Upgrade to Austral Public School

Flood Impact Assessment (FIA)

Prepared for: The NSW Department of Education

Date: 17th January 2025

Prepared by: Jacob Lee

Ref: 304000720

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Revision

Site Address:	205 Edmondson Avenue, Austral, NSW 2179
Real Property Description:	Lot 1 DP 398105 Lot 1 DP 398106 Lot 1 DP 509613 Lot 1 DP 512119 Lot 2 DP 509613 Lot 865 DP2475
Proposed Development:	Upgrade to Austral Public School
Proponent	The Department of Education (DoE) is the proponent and determining authority pursuant to Section 5.1 of the Environmental Planning and Assessment Act 1979 (the Act).
Authority Reference #:	N/A
Stantec Reference:	304000720-CI-RE-FIA-001

Jackson Bramley BE (Civil) MIEAust NER

Principal, Civil Team Lead

For and on behalf of
Stantec Australia Pty Ltd

Revision	Date	Comment	Prepared By	Approved By
01	19.04.24	Draft Issue for Approval	LPT	JMB
02	30.04.24	Issue for Approval	LPT	JMB
03	13.12.24	Draft Issue for REF	JML	JMB
04	17.01.25	Issue for REF	JML	JMB

Contents

Acronyms

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AIDR	Australian Institute of Disaster Resilience
ARI	Average Recurrence Interval
ARR	Australian Rainfall and Runoff
BoM	Bureau of Meteorology
DA	Development Application
DCP	Development Control Plan
DN	Diameter Nominal (mm)
EY	Exceedances per Year
FEMP	Flood Emergency Management Plan
FFL	Finished Floor Level
FIA	Flood Impact Assessment
FPL	Flood Planning Level
IFD	Intensity-Frequency-Duration
ILU	Independent Living Units
L/s	Litres per second
LGA	Local Government Area
LEP	Local Environmental Plan
m/s	Metres per second
PMF	Probable Maximum Flood
RCP	Representative Concentration Pathways
RL	Relative Level
SES	State Emergency Service

1. Introduction

This flood impact assessment (FIA) has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the upgrade of Austral Public School (APS) (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

The proposed activity is for the upgrades to the existing Austral Public School (APS) at 205 Edmondson Avenue, Austral, NSW, 2179 (the site).

The purpose of this report is to assess potential impact of the proposed works on matters of flood behaviour and risk.

1.1 Site description

APS is located at 205 Edmondson Avenue, Austral on the south-eastern corner of the intersection between Edmondson Avenue and Tenth Avenue. The site has an area of 2.986 ha and comprises of 6 allotments, legally described as:

- Lot 1 DP 398105
- Lot 1 DP 398106
- Lot 1 DP 509613
- Lot 1 DP 512119
- Lot 2 DP 509613
- Lot 865 DP2475

The site currently comprises an existing co-educational primary (K-6) public school with:

- 8 permanent buildings;
- 14 demountable structures;
- interconnected paths;
- covered walkways;
- play areas: and
- at-grade parking.

The Austral Community Pre-school is also located within the site.

The existing buildings are clustered in the northern part of the site, ranging between 1 to 2 storeys in height. There is a sports oval in the south-eastern portion of the site, and a densely vegetated informal play area located in the south-western portion of the site.

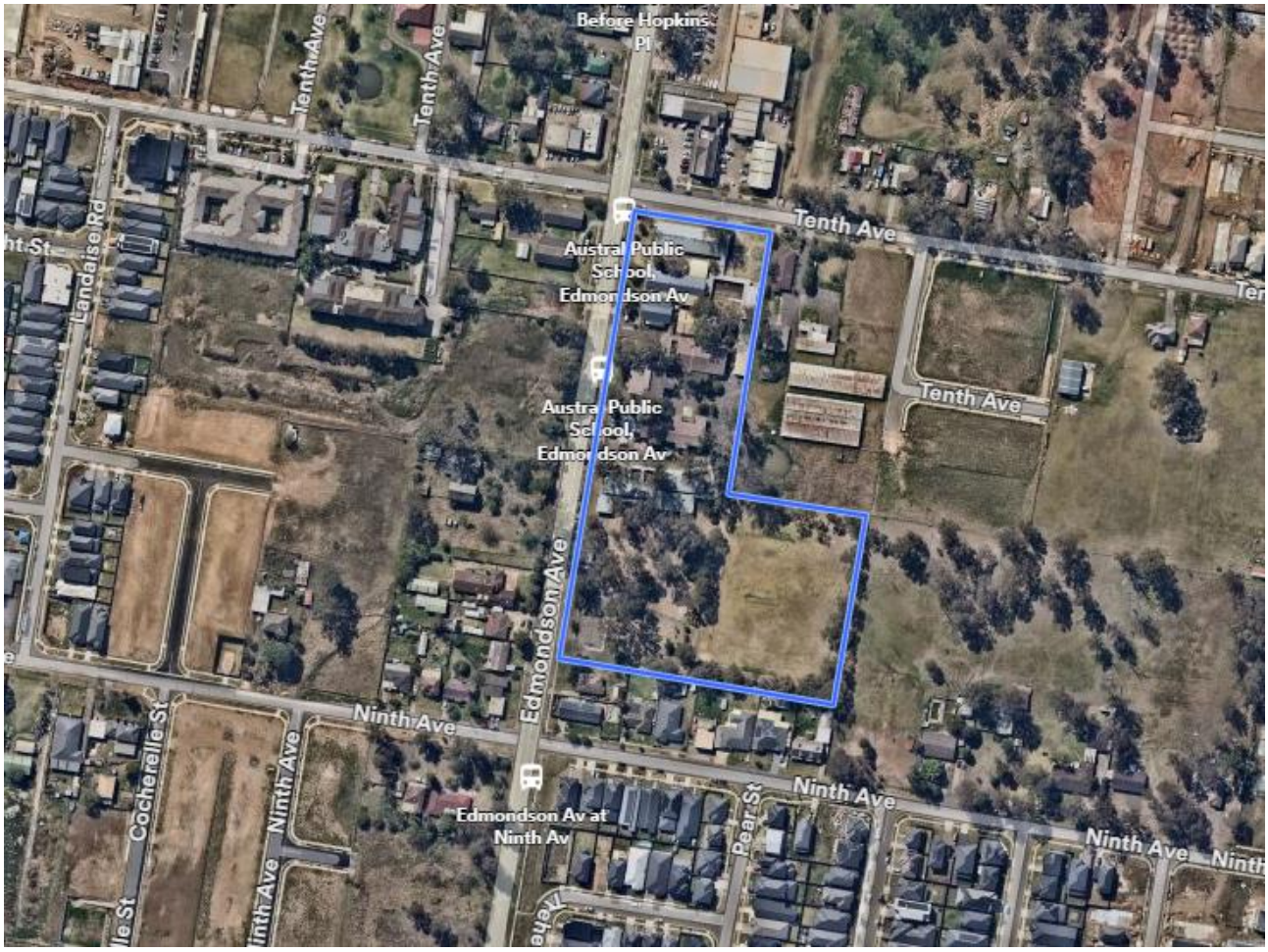

Figure 1-1 Aerial image of site (source: NearMap, taken 7 Sept 2023)

2. Proposed activity description

The proposed activity involves alterations and additions to the existing APS, including the following:

- Demolition of existing structures and removal of trees, as well as other site preparation works;
- The erection of a new 3-storey building comprising teaching spaces that includes 20 permanent teaching spaces and 3 support teaching spaces;
- Conversion of the first floor of Building B from a Library to staff annex (staff room) and minor modifications on the ground floor;
- Refurbishment and change of school function of Building I from classrooms to a Library;
- At-grade parking (57 new spaces, including 1 accessible space);
- New driveway and access gate from Edmondson Road;
- Erection of a substation within the site on the northern boundary;
- Upgrade of the sports field;
- Internal pathways, fencing, utility upgrades and associated works; and

- Off-site public domain improvements including retention and upgrading of the Kiss & Drop area and a temporary pedestrian road crossing on Tenth Avenue.

The intent of the activity is to allow for upgrades to APS that will provide a CORE 35 primary school compliant with the EFSG. The works will increase the capacity of the school from 681 students and 40 FTE teachers to 734 students and 64 FTE teachers, respectively. Furthermore, provision within the expanded 734 student capacity will be made for the creation of 30 support class students places.

Figure 2-1 below shows the scope of works for the proposed activity.

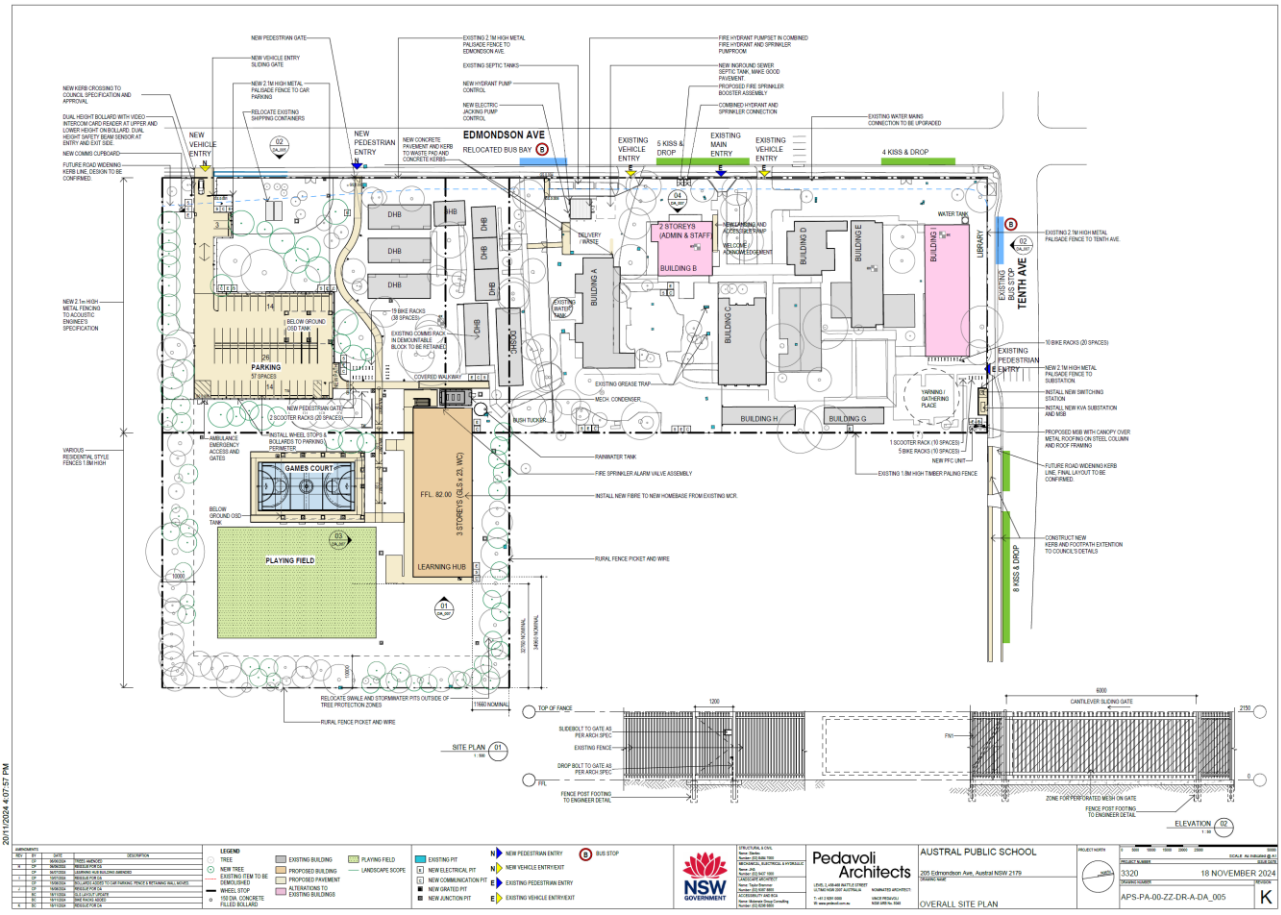

Figure 2-1 Proposed Site Plan (Source: Pedavoli Architects, Overall Site Plan (Rev K)

3. Method

Liverpool City Council have provided the Liverpool Overland Flow Path Study for Rural Catchments- Austral and Kemps Creep TUFLOW Model, undertaken by Jacobs in 2019, to confirm the existing flood conditions across the site.

Stantec Australia have run the flood model, prepared by Jacobs, to ensure the results are in agreeance with those in the Overland Flow Path Study, which has been confirmed by way of running the existing scenario for the 1% AEP and Probable Maximum Flood (PMF) storm events. A cell size of 2m has been adopted for the flood model in line with the Jacobs model.

LiDAR data was used in the flood model. Stantec does not take responsibility for the accuracy and reliability of the LiDAR data. Stantec plan to re-run the existing scenario flood model using site-specific survey data to ensure a more accurate representation of flood levels and behaviour in and around the proposed development.

4. Flood related requirements

4.1 Development control plan

With reference to the Liverpool Development Control Plan 2008 General Controls for all development, Section 9 Flooding Risk, the following flood-related development controls apply for the proposed development:

Flood Risk Category	Land Use Risk Category	Planning Controls							
		Floor Level	Building Components	Structural Soundness	Flood Effects	Car Parking & Driveway Access	Evacuation	Management & Design	Fencing
Local Overland Flood Risk	Critical Uses & Facilities	13	4	5	3	4, 7, 8	7	3, 5	2, 4
	Sensitive Uses & Facilities	13	4	5	3	4, 7, 8	7	3, 5	2, 4
	Subdivision				3		5	1	2, 4
	Residential	3, 5	1	6	3	4, 7, 8	5		2, 4
	Commercial & Industrial	10	1	6	3	4, 7, 8	5	3, 5	2, 4
	Tourist Related Development	3, 5	1	6	3	4, 7, 8	5	3, 5	2, 4
	Recreation & Non-Urban	3, 5	1	6	3	4, 7, 8	5	3, 5	2, 4
	Concessional Development	14	1	6	3	4, 7, 8	5	3, 5	2, 4

Key:

	Not Relevant
1, 2, 3	Control reference number relevant to the particular planning consideration.

Figure 4-1 Local Overland Flooding (Liverpool Council DCP, 2008)

The proposed development is categorised as 'Sensitive Uses & Facilities', therefore, the relevant planning control for floor level is as follows:

- Floor levels to be no lower than the PMF level unless justified by a site-specific assessment.

The current floor level is set at FFL 82.00m, which sits above the PMF level, and therefore meets Liverpool Council's specific flood planning controls. Considering the flood modelling undertaken by Stantec Australia, it is evident that the proposed building is not adversely affected by flooding during the 1% AEP storm event or the PMF storm event, therefore, the set FFL level of 82.00m is considered suitable.

4.2 Consultation

The site is located on flood-liable land, and therefore written notice to Liverpool Council and the State Emergency Service (SES) must be undertaken prior to works being approved as per clause 2.12 and 2.13 and 3.10 of the T&I SEPP. The relevant clauses of the T&I SEPP are as follows:

> ***2.12 Consultation with councils—development with impacts on flood liable land***
>
> *(1) (Repealed)*
>
> *(2) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without consent and that will change flood patterns other than to a minor extent unless the authority or person has—*
>
> *(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and*

(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.

2.13 Consultation with State Emergency Service—development with impacts on flood liable land

(1) A public authority, or a person acting on behalf of a public authority, must not carry out development on flood liable land that may be carried out without development consent under a relevant provision unless the authority or person has—

(a) given written notice of the intention to carry out the development (together with a scope of works) to the State Emergency Service, and

(b) taken into consideration any response to the notice that is received from the State Emergency Service within 21 days after the notice is given.

3.10 Notification of councils and State Emergency Service—development on flood liable land

(1) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without development consent (other than demolition of buildings or structures, or internal works to existing buildings) unless the authority or person has—

(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located and the State Emergency Service, and

(b) taken into consideration any responses to the notice that are received from the council and State Emergency Service within 21 days after the notice is given.

(2) In this section—

flood liable land has the same meaning as in the Flood Risk Management Manual.

Consultation with Liverpool Council and the State Emergency Service (SES) is to be undertaken and documented in the REF prior to finalisation and determination of the proposed activities.

5. Existing environment

5.1 Site topography

Ground surface across the site is dipping gently toward the western boundary. The minimum ground surface elevation across the site is 79 mAHD and change in level across the site from the southern boundary to the northern boundary varies at 8m. The high point of the site located along the eastern boundary at a level of RL 87 m AHD and the low point located along the western boundary at a level of 79 mAHD, this is an average slope of 7%.

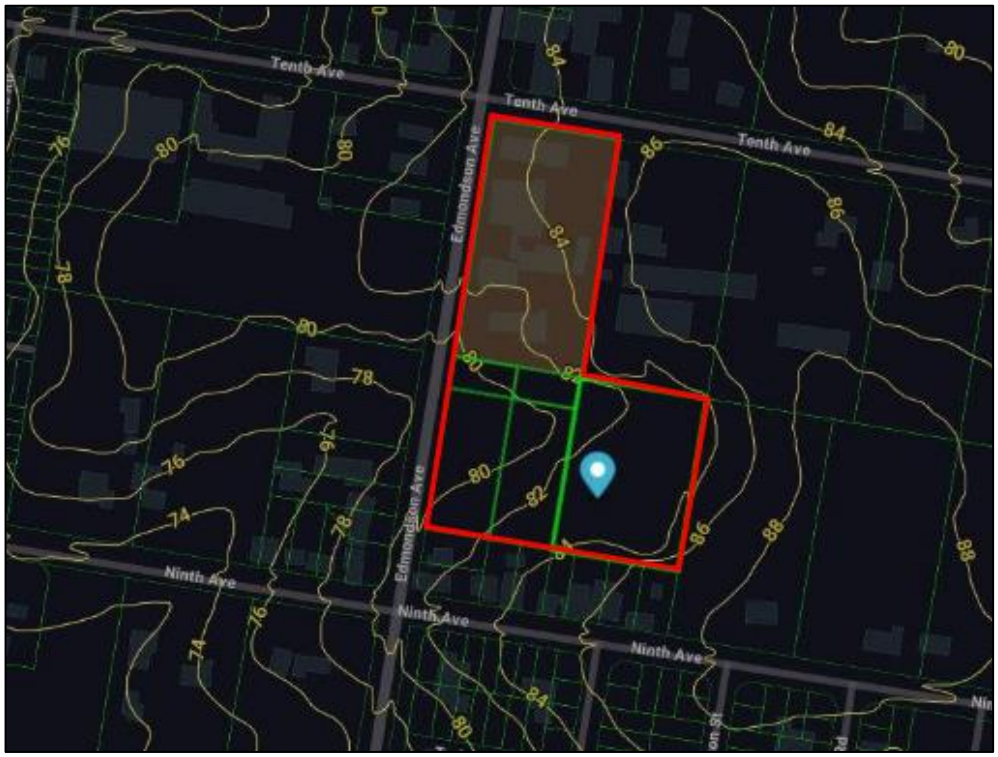

Figure 5-1: Site Topography (Mecone Mosaic 2023)

5.2 Mainstream flooding

The site is only affected by 'local overland flooding', which is inundation by local stormwater run-off on its way to a waterway, rather than overbank flow from a waterway. The site is not affected by any floodway associated with mainstream flooding identified in the *Liverpool Overland Flood Study* adopted by Council for the site catchment, as shown in Figure 5-2.

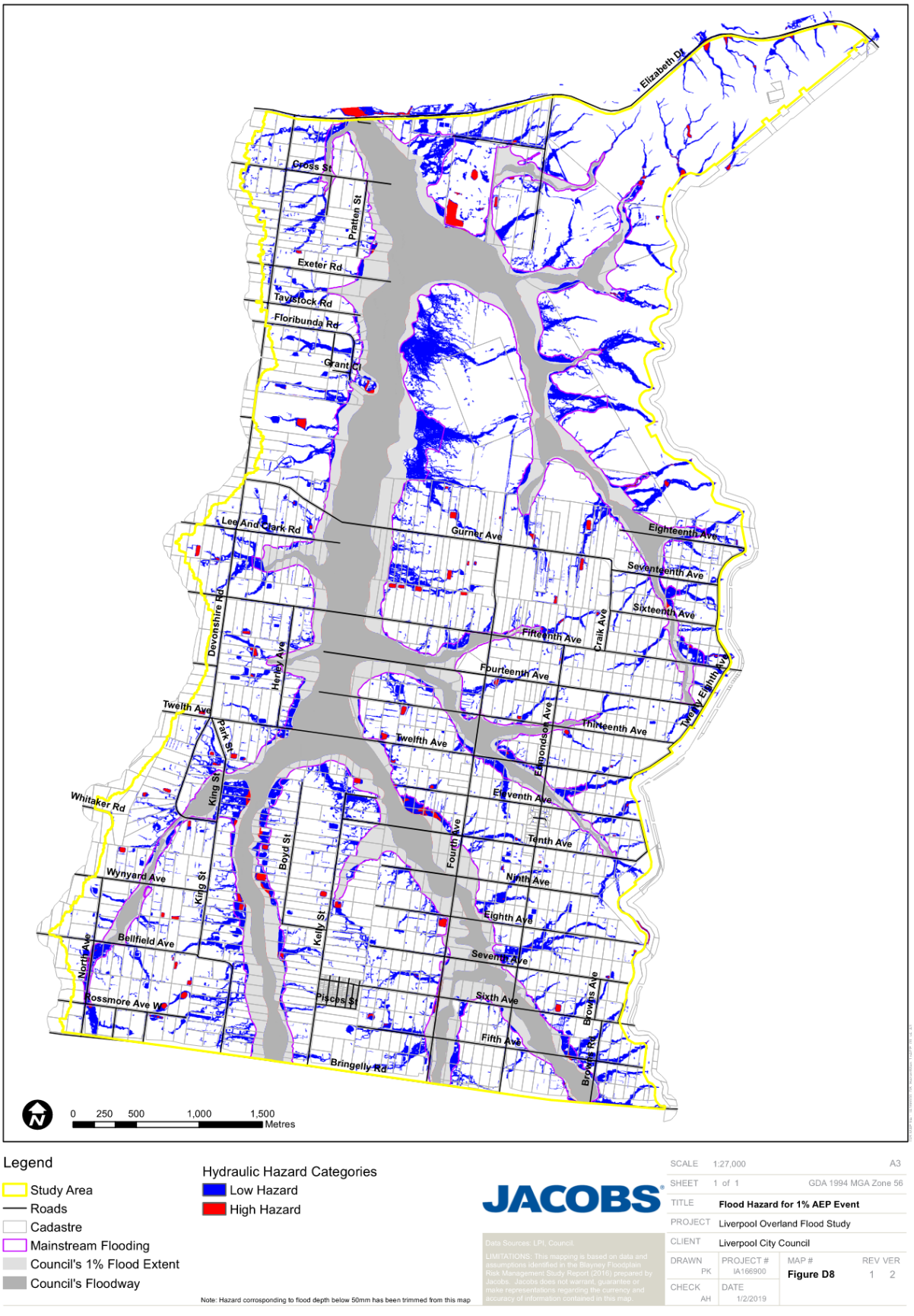

Figure 5-2 Mainstream flooding and flood hazards for 1%AEP (source: Liverpool Overland Flood Study)

5.3 Overland flooding

The proposal site is located upstream of an 825mm drainage pipe that conveys overland flow underneath Edmondson Avenue from east to west. The drainage outlets to a grassed overland flow path that conveys water south-east toward Ninth Avenue. From Ninth Avenue the overland flow drains toward a third order tributary of Kemps Creek approximately 500m southeast of the proposed works.

The site is only affected by 'local overland flooding', which is inundation by local stormwater run-off on its way to a waterway, rather than overbank flow from a waterway. The peak flowrate across Edmonson Avenue is minor during the design 1% AEP (1.16m^3 per second) and approximately 12m^3 per second during the PMF. These flowrates are relatively minor compared to the flowrates observed at the tributary of Kemps Creek where it crosses Ninth Avenue, which are approximately 60m^3 per second in the 1% AEP and 190m^3 per second during the PMF.

Due to the relatively small size of the catchment the peak flood depths are observed during the shorter duration 'flashy' storm events, being the 45-minute duration 1% AEP and the 15-minute duration PMF. The peak flood waters observed across the site and documented in this assessment drain from the site within two-hours following the start of the storm event, and so a shelter-in-place strategy is considered suitable to manage flood risks. However additional modelling of longer duration events is required to confirm the flood emergency response approach, as events of longer duration would result in lower hazard but more prolonged flooded extents that should be considered.

6. Hydraulic model results

6.1 Pre-development

6.1.1 1% AEP

Figure 6-1 and Figure 4 present the flood depth and level contours and hazard maps, respectively, in the existing scenario for the 1% AEP flood event.

In the pre-development case, the site is subject to shallow overland flows during the 1% Annual Exceedance Probability (AEP) storm event. The flood depths are generally below 50mm across the site and flow in a northeast direction and concentrate in an existing overland flow path located along the northern boundary of the site. The floodwater depth ranges from 50-200mm in this flow path, which flows east, and reaches a peak depth of approximately 300mm directly upstream of where the 1% AEP flood overtops Edmondson Avenue. The flood hazard for majority of the site is classified as H1 in the 1% AEP event, which is considered generally safe for people, vehicles and buildings. The flood hazard along a portion of the northern boundary of the site is classified as H2, which is considered unsafe for small vehicles.

Figure 6-1 Pre-development flood extent (1%AEP)

Figure 6-2 Pre-development flood hazard (1% AEP)

6.1.2 PMF

In the pre-development case, the site is subject to shallow overland flows during the probable maximum flood (PMF). The flood depths are generally below 50mm across the site and flow in a northeast direction and concentrate in an existing overland flow path located along the northern boundary of the site. The floodwater depth ranges from 50-1000mm in this flow path, which flows east, and reaches a peak depth of approximately 1.0m directly upstream of where the PMF flood overtops Edmondson Avenue.

A flood hazard of H1-H5 is observed through the development site, with only a minor portion at the northern boundary being classified as a H5 hazard. This portion of area is considered unsafe for vehicles and people. Buildings in this area require special engineering design and construction. Safe access shall be provided to flood-free land from the development.

Figure 6-3 and Figure 6-4 present the flood extent and hazard maps, respectively, in the existing scenario for the PMF flood event.

Figure 6-3 Pre-development flood extent (PMF)

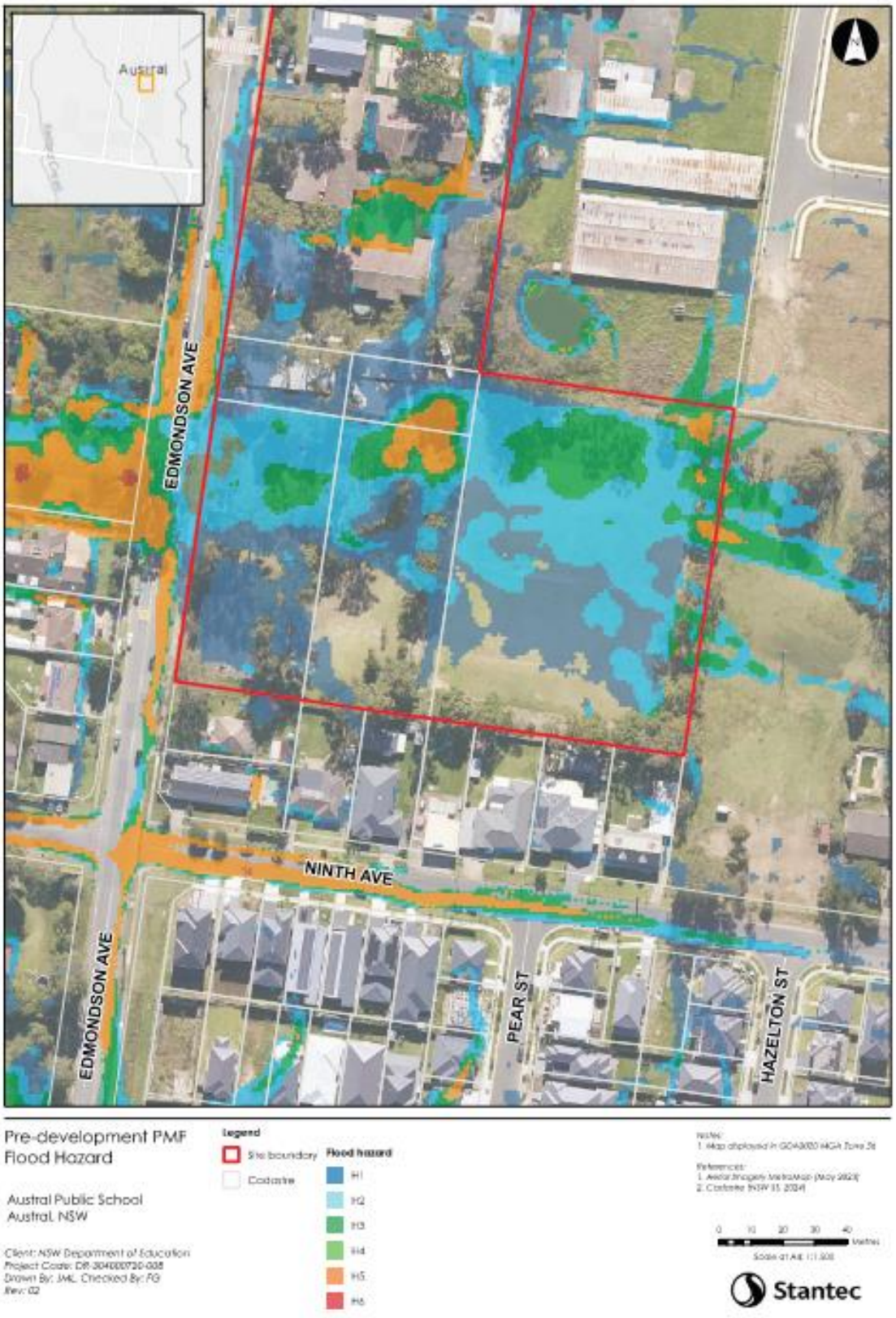

Figure 6-4 Pre-development flood hazard (PMF)

6.2 Post-development

A post development scenario has been modelled to determine the impact of the proposed infrastructure associated with Austral Public School on existing flood levels and evaluate flood mitigation methods to reduce flood impacts to adjacent and downstream properties, if required. The design surface including the proposed building footprints, the sport court, the footpaths and the on-grade carpark have been incorporated into the flood model as part of the post development scenario. Mannings values were also updated to reflect the post-development site conditions; i.e., proposed roads, proposed increase in vegetation roughness, proposed buildings, etc.

6.2.1 1% AEP

Figure 6-5 and Figure 6-6 present the flood depth and level contours and hazard maps, respectively, in the post development scenario for the 1% AEP flood event.

The proposed development of the site involves localised earthworks required to grade the site, which includes filling the proposed building pad area and cutting into the proposed carpark and recreational use area. Overall, the earthworks result in removal of 800 cubic metres of material from the site, and redistribution of surface flows. The redistribution of surface flows results in minor flood impacts across the site which generally mirror the proposed cut/ fill plan with slight increases in flood levels around the recreational and carpark use areas.

As can be seen in Figure 6-5, the flood level increases are contained within the project site, except for minor localised impact along Edmondson Avenue fronting the site. The localised floods within Edmondson Avenue are similar to the flood behaviour observed in the existing scenario. The floods here are contained within the road reserve and do not have additional impact on the development site, or the road.

The flood depths are generally below 70mm across the site and flow in a northeast direction and concentrate in an existing overland flow path located along the northern boundary of the site. The floodwater depth ranges from 0-500mm in this flow path, with maximum depths contained to swale channels. The overland flow path which flows west, and reaches an increased depth within the road corridor of approximately 300mm directly upstream of where the 1% AEP flood overtops Edmondson Avenue. The areas of flooding throughout the development site are of internally generated runoff and do not present a flood issue. The proposed grading of the sports court allows for a clear overland flow path from the east of the site toward the western boundary, and into Edmondson Avenue. Throughout this area there are numerous stormwater pits and pipes which will assist in conveying the ponded stormwater. This flow path has allowed for decreased flood depths around the proposed building, and a clear diversion of stormwater in the major storm events. This also has increased the flood depths within the road reserve, however, as discussed, does not impact the development site or road, as this mimics the flood behaviour in the existing scenario.

The flood hazard has decreased in risk and remains between H1-H2 around the proposed building. This is considered generally safe for people, vehicles, buildings as is unsafe for small vehicles. Therefore, no mitigation measures are required within this area, and it is considered suitable.

Figure 6-5 Post-development flood extent (1% AEP)

Figure 6-6 Post-development flood hazard (1% AEP)

6.2.2 PMF

Figure 6-7 and Figure 6-8 present the flood depth and level contours and hazard maps, respectively, in the post development scenario for the PMF AEP flood event.

As can be seen in Figure 6-7, the site is subject to shallow overland flows during the probable maximum flood (PMF) storm event. The flood behaviour is similar in the proposed scenario when compared to the existing. The flood depths are generally below 50mm across the site and flow in a northeast direction and concentrate in an existing overland flow path located along the northern boundary of the site. The floodwater depth ranges from 0-615mm in this flow path, which flows to the west, and reaches an increased depth within the road corridor of approximately 310mm directly upstream of where the PMF flood overtops Edmondson Avenue. The areas of flooding throughout the development site are of internally generated runoff and do not represent a flood issue. There is an overland flow path across the sports court toward Edmondson Avenue, throughout this area there are numerous stormwater pits and pipes which will assist in conveying the ponded stormwater.

The maximum flood hazard across the road is not increased. The flood hazard category improves in the post-development condition, at H1-H4. A minor portion of H4 flood is contained to the proposed swale areas to the east of the site; however, this area to the east is not expected to be trafficked by people or vehicles, due to the swale being located close to the boundary/ existing tree area, and outside of the main school infrastructure. The overall flood hazard in the post-development condition is significantly improved when compared to the pre-development condition and is considered suitable.

During the probable maximum flood (PMF) the development results in a maximum flood level increase of 10mm within Lot 866, however, the encroachment of flood impact is still narrow, being less than 2m into the cadastral boundary. The impact is still considered to be minor given that the lot is affected by the PMF in the pre-developed case, and the hazard category in the lot is not increased in the post-development case. The flood level impact to Edmondson Avenue, road reserve, increases to approximately 90mm but similar to the 1%AEP event the maximum flood hazard category across the road is not increased. These results are considered reasonable, and not further mitigation is required within this area.

Figure 6-7 Post-development flood extent (PMF)

Figure 6-8 Post-development flood hazard (PMF)

6.2.3 Flood impact

The flood level difference comparing the pre-development and post-development scenario for the 1% AEP event and the PMF are shown as Figure 6-9 and Figure 6-10 respectively

The 1% AEP flood levels in and around the site are generally reduced in the post-development conditions due to the provision of additional flood storage in the swales positioned along the eastern, southern, and northern boundaries. These swales experience minor increases of approximately 0.10m up to 0.25m. These swales are located close to the boundary / existing tree area, and outside of the main school infrastructure. Therefore, increases in flood depths within these areas shall not pose as hazardous to pedestrians, and no further mitigation measures are required.

The flood level increases during the post-development 1% AEP and PMF storm event are contained within the project site, except for minor localised impact to Lot 866 of Deposited Plan (DP) 2475 and Edmondson Avenue. The localised floods within Edmondson Avenue are similar to the flood behaviour observed in the existing scenario. The floods here are contained within the road reserve and do not have additional impact on the development site, or the road. Similar situation to the impacts in Lot 866, where the floods are contained within the landscape area along their southern boundary with the encroachment of flood impact being less than 2m into the cadastral boundary.

The flood depths are generally below 50mm across the site in the 1% and PMF storm events and flow in a northeast direction and concentrate in an existing overland flow path located along the northern boundary of the site. During the 1% AEP storm event the floodwater depth ranges from 50-500mm in this flow path, with maximum depths contained to swale channels. The overland flow path which flows west and reaches an increased depth within the road corridor of approximately 300mm directly upstream of where the 1% AEP flood overtops Edmondson Avenue.

The maximum flood depth during the PMF storm event is 615mm. The areas of flooding throughout the development site are of internally generated runoff and do not present a flood issue. The proposed grading of the sports court allows for a clear overland flow path from the east of the site toward the western boundary, and into Edmondson Avenue. Throughout this area there are numerous stormwater pits and pipes which will assist in conveying the ponded stormwater. This flow path has allowed for decreased flood depths around the proposed building, and a clear diversion of stormwater in the major storm events. This also has increased the flood depths within the road reserve, however, as discussed, does not impact the development site or road. This is similar to the flood behaviour in the existing scenario.

The proposed building is free of flooding in the 1% AEP and PMF flood events in the post-development condition. Based on the flood mapping prepared by Stantec, it can be confirmed that the proposed development will not negatively impact on adjacent and downstream properties. It is believed that the set FFL level satisfies council's flood planning requirements.

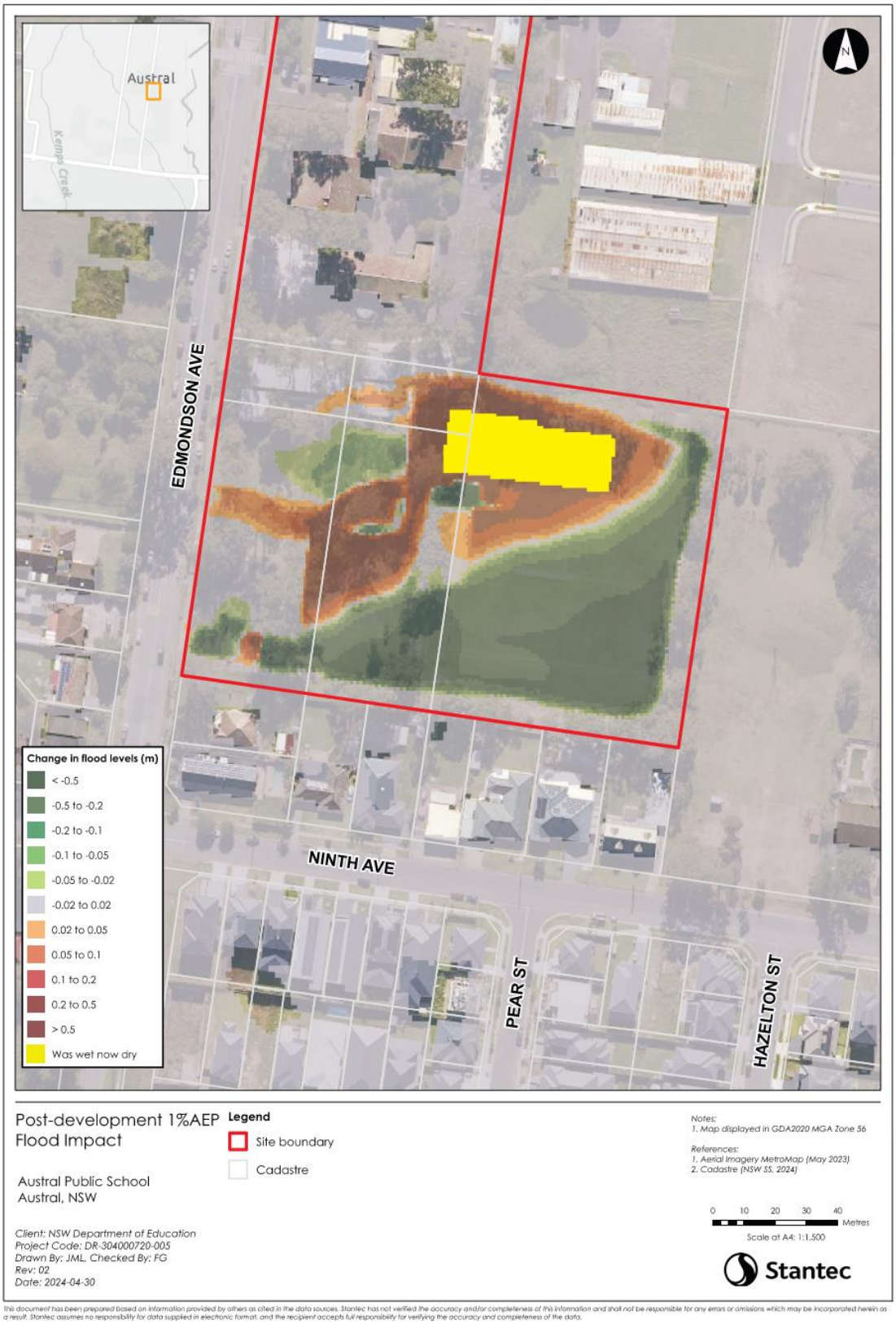

Figure 6-9 Flood level difference (1% AEP)

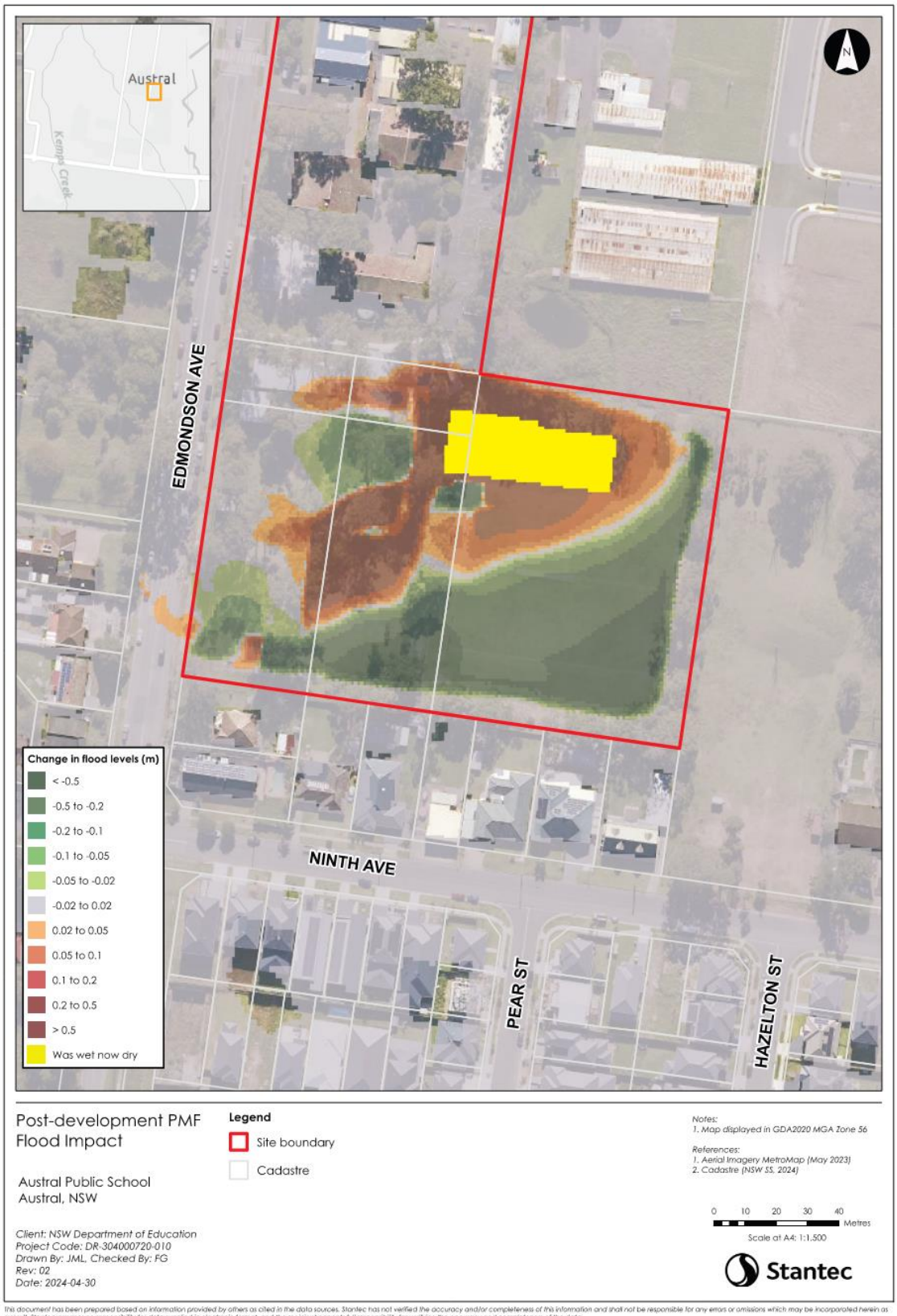

Figure 6-10 Flood level difference (PMF)

6.3 Cumulative impact

The site is located in the Austral and Leppington North precincts which are part of the South West Growth Area (SWGA). The draft precinct plans for Austral and Leppington North were finalised March 2013 and were informed by the *Austral & Leppington North Precincts Water Cycle Management* (Cardno, 2012) report (the WCM).

Generally, the WCM found that the development of the precincts (as per the indicative layout plan) would likely result in minor increases of up to 50mm in Kemps Creek, with some impacts of between 300 and 500mm for a tributary of Kemps Creek to the northeast of the transmission substation. Flood level difference maps were not provided in the WCM to identify the exact location.

The flood impact associated with the proposed development do not extent beyond the road reserve of Edmondson Avenue, and there are no impacts identified in the mainstream of Kemps Creek or any of its tributaries. The proposal is highly unlikely to result in a significant alteration of flood behaviour or risk even considering future developments in the catchment.

The proposal is not located in proximity to any creeks or drainage channels identified in the Austral indicative layout plan, as shown on Figure 6-11.

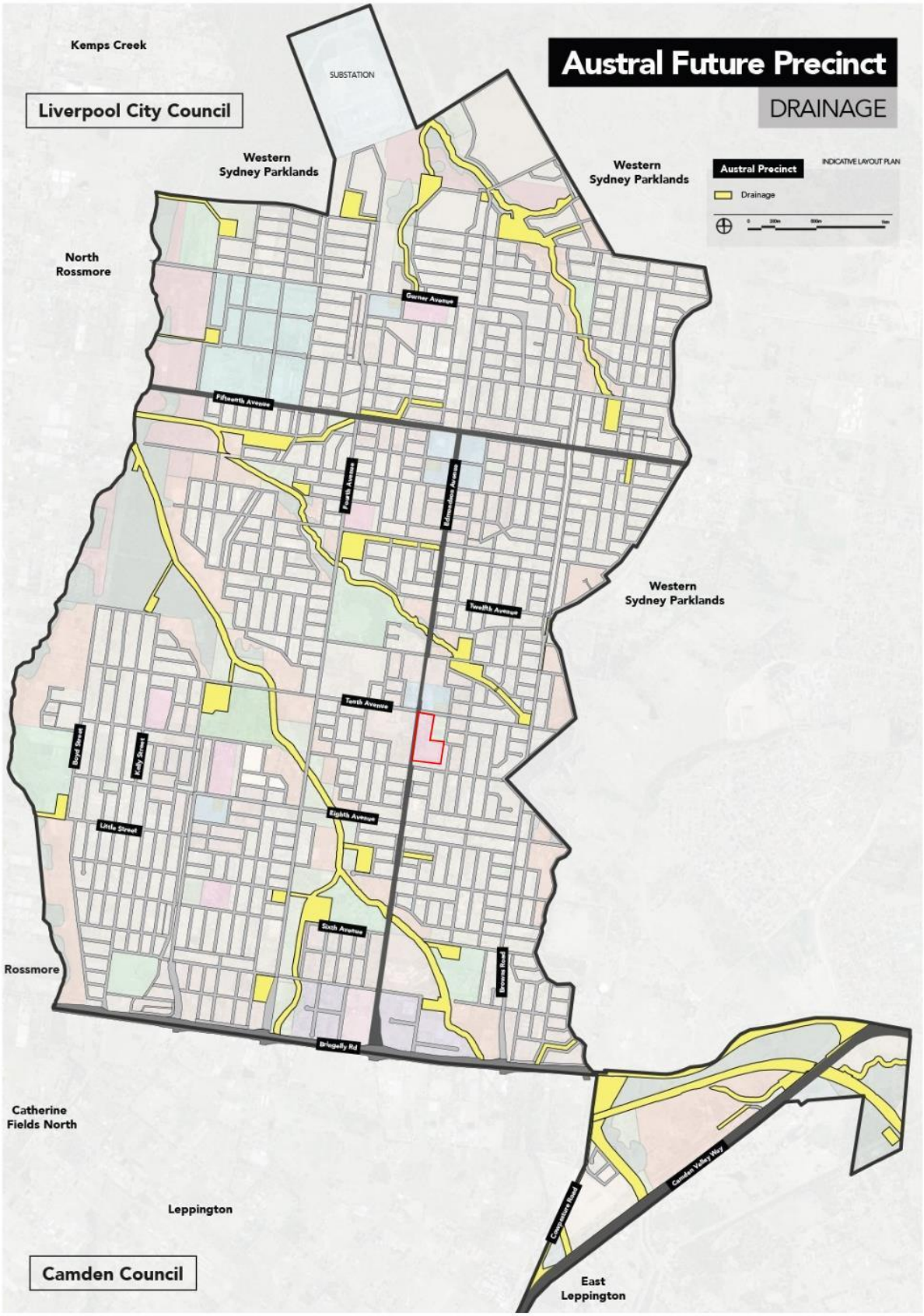

Figure 6-11 Austral precinct indicative layout of drainage channels (approximate location of site shown in red)

7. Mitigation measures

Mitigation measures are recommended in Table 7-1.

Table 7-1 Mitigation measures

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
F-001	Consultation	Formal consultation is to be undertaken with Council and the SES (refer section 4.2).	Consultation requirements for activities proposed under T&I SEPP.
F-002	Detailed design	Additional hydraulic modelling is to be undertaken considering the detailed design surface prior to construction of works.	Possible changes to design surface and overland flood behaviour following detailed design.
F-003	Emergency management	The site is affected by areas of high hazard (H4) during the PMF. Prior to the commencement of operations or occupation of the facility a flood evacuation plan is to be prepared to clearly communicate areas of potential hazard and the flood emergency response strategy. It is recommended that the flood emergency management plan is prepared with SES consultation and considers regional evacuation management plans.	Emergency flood management for sensitive facilities

8. Conclusion

The proposed activity is for the upgrades to the existing APS at 205 Edmondson Avenue, Austral, NSW, 2179. This flood impact assessment finds that the proposed activities are unlikely to result in significant flood impact or risk, provided the mitigation measures detailed in this report are adhered to.

Appendix A Flood Maps

Pre-development 1%AEP Flood Extent

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-001
Drawn By: JML, Checked By: FG
Rev: 01
Date: 2024-04-30

Legend

- Site boundary
- 1m flood height contour
- Cadastre

Flood depth (m)

- 0.05 to 0.25
- 0.25 to 0.50
- 0.50 to 0.75
- 0.75 to 1.00
- > 1.50

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec

Post-development 1%AEP Flood Extent

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-002
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Legend

- Site boundary
- Cadastre
- 1m flood height contour

Flood depth (m)

- 0.05 to 0.25
- 0.25 to 0.50
- 0.50 to 0.75
- 0.75 to 1.00
- > 1.50

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

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Pre-development 1%AEP Flood Hazard

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-003
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Legend

- Site boundary
- Cadastre

Flood hazard

- H1
- H2
- H3
- H4
- H5
- H6

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec

Post-development 1%AEP Flood Hazard

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-004
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Legend

- Site boundary
- Cadastre

Flood hazard

- H1
- H2
- H3
- H4
- H5
- H6

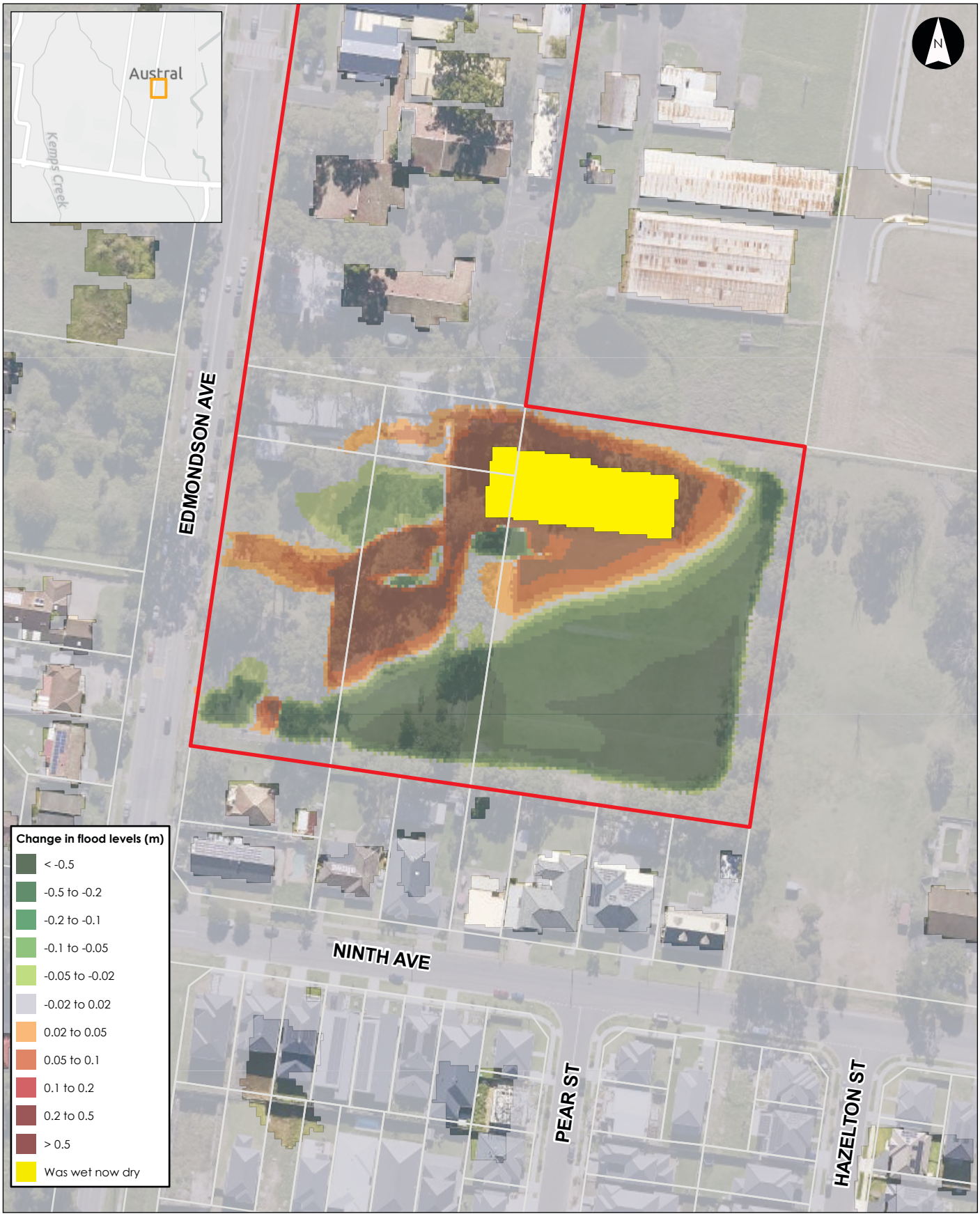
Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec



Post-development 1%AEP Flood Impact

Austral Public School
Austral, NSW

Legend

- Site boundary
- Cadastre

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Client: NSW Department of Education
Project Code: DR-304000720-005
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Stantec

Pre-development PMF Flood Extent

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-006
Drawn By: JML, Checked By: FG
Rev: 01
Date: 2024-04-30

Legend

- Site boundary
- 1m flood height contour
- Cadastre

Flood depth (m)

- 0.05 to 0.25
- 0.25 to 0.50
- 0.50 to 0.75
- 0.75 to 1.00
- 1.00 to 1.25
- 1.25 to 1.50

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec

Post-development PMF Flood Extent

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-007
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Legend

- Site boundary
- Cadastre
- 1m flood height contour

Flood depth (m)

- 0.05 to 0.25
- 0.25 to 0.50
- 0.50 to 0.75
- 0.75 to 1.00
- 1.00 to 1.25
- 1.25 to 1.50

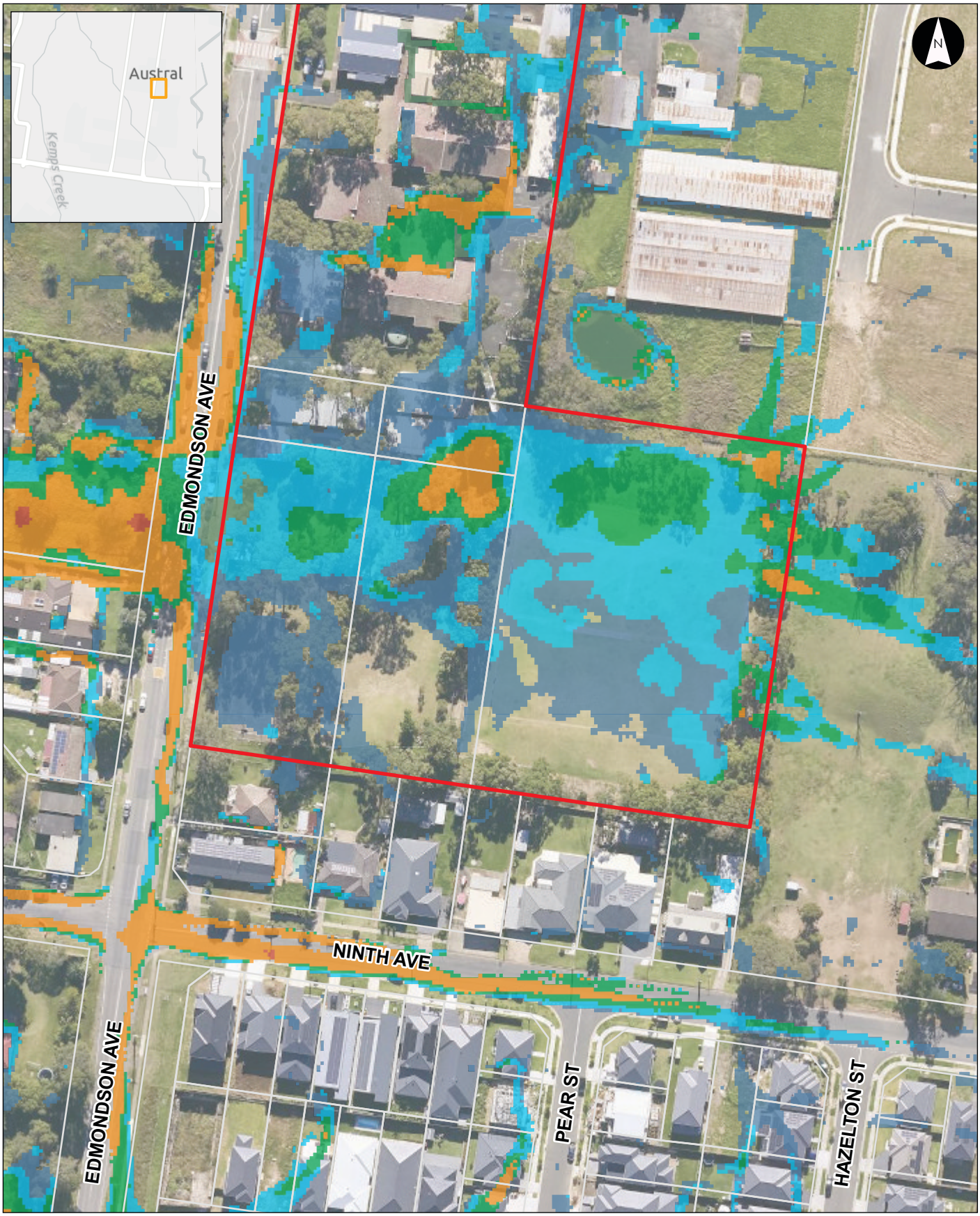
Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec



Pre-development PMF Flood Hazard

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-008
Drawn By: JML, Checked By: FG
Rev: 02

Legend

- Site boundary
- Cadastre

Flood hazard

- H1
- H2
- H3
- H4
- H5
- H6

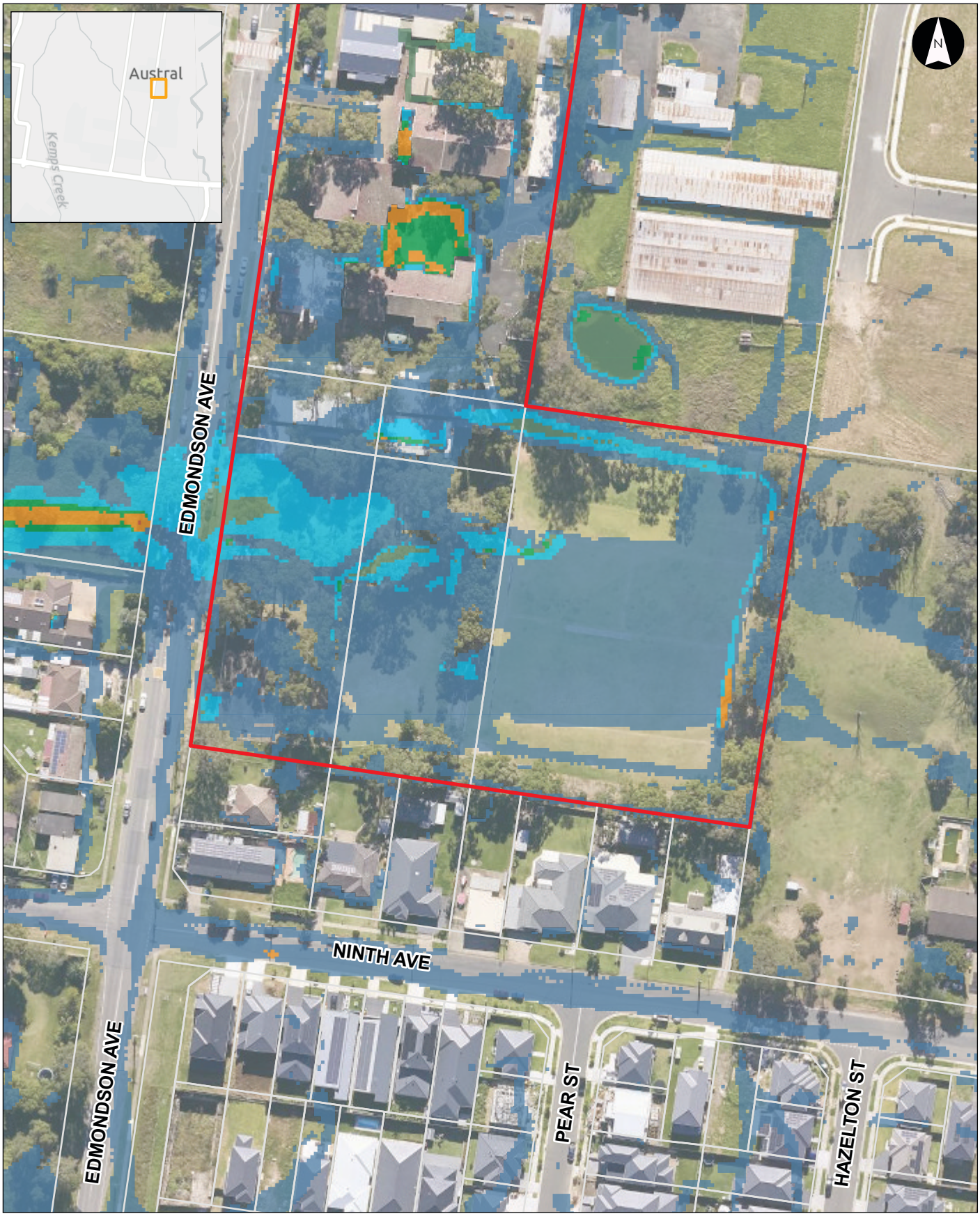
Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec



Post-development PMF Flood Hazard

Austral Public School
Austral, NSW

Client: NSW Department of Education
Project Code: DR-304000720-009
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Legend

- Site boundary
- Cadastre

Flood hazard

- H1
- H2
- H3
- H4
- H5
- H6

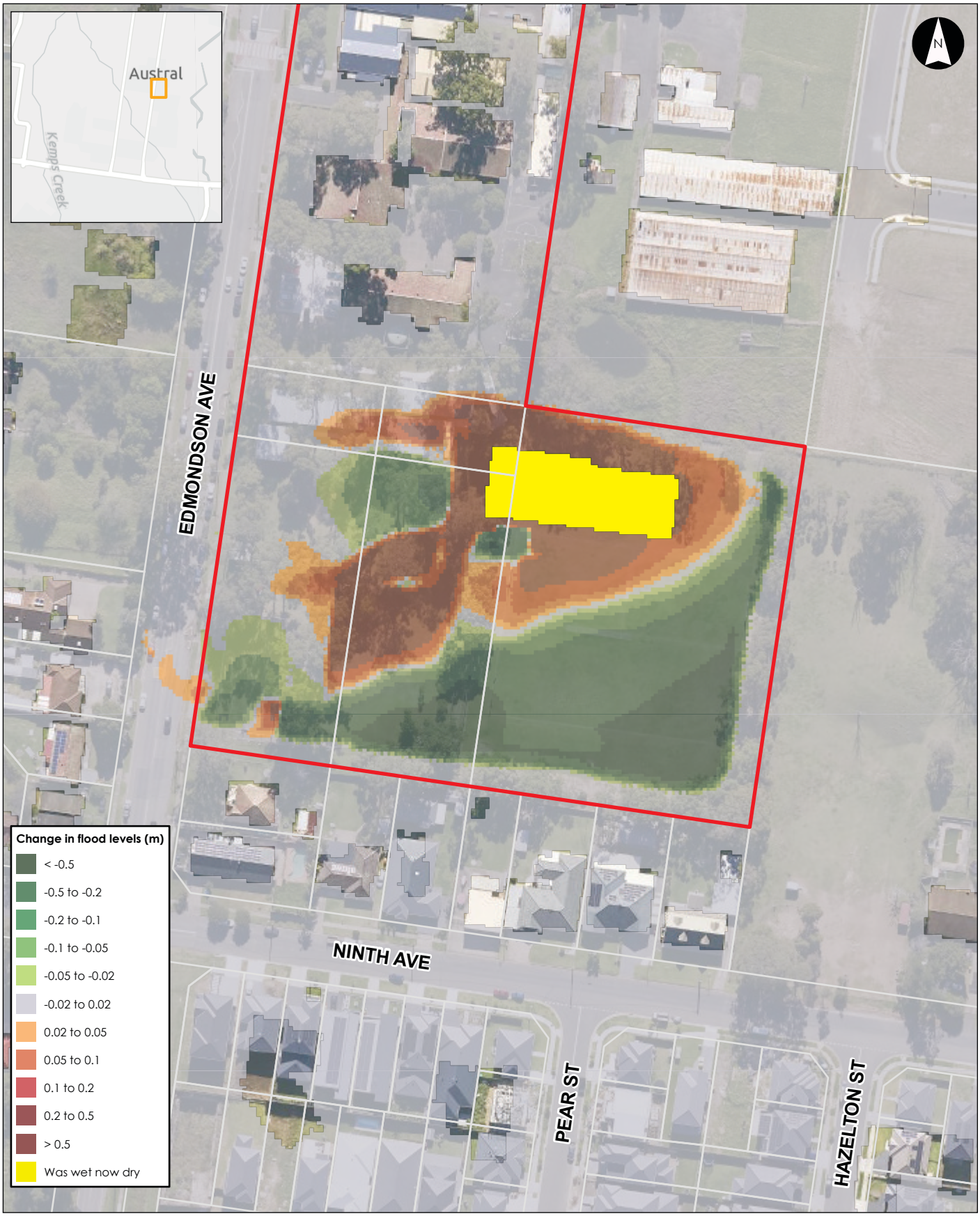
Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Stantec



Post-development PMF Flood Impact

Austral Public School
Austral, NSW

Legend

- Site boundary
- Cadastre

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery MetroMap (May 2023)
2. Cadastre (NSW SS, 2024)

0 10 20 30 40 Metres

Scale at A4: 1:1,500

Client: NSW Department of Education
Project Code: DR-304000720-010
Drawn By: JML, Checked By: FG
Rev: 02
Date: 2024-04-30

Stantec

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