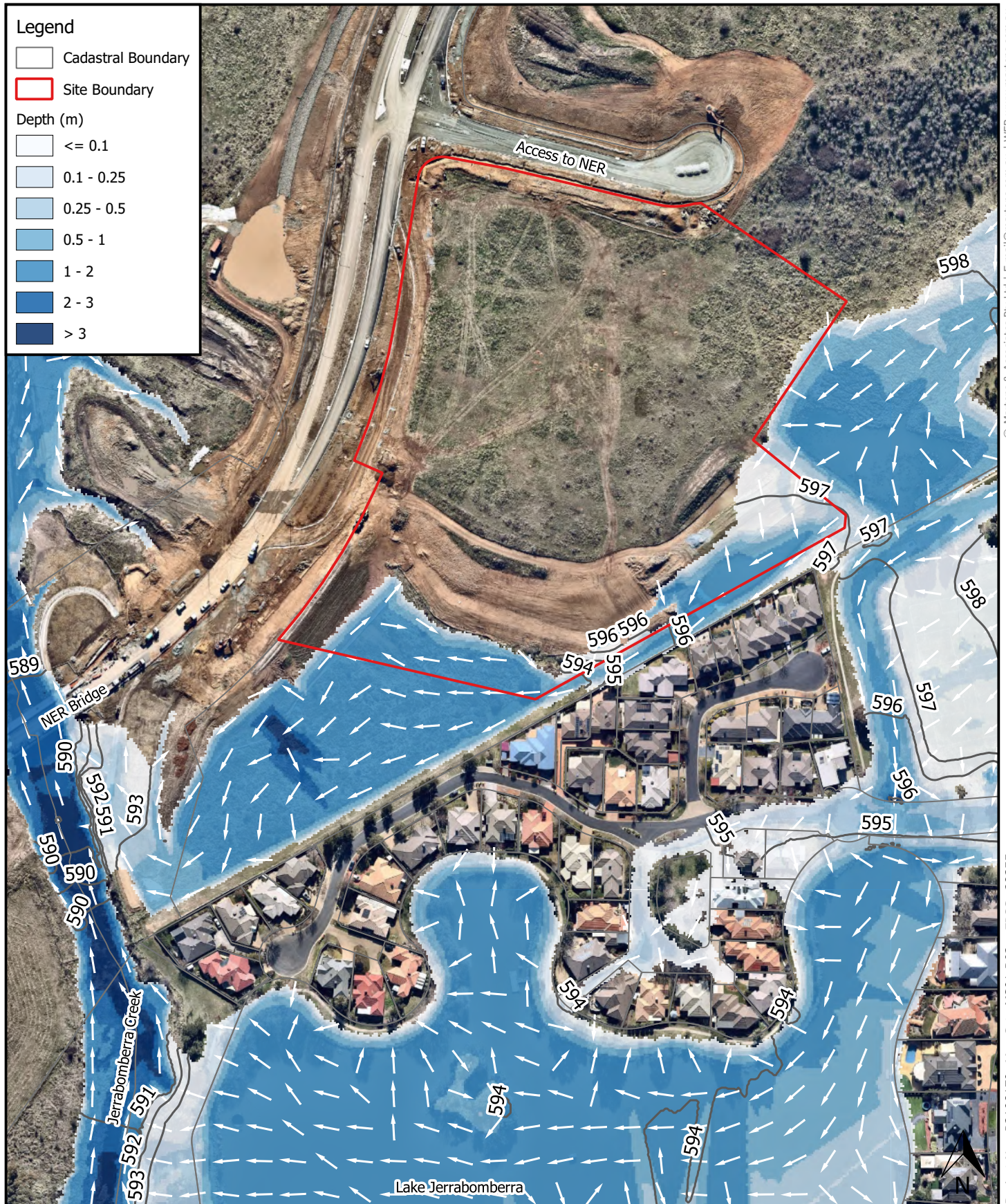
Respond – During a Flood Event

Trigger	Action	Responsibility	Requirements
Any of the following: - The QPRC's 'Disaster Dashboards' warning system issues a flood alert for the area. - Floodwaters are observed at the depression along the south-eastern boundary or the proposed eastern entry.	If the site is closed:		
	Visit the site, if safe to do so, ensure no one is on site, ensure gates are locked and place a sign on the gates advising premises are closed until further notice due to risk of flooding.	Chief Flood Warden or delegate	Informative signs
	Cancel any upcoming deliveries.	Chief Flood Warden or delegate	FERP
	If the site is open:		
	Order all site personnel to move to shelter-in-place on the fill pad inside any temporary structures, or on the Building A ground floor if constructed.	All Flood Wardens	Flood response kits including first aid kits, portable radio and megaphone, sufficient torches and hi-vis vests for all Flood Wardens, spare batteries for all of the above
	Relocate all loose materials within the PMF extents to higher ground if safe to do so.	Site Management	FERP
	Sweep site to ensure everyone is in the nominated assembly area.	Flood Wardens	Torches, megaphone, informative signs
	Explain why sheltering, the sheltering arrangements and the likely duration.	All Flood Wardens	This FERP, megaphone

	Contact site management and advise that there are people sheltering on site.	All Flood Wardens	Telephone and emergency contact list
	Contact the NSW SES (131 500) advise that there are people sheltering on site.	All Flood Wardens	Telephone and emergency contact list
Respond – During a Flood Event			
Trigger	Action	Responsibility	Requirements
Any of the following: - The NSW SES issues an evacuation order which covers the site.	Order an immediate site evacuation.	All Flood Wardens	Flood response kits including first aid kits, portable radio and megaphone, sufficient torches and hi-vis vests for all Flood Wardens, spare batteries for all of the above
	Advise site management that the site is being evacuated.	Chief Flood Warden, or Warden (whoever has called the evacuation)	Telephone, emergency contact list
	Encourage occupants to leave promptly but calmly to Environs Drive either via Main School entrance or entrance from Bus Bays.	Flood Wardens	Megaphone, torches, hi-vis vests
	Sweep the site to ensure everyone has left the site before locking the gates and placing a sign on the gates advising premises are closed until further notice due to risk of flooding.	Chief Flood Warden, or Warden in charge	Torches, megaphone, informative signs
	Cancel any upcoming deliveries, and/or interrupt any ongoing deliveries and instruct vehicles to leave site.	Chief Flood Warden or delegate	FERP
Any of the following: - NSW SES or BoM advises that flood peak has passed. - Flood water recedes or no visible sign of flood water along south eastern boundary	Check the condition of the evacuation route.	Chief Flood Warden	Torches, hi-vis vests
	If safe to do so, direct remaining people on site to evacuate via roads which are clear of flooding.	Chief Flood Warden	Megaphone
	If not safe to do so, contact NSW SES (131 500) and await further instructions.	Chief Flood Warden	Telephone and emergency contact list
	Advise site management of status.	Chief Flood Warden	Telephone and emergency contact list

Recover – After a Flood

Trigger	Action	Responsibility	Requirements
All clear given by NSW SES, BoM, QPRC 'Disaster Dashboard' or Chief Flood Warden	No one will be allowed to return to the site while flooding is still occurring or has recently occurred.	Site Management and Chief Flood Warden	Informative signs
	Site access roads will need to be cleared of debris before the site is accessed. This should only be undertaken under the direction of the NSW SES or Queanbeyan-Palerang Regional Council, due to risks from electricity, gas, debris and venomous animals.	Site Management and Chief Flood Warden	Telephone and emergency contact list
	Normal site usage should be able to resume once the site has been checked to ensure that utilities are restored and no structural damage has occurred. These checks need to be undertaken by professionals qualified to do so. Although landscaping areas would need cleaning that would not prevent use of the premises if the building is in working order.	Site Management and Chief Flood Warden	Contact details for structural engineer, electricians and plumbers
	Before any cleaning or repair work is undertaken on site, a hazard assessment will be undertaken, safe work methods statements (SWMS) prepared and personal protective equipment supplied consistent with the known hazards which can be associated with floods: - Slips, trips and falls - Sharp debris - Venomous animals - Contaminated water and sediments	Site Management and Chief Flood Warden	Correct SWMS and PPE
	A debrief will be held and may involve emergency services. The flood event and response, including the use of this FERP and any emergency procedures will be reviewed.	Site Management, Chief Warden and other wardens who were involved in response	FERP, a log of actions taken during the event. This check list can be used for that purpose with times and notes recorded against each action.
	Changes may be made to the FERP and the requirements for future emergency response should the review identify any improvements which may be made.	Site Management and Chief Flood Warden	FERP



0 20 40 60 80 100 m

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).

1% AEP - Existing Conditions Water Level (mAHD) & Water Depth (m)

Map Title / Figure:

FL04

Lot 1, DP1263364

New High School in Jerrabomberra

Flooding Assessment

Department of Education

22/09/2021

Map

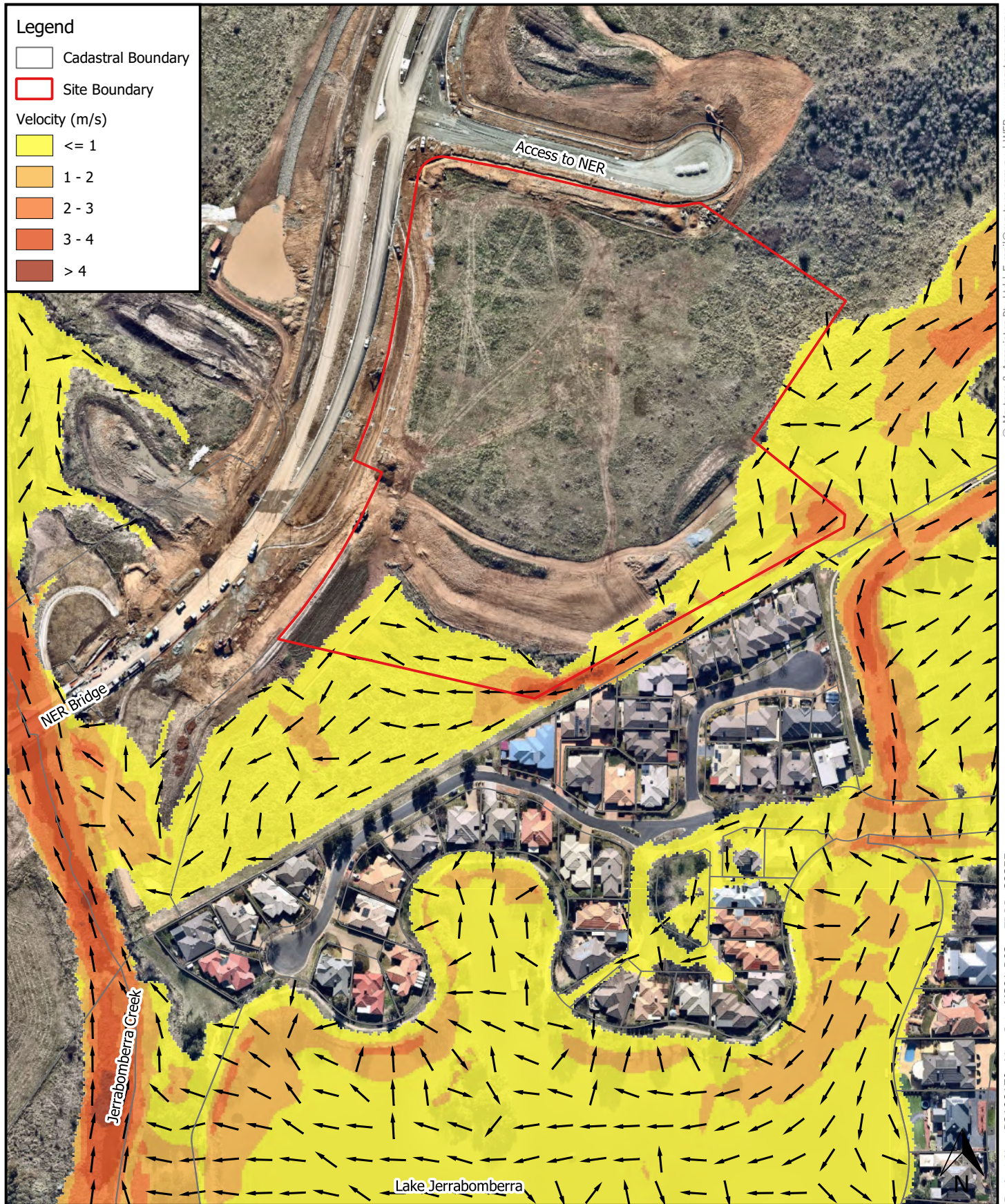
Site

Project

Sub-Project

Client

Date

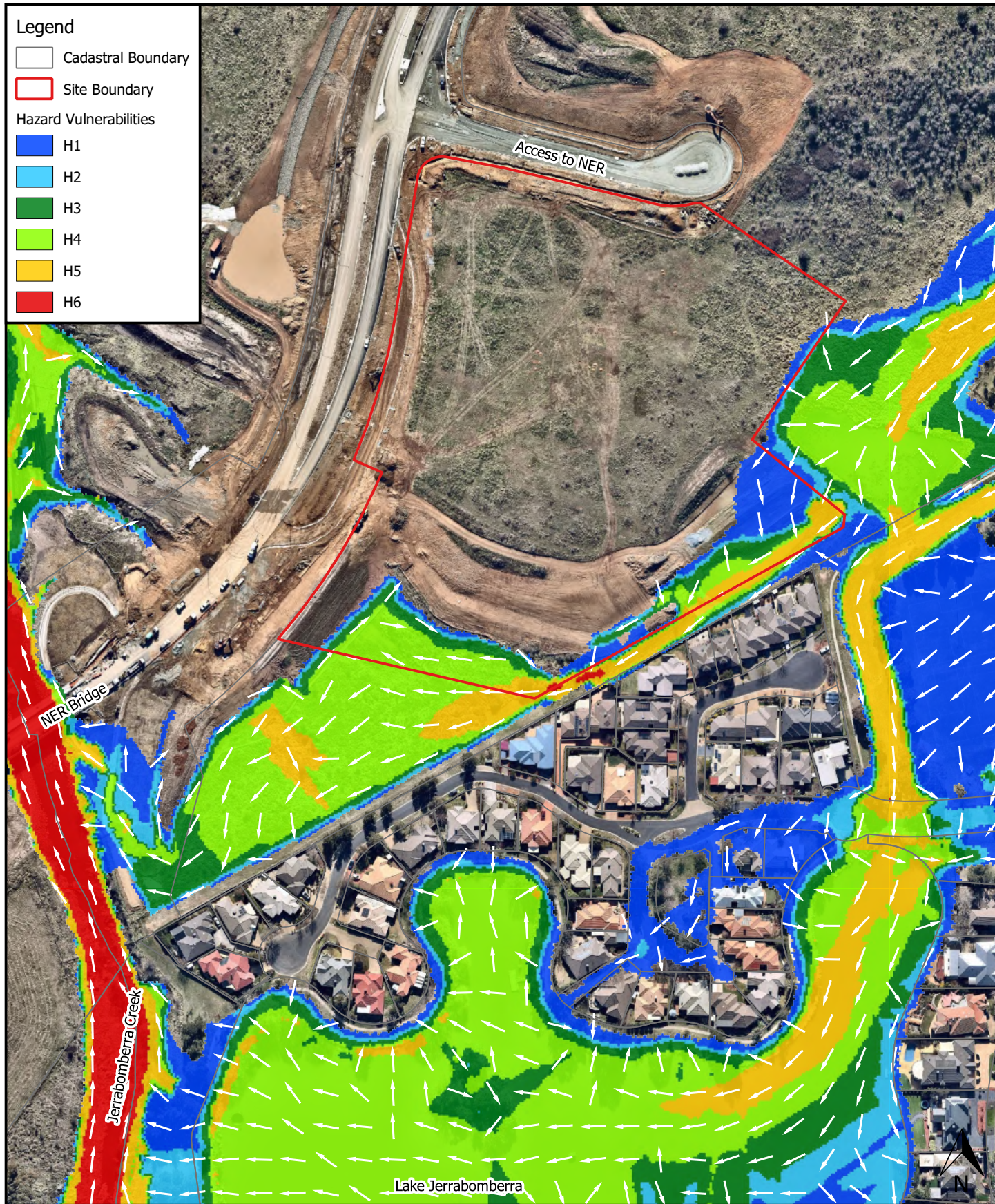


1% AEP - Existing Conditions Water Velocity (m/s)

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).



0 20 40 60 80 100 m

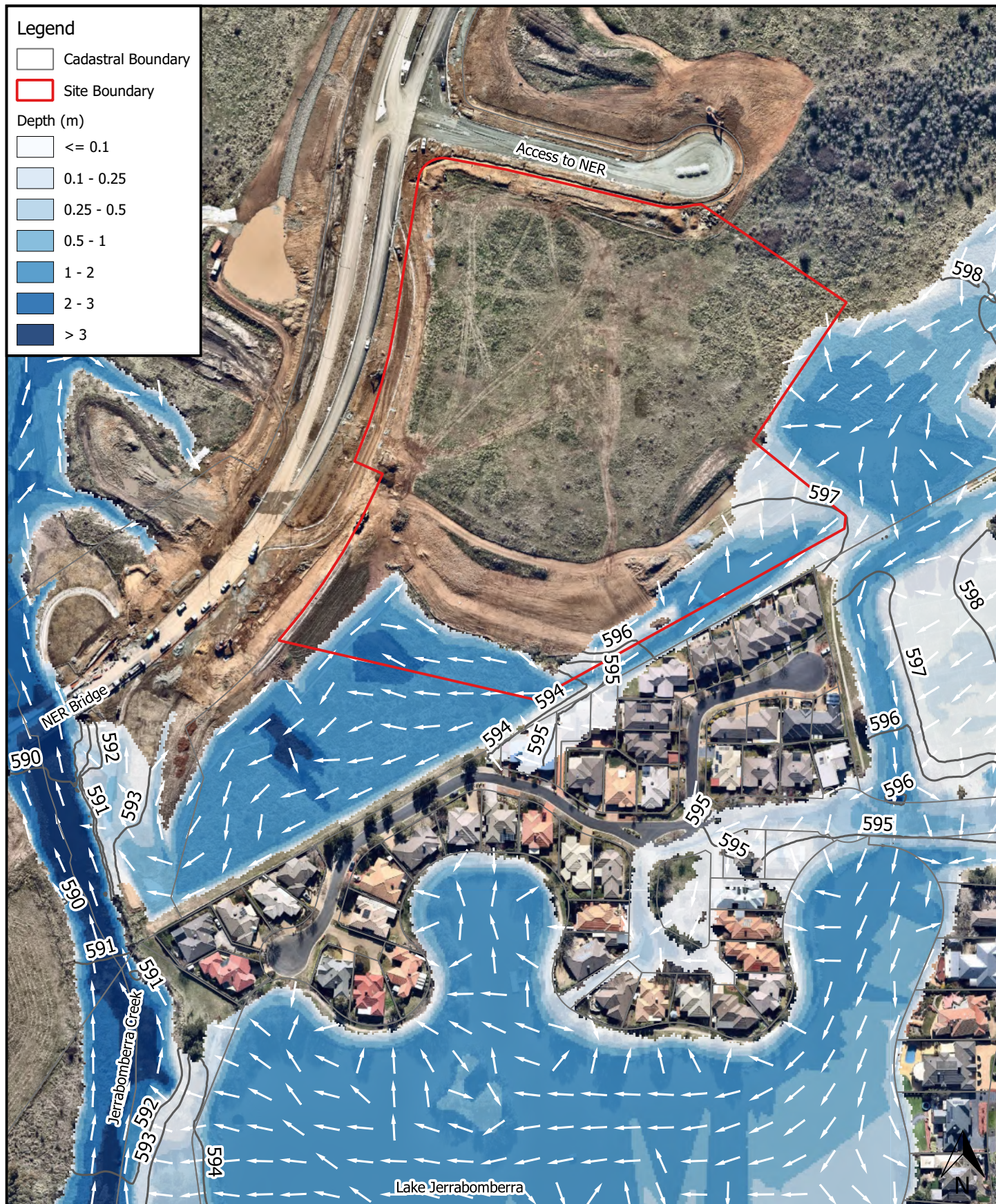
Map Title / Figure:

1% AEP - Existing Conditions Flood Hazard Vulnerabilities

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).
Flood Hazard Vulnerabilities based on ARR 2019 Combined flood hazard curves.



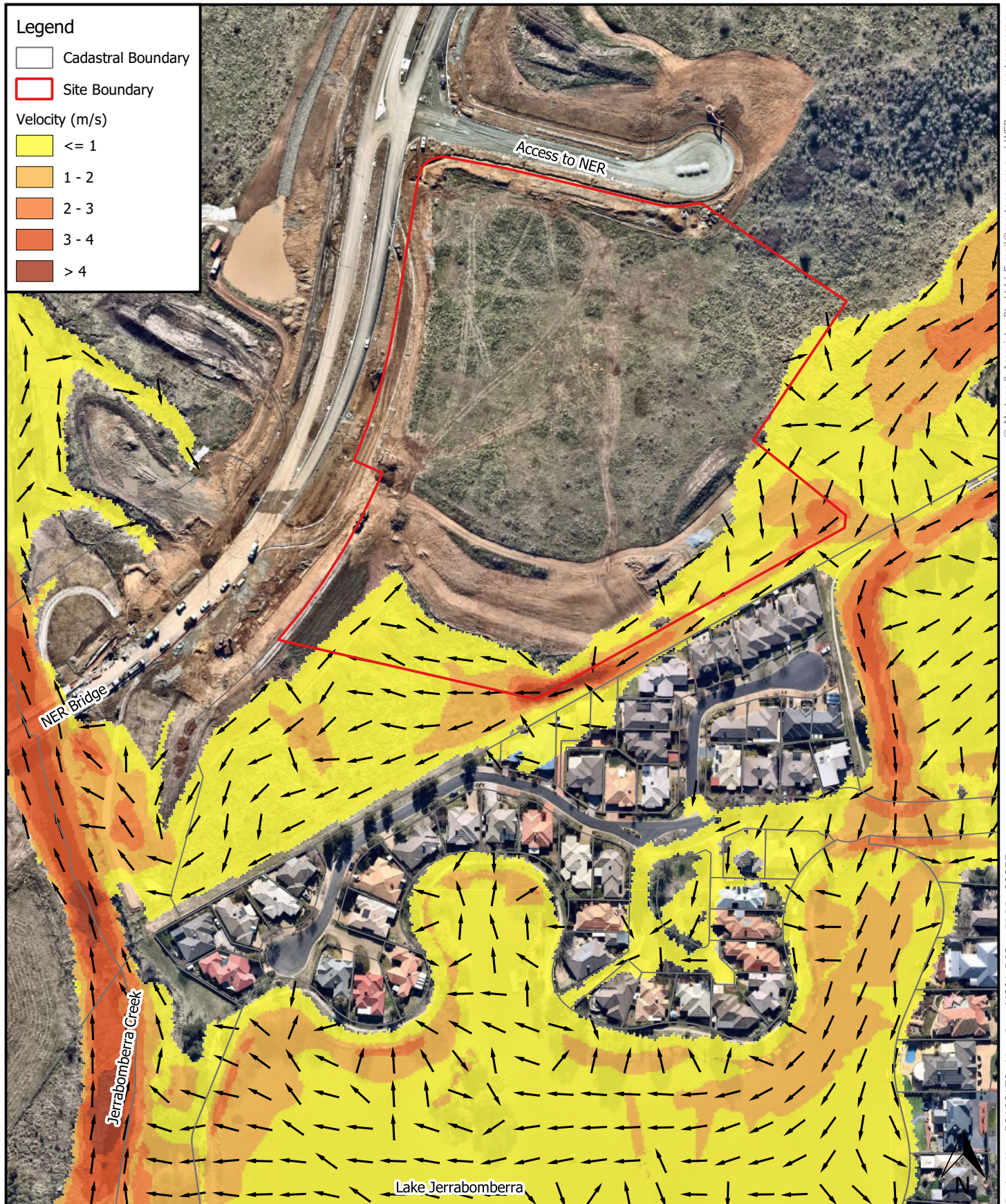
0 20 40 60 80 100 m

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).

1% AEP with Climate Change - Existing Conditions Water Level (mAHD) & Water Depth (m)

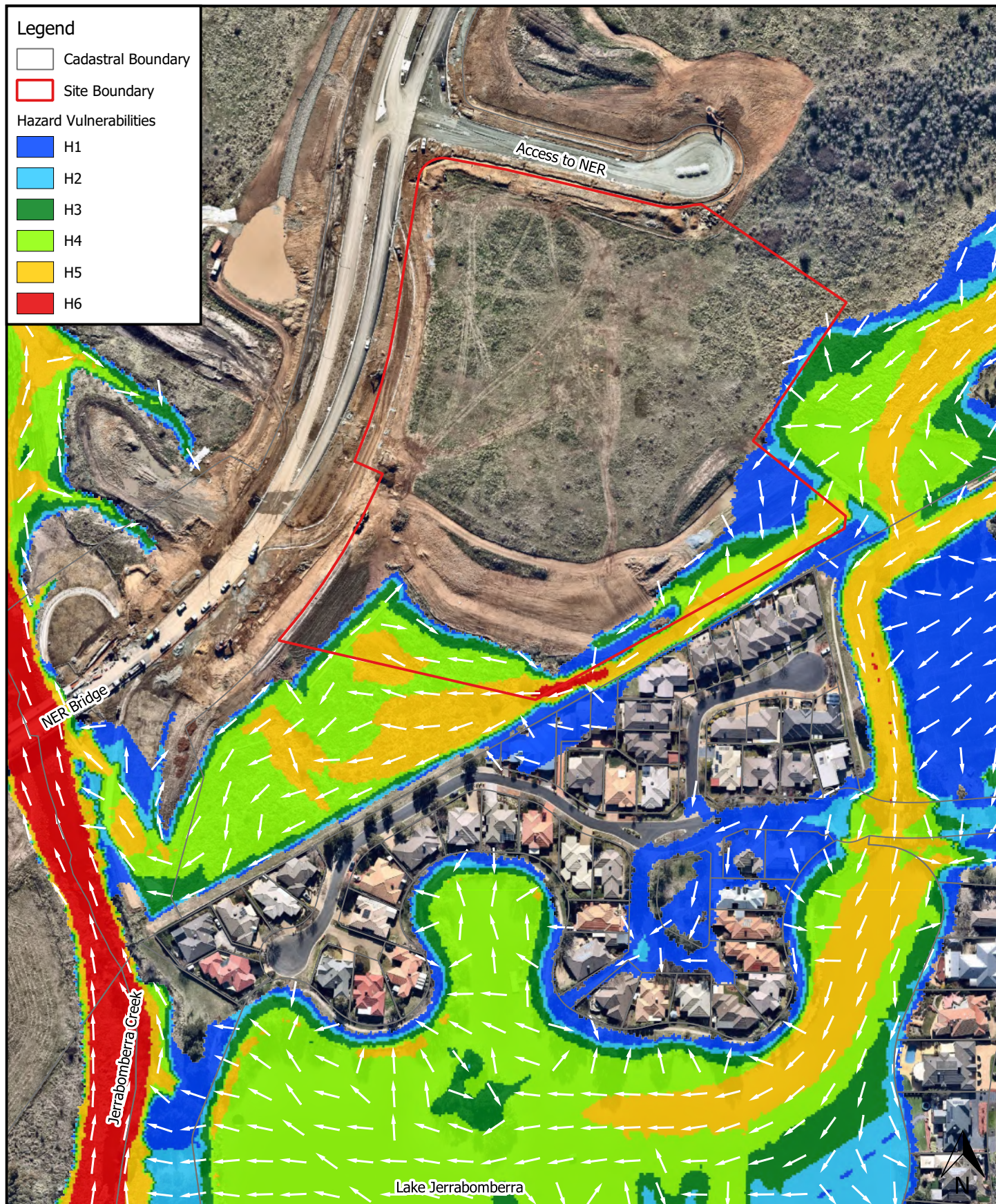


1% AEP with Climate Change - Existing Conditions Water Velocity (m/s)

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).



0 20 40 60 80 100 m

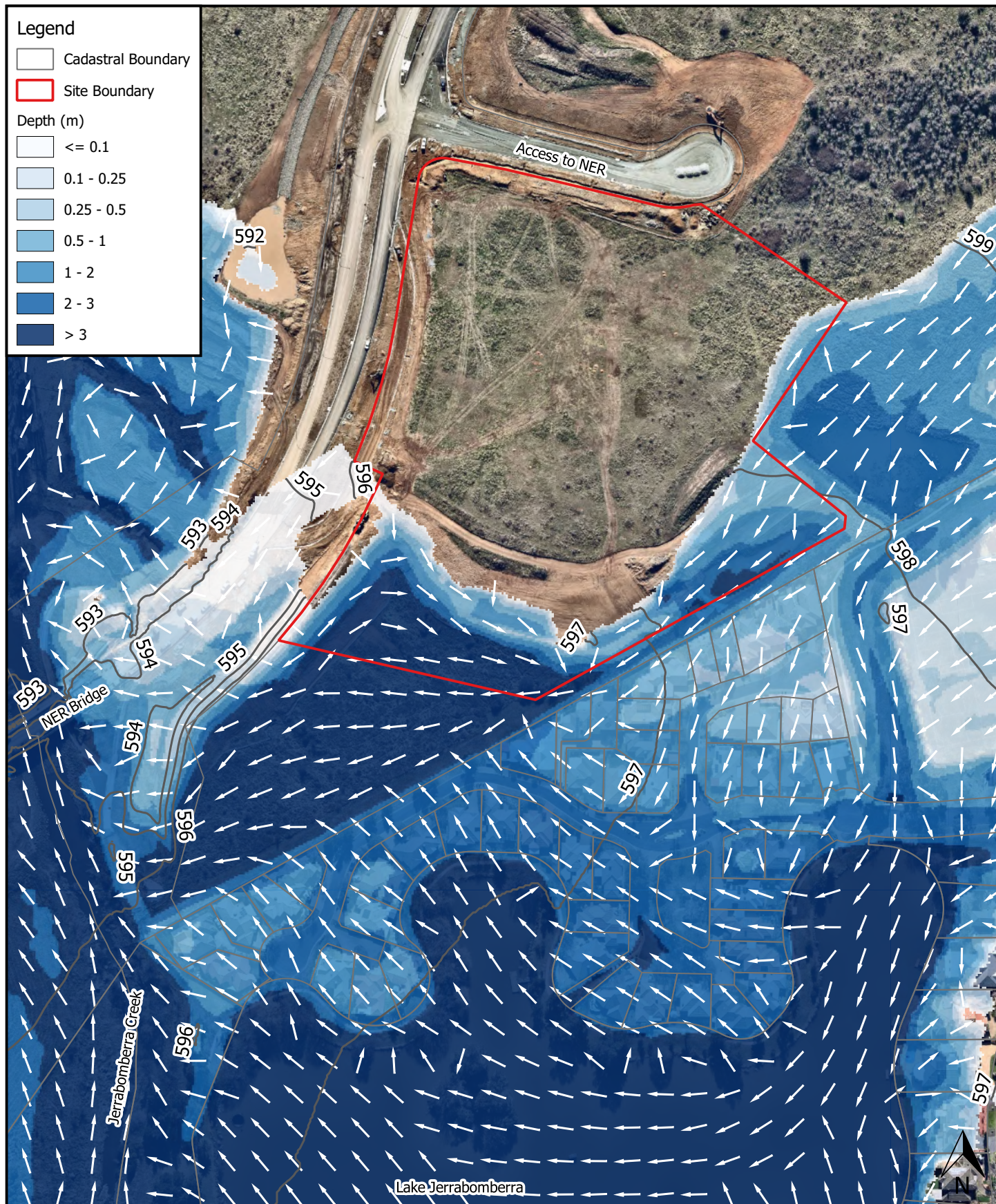
Map Title / Figure:

1% AEP with Climate Change - Existing Conditions Flood Hazard Vulnerabilities

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).
Flood Hazard Vulnerabilities based on ARR 2019 Combined flood hazard curves.

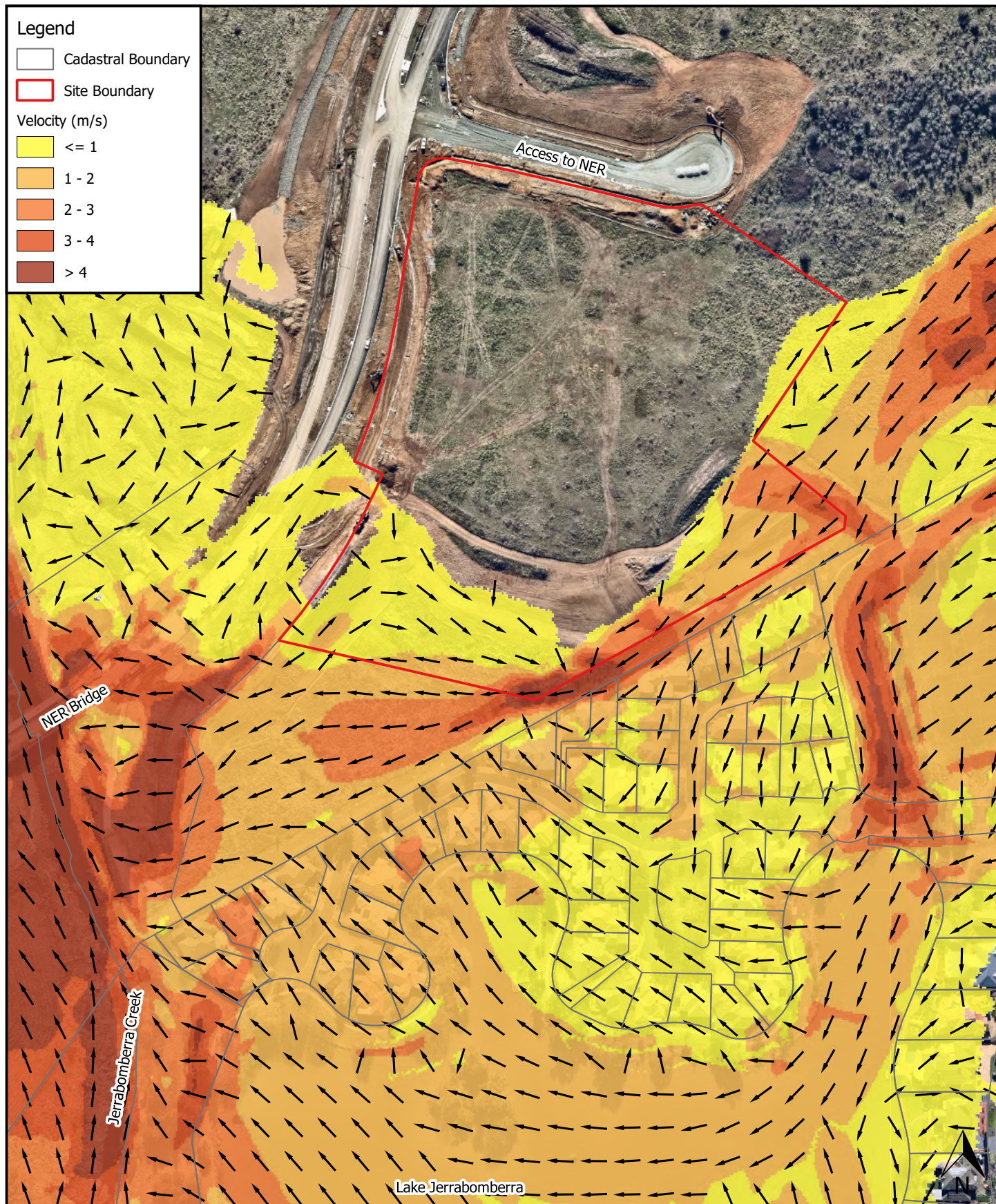


PMF - Existing Conditions Water Level (mAHD) & Water Depth (m)

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).

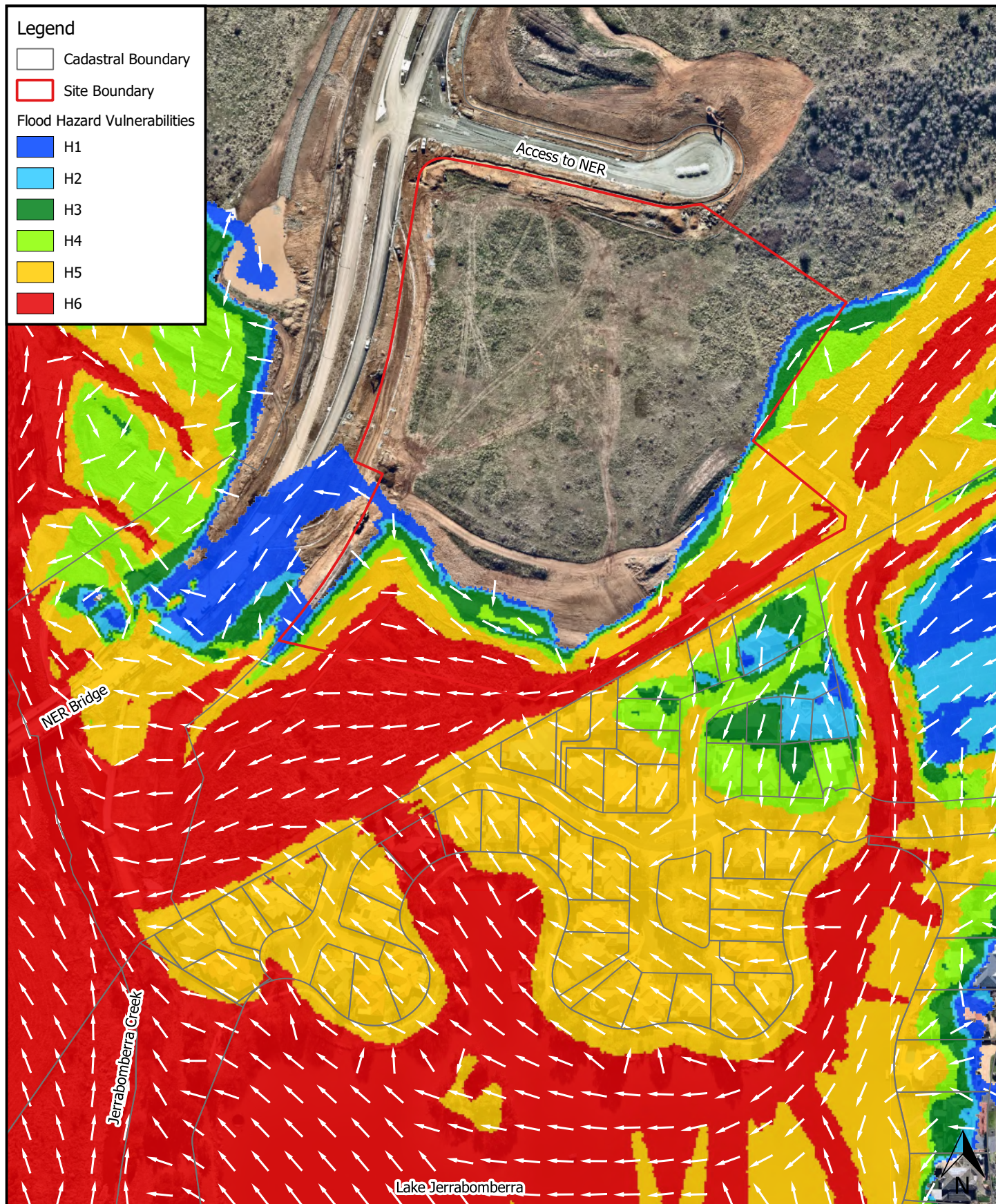


Map Title / Figure:
PMF - Existing Conditions Water Velocity (m/s)

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).

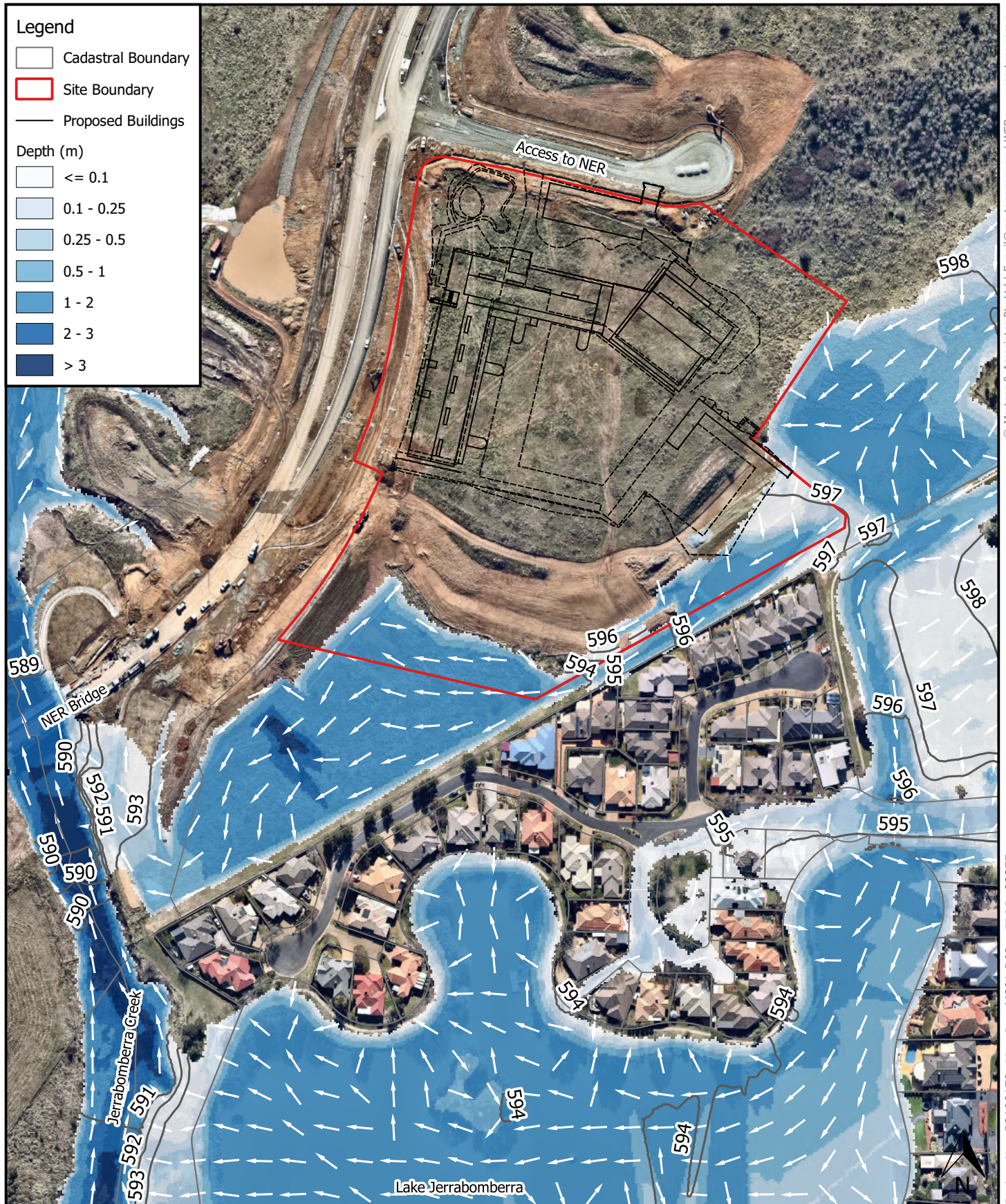


PMF - Existing Conditions Flood Hazard Vulnerabilities

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
 Cadastre sourced from SIX Maps Clip & Ship (2021).
 Flood Hazard Vulnerabilities based on ARR 2019 Combined flood hazard curves.



0 20 40 60 80 100 m

1:2500 @ A4

Viewport Results

Aerial Image from Nearmap (2021).
Cadastre sourced from SIX Maps Clip & Ship (2021).

1% AEP - Developed Conditions Water Level (mAHD) & Water Depth (m)

FL13
Lot 1, DP1263364
New High School in Jerrabomberra
Flooding Assessment
Department of Education
22/09/2021

Map
Site
Project
Sub-Project
Client
Date