No.98 MACKENZIE STREET, REVESBY

Our Ref: **E240269**

FLOOD RISK MANAGEMENT REPORT

PREPARED BY: NADER ZAKI

CHECKED BY: YOUSSEF RIAD
MIEAust CPEng NER

24 April 2025

ISSUE C

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INTRODUCTION

NY Civil Engineering has prepared a Flood Risk Management Report to accompany the Development Application submitted to Canterbury Bankstown City Council for the Proposed Dual Occupancy and Secondary Dwellings at property No. 98 Mackenzie Street, Revesby.

Canterbury Bankstown City Council have identified the proposed development site as affected by low and medium risk flooding. Flood mapping has been undertaken through the 100 Year ARI Flood Maps from Padstow Catchment Study. This Flood Risk Management Plan has been undertaken identifying the proposed developments adherence with the requirements of Council's Development Control Plan (DCP).

The following documentation has been used in the preparation of this Flood Risk Management Report;

- Survey by TJ Surveyors dated 29 January 2024
- Architectural Site Plan by Masterton Homes dated April 2025 (Appendix A)
- 100 Year ARI Flood Maps from Padstow Catchment Study (Appendix B)
- NY Civil Engineering Flood Model Maps and driveway profile (Appendix C)
- Canterbury Bankstown Development Control Plan 2023 (DCP) Chapter 2 – Flood Risk Management

SITE INFORMATION

The site is approximately 300m west of Playford Park. The existing development consists of a single storey dwelling. The general nature of the surrounding development is primarily residential. The site is located adjacent a natural depression in the topography directing runoff from the local catchment through the front half of the property. The site slopes predominantly from east to west.

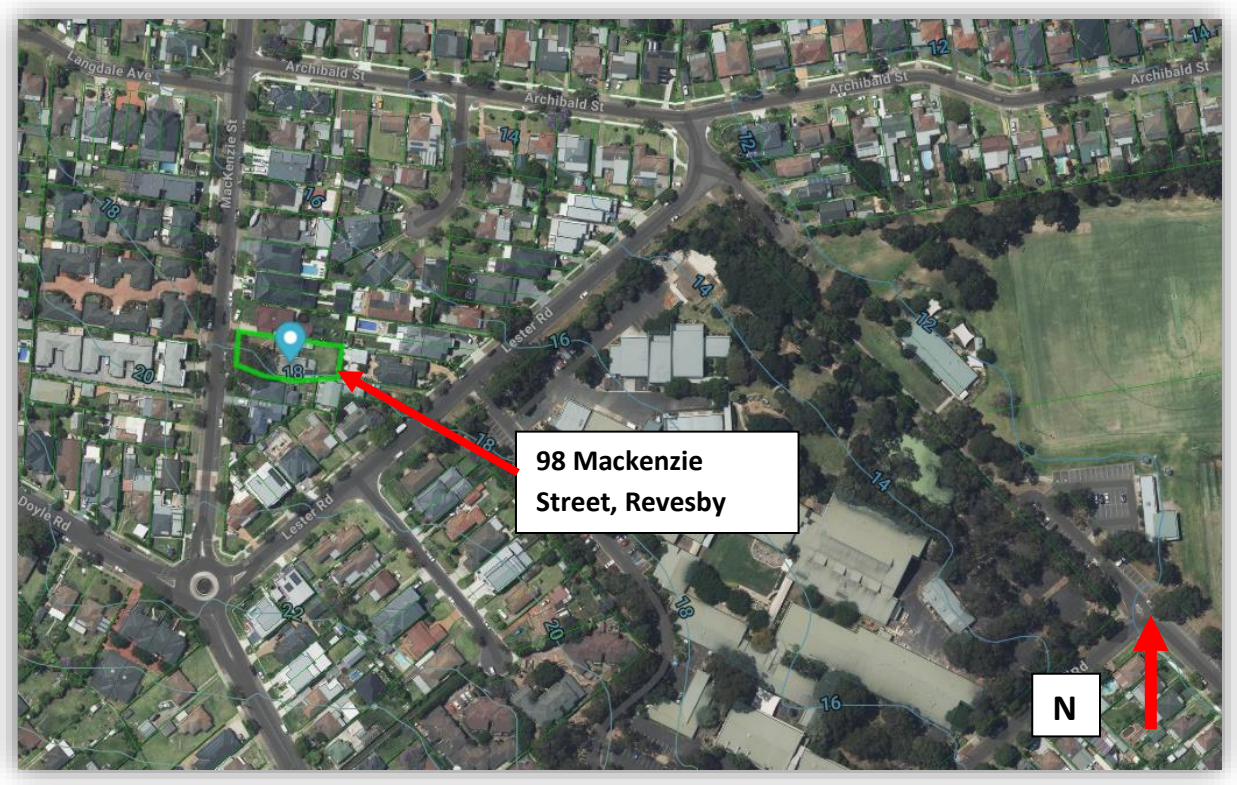


Figure 1. Subject Site and Surrounding Area Developments

Figure 1 shows the location of the subject site and an indication of the nature of the developments surrounding the site.

PROPOSED DEVELOPMENT

The proposed development involves the construction of an attached dual occupancy. See Figure 2.

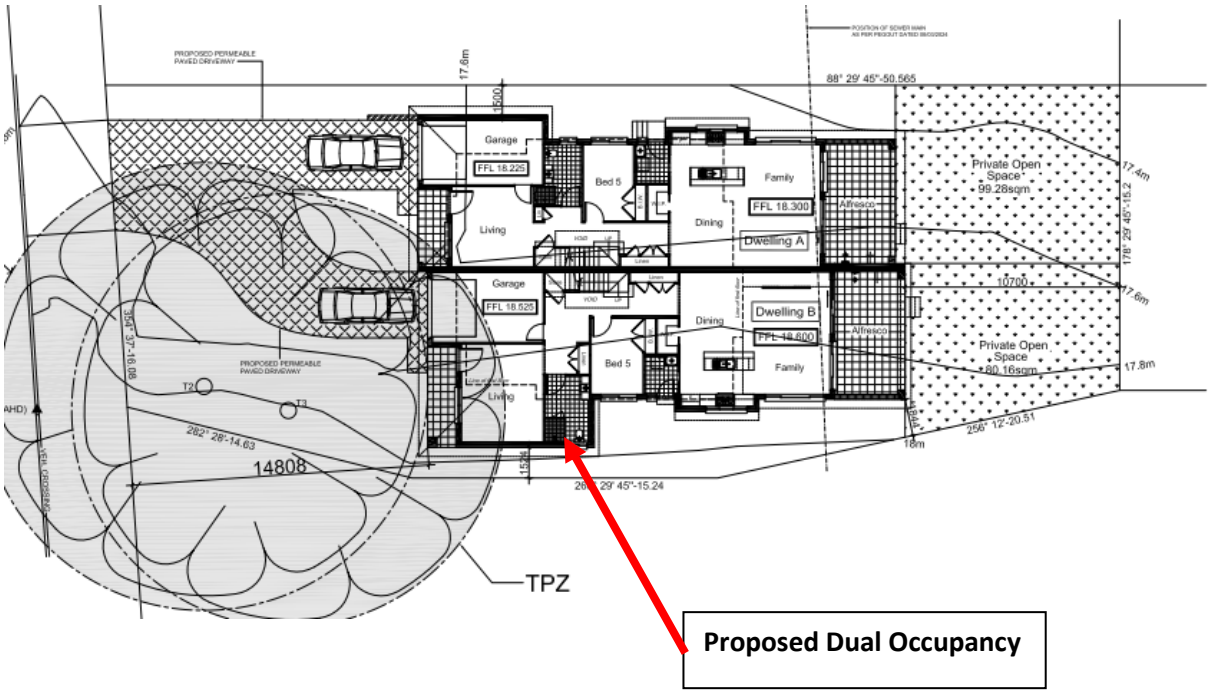


Figure 2: Proposed Development

Figure 2 is an extract from architectural plans depicting the site plan and location of the proposed development.

FLOODING

Council has shown in their 'Stormwater System Report' dated 17.10.2023 (Appendix B) that the site is subject to flooding in the 1% AEP and PMF flood events, with relevant flood levels as below;

1% AEP flood level (Dwelling A)	RL 17.80m AHD
1% AEP flood level (Dwelling B)	RL 18.10m AHD
Flood Planning Level (Dwelling A)	RL 18.30m AHD
Flood Planning Level (Dwelling B)	RL 18.60m AHD
PMF (Dwelling A)	RL 17.90m AHD
PMF (Dwelling B)	RL 18.30m AHD

Table 1: Flood Levels

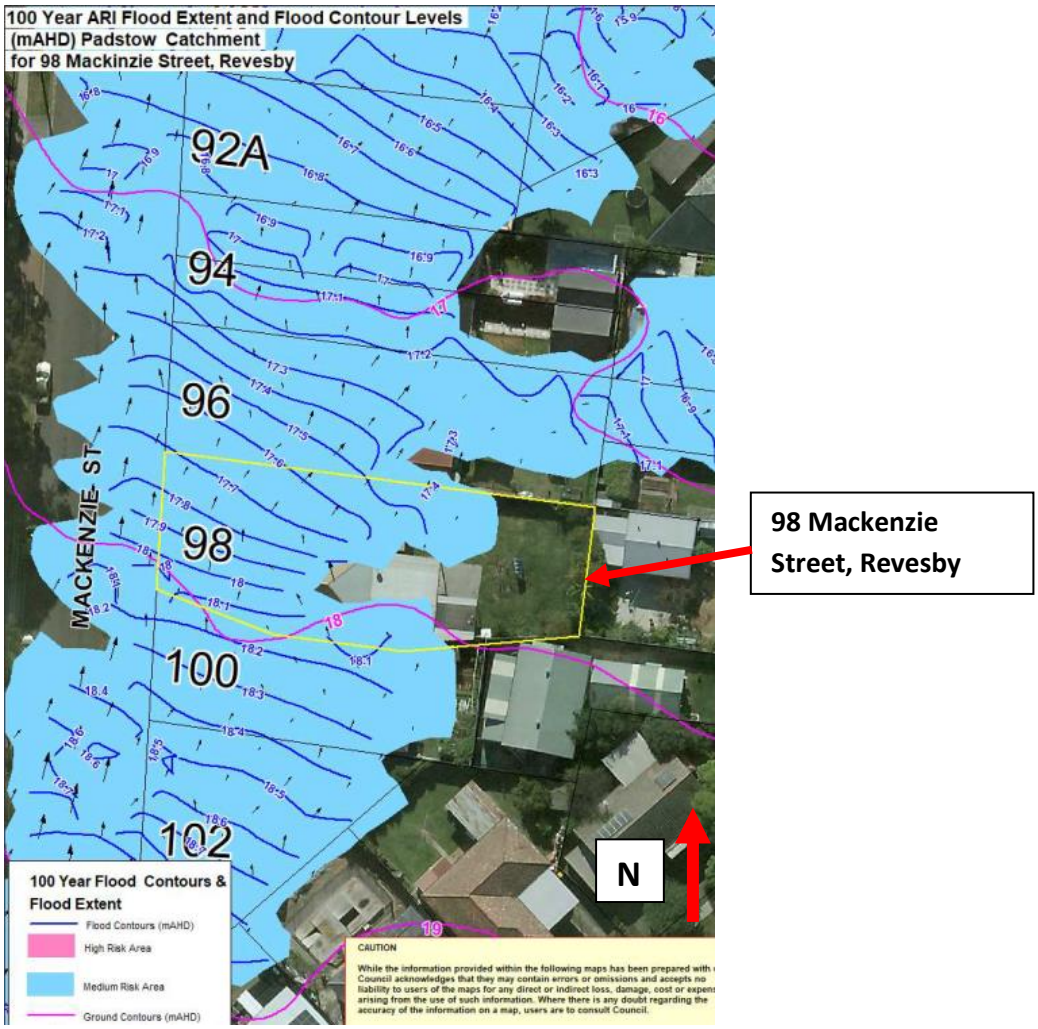


Figure 3: 100 Yr ARI Flood Depth

Figure 3 is an extract from the 100 Year ARI Flood Maps from Padstow Catchment Study indicating the site is affected by a minor overland flowpath. The front 30% of the site is inundated in the 100 ARI storm event.

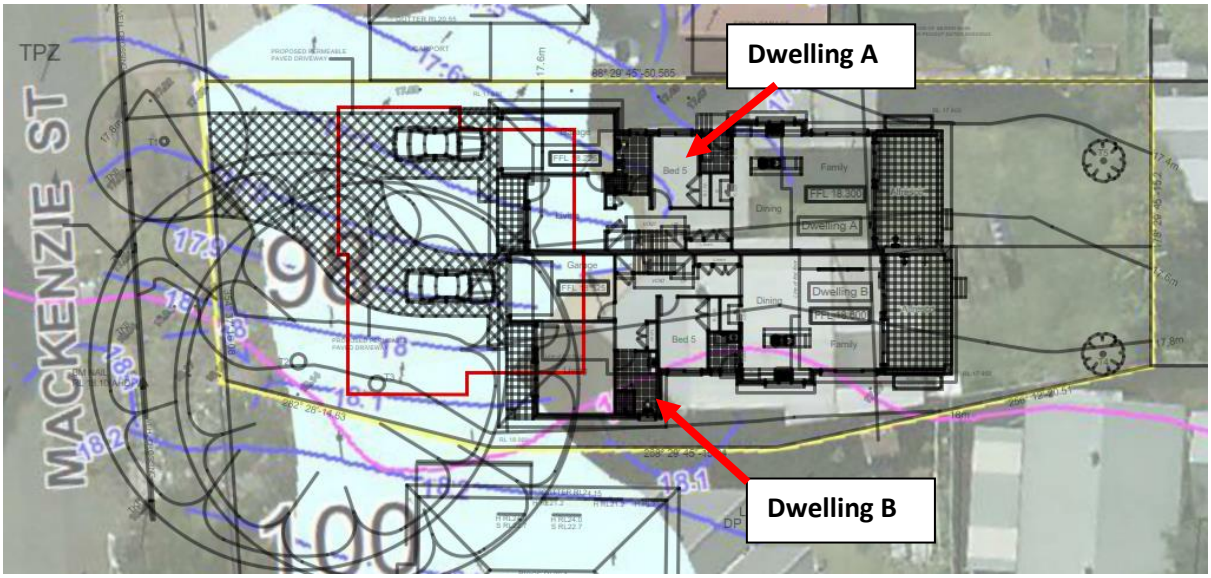


Figure 4: Proposed Building Outline

Figure 4 is an outline of the proposed development overlaying the 100-year ARI flood map indicating the flood level at Dwelling A and Dwelling B. From figure 4. the Flood Planning Levels aforementioned (in table 1) can be interpolated.

Commentary received in phone conversation between our office and from Pushpa Goonetilleke (Council Stormwater Engineer) on 10 September 2024 has confirmed that this flooding is minor in nature and Council considers the obstruction of this minor flow inconsequential to the flood regime. However, further flood modelling has been undertaken to confirm a net zero afflux is achieved with the proposed development.

FLOOD MANAGEMENT REQUIREMENTS

Canterbury Bankstown City Council have outlined in their DCP 'Chapter 2 - Flood Risk Management' a number of planning controls for developments subject to low, medium and high-risk flooding. The proposed development's flood risk category has been considered as medium risk for the purpose of addressing the below requirements.

As outlined in the DCP, Section 6 – Schedule 5 – Catchments Affected by Stormwater Flooding, considerations and assessment for Residential type development(s) include;

Floor Level:

Consideration No.1: non-habitable floor levels should be no lower than the 20-year flood unless justified by a specific assessment.
Assessment: Non applicable.

Consideration No.2: All habitable floor levels to be equal to or greater than the 100-year flood level plus freeboard.
Assessment: The minimum freeboard in relation to peak water surface level of the 1% AEP overland flow path to habitable floor space is 500mm.

The highest flood level immediately adjacent to the building footprint is interpolated for Dwelling A to be 17.80m AHD and 18.10m AHD for Dwelling B.
The proposed dwellings are to have a finished floor level (FFL) no lower than RL 18.30m AHD and RL 18.60m AHD respectively.

Consideration No.6: A restriction on the use of the land is to be registered on the Certificate of Title where the lowest floor level is elevated more than 1.5m above finished ground level, requiring that the undercroft area is not to be enclosed. The use of roller shutters, hit and miss brickwork and similar methods is however permissible where there is no significant flood impact. Non-habitable uses (laundry, toilet, bathroom and similar uses) can be enclosed where there is no significant flood impact.
Assessment: Non applicable.

Building Components and Method:

Consideration No.1: All structures to have flood compatible building components below the 100-year flood level plus freeboard.
Assessment: A suitably qualified structural engineer is to certify that the building components of the proposed structures below RL 18.30 AHD for Dwelling A and RL 18.60 AHD for Dwelling B are flood compatible nature at CC stage.

Structural Soundness:

Consideration No.1: Applicant to demonstrate that the structure can withstand the forces of floodwaters, debris and buoyancy up to and including a 100-year flood plus freeboard, or up to the PMF (probable Maximum Flood) if required to satisfy evacuation requirement (See below). An engineer's report may be required.
Assessment: An appropriately qualified structural engineer is to certify that the proposed dwelling can withstand the forces of floodwaters, debris and buoyancy to the habitable level of 18.30m AHD and 18.60m AHD for dwellings A and B respectively. The structures adjacent PMF level of RL 17.90m AHD for Dwelling A and RL 18.30m AHD for Dwelling B are lower than the required habitable floor level, and does not require an evacuation route.

Flood Effects:

Consideration No.2: Applicant to demonstrate to Council's satisfaction (by way of an engineer's report if requested) that the development will not increase flooding effects elsewhere, having regard to loss of flood storage; changes in flood levels, flows and velocities; the cumulative impacts of multiple developments in the vicinity. The report should also identify the presence of any "major overland flow paths". Note: Where major overland flow paths are present, this may result in restrictions of the proposed development to maintain the functioning of the flowpath, and/or to manage the impacts of development on properties.
Assessment: The flow regime is minor in nature, and Council have confirmed that construction on slab footing is appropriate.

Consideration No.3: Council may require that the creation of an easement, or that a restriction be placed on the Title Certificate identifying the location of "major overland flow paths" or locations of significant backwater flooding.
Assessment: Council to advise if an easement or restriction is to be created.

Parking and Driveway Access:

Consideration No.2: The minimum surface level of open spaces or carports shall be as high as practical, and not below (i) the 20-year flood level, or (ii) the level of the crest of the road at the location where the site has access, (whichever is lower). In the case of garages, the minimum surface level shall be as high as practical, but no lower than the 20-year flood level. Surface levels should also be determined having regard to the control Number 4 below relating to depths of inundation over driveways.
Assessment: The proposed garage and car space for both dwelling are higher than the 100-year flood level and road crest.

Consideration No.3: Garages capable of accommodating more than 3 vehicles on land zones for urban purposes, or enclosed car parking, must be protected from inundation from the 100-year flood.
Assessment: N/A No parking area accommodating more than 3 vehicles is proposed.

Consideration No.4: The level of the driveway providing access between the road and the parking spaces should be as high as practical, and not lower than 0.3m below the 100-year flood level. However, Council may consider a lower level for the driveway in the following circumstances, where risk to human life is not compromised: (a) Where the road is lower than the parking space, no part of the driveway should be inundated to a greater depth than the roadway. (b) Where the car parking space is lower than the road, the depth of inundation over the driveway must not be greater than the car park inundation depth, and the driveway must rise continuously in an egress direction. (c) Where the car parking space and road are both below the 100-year flood level, the depth of inundation over the driveway must not be greater than the depth at either the car parking space or the road. Where feasible, the driveway should rise continuously in the egress direction.
Assessment: N/A the driveway level is not lower than 0.3m below the 100-year flood level at any time.

Consideration 5: Enclosed car parking and car parking areas capable of accommodating more than three vehicles (other than on rural zoned land) with a floor level below the 20-year flood level or more than 0.8m below the 100-year flood level shall have adequate warning signs, signage and exits.
Assessment: N/A No parking area accommodating more than 3 vehicles is proposed.

Consideration 6: Restraints or vehicle barriers to be provided to prevent floating vehicles leaving a site during a 1% AEP flood.
Assessment: N/A parking and garage spaces are higher than 100-year flood level.

Evacuation:

Consideration No.2: Reliable access for pedestrians or vehicles is required from the building, commencing at a minimum level equal to the lowest habitable floor level to an area of refuge above the PMF. Such a refuge may comprise a minimum of 20% of the gross floor area of the dwelling being above the PMF level. An engineer's report may be required.
Assessment: All habitable floor levels are above PMF level as such reliable access is always achievable.

Consideration No.3: The development is to be consistent with any flood evacuation strategy, flood plan or similar strategy that has been adopted by Council.
Assessment: Council to advise if a current Flood Evacuation Strategy or Plan exists for any previous DA Applications.

CONCLUSIONS AND RECOMMENDATIONS

Based on our analysis of the proposal, it can be concluded that the proposed development has a negligible impact on surrounding developments.

The following conclusions and recommendations are based on council's controls for flood affected developments;

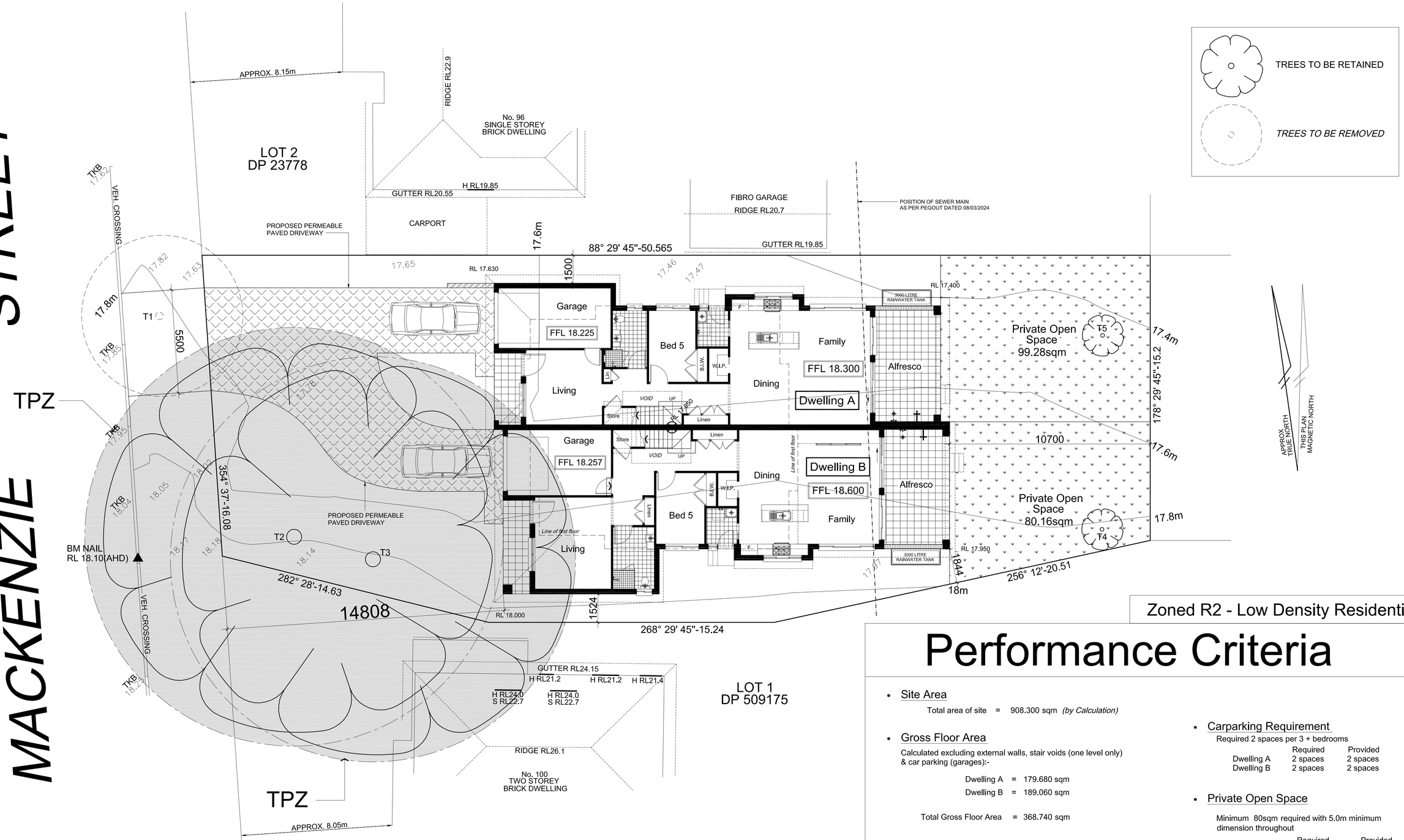
- **The proposed Dwelling A and the adjacent Secondary Dwelling is to have a finished floor level (FFL) no lower than RL 18.30m AHD.**
- **The proposed Dwelling B and the adjacent Secondary Dwelling is to have a finished floor level (FFL) no lower than RL 18.60m AHD.**

- The building components of the proposed dwelling structure below RL 18.30m AHD and RL 18.60m AHD for Dwelling A and B, respectively, are to be constructed from flood compatible materials.

- An appropriately qualified structural engineer is to certify that the proposed dwelling can withstand the forces of floodwaters, debris and buoyancy to RL 18.30m AHD and RL 18.60m AHD for Dwelling A and B, respectively.

APPENDIX A

ARCHITECTURAL PLANS



Zoned R2 - Low Density Residential

Performance Criteria

- **Site Area**
  Total area of site = 908.300 sqm *(by Calculation)*

- **Gross Floor Area**
  Calculated excluding external walls, stair voids (one level only) & car parking (garages):-
  Dwelling A = 179.680 sqm
  Dwelling B = 189.060 sqm
  Total Gross Floor Area = 368.740 sqm

- **Floor Space Ratio**
  Maximum allowable = 0.50 : 1 or 454.150 sqm
  FSR proposed = 0.41 : 1 or 368.740 sqm

- **Individual Floor Space Ratio - Lot 100**
  FSR proposed = 0.39 : 1 or 179.680 sqm / 457.90 sqm

- **Individual Floor Space Ratio - Lot 101**
  FSR proposed = 0.42: 1 or 189.060 sqm / 450.40 sqm

- **Carparking Requirement**
  Required 2 spaces per 3 + bedrooms

	Required	Provided
Dwelling A	2 spaces	2 spaces
Dwelling B	2 spaces	2 spaces

- **Private Open Space**
  Minimum 80sqm required with 5.0m minimum dimension throughout

	Required	Provided
Dwelling A	80.000 sq.m	99.280 sqm
Dwelling B	80.000 sq.m	80.160 sqm

- **Front Setback Landscaped Area**
  Minimum required for Bankstown Council Area is 45% of front setback area of 272.360 sq.m
  Required 45% of front setback or 122.565 sq.m
  Provided 56% of front setback or 154.000 sq.m

Site Plan

100 Year ARI Flood Level
RL 17.900 AHD

TORRENS TITLE

REVISION	DATE	DRAWN BY	COMMENTS
A	27.02.24	SL	Presentation Plans
B	11.04.24	CR	Livable Housing Design Amendments
C	31.10.24	CR	Post Contract Variation Doc 2
D	09.04.25	GD	New Development Application

MASTERTON HOMES
MASTERTON HOMES PTY LTD
CNR SAFFO RD & HUME HWY
WARWICK FARM NSW 2170
Lic. No.: 355582
ABN. 52 002 873 047
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SALES CENTRE 1300 4HOMES

RESIDENTIAL LOGISTICS P/L
Suite 1, Level 1
208 -210 Northumberland St,
Liverpool NSW 2170
Email: mail@rl.net.au Phone: 9602 7700 Fax: 9734 6633

Site Plan & Performance Criteria Calculations
PROPOSED ATTACHED DUAL OCCUPANCY

CLIENT: *Mr Manduca & Mrs Fruci*
SITE ADDRESS: *No.98 (Lot A in DP 416914) Mackenzie Street,*
SUBURB: *Revesby* SCALE: *1 : 100*
COUNCIL: *Canterbury Bankstown* JOB No.: *RL 5989*
REVISION: *D* DATE: *09.04.2025* SHEET: *1 of 1*

APPENDIX B

100 YEAR ARI FLOOD MAPS - PADSTOW CATCHMENT STUDY

Level 1, 66 - 72 Rickard Road, Bankstown NSW
PO Box 8, Bankstown NSW 1885
Tel: (02) 9707 9010 - Fax: (02) 9707 9408
DX 11220 BANKSTOWN
council@cbcity.nsw.gov.au

CITY OF CANTERBURY BANKSTOWN

To: Rosetta Fruci
8 Elliston Pl
BARDEN RIDGE NSW 2234

STORMWATER SYSTEM REPORT
98 Mackenzie Street, REVESBY NSW 2212

Date: 17-Oct-2023
Ref: WP-SIAONL-2103/2023
Development type: **Dual Occupancy**

NO FLOOD/OVERLAND FLOW STUDY REQUIRED

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

- Overland flowpath for excess stormwater runoff from the upstream catchment to the south of the site.

The site will be subject to stormwater inundation from this overland flowpath during large storm events. Refer to the attached **"100 Year ARI Flood Maps from Padstow 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 17.9 m AHD.**

For this development, a flood /overland flow study to determine the 100 year ARI* water surface level is not necessary provided that the **proposed development including floor levels, shall comply with the development controls specified in Chapter 2.2 Schedule 5, of Canterbury Bankstown's Development Control Plan 2023 - 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. Refer Bankstown Council's *Development Engineering Standards* 2023*.**

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

Runoff on the site, and naturally draining to it is to be collected and disposed of to Council's requirements detailed in Bankstown Council's *Development Engineering Standards*** 2023.*

This report is given without the benefit of development plans or a site survey. Council may choose to vary some report requirements following evaluation of detailed plans when they are submitted.

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.

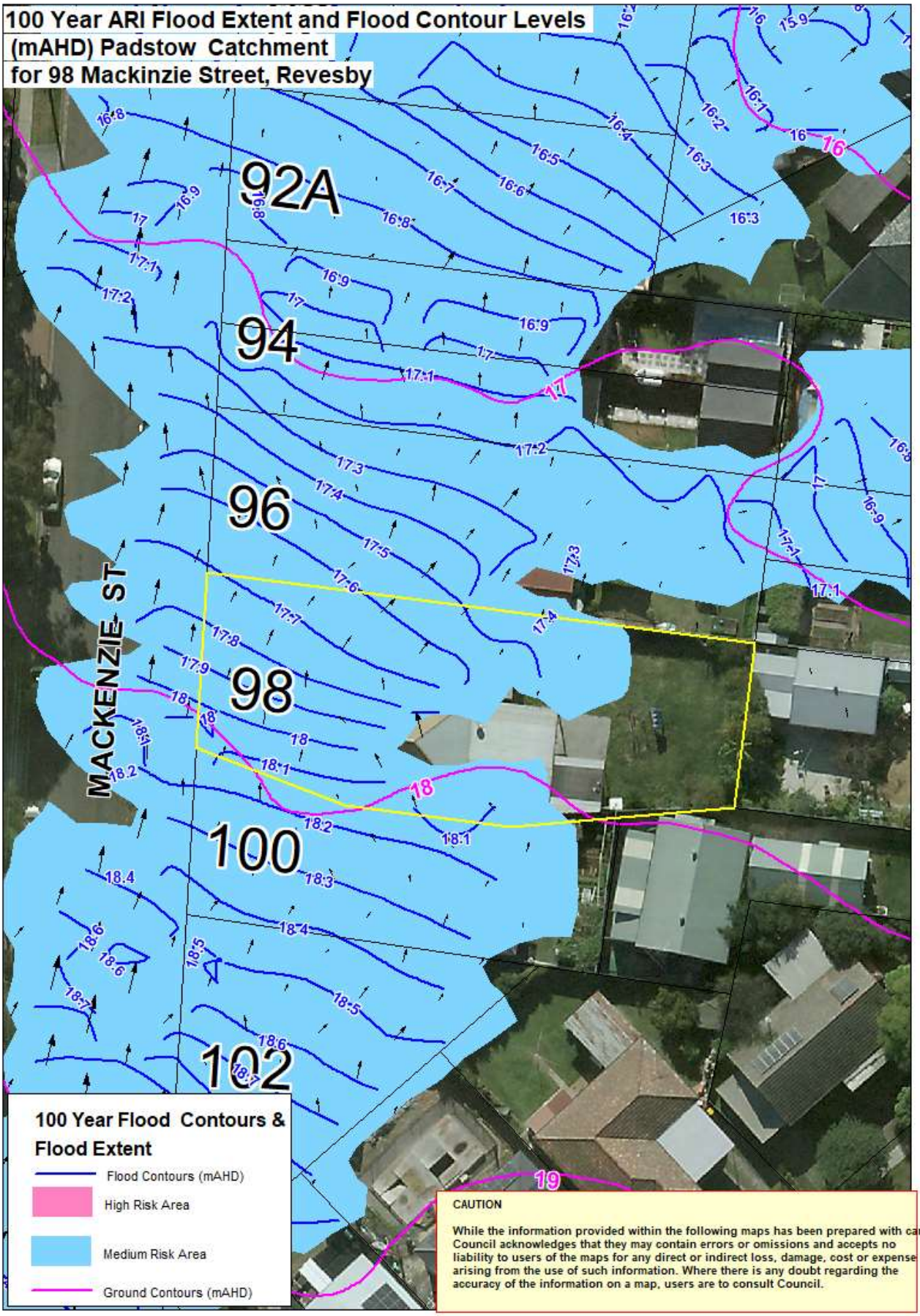
* Average Recurrence Interval

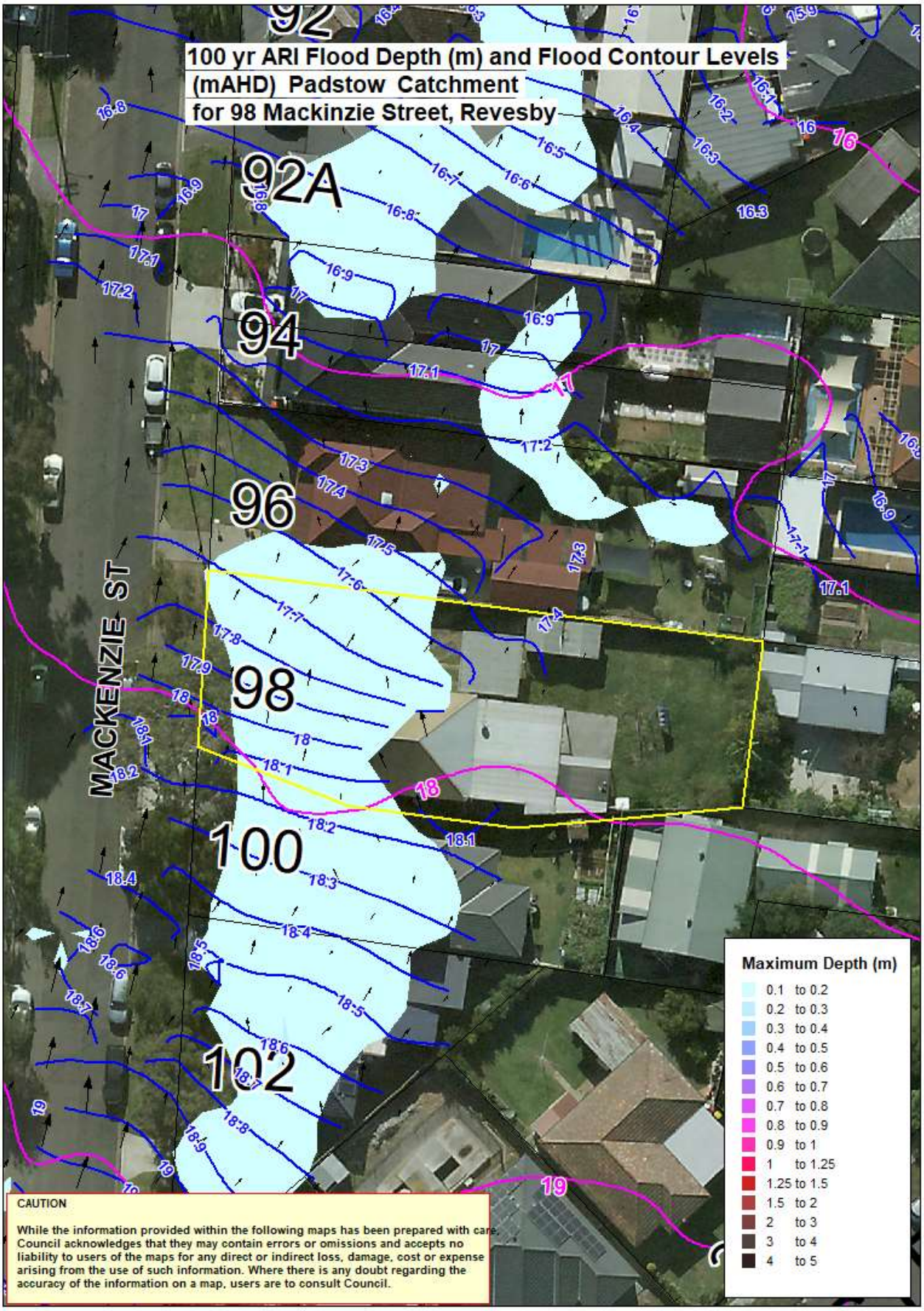
** Australian Height Datum

*** Canterbury Bankstown Council's *Development Engineering Standards* June 2023 and Canterbury *Bankstown's Development Control Plan 2023* is available from Council's Web Page.

PMF Probable Maximum Flood

Pushpa Goonetilleke
ENGINEER


100 Year ARI Flood Extent and Flood Contour Levels (mAHD) Padstow Catchment for 98 Mackinzie Street, Revesby
92A
94
96
98
100
102
MACKENZIE ST
100 Year Flood Contours & Flood Extent
Flood Contours (mAHD)
High Risk Area
Medium Risk Area
Ground Contours (mAHD)
CAUTION
While the information provided within the following maps has been prepared with care, Council acknowledges that they may contain errors or omissions and accepts no liability to users of the maps for any direct or indirect loss, damage, cost or expense arising from the use of such information. Where there is any doubt regarding the accuracy of the information on a map, users are to consult Council.


100 yr ARI Flood Depth (m) and Flood Contour Levels
(mAHD) Padstow Catchment
for 98 Mackinzie Street, Revesby
92
92A
94
96
98
100
102
MACKENZIE ST
Maximum Depth (m)
0.1 to 0.2
0.2 to 0.3
0.3 to 0.4
0.4 to 0.5
0.5 to 0.6
0.6 to 0.7
0.7 to 0.8
0.8 to 0.9
0.9 to 1
1 to 1.25
1.25 to 1.5
1.5 to 2
2 to 3
3 to 4
4 to 5
CAUTION
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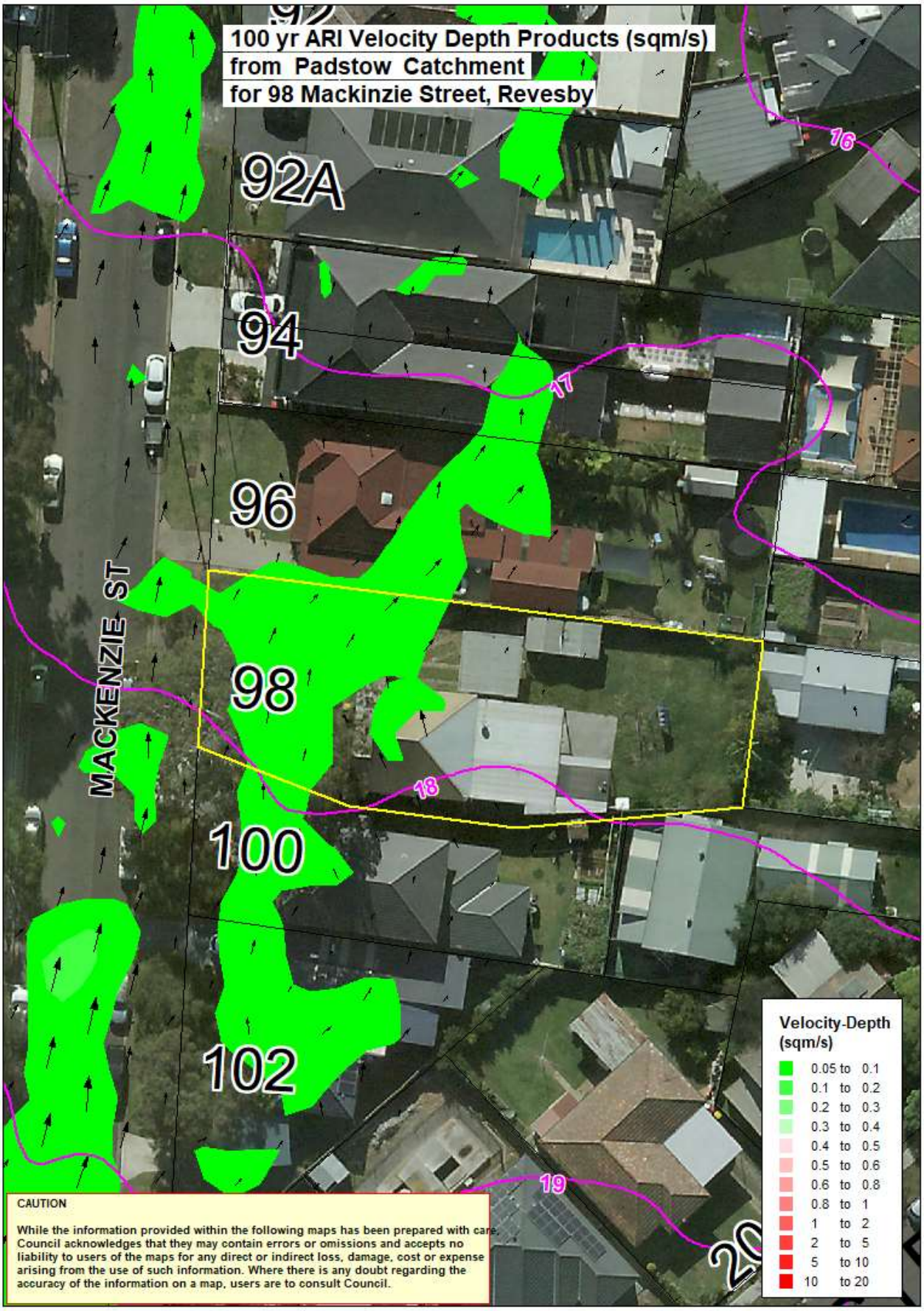
100 yr ARI Velocity Depth Products (sqm/s)
from Padstow Catchment
for 98 Mackinzie Street, Revesby
92A
94
96
98
100
102
MACKENZIE ST
16
17
18
19
Velocity-Depth (sqm/s)
0.05 to 0.1
0.1 to 0.2
0.2 to 0.3
0.3 to 0.4
0.4 to 0.5
0.5 to 0.6
0.6 to 0.8
0.8 to 1
1 to 2
2 to 5
5 to 10
10 to 20
CAUTION
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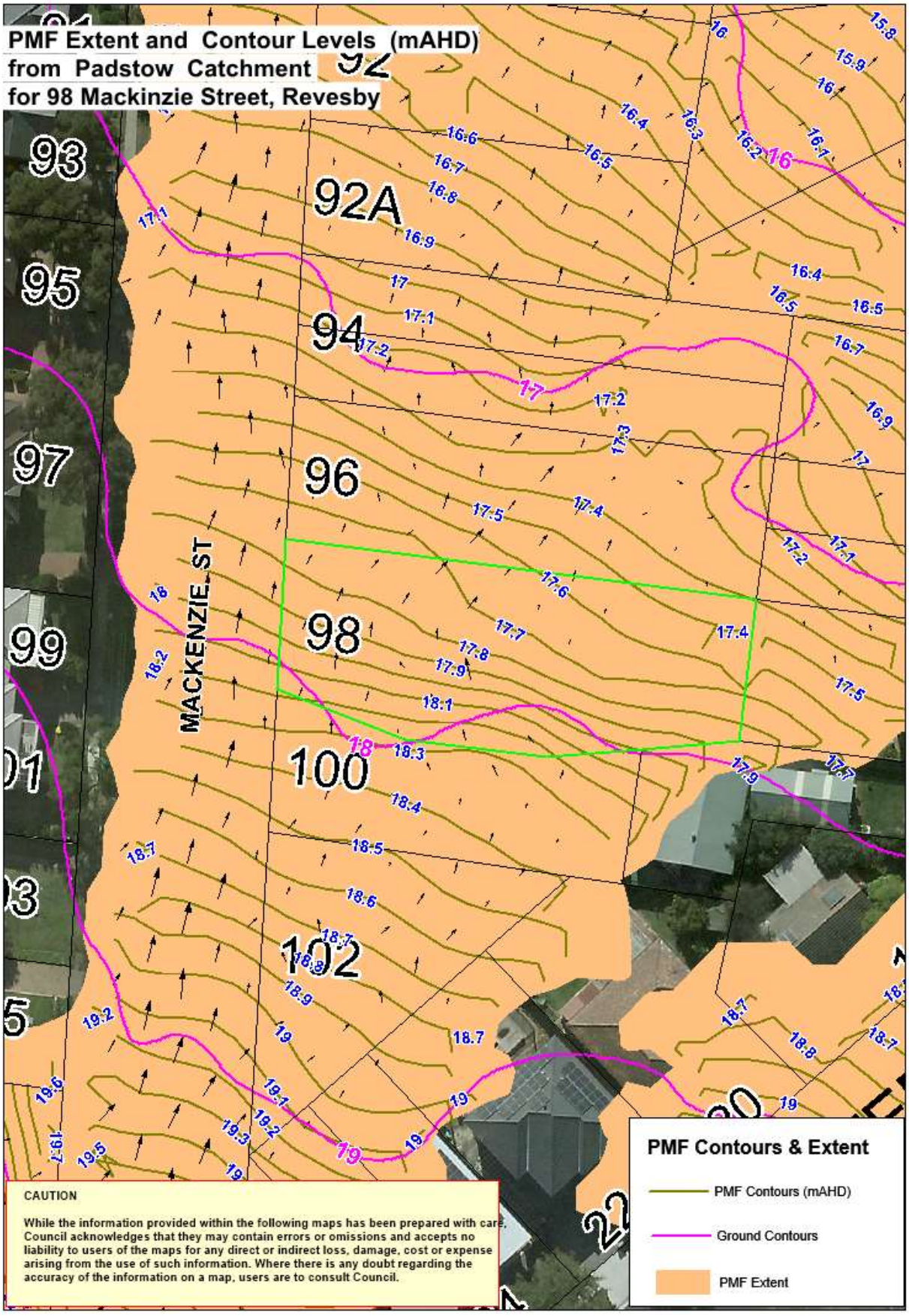
PMF Extent and Contour Levels (mAHD)
from Padstow Catchment
for 98 Mackinzie Street, Revesby
MACKENZIE_ST
92A
93
95
94
97
96
99
98
100
102
PMF Contours & Extent
PMF Contours (mAHD)
Ground Contours
PMF Extent
CAUTION
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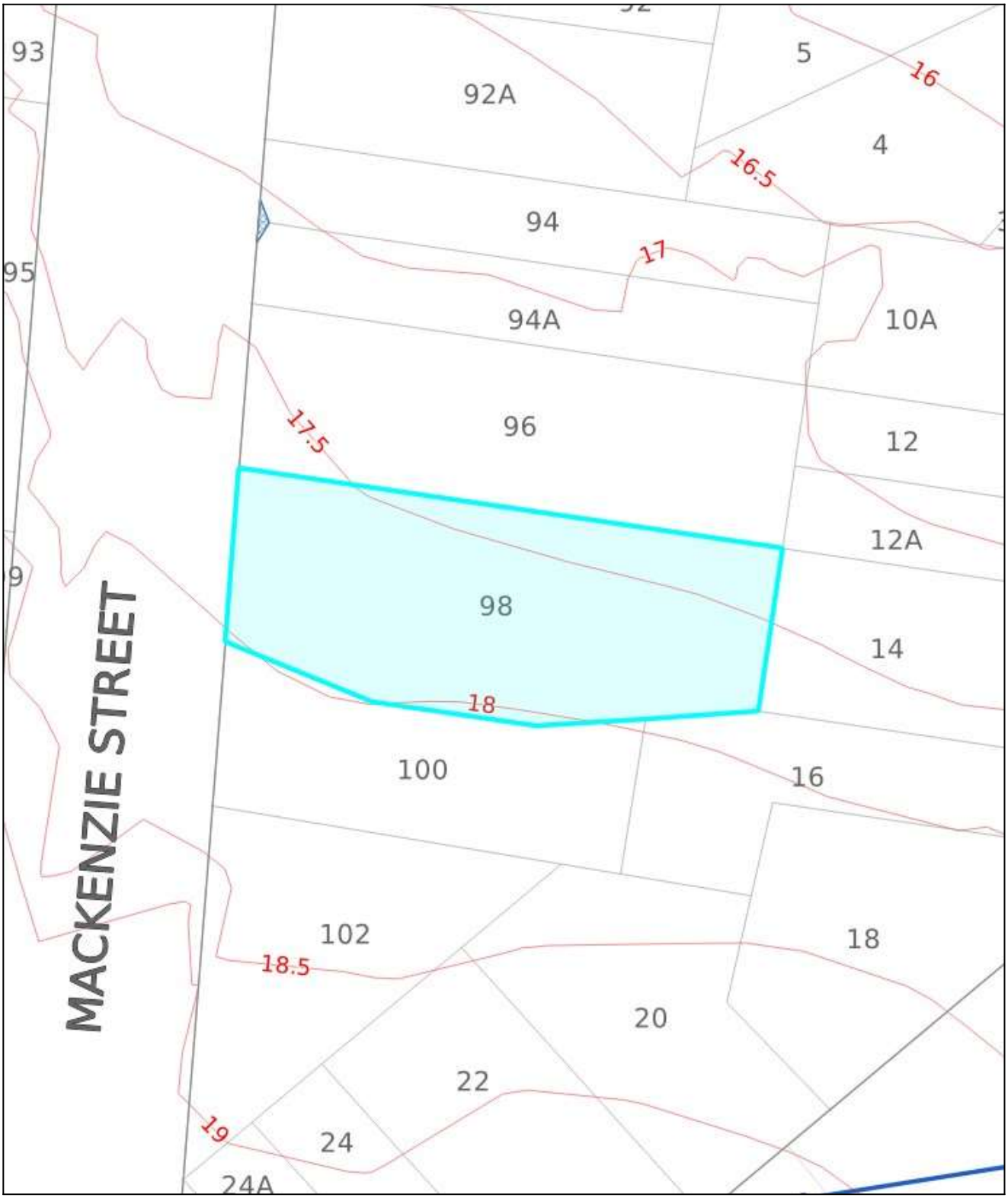
GIS Map 98 Mackenzie Street, Revesby



DATE: Oct 17, 2023, 10:38 AM

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Metres 10 20 30

PREPARED BY: Pushpa G

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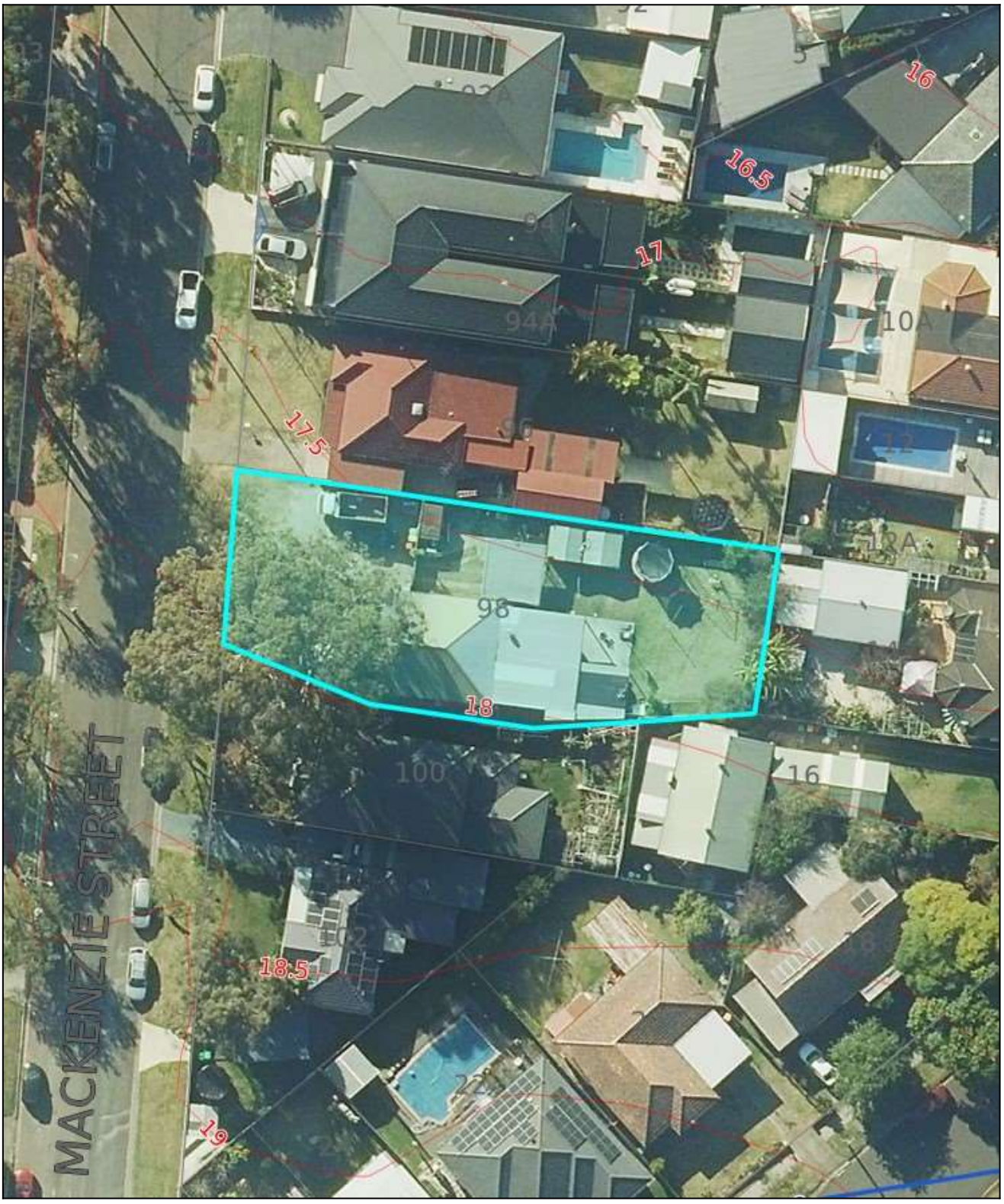
GIS Map 98 Mackenzie Street, Revesby



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Metres 10 20 30

PREPARED BY: Pushpa G

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LEGEND

Canterbury Bankstown LGA

Surrounding LGA's

Jetty

Jetty

Parcel Frontage

Parcel Frontage

Parcel Boundary

Parcel Boundary

Parcel Easements (Line)

Parcel Easements (Line)

Parcel Easements (Polygon)

Parcel Easements (Polygon)

Contours (Major 10m)

Contours (Major 10m)

Contours (Intermediate 5m)

Contours (Intermediate 5m)

Contours (Minor <5m)

Contours (Minor <5m)

Drains

Drains

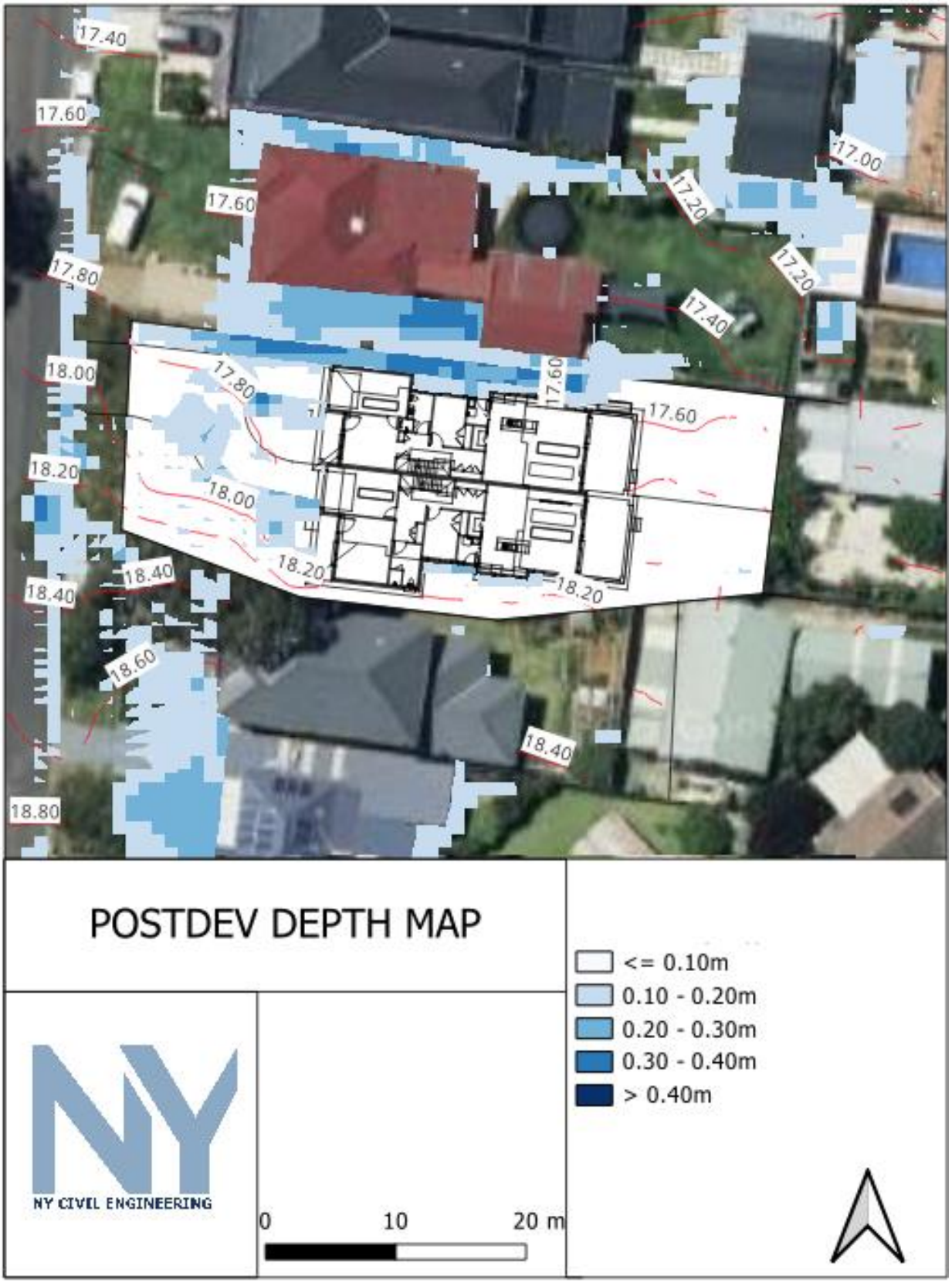
Pits

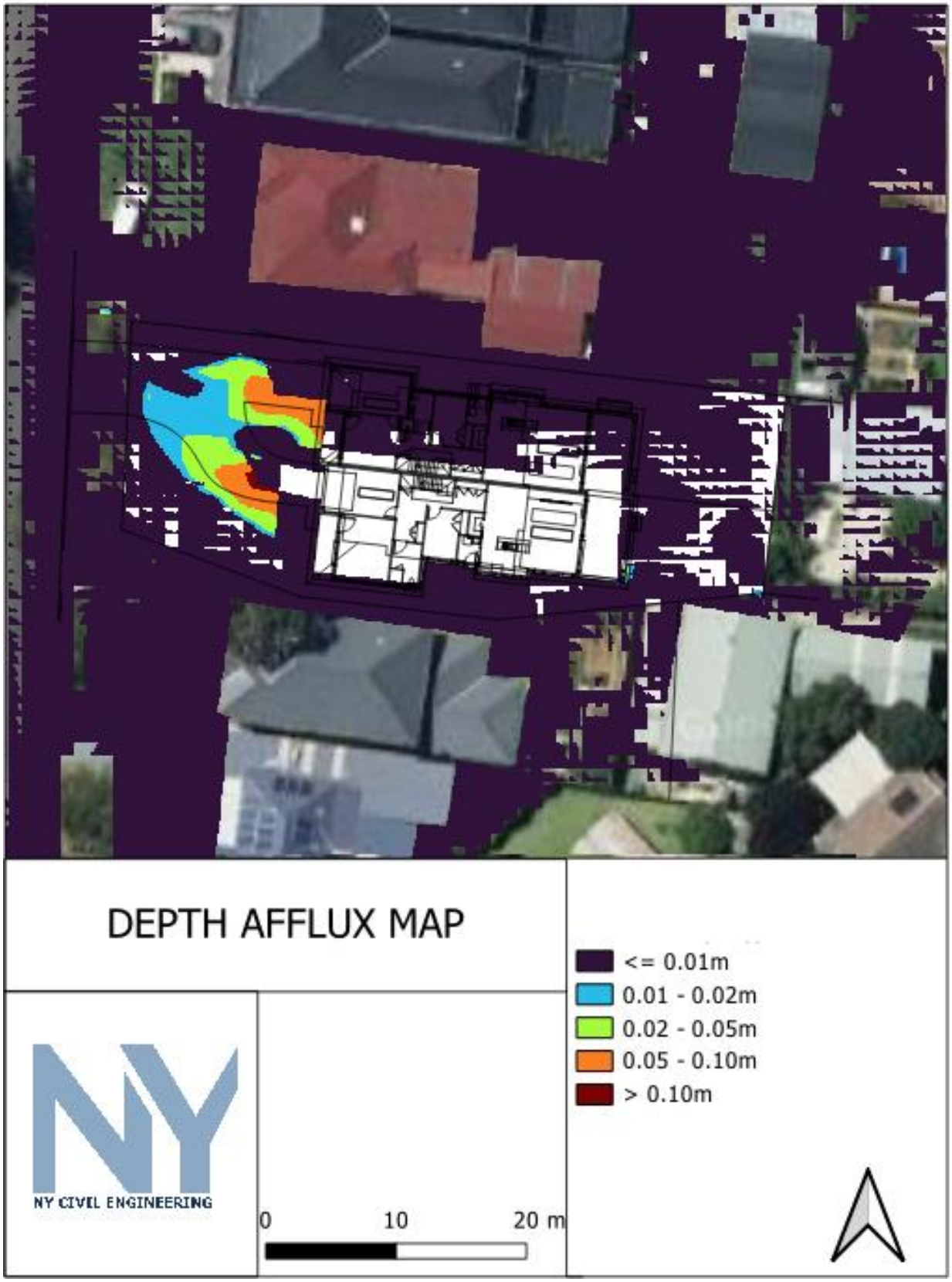
Pits

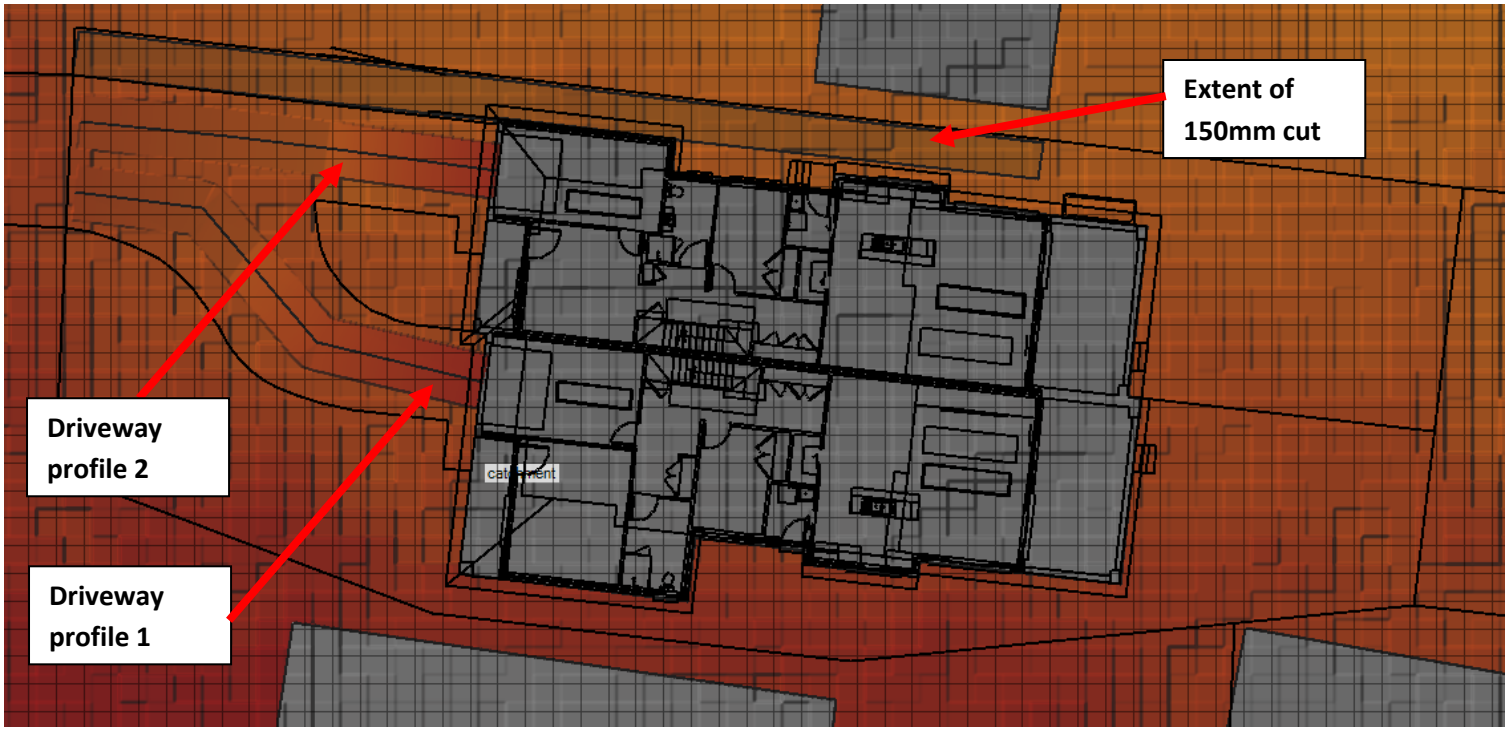
Sydney Water Stormwater Channels

APPENDIX C

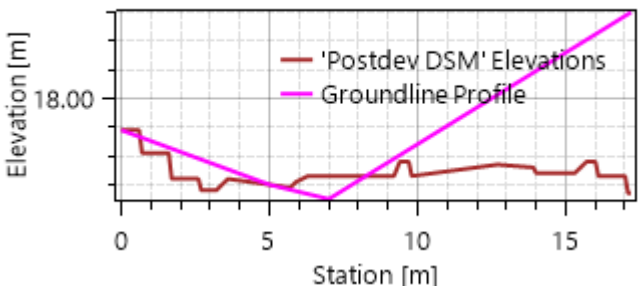
NY FLOOD MAPS


17.40
17.60
17.60
17.80
18.00
18.20
18.40
18.40
18.60
18.80
17.00
17.20
17.20
17.40
17.60
17.80
17.60
18.00
18.20
18.20
POSTDEV DEPTH MAP
<= 0.10m
0.10 - 0.20m
0.20 - 0.30m
0.30 - 0.40m
> 0.40m
NY CIVIL ENGINEERING
0
10
20 m


DEPTH AFFLUX MAP
<= 0.01m
0.01 - 0.02m
0.02 - 0.05m
0.05 - 0.10m
> 0.10m
NY CIVIL ENGINEERING
0
10
20 m



Driveway Profile 1



Driveway Profile 2