

106-108 CHESTER HILL RD, BASS HILL

Flood Risk Management Report

ISSUE A: JULY 26, 2021

PREPARED FOR: Canterbury-Bankstown Council

REPORT NUMBER: 21-1072 FRMP-A

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1. Introduction

A development application is to be lodged at Canterbury-Bankstown Council for the proposed dwelling at No.106-108 Chester Hill Rd, Bass Hill. Council indicates that the site is flood affected and a Flood Risk Management Plan is required to investigate the Post developed 100 year ARI water surface level, the impact the proposal will have on the inundation levels of the neighbouring sites, and the boundary fencing treatments necessary to pass the floodway flows.

The site is noted as a Flood Controlled Lot and is located within the Villawood Catchment Area as per *Canterbury-Bankstown Council Stormwater System Report (SSR) dated 27 September 2019*.

D.T CIVIL Engineering Consultants, have been commissioned to assess the flood characteristics of the site and to provide a Flood Risk Management Plan demonstrating compliance with Canterbury-Bankstown Council's DCP, and the NSW Government Department of Planning's 'Floodplain Development Manual'.

2. Site Analysis

The site is located within the municipality of Canterbury-Bankstown Council and is identified as Lot B and Lot C on DP 23626. The site is located on the Western side of Chester Hill Rd and has a total site area of approximately 1618.5m² in total. The site is bounded by built up residential allotments to the North, West, South, and by Chester Hill Rd along the Eastern boundary (See Figure 1 – Site location).

The proposed development consists of the consolidation of the two residential lots. The existing dwellings are to be demolished and the construction of a new boarding house and on ground parking area. The proposal also consists of the change of use of the existing single detached structures to boarding rooms (See Figures 2 & 3 Pre-developed & post-developed site plans).

3. Flood Assessment and Recommendations

The flood information extracted from *Canterbury-Bankstown Council – "100 Year ARI Flood Extent Map from Villawood Catchment Study"* demonstrate that the subject site is Located within an overland flow path (floodway) from excess stormwater runoff. The frontage of the consolidated sites along Chester Hill Rd is located within a floodway and subject to full inundation of overland flow during the 100YR ARI flood event. The roadway has been categorised as Medium Risk Area as calculated by velocity x depth.

Council's Stormwater System Report (SSR) and modelling denotes that the overland flow is not contained within the roadway and inundates the sites for all storms up to and including the 100YR and also during the Probable Maximum Flood (PMF).

As per the flood information, the maximum 100YR ARI Flood Level adjacent to the proposed boarding house at the front of site has been determined to be 25.80mAHD. The 100YR ARI Flood level located at the rear of the site (adjacent to the existing structures has been determined to be 25.55mAHD.

The Flood Planning Level (FPL) is to be set at 500mm above the 100YR Flood Level. Therefore, the design FPL for the site is determined to be **FPL26.30mAHD (at the front), and FPL56.05mAHD (at the rear).**

As per the flood information, the flood extent extract, and the site survey, it can be seen that the flooding inundates the roadways, surrounding road network, and the site during the 100YR ARI Storm Event.

3.1 Finished Floor Levels

As per Councils DCP for flood affected sites, all habitable floor levels are to have a 500mm freeboard above the 100 Year ARI flood level.

With this, the minimum habitable floor level is to be set at **FFL26.30** for the main boarding house at the front of the site. The rear outbuildings & garage areas that are to be converted are to ensure a minimum habitable floor level of **FFL26.05mAHD** is achieved. These levels will ensure adequate freeboard to habitable areas have been achieved across the site.

All habitable floor levels as shown on the architectural plans (*Master Grannyflats Project 106B Issue DA05 dated 22/07/21*) satisfy the above finished floor level requirements with FFL26.30mAHD.

3.2 Building Components and Structural Soundness

The lowest floor level in the vicinity of the proposed development is located at the rear of the building line with a Natural Ground Level (NGL) of RL25.54. With a minimum required habitable finished floor level of min.26.30mAHD, the ground floor of the proposed boarding house will be a maximum of 0.76m above the ground level.

With this, the proposed ground floor of the development is to be constructed as a suspended structure on piers to the structural engineer's details.

This form of construction will ensure structural soundness and the ability to withstand all forces of flowing waters, including debris and buoyancy. All building components below the 100YR ARI plus freeboard (i.e the Flood Planning Level) are to be flood compatible materials as described above. All power points are to be at a minimum level of 26.30mAHD (FPL).

3.4 Volume

The volume of the existing flood storage on the site is approximately 95.38m³. The proposal includes the removal of the various components surrounding the existing structures, and the reconstruction of a new boarding house.

The post-developed net flood storage volume for the site has been calculated to be greater than that of the site scenario in its pre-developed state. This is due to the removal of existing dwellings and obstructions, and the construction of the proposed boarding house on piers. Pier construction allows for the site storage volume capacity to increase significantly as the structures being removed were located within the overland flow path. Therefore, the site storage volume will be increased due to the development which decreases potential inundation.

3.5 Velocity

The proposed development will have a 5.50m set back from the front boundary, a 32.39m set back from the rear boundary, a 0.9m set back from the southern side boundary and a 10.96m set back from the northern side boundary (See attached Figure 3). The demolition of the existing dwellings as obstructions, along with the proposed development on piers, create significantly greater widths of flow through the site. With this, the proposed setbacks, pier construction, and the implementation of flood fence for all new fencing site boundaries, the proposed development is expected to decrease the velocity of water during all Storm Events.

3.6 Impact on adjacent lands

As per the Flood Extent shown in Figure 4, it can be seen that the neighbouring properties located to the North and West of the site are all fully inundated by the 1 in 100YR Flood event. The site located to the south of the development is unaffected during the 1 in 100YR Flood event. The proposal consists of the demolition of two single residential dwellings and the construction of a single storey boarding house as well as alterations and additions to existing structures at the rear of the site. With this, the proposed boarding house is to be on piers, and no decrease to the side setbacks within an overland flow path or decrease of flow width in the vicinity of the proposal. Therefore, the proposal is not expected to increase the inundation level on the neighbouring properties.

4. Evacuation

It is recommended that evacuation procedures shall be carried out pending instructions from authorities i.e. State Emergency Services.

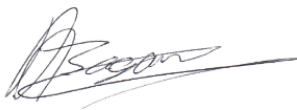
For Storms up to the 1% AEP, all occupants are to remain within the dwelling, due to the proposed elevated level, and the short length of time of concentration. However, if previous warning is given, evacuation to Chester Hill Rd is safer. Occupants of the dwelling are to evacuate to the front of site and travel in a **Southern** direction along Chester Hill Rd. This is the shortest and safest travel distance to evacuate. Evacuation during flooding may be quite dangerous and would NOT be recommended and should only take place prior to the water level reaching a level of 0.2m above the NGL at the front boundary.

5. Conclusion

We certify that the proposed alterations & additions to the existing dwellings as presented in the architectural plans by *Master Granny Flats (Project 106B Issue DA05 dated 22/07/2021)* will meet the requirements of Department of Planning's 'Floodplain Development Manual', Canterbury-Bankstown Council's Flood requirements as specified in *Canterbury-Bankstown Council - 100 Year ARI Flood Extent Map from Villawood Catchment Study*, provided that all procedures and recommendations presented in this report are implemented.

Should you require any further assistance, please do not hesitate to contact our office.

Kind Regards,



Dimitri Tsagaris

D.T CIVIL PTY LTD

B.E.(UoW), M.I.E(Aust), P.Eng, NER



Figure 1 – Site Locality Plan

Source: Six Maps dated 25/07/2021

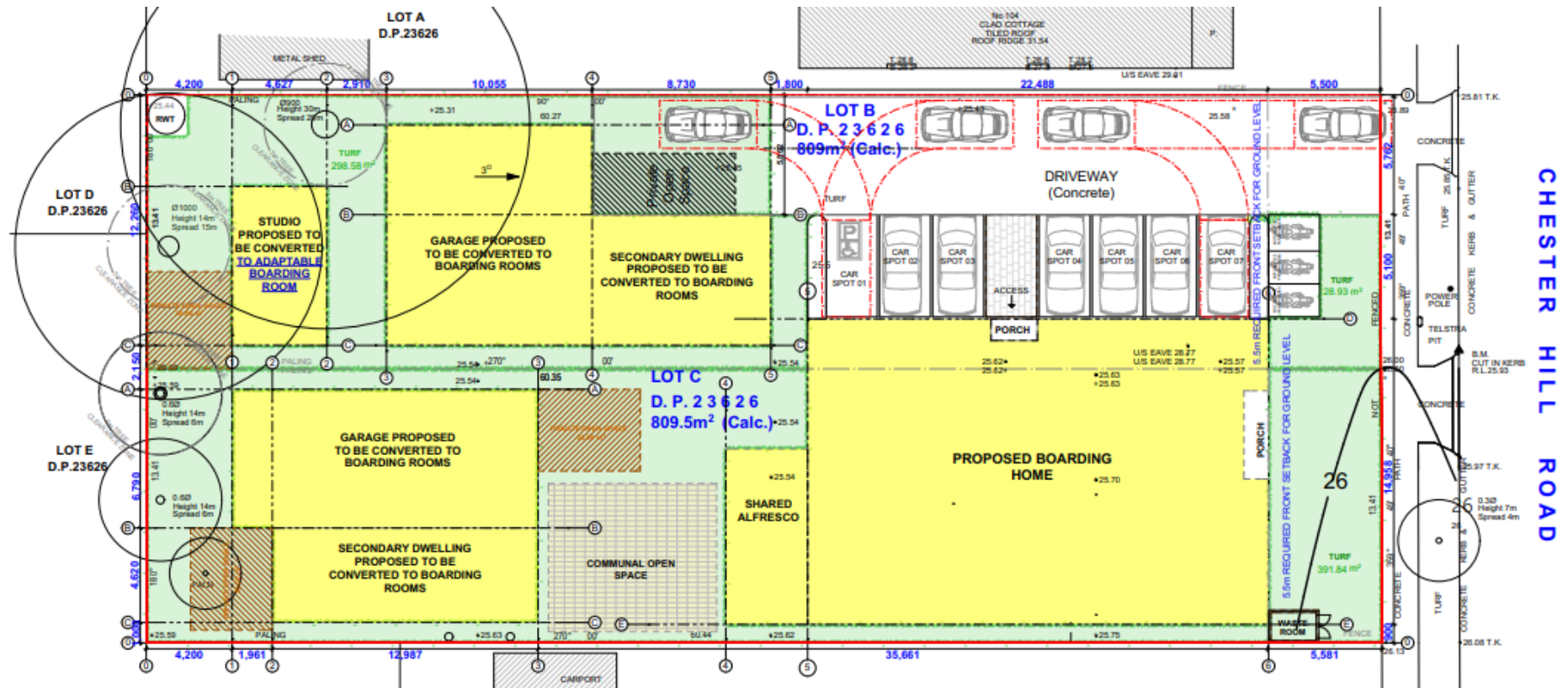
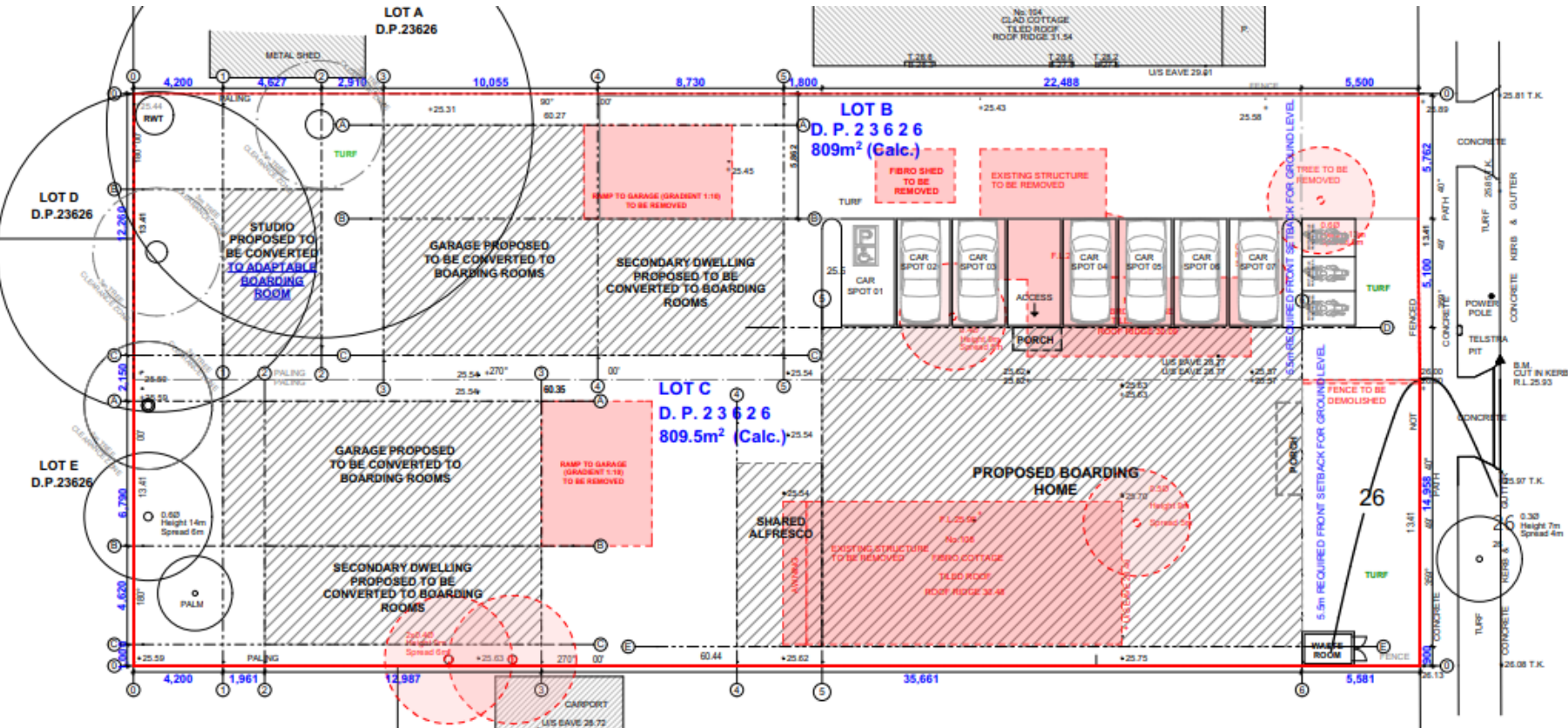


Figure 2 – Proposed Site Plan

Source: Architectural Plans by *Master Granny Flats* dated 22.07.2021



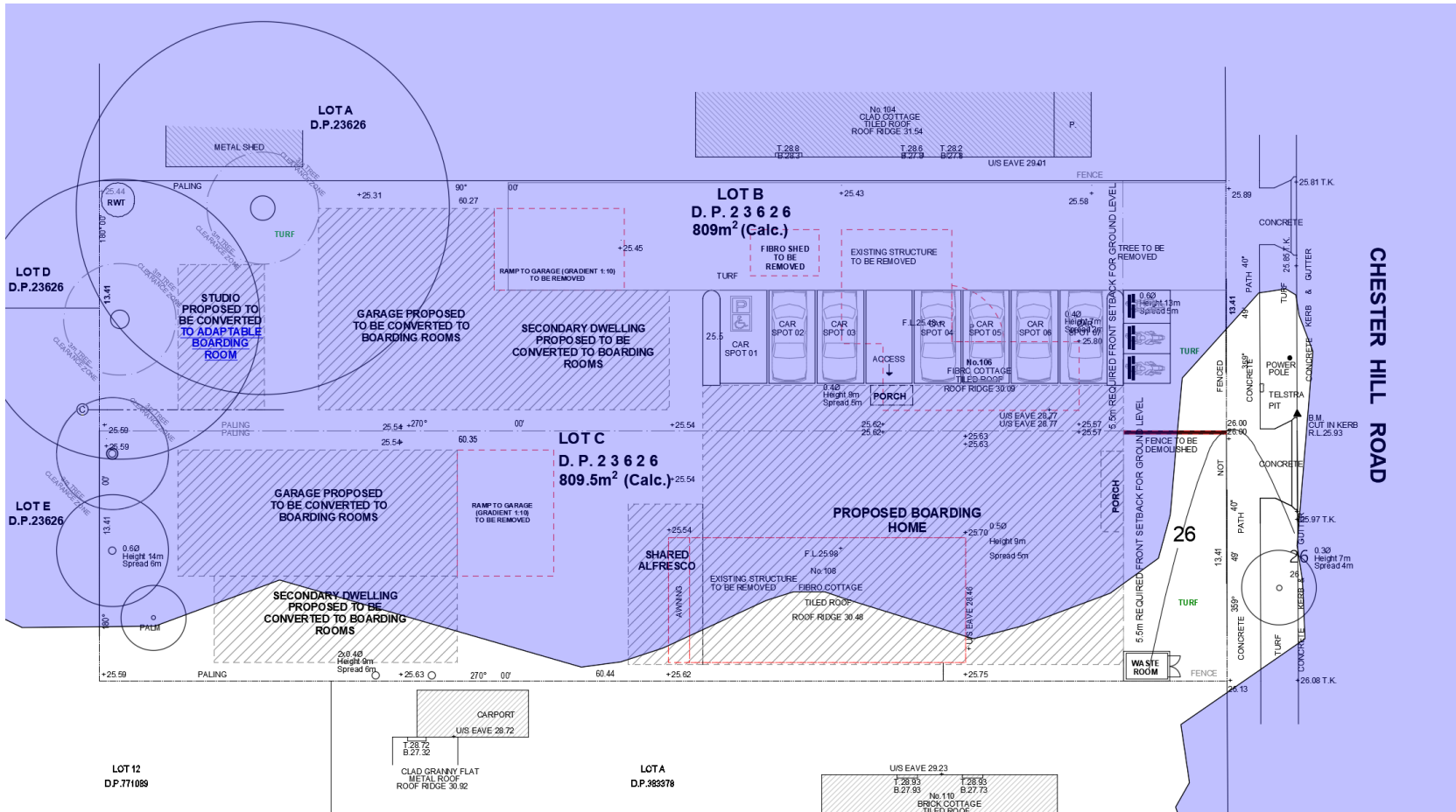


Figure 4 - Proposed 100YR Flood Extent



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CITY OF CANTERBURY BANKSTOWN

To: Master Granny Flats
PO Box 344
SOUTH HURSTVILLE NSW 2221

STORMWATER SYSTEM REPORT 108 Chester Hill Road, BASS HILL NSW 2197

Date: 27-Sep-2019
Ref: WP-SIA/1378/2019
Development type:

NO

FLOOD/OVERLAND FLOW STUDY REQUIRED

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

- Overland flowpath [floodway] for excess stormwater runoff from the upstream catchment and associated with this drainage system.

The site will be subject to stormwater inundation from this overland flowpath during large storm events. Refer to the attached "100 Year ARI Flood Extent Map from Villawood Catchment Study". 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.

For existing maximum 100 year ARI* flood levels, m AHD**, at the site refer to flood contours in the attached maps.

For this development, a flood / overland flow study to determine the 100 year ARI water surface level is not required provided that no structures are proposed within the area affected by the overland flowpath as shown on the "100 Year ARI Flood Extent Map from Villawood Catchment Study" and that the existing ground surface levels within this area are maintained without changes.

The proposed development including floor levels, shall comply with the development controls specified in Part B12 Schedule 5, of Bankstown's Development Control Plan 2015 - Catchments Affected by Stormwater Flooding.

A floodway is required over the site. Site levels should be designed to allow the operation of this floodway. No obstructions to the flow of stormwater are to be constructed or placed in this floodway.

This report relates to the exposure of the subject site to Council's [& Sydney Water's] [& Private] 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

*** Bankstown Council's *Development Engineering Standards and Bankstown's Development Control Plan 2015* is available from Council's Customer Service Centre.

Pushpa Goonetilleke
ENGINEER

Figure 5 – Council SSR Report Extract (No.106 & 108)

Source: Canterbury-Bankstown Council dated 27/09/2019

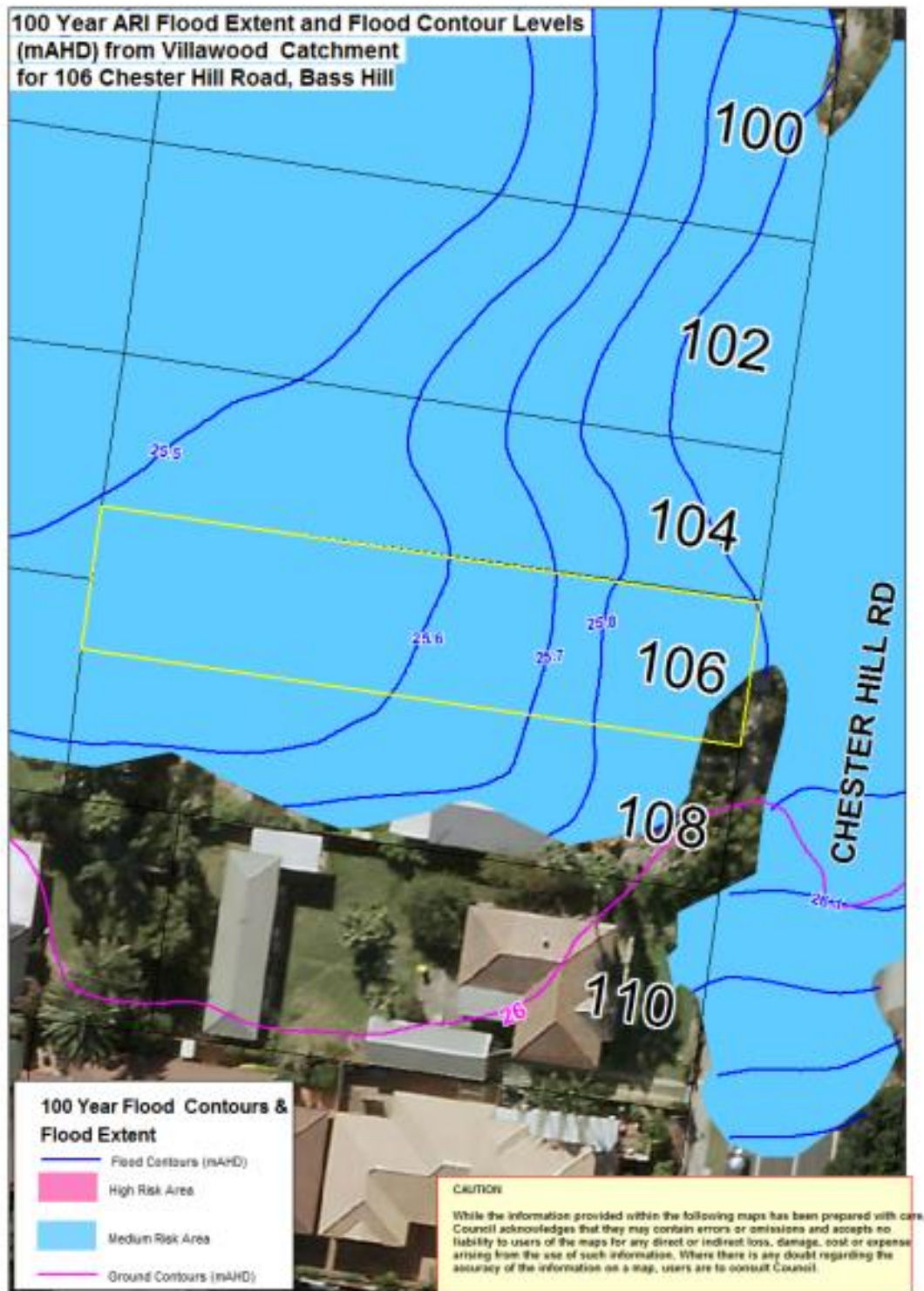


Figure 6 – ARI Flood Extent and Flood Contour Levels

Source: Canterbury-Bankstown Council dated 27/09/2019



Figure 7 – Villawood Catchment Area – 100YR ARI Flood Depths & Contours

Source: Canterbury-Bankstown Council dated 27/09/2019



Figure 8 – Subject Site – 100Yr ARI Velocity Depth Products

Source: Canterbury-Bankstown Council dated 27/09/2019