
Pittwater Data Services Pty Ltd
ABN 36098815537
27 Ashby Street
Dudley, 2290
Mobile: 0422 088 032
Email: pittwaterdataservices@live.com.au
Our Reference: PDS15112022:107IRISST:BEACON HILL

Maree Jaloussis Hayes
107 Iris Street,
Beacon Hill, 2100
29th March 2023

Re: Flood Report for 107 Iris Street Beacon Hill

Dear Maree,

1.0 INTRODUCTION

I refer to your proposed subdivision Development Application (DA) for 107 Iris Street Beacon Hill (Part Lot 18 DP 19022) as discussed with your project manager David Hoare. Northern Beaches Council (NBC) has identified the property as potentially flood prone. Therefore, a Flood Study is required of the overland flooding processes for the 1:100year flood event as detailed in NBC Water Management for Development Policy Version 2 dated 26th February 2021.

The following investigation was undertaken and submitted for both your and NBC consideration as part of the DA process. Note 107 Iris Street Beacon Hill will be referred to as the *site*.

2.0 GENERAL DESCRIPTION

There are several features of the topography of the *site* and its location that are important to the potential flooding processes during a 1%AEP event.

These are:

1. The *site* is located in the upper western portion of the Narrabeen Lagoon catchment discharging into Middle Creek as shown in Figure 1.
2. The *site* southern catchment boundary is along Warringah Road generally at an elevation of between 150 to 160 metres AHD. The western boundary is near Jones Street and the eastern boundary along an easement from Warringah Road to Iris Street.
3. Dareen Street intersects flows from the catchment and discharges overflows from the stormwater system to the east. The profile of Dareen Street is shown in Figure 2.

4. There is a network of pipes and pits throughout the *site* catchment as discussed in Section 3 and shown in Figures 3 and 4. The pipe traversing along the *site* discharges into a drop structure generating a complex flow regime.
5. The *site* varies in level from 140 to 130 metres (Figures 1 and 2). The northern portion of the *site* has a drop off rock outcrop which is orientated along the contours suggesting that overland flows are distributed across the *site*, except at the driveway as shown conceptually in Figure 2.
6. As shown in Figure 1 there is a small catchment area that generates overland flows through the *site*, that is not intersected by Dareen Street.

3.0 REVIEW OF EXISTING DATA

The *site* was surveyed by Survcorp Pty Ltd consulting surveyors, Reference No 3435 Dated 25th July 2022 (Figure 5).

The 525mm diameter pipeline along the eastern side of the *site* as shown in Figure 4 was audited by Waterview Surveying Services and Sub Surface Utility Solutions Pty Ltd to determine the condition of the pipeline and its invert levels (IL).

The stormwater network (pits and pipes) within the *site* catchment were accessed from NBC Webb mapping/stormwater overlay (Figure 3). The stormwater data included pipe diameters, nodes and pits (sag and run-on). Invert and obvert levels were not included in the overlay.

The topography for this investigation used the NSW Government Land and Property Lidar 2014 Data Sydney 3366264-56. Contours were generated by Pittwater Data Services Pty Ltd at 0.2 metre intervals (Figures 1 and 2).

A literature search through NBC and State Emergency Services data portal has produced no published flood studies in this portion of the Narrabeen Lagoon catchment.

4.0 RESULTS OF INVESTIGATION

This report used the Watercom Drains Modelling software (Ref 1). The model adopts the Australian Rainfall and Runoff 2019 guidelines and rainfall inputs and storm ensembles from the BoM data hub (Ref 2). The model used topographical lidar data 2014. Pipe invert levels were determined from pit grate levels minus 600mm pipe cover minus pipe diameter. The 1%AEP rainfall ensembles were run with zero percentage and 50% blockage for the network pits along Dareen Street.

The modelled pit and pipe network is shown in Appendix A. The models results are shown in Figures A1 to A4. In essence the results show the 525mm pipeline traversing along the property runs at full capacity for the 1%AEP event for blockage 0 (A1 to A3) and 50% (A4). The remaining inflows from the catchment discharges down the Dareen Street northern kerb a gutter at a depth of 0.19m.

Overland flows not intercepted by Dareen Street are from a small *site* catchment of approximately 0.71Ha as shown in Figure 1. This small catchment will generate sheet flow distributed across the *site* to a depth of less than 0.1m as shown in Figure 2.

5.0 PROPOSED DEVELOPMENT

The proposed subdivision as shown in Figure 5 and future Dwellings, associated driveways and services (detention tanks gardens etc) would have insignificant impact on the sheet flow across the *site* during a 1% AEP flood event considering the depth and velocity of the sheet flow. The *site* is protected from overland flows by Dareen Street, when the NBC stormwater network reaches its capacity either 50% blocked or unblocked, particularly the 525mm upstream entry pit in Dareen Street. The proposed 4 Lot subdivision meets the NBC Water Management for Development Policy Version 2 dated 26th February 2021 in relation to overland flows to the 1:100year event.

Yours Faithfully,


Stephen Wyllie Bsc (Eng) FMA Member

Director

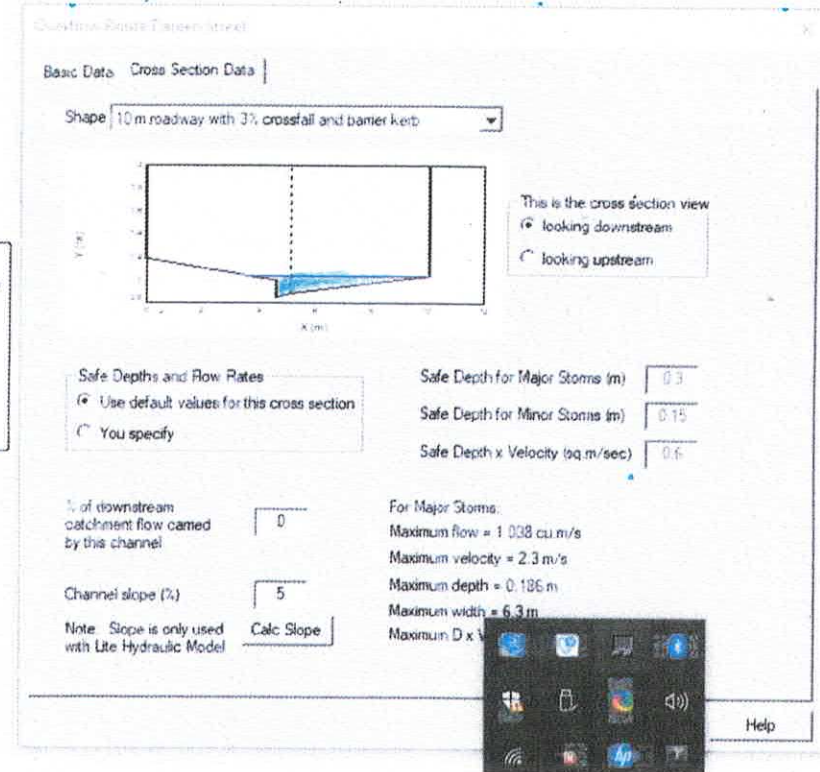
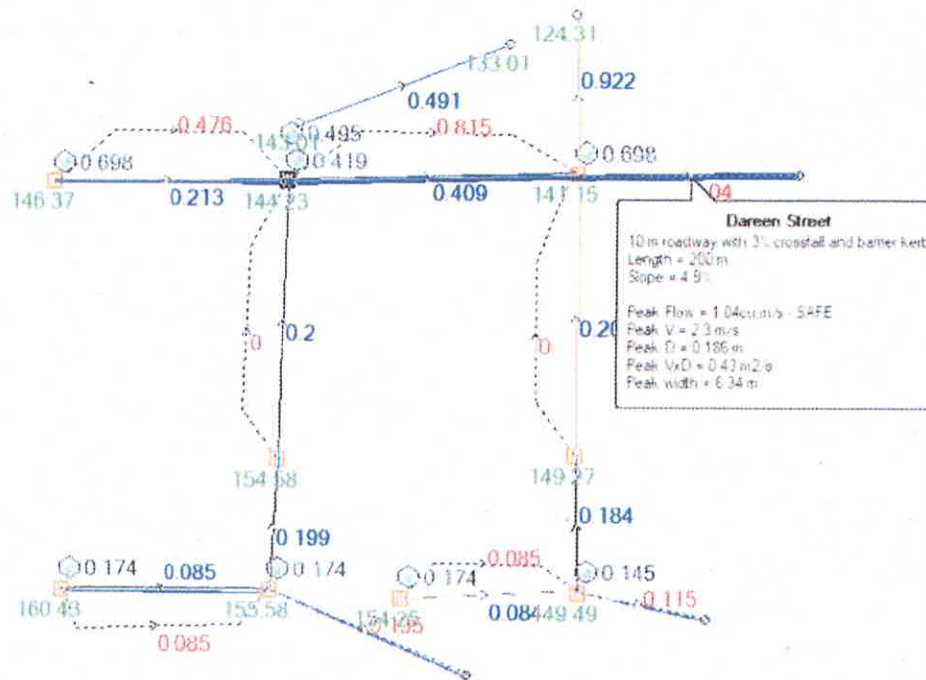
29/03/2023

6.0 REFERENCES

1. Drains Model by Watercom 2022
2. Australian Rainfall and Runoff, A Guide to Flood Estimation, Commonwealth of Australia 2019.

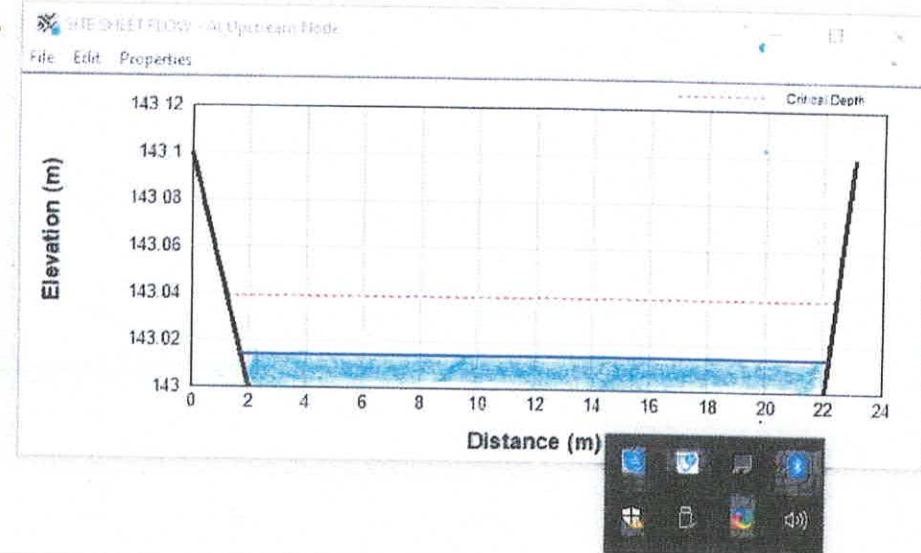
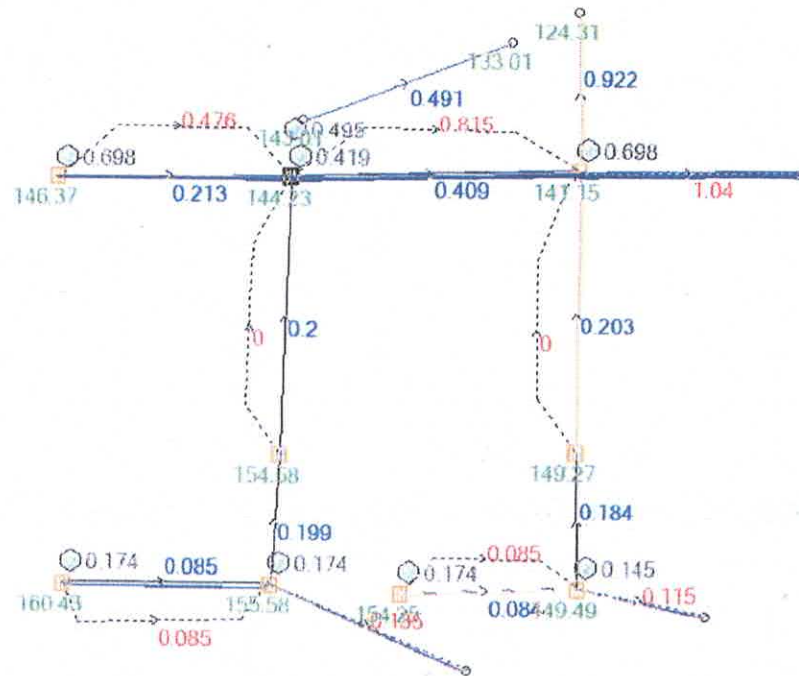
APPENDIX A

Results for median storm in critical 1% AEP ensembles
using Full Unsteady hydraulic model

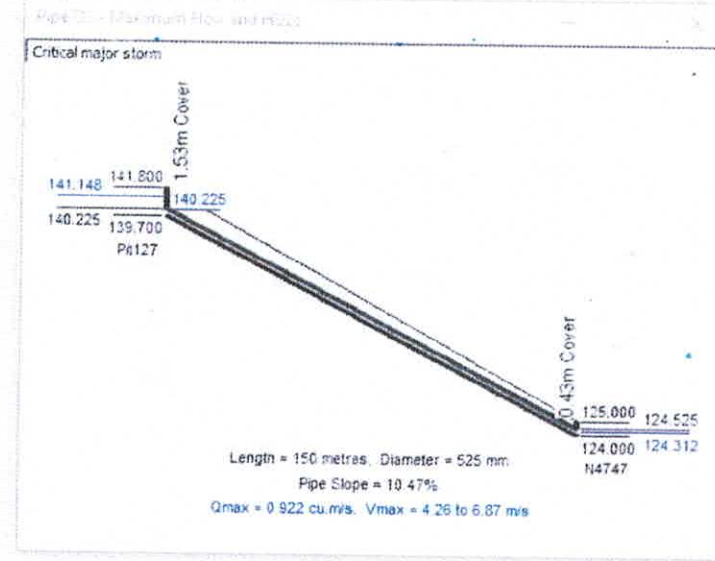
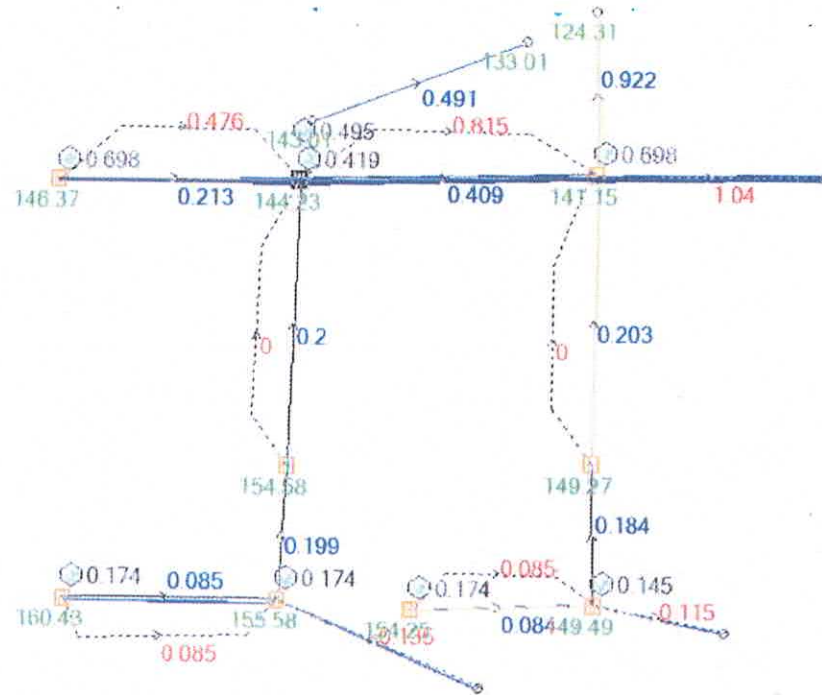


107 Iris Street Beacon Hill

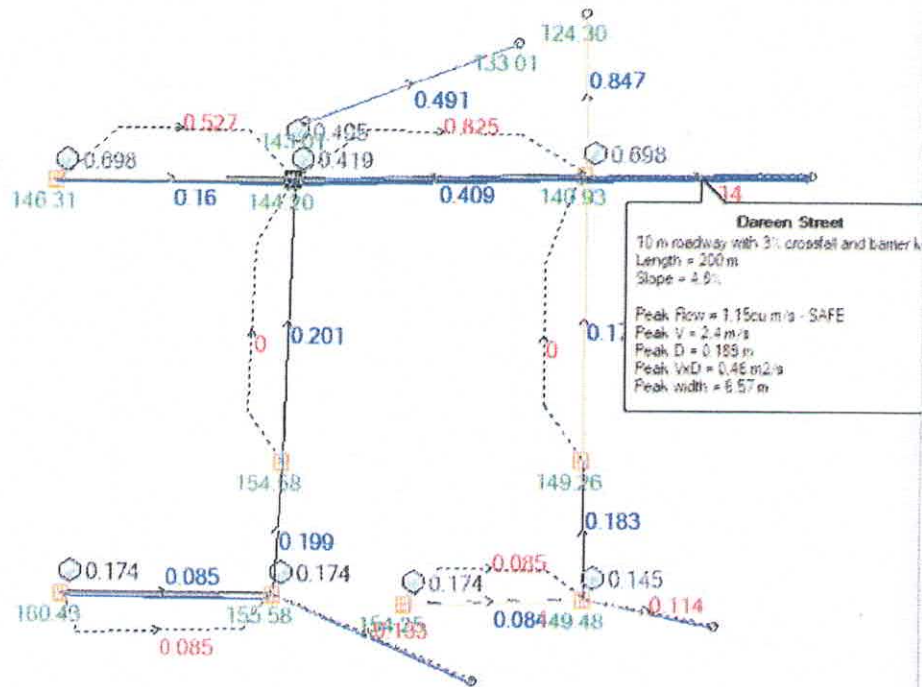
Results for median storm in critical 1% AEP ensemble
using Full Unsteady hydraulic model.



Results for median storm in critical 1% AEP ensembles
(using Full Unsteady hydraulic model)



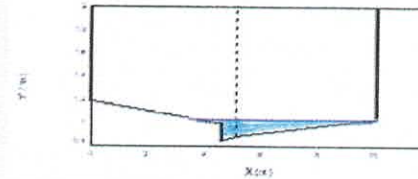
Results for median storm in critical 1% AEP ensemble
using Full Unsteady hydraulic model.



Overview Route Darren Street

Basic Data Cross Section Data

Shape 10 m roadway with 3% crossfall and barrier kerb



Safe Depths and Flow Rates

☒ Use default values for this cross section
☐ You specify

Safe Depth for Major Storms (m) 0.3

Safe Depth for Minor Storms (m) 0.15

Safe Depth x Velocity (sq.m/sec) 0.6

% of downstream
 catchment flow carried
 by this channel 0

Channel slope (%) 5

Note: Slope is only used
 with Lite Hydraulic Model

Calc Slope

For Major Storms:

Maximum flow = 1.146 cu m/s

Maximum velocity = 2.4 m/s

Maximum depth = 0.1

Maximum width = 6.6

Maximum D x V = 0.4



Help

50% BLOCKAGE A4

FIGURES



LEGEND

- SITE CATCHMENT
- SITE
- SITE CATCHMENT OF DAREEN ST.
- CONTOURS M. AHD

FIGURE 1

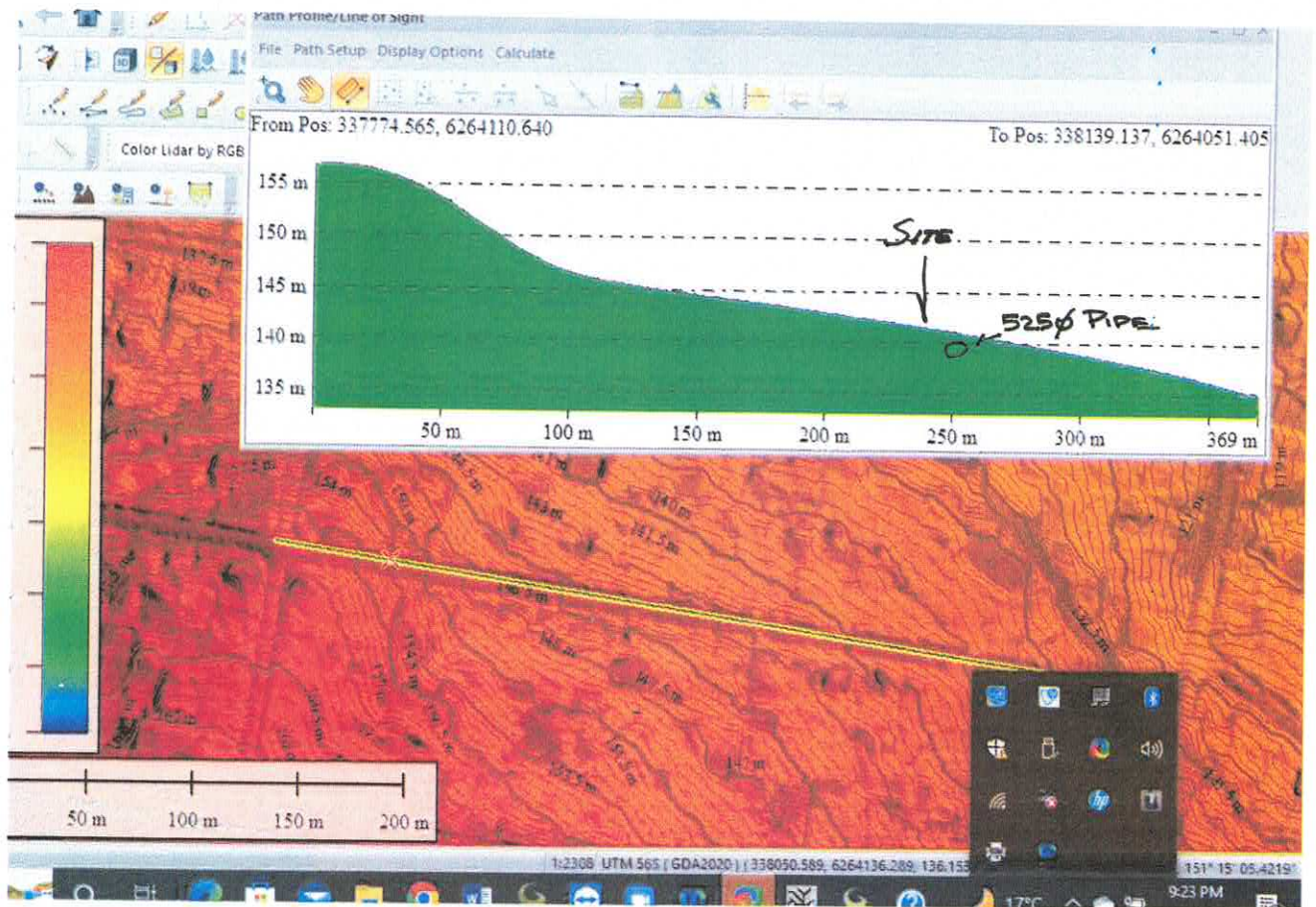


FIGURE 2

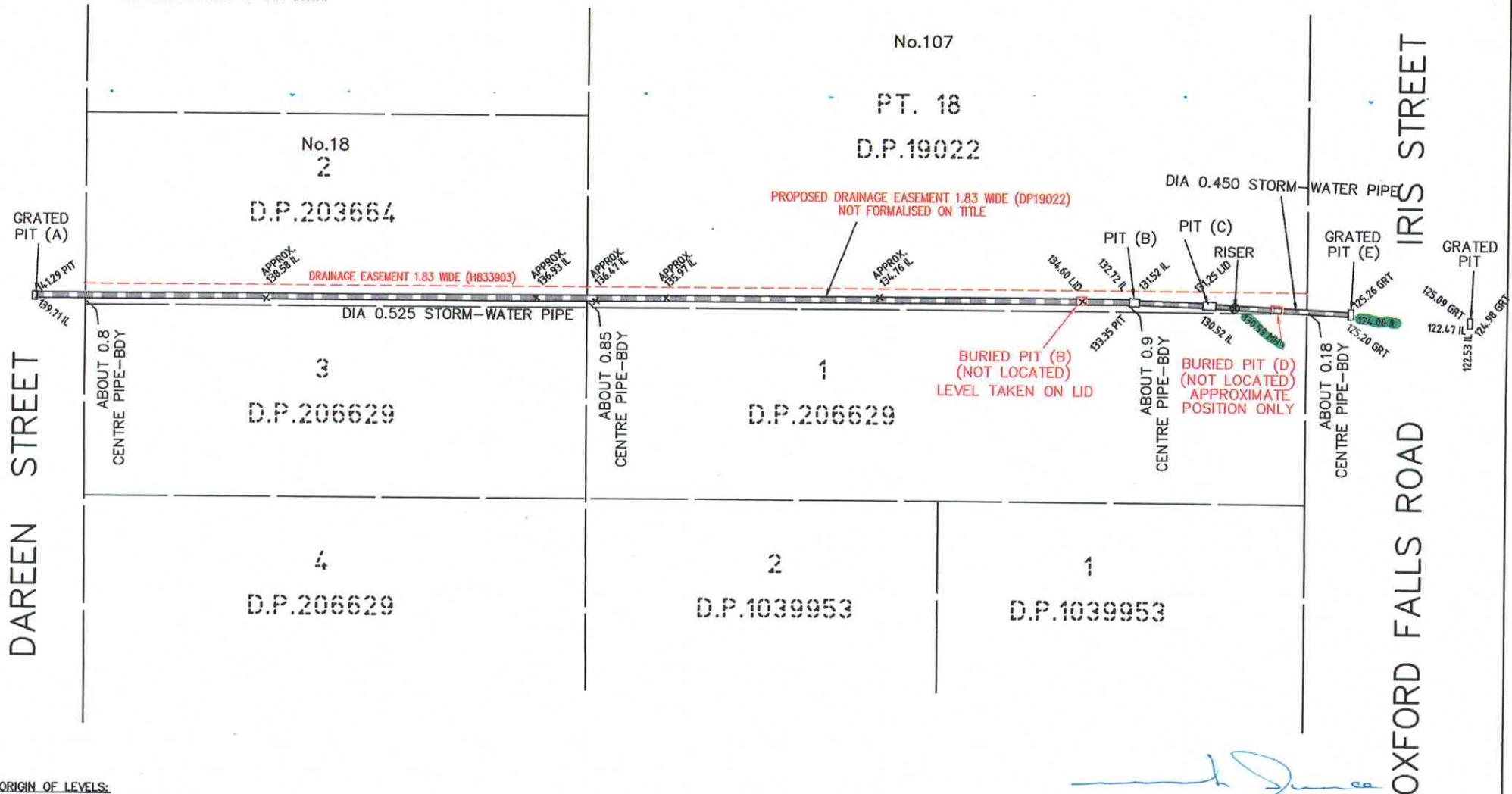


FIGURE 3

PIPE LOCATION, SIZE, DEPTH AND INVERT LEVELS
OUTSIDE OF PITS AS PER UTILITY SURFACE LOCATION BY
SUBSURFACE UTILITY SOLUTIONS.

WATERVIEW SURVEYING SERVICES ACCEPTS NO LIABILITY
FOR THE ACCURACY OF THIS DATA.

NORTH



ORIGIN OF LEVELS:
DATUM: AUSTRALIAN HEIGHT DATUM

BM ADOPTED: SSM 14787
RL 125.982

[Signature]

REGISTERED SURVEYOR

1	FIRST ISSUE
	25/09/22



1A Mona Street Mona Vale NSW 2103
ACN 610 583 572
michael@wvsurveying.com.au
0474 943 100

PLAN SHOWING AS-BUILT LOCATION AND LEVELS OF
STORM-WATER PIPE WITHIN PART LOT 18 IN DP.19022
& LOT 2 IN DP.203664
107 IRIS STREET & 18 DAREEN STREET, BEACON HILL

SURVEY INSTRUCTION 1619	SCALE 1:350 @ A3	DATE OF SURVEY 16/09/2022
DRAWING NAME 1619storm-water	CAD FILE 1619storm-water L.dwg	ISSUE A

NOTE:

EXISTING BUILDINGS, STRUCTURES, CONTOURS AND LOT DIMENSIONS HAVE BEEN TAKEN FROM DETAILED SITE SURVEY BY RGM PROPERTY SURVEYS, DRAWING No. 14450/001, REV A, DATED 25/07/2014. WATERVIEW SURVEYING SERVICES ACCEPTS NO LIABILITY FOR THE ACCURACY OF THIS INFORMATION.

LOT DIMENSIONS AND AREAS ARE SUBJECT TO COUNCIL APPROVAL AND FINAL SURVEY.

BUILDING FOOTPRINTS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO COUNCIL APPROVAL.

PROPOSED DRIVEWAY IS INDICATIVE ONLY AND IS SUBJECT TO ENGINEERING DESIGN.

EASEMENTS TO BE CREATED SUBJECT TO SERVICE INTALLMENT AND DRIVEWAY CONSTRUCTION.

D.P.204368

PROPOSED LOT 3
586.9m²
524.8m² (EXC ACCESS HANDLE)

No.107
INDICATIVE
BUILDING ENVELOPE
150m²

No.109
INDICATIVE
BUILDING ENVELOPE
150m²

EXISTING RESIDENCE
TO BE DEMOLISHED AS PART
OF STAGE 2 WORKS

PROPOSED LOT 4
613.5m²
526m² (EXC ACCESS HANDLE)

PROPOSED LOT 1
526m²

No.113
INDICATIVE
BUILDING ENVELOPE
150m²

PROPOSED LOT 2
525.7m²

INDICATIVE LINE OF COUNCIL 525mm STORM-WATER DRAINAGE PIPE

- (A) PROPOSED RIGHT OF WAY & EASEMENT FOR SERVICES 1.75 WIDE & VARIABLE
- (B) PROPOSED RIGHT OF WAY & EASEMENT FOR SERVICES 1.75 WIDE & VARIABLE
- (C) PROPOSED RIGHT OF WAY & EASEMENT FOR SERVICES 1 WIDE & VARIABLE
- (D) PROPOSED RIGHT OF WAY & EASEMENT FOR SERVICES VARIABLE WIDTH
- (E) PROPOSED EASEMENT FOR DRAINAGE 3 WIDE
- STRUCTURAL ROOT ZONE-BY SYDNEY ARBORIST PLAN

SURVEYOR:
Name: MICHAEL K JOYCE
Date:
Reference:

PLAN OF PROPOSED SUBDIVISION OF LOT 18
IN D.P.19022

LGA: NORTHERN BEACHES
Locality: BEACON HILL
Reduction Ratio: 1:150
Lengths are in metres

Registered

FIGURE 6

D.P.203664

D.P.203664

D.P.206629

IRIS STREET