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By Hand		
Contact:		Terry Harvey
Our Ref:		P2108563JC01V01
Pages:		4 + Attachment
cc.		pkeywood@mecone.com.au

2 November 2021

HPG Australia
Attn: Barney Oros
By email

Dear Barney,

RE: PRELIMINARY FLOODING ADVICE – 445-459 CANTERBURY ROAD, CAMPSIE, NSW

1 OVERVIEW

Martens and Associates (MA) have been engaged by HPG Australia to undertake a preliminary review of the flood related development constraints to support a planning proposal for a proposed private hospital at 445-459 Canterbury Road, Campsie (the site). The proposal will involve the demolition of existing site buildings, the construction of a new multi-storey private hospital with basement parking, and construction of a lane way. This letter has been prepared to provide preliminary flood advice to inform the client of the site flood behaviour, potential flooding impacts and compliance with the Section 9.1 Ministerial Direction for Flooding.

2 SITE FLOOD CHARACTERISTICS

The site is located in the Cooks River catchment within the Canterbury-Bankstown LGA. Cardno Pty Ltd (2016) previously prepared the *Final Overland Flow Study – Canterbury LGA Cooks River Catchment*, hereafter referred to as the Cardno flood study.

At the time of writing a *Stormwater System Report* (SSR) has been purchased from Council however has not yet been received. For the purposes of this advice the relevant site flood information was extracted from the Cardno flood study, and details of the 1% annual exceedance probability (AEP) flood and probable maximum flood (PMF) have been provided, however this advice should be updated upon receipt of the SSR.

Based on our review of the Cardno flood study and available information, the site flood behaviour is summarised below:

1. There is a local high point at the site, and existing site surface levels in the vicinity of the proposed building range from approximately 25.8-29.1 mAHD (based on 2020 LIDAR data available from ELVIS).

2. The site is located at the corner of Canterbury Road and Stanley Street, and is only affected by shallow flood water at the north western site corner in the 1% AEP event.

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3. The peak site 1% AEP flood level is approximately 26.30-26.45 mAHD and is low hazard.

4. 1% AEP floodwaters on site are classified as 'flood fringe' and are located outside the proposed building footprint.

5. In the PMF, flood waters flow around the local high point of the site, and the proposed building footprint lies outside the PMF extents.

6. The peak site PMF level is approximately 28.8-29.0 mAHD and is low hazard on the site, but high hazard in Canterbury Road and Stanley Street.

7. PMF waters on site are classified as 'flood fringe', and flood waters in Canterbury Road and Stanley Street are classified as 'floodway'.

8. As the proposed building is located outside of the 1% AEP and PMF extents, there will be no loss of flood storage and the proposed development will not cause material off-site impacts in the 1% AEP flood or PMF events.

3 COMPLIANCE WITH SECTION 9.1(2) MINISTRIAL DIRECTION FOR FLOODING

Section 9.1(2) 'Flooding' of the Environmental Planning and Assessment Act 1979 outlines the flooding controls to be considered as part of a planning proposal, and are summarised in Table 1. Additional flooding controls are provided in the Canterbury DCP (2012) at Part B5.13 'Areas Subject to Possible Flooding' and B5.14 Flood Management. Our general comments regarding the compliance of the proposed development with the relevant flooding controls is provided as follows:

1. All habitable floor levels should be at or above approximately 26.95 mAHD (the 1% AEP flood level plus 0.5 m freeboard, to be confirmed upon receipt of the SSR) in accordance with the DCP (Part B5.13 C3).

2. The basement parking should be protected to approximately 26.6 mAHD (the 1% AEP flood level plus 0.15 m freeboard, to be confirmed upon receipt of the SSR) in accordance with the DCP (Part B5.13 C4).

3. Although the building footprint is not affected by the PMF, shelter-in-place is the preferred emergency response strategy due to high hazard flooding in Canterbury Road and Stanley Street in the PMF event.

4. For a shelter-in-place response, the upper floors (likely starting from the level 1 of the development) will be above the PMF level of approximately 29.0 mAHD and hence safe shelter-in-place is available on site.

5. As the upstream catchment is small the duration of hazardous flood waters on Canterbury Road and Stanley Street is likely to be less than an hour or two in the PMF, which is an acceptable period to shelter-in-place.

Table 1 demonstrates that all the applicable flood planning requirements for the planning proposal are effectively addressed, and compliance with the Section 9.1 Ministerial Direction 'Flooding' is achieved.

Table 1: Compliance with Section 9.1(2) Ministerial Direction 'Flooding' and MA responses.

Section 9.1(2) Ministerial Direction 'Flooding' Requirement	MA Response
(6) A planning proposal must not contain provisions that apply to the flood planning area which:	
(a) Permit development in floodway areas,	1. The proposed development footprint lies outside of the PMF extents and is therefore not within a floodway area.
(b) Permit development that will result in significant flood impacts to other properties,	2. As discussed at (1) the proposed development footprint lies outside of the PMF extents and hence will not cause significant flood impacts to other properties.
(c) Permit development for the purposes of residential accommodation in high hazard areas,	3. The site is only affected by low hazard flood waters up to and including the PMF event, and as discussed at (1) the proposed development footprint lies outside of the PMF extents.
(d) Permit a significant increase in the development and/or dwelling density of that land,	4. Although the proposal will increase the density of development on the site, the development can proceed safely and in accordance with the other controls of the Section 9.1 Ministerial Direction 'Flooding' requirements.
(e) Permit a significant increase in the development and/or dwelling density of that land, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,	5. Site occupants can safely evacuate the site during the 1% AEP flood event via the adjacent roads as they are only affected by low hazard overland flows.
(f) Permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent,	6. The proposal will be the subject of a development consent.
(g) Are likely to result in significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or	7. The proposed development will not require any government spending on emergency management services, flood mitigation or emergency response measures as the proposed development footprint lies outside of the PMF extents.
(h) Permit hazardous industries or hazardous storage establishments where hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.	8. As discussed at (1), the proposed development footprint lies outside of the PMF extents and hence any hazardous materials can be stored safely.
(7) A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which:	
(a) Permit development in floodway areas,	9. As discussed at (1).
(b) Permit development that will result in significant flood impacts to other properties,	10. As discussed at (2).
(c) Permit a significant increase in the dwelling density of that land,	11. As discussed at (4).

Section 9.1(2) Ministerial Direction 'Flooding' Requirement	MA Response
(d) Permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate,	12. Although the building footprint is not affected by the PMF, shelter-in-place is the preferred emergency response strategy due to high hazard flooding in Canterbury Road and Stanley Street in the PMF event. These roads would only be affected for a short time (likely 1-2 hours at most) during the peak of the PMF event due to the small size of the catchment, which is considered an appropriate duration to shelter-in-place.
(e) Are likely to affect the safe occupation of and efficient evacuation of the lot, or	13. As discussed at (5) and (12).
(f) Are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities	14. As discussed at (8).

4 CONCLUSION AND RECOMMENDATIONS

The following conclusions and recommendations are made:

1. As the proposed building is located outside of the 1% AEP and PMF extents, there will be no loss of flood storage and the proposed development will not cause material off-site impacts in the 1% AEP flood or PMF events.
2. Shelter-in-place for a short duration is the preferred flood emergency response strategy due to high flood hazards on Canterbury Road and Stanley Street in the PMF event.
3. The finished ground floor level of the proposed development should be at or above the flood planning level of approximately 26.95 mAHD (to be confirmed upon receipt of the SSR).
4. Compliance with the Section 9.1 Ministerial Direction 'Flooding' is achieved.
5. A flood emergency response plan (FERP) should be prepared at development application stage to address the risk to life from flooding and measures to mitigate these risks.

If you require any further information, please do not hesitate to contact the undersigned.

For and on behalf of

MARTENS & ASSOCIATES PTY LTD

TERRY HARVEY
Senior Engineer / Project Manager

ATTACHMENT A: CONCEPT SITE PLAN

445-459 Canterbury Rd, Campsie

Masterplan Concept Design for Illustrative Purposes Only

Client: HPG Australia — Property Lifestyle Partnership

Architect: TEAM ARCHITECTS

Project No:	10-20
Drawn:	LZ/PG/MS/DB
Revision:	G
Date:	12.08.21

distinctive

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CITY OF CANTERBURY BANKSTOWN

To: Daniel Dhiacou
201/20 George St
HORNSBY NSW 2077

STORMWATER SYSTEM REPORT
445 Canterbury Road, CAMPSIE NSW 2194

Date: 05-Nov-2021
Ref: WP-SIA-2314/2021
Development type: Private Hospital

NO FLOOD/OVERLAND FLOW STUDY REQUIRED

The site may affected by the following Council stormwater system components:

- Overland flowpath for excess stormwater runoff from the upstream catchment and associated with the drainage system located north of the site.

The north west part of the site may be subject to stormwater inundation from this overland flowpath during large storm events. Refer to the attached **"100 Year ARI Flood Extent Map from Cooks River Overland Flow Catchment Study"** showing the flood contours to m AHD**. Provision should be made on site, and at boundary fences, for this stormwater runoff to pass unobstructed over the site. Stormwater flowing naturally onto the site must not be impeded or diverted.

The estimated 100 year ARI* flood level at the site is RL 26.1 m AHD**

For this development, a flood /overland flow study to determine the 100 year ARI* water surface level is not necessary.

The proposed development including floor levels, shall comply with the development controls specified in former Canterbury Development Control Plan 2012 - Catchments Affected by Stormwater Flooding.

The Development Application submission shall be based on an AHD datum for levels where sites are affected by overland flow / flooding.

Habitable floor levels are to be at least 500mm above the 100 year ARI* flood level at the site.

Runoff from the dwelling is to be disposed of to Council's requirements detailed in Bankstown Council's *Development Engineering Standards****.

The site is affected by the probable maximum flood (PMF);Refer the attached PMF Extent Map.
[The Probable Maximum Flood is the largest flood that could occur. It is derived from the maximum amount of atmospheric moisture that can occur in the locality

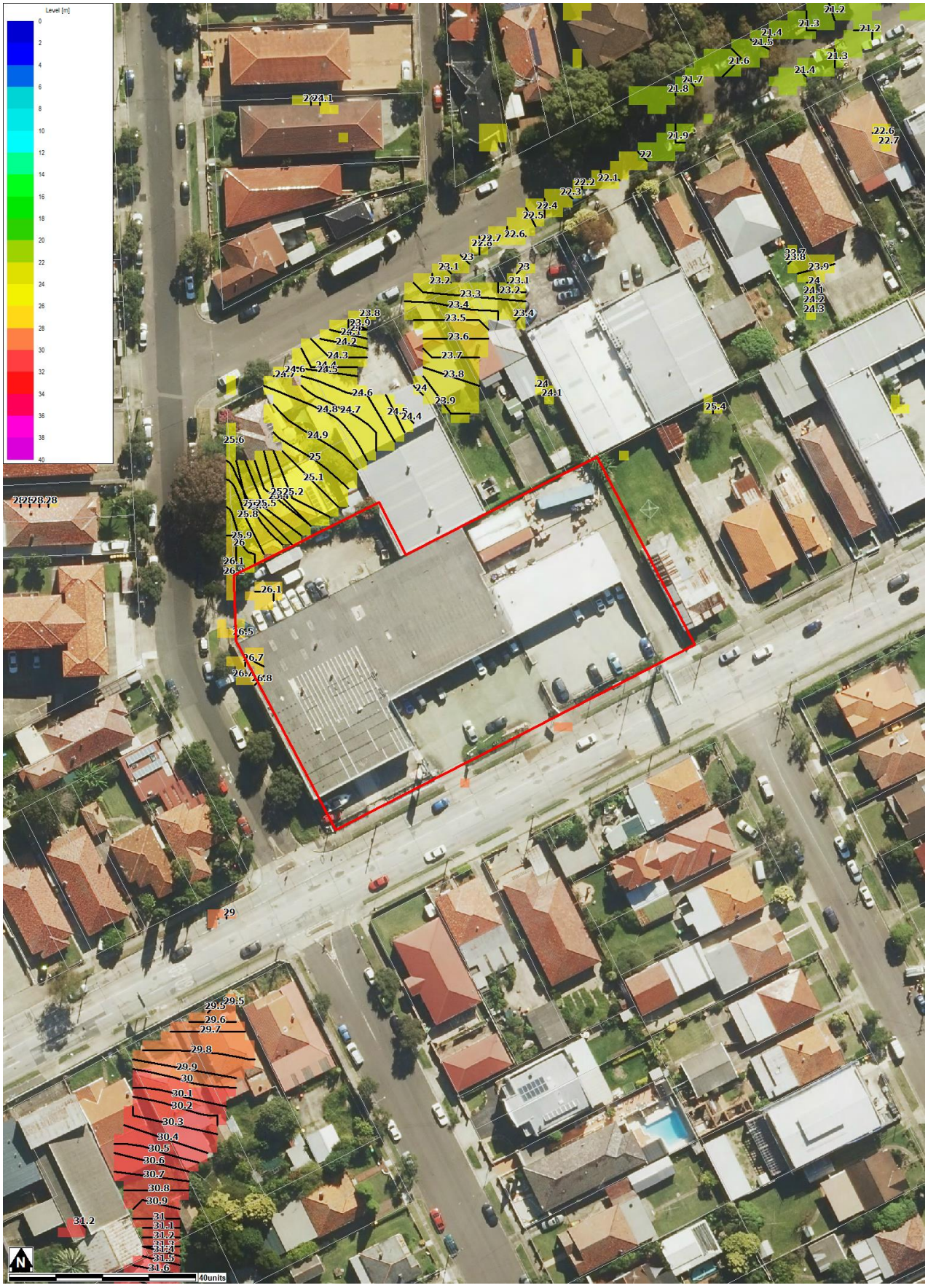
This report is given without the benefit of development plans or a site survey.

This report relates to the exposure of the subject site to Council's stormwater system, both underground and overland. It does not assess the suitability or otherwise of this site for the proposed development.

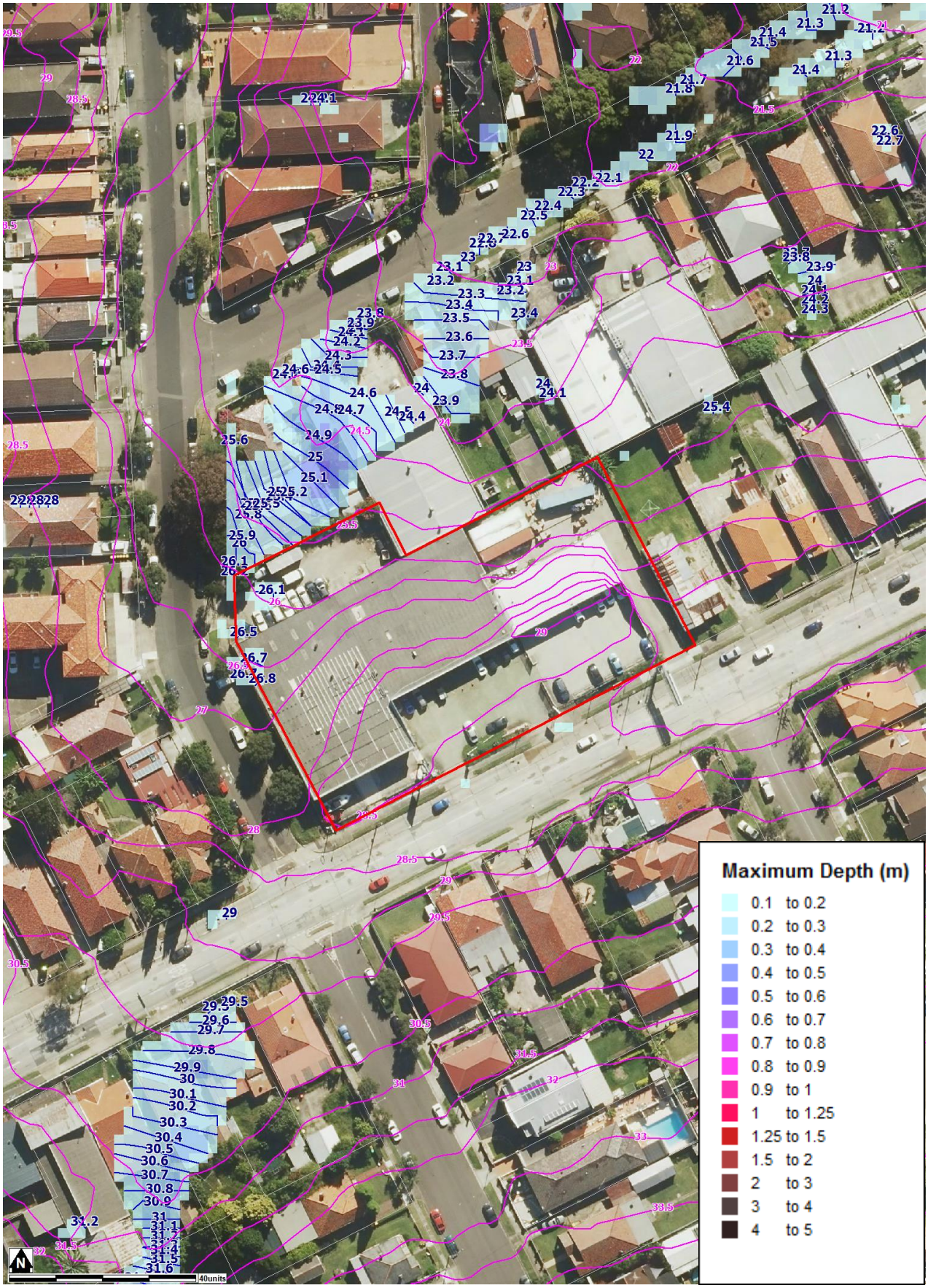
* Average Recurrence Interval

** Australian Height Datum

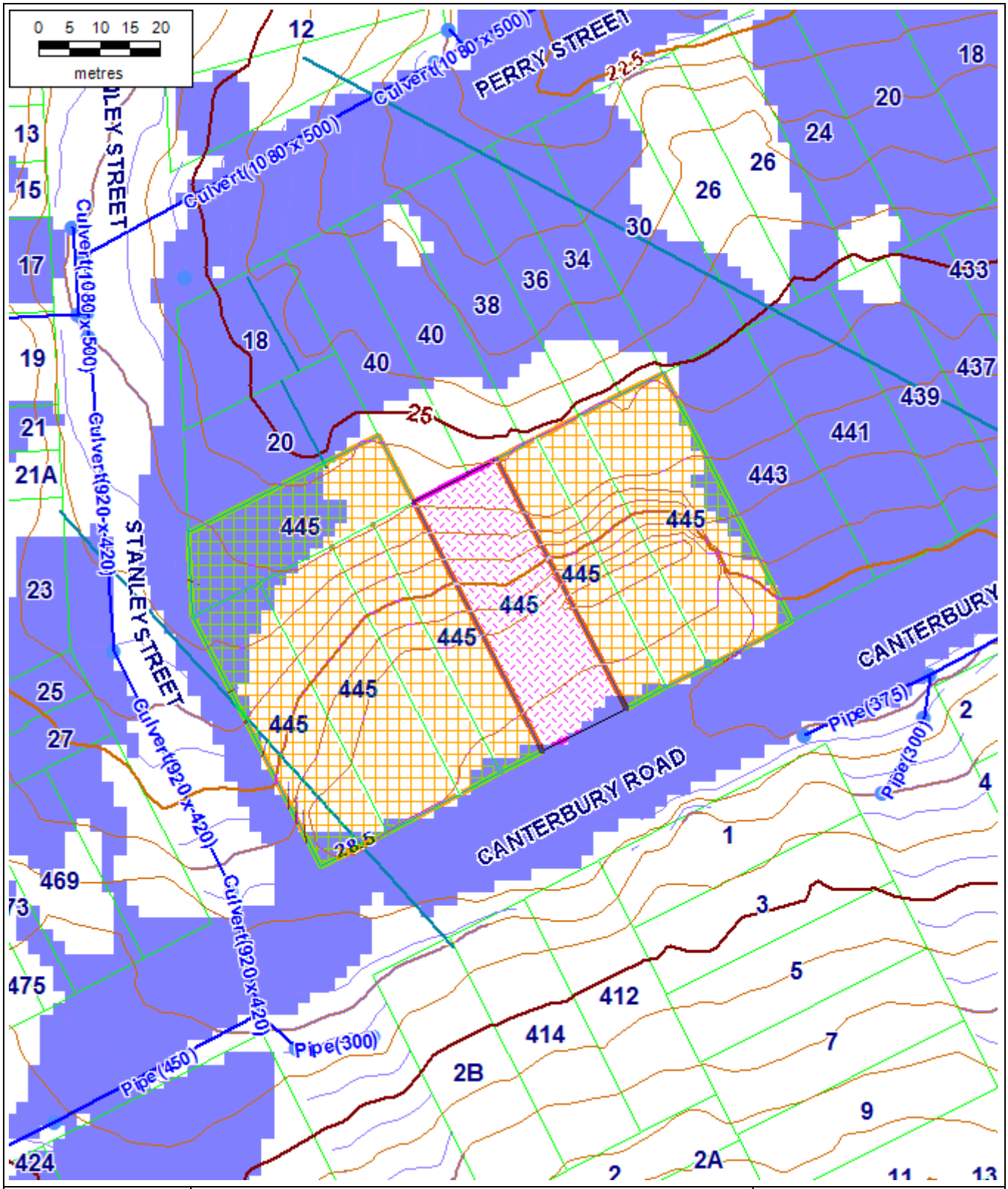
Pushpa Goonetilleke
ENGINEER



100yr ARI Flood Extent



100yr ARI Flood Depth with Flood Contours to m AHD**



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5 November 2021

445 Canterbury Road, Campsie

Probable Maximum Flood Extent

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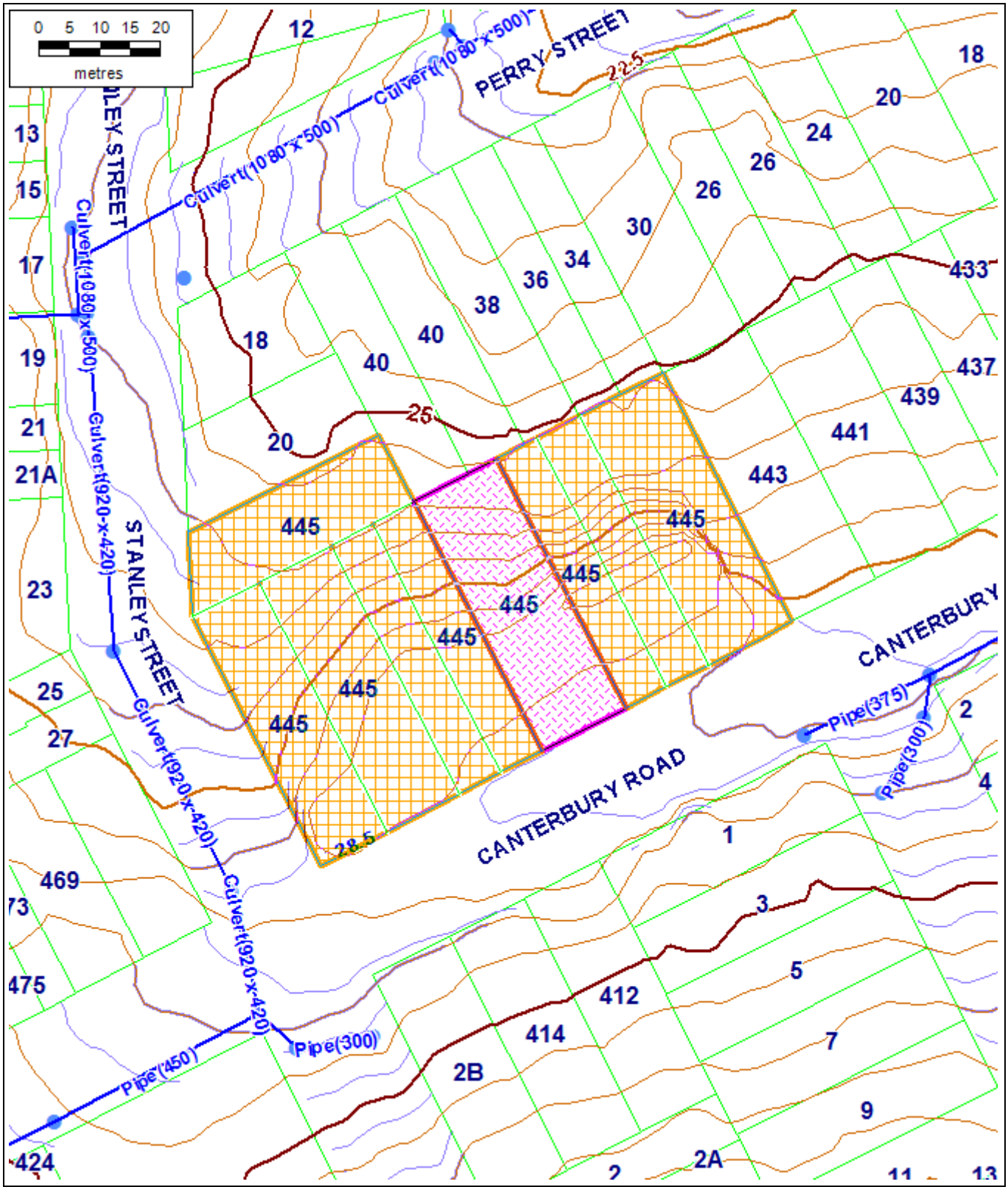
Legend

CooksOverlandFlowStation
CooksOverlandFlowLines
Sydney Water
Stormwater Drains MD
Stormwater Pits MD
Contour Major 5m
Contour Intermediate 2.5m
Contour Minor 0.5m
_25cm Contour Interval (Major)
_25cm Contour Interval (Basic)
_25cm Contour Interval (Minor)
Parcel
Parcel Associate
Parcel Vinculum
Jetty
Easements
Road Boundaries
Flooding_PMFEXTENT
Road Names
Airport Internal Road
Water Boundary
Airport Taxiway



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445 Canterbury Road, Campsie

GIS Map

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Aerial Map

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