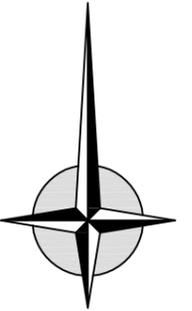


Attachment 2 - 1 Gee Street, South Launceston - Plans of Proposal

NOTE: TABLE FOR UNPROTECTED EMBANKMENT SLOPES
SLOPE = H:L

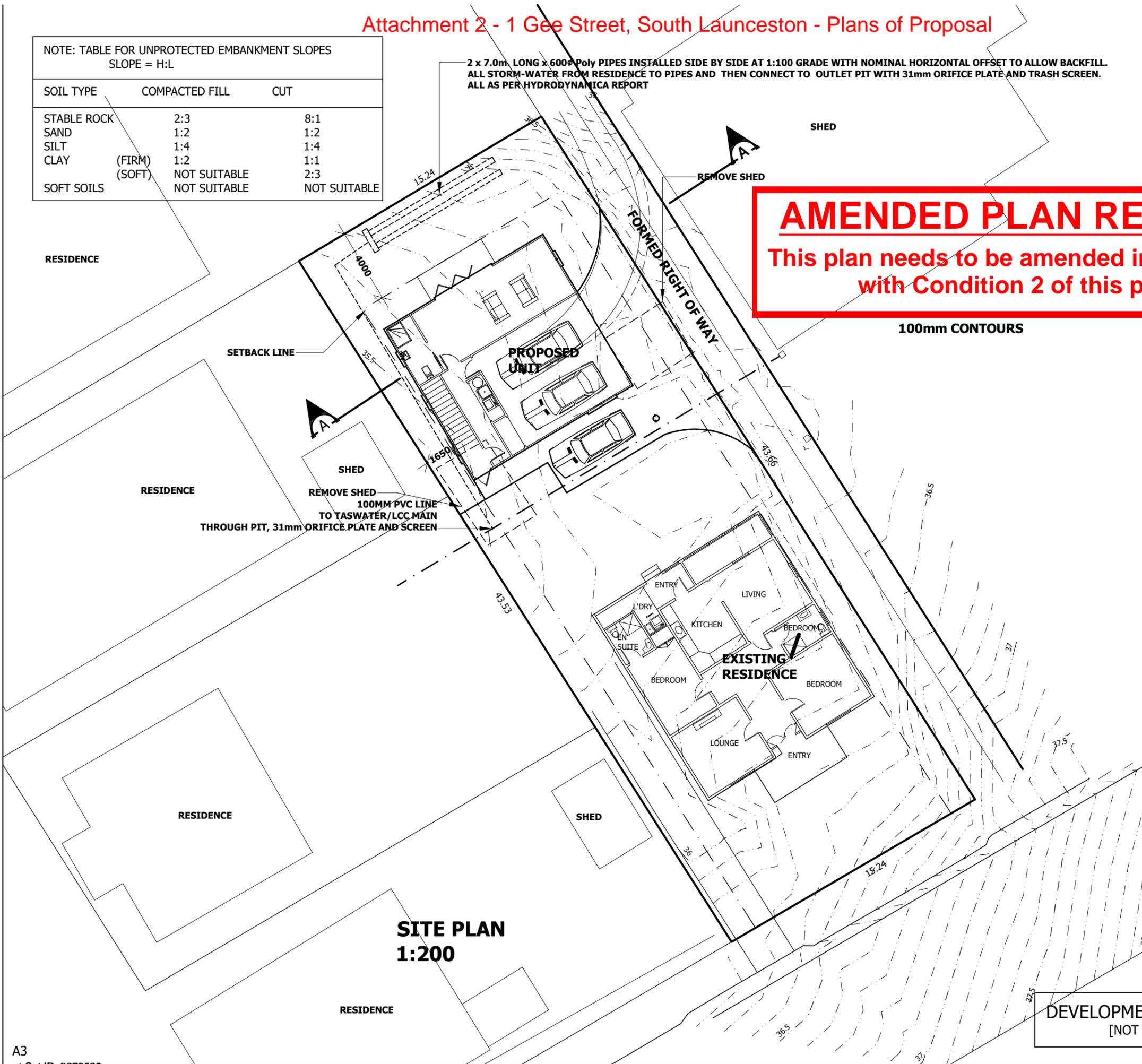
SOIL TYPE	COMPACTED FILL	CUT
STABLE ROCK	2:3	8:1
SAND	1:2	1:2
SILT	1:4	1:4
CLAY (FIRM)	1:2	1:1
CLAY (SOFT)	NOT SUITABLE	2:3
SOFT SOILS	NOT SUITABLE	NOT SUITABLE

2 x 7.0m LONG x 600mm Poly PIPES INSTALLED SIDE BY SIDE AT 1:100 GRADE WITH NOMINAL HORIZONTAL OFFSET TO ALLOW BACKFILL.
ALL STORM-WATER FROM RESIDENCE TO PIPES AND THEN CONNECT TO OUTLET PIT WITH 31mm ORIFICE PLATE AND TRASH SCREEN.
ALL AS PER HYDRODYNAMICA REPORT



AMENDED PLAN REQUIRED
This plan needs to be amended in accordance with Condition 2 of this permit

1 GEE ST SOUTH
LAUNCESTON TAS 7249
TITLE REF: 69718/4
PROPERTY ID: 6618151
AREA = 663.0m²



**SITE PLAN
1:200**



wilkin
design

P.O. BOX 478
LAUNCESTON
TASMANIA 7250

ACCREDITATION NO:
CC678 X

NOTES:

PROJECT TITLE:
LOFFEL RESIDENCE.
**1 GEE ST.
STH LAUNCESTON**

REVISION:
1# 10-10-17.

DATE:
01/08/2017

SCALE:
AS SHOWN

JOB NUMBER:
DA-17099

PAGE:
01 of 05

PLANNING EXHIBITED DOCUMENTS
Ref. No: DA 0373/2017
Date advertised: 01/11/2017
Planning Administration: *Drylls*

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DEVELOPMENT APPLICATION ONLY
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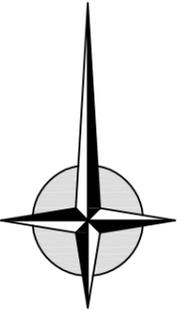
NOTE: TABLE FOR UNPROTECTED EMBANKMENT SLOPES
SLOPE = H:L

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SAND	1:2	1:2
SILT	1:4	1:4
CLAY (FIRM)	1:2	1:1
CLAY (SOFT)	NOT SUITABLE	2:3
SOFT SOILS	NOT SUITABLE	NOT SUITABLE

> 12.0m POS TO FIRST FLOOR

AREAS SCHEDULE;

- UNITS IN TOTAL AREA - 265.8m²
- SEALED SURFACES IN TOTAL AREA - 310.25m²
- PENETRABLE SURFACES (GARDEN BEDS, LAWN) - 300.00m² (EQUALS 35% OF TOTAL LAND AREA)



1 GEE ST SOUTH
LAUNCESTON TAS 7249

TITLE REF: 69718/4
PROPERTY ID: 6618151
AREA = 663.0m²



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LAUNCESTON
TASMANIA 7250

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LOFFEL RESIDENCE.

**1 GEE ST.
STH LAUNCESTON**

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ALL POS AREAS
TO BE GRASSED

BATTER SLOPE AS REQUIRED
AND TO TABLE

CONC. PATH
FENCE IS PROPOSED
STRATA LINE

FORMED RIGHT OF WAY

BITUMEN OR CONC. DRIVEWAY AREA

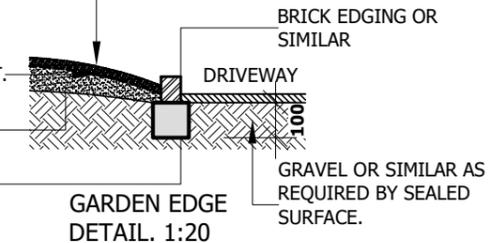
THESE DRIVEWAY AREAS TO BE
PERVIOUS SURFACE SUCH AS GRAVEL

EXISTING SEWER MAIN

POS > 4.0m. WIDE (32.00m²)

15mm-20mm 'NO FINES'
DECORATIVE STONE MULCH
TO ALL GARDEN BEDS.

MARAX WEED MAT.
TOP SOIL.
MORTAR BED.



> 60.0m² (110.0) AREA LESS THAN 1 in 10 SLOPE
AS DEDICATED PRIVATE OPEN SPACE FOR
ORIGINAL RESIDENCE

NOTE: IF SPECIFIED PLANTS ARE NOT
AVAILABLE AT TIME OF PLANTING SIMILAR SIZE
AND TYPE OF PLANTS SHOULD BE INSTALLED IN
LOCATIONS SHOWN.

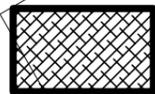
WHERE REQUIRED GARDEN BEDS TO
HAVE AN IRRIGATION SYSTEM.
IN-LINE DRIPPER TUBE @ 300crs. TO
BE PROVIDED

GARDEN TAP (TYP.) LOCATIONS TO BE
CONFIRMED BY OWNER TYPICALLY 2-4 PER
DWELLING.

DENOTES 1800h. FENCES

DENOTES SPOT LEVELS

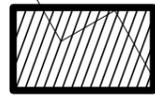
0.00



GRAVELLED CAR-PARKING AREA



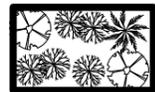
PRIVATE OPEN SPACE AREA IN TOTAL
(MIN. AREA OF 60.0m²)



PRIVATE OPEN SPACE AREA WITH MIN. WIDTH
OF 4.0m AND MIN. AREA OF 24.0m²



SEALED DRIVEWAY WITH FALLS TO SUMPS AS
REQUIRED FOR BUILDING APPLICATION
(124.6m² AREA - 19% OF SITE)



BUILT UP LANDSCAPED AREAS AS PER
SCHEDULE

**LANDSCAPING SITE PLAN
1:200**

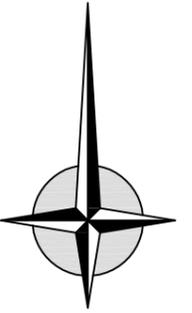
**PLANNING EXHIBITED
DOCUMENTS**
Ref. No: DA 0373/2017
Date
advertised: 01/11/2017
Planning Administration

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LANDSCAPING SCHEDULE

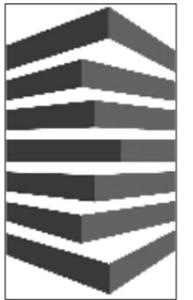
- LEPTOSPERMUM 'MANUKA'
(TEA TREE)
MATURE HEIGHT APPROX. 3.0m +
- ANIGOZANTHOS FLAVIDUS
(TALL GREEN KANGAROO PAW)
MATURE HEIGHT APPROX. 1.5m
- CORREA ALBA
(WHITE CORREA)
MATURE HEIGHT APPROX. 2.0m
- DIPLARRENA MORAEA
(BUTTERFLY IRIS)
MATURE HEIGHT APPROX. 1.0m
- LOMANDRA LONGIFOLIA
(TASMANIAN SAGG)
MATURE HEIGHT APPROX. 1.0m

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1 GEE ST SOUTH
LAUNCESTON TAS 7249

TITLE REF: 69718/4
PROPERTY ID: 6618151
AREA = 663.0m²



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P.O. BOX 478
LAUNCESTON
TASMANIA 7250

ACCREDITATION NO:
CC678 X

NOTES:
**RELOCATION
OF DETENTION.**

PROJECT TITLE:
LOFFEL RESIDENCE.
**1 GEE ST.
STH LAUNCESTON**

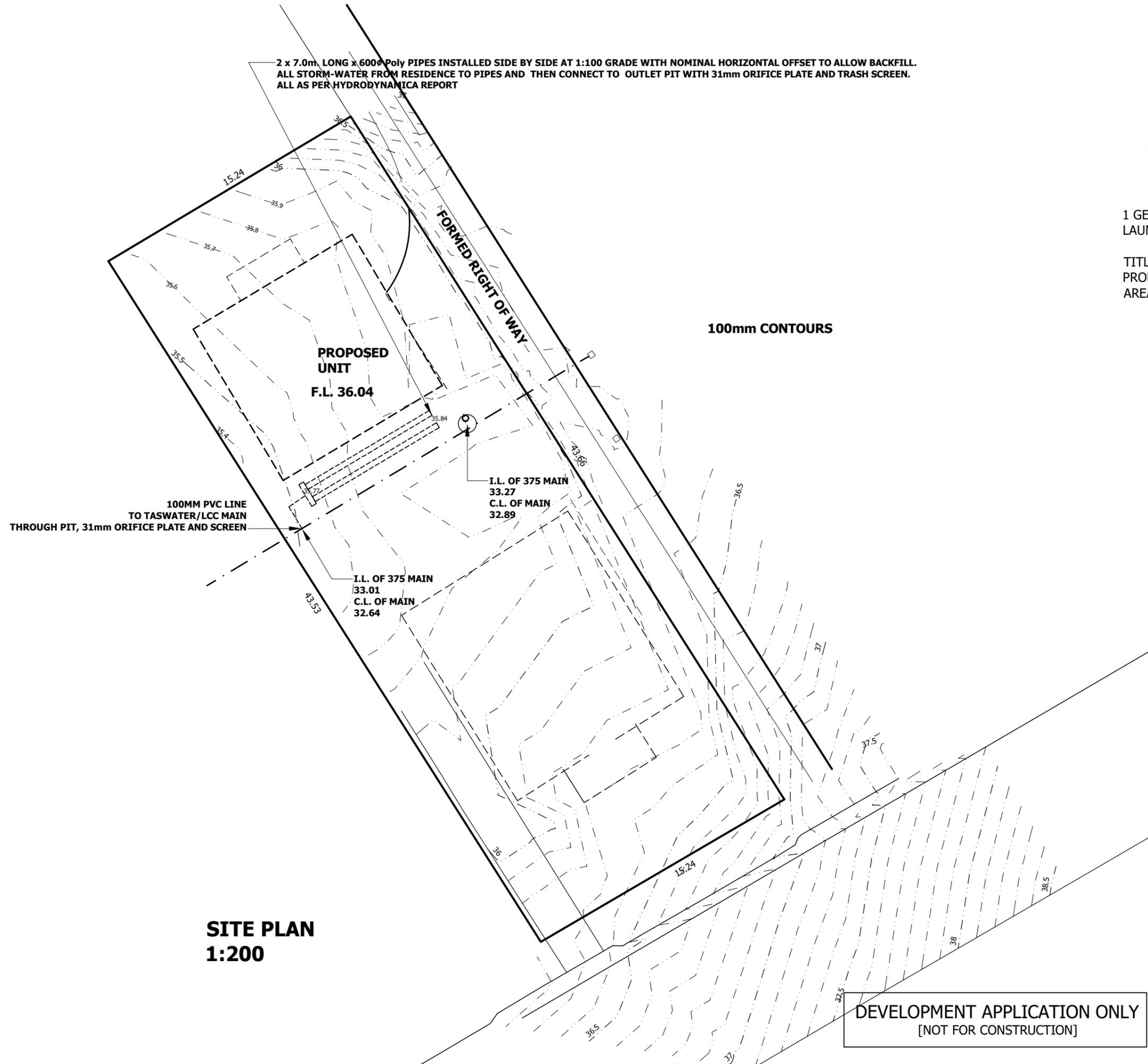
REVISION:
2# 31-10-17.

DATE:
01/08/2017

SCALE:
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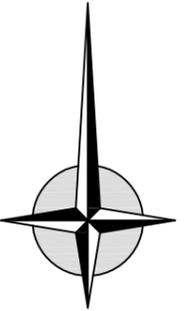
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DA-17099

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**SITE PLAN
1:200**

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**1 GEE ST.
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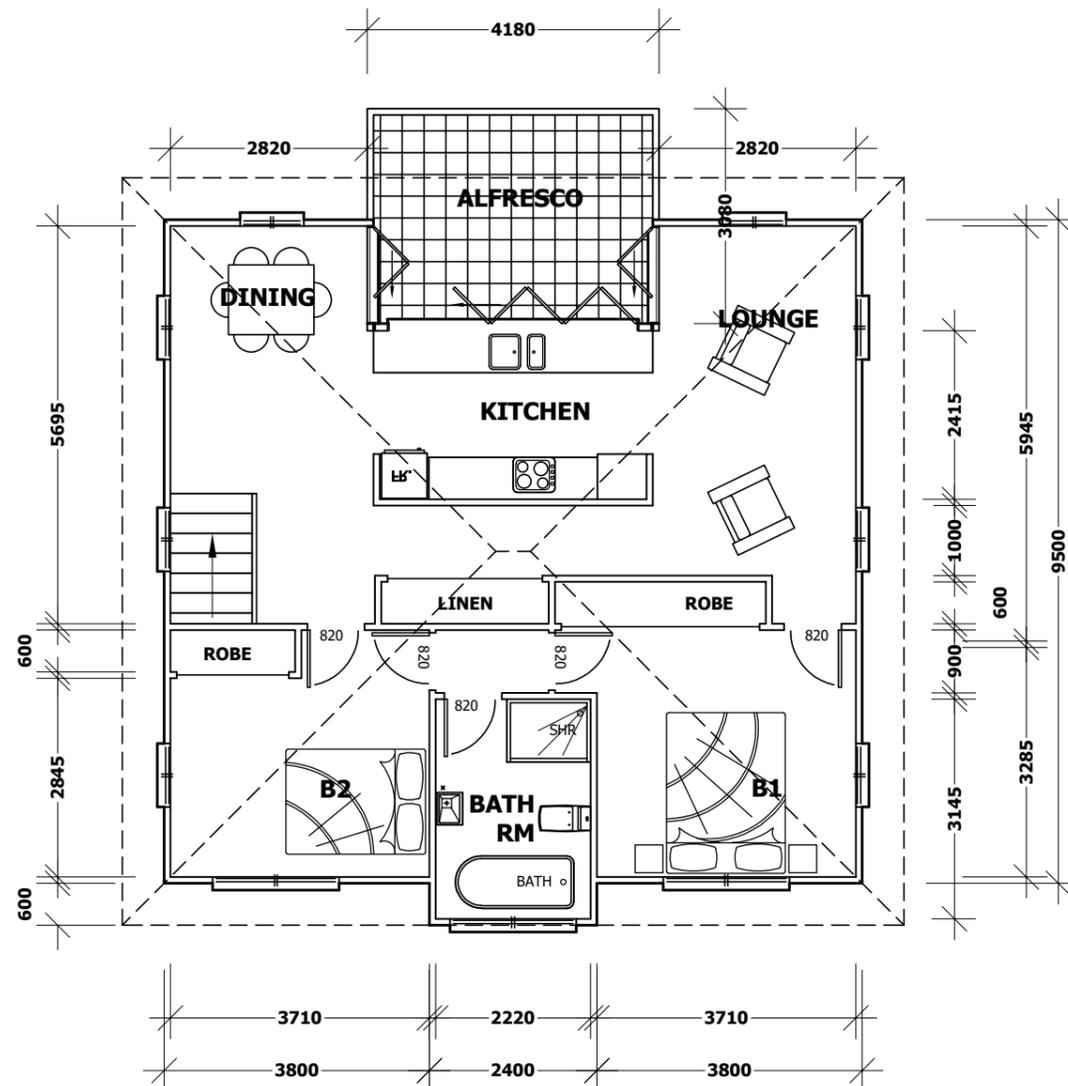
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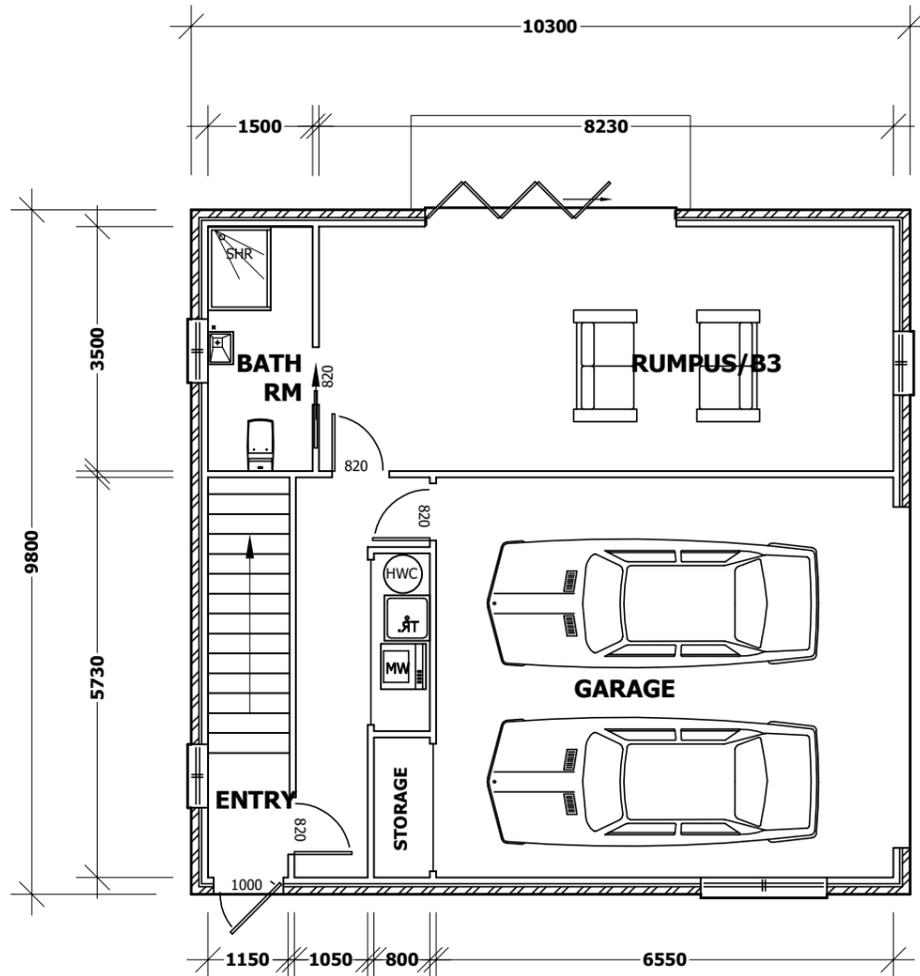
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UPPER FLOOR PLAN
1:100
FLOOR AREA - 84.50m²
DECK AREA - 12.90m²



LOWER FLOOR PLAN
1:100
FLOOR AREA - 95.80m²

DEVELOPMENT APPLICATION ONLY
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**SOUTH ELEVATION
1:100**



**NORTH ELEVATION
1:100**



**EAST ELEVATION
1:100**

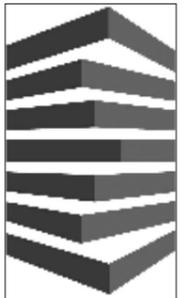
ALUMINIUM DOUBLE GLAZED WINDOWS

SELECT BRICK TO GROUND FLOOR
WALL AND COLUMNS



**WEST ELEVATION
1:100**

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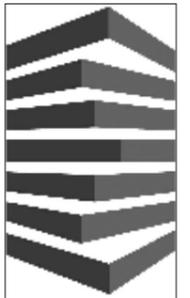
**SITE CONTOUR
EAST TO WEST**

NORTH TO SOUTH IS LEVEL

FORMED RIGHT OF WAY

PLANNING EXHIBITED DOCUMENTS
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 Date advertised: 01/11/2017
 Planning Administration *Dayles*

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LOFFEL RESIDENCE.

1 GEE ST.
STH LAUNCESTON**

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MEMO

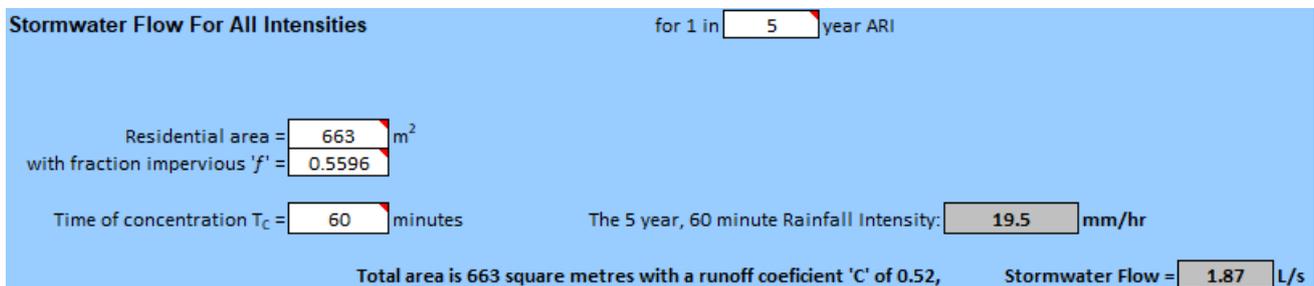
10 October 2017

Re: On Site Detention Construction at 1 Gee Street, South Launceston

According to the FIR from LCC to Wilkin Design it is necessary for onsite detention to be provided to limit the rate of discharge to that of the predevelopment site for a 1:5 year storm event of 1 hour duration with a storage volume of sufficient size to allow for the site to be developed to a level of 85% impervious.

The Lot size is 663 m², with impervious areas (roofs, driveways and footpaths totaling 371 m²) the predevelopment impervious fraction is 55.96%.

This 5 year 1 hour 'permissible flow' is calculated as using the Rational Method as follows:



Stormwater Flow For All Intensities for 1 in year ARI

Residential area = m²
 with fraction impervious 'f' =

Time of concentration T_c = minutes The 5 year, 60 minute Rainfall Intensity: mm/hr

Total area is 663 square metres with a runoff coefficient 'C' of 0.52, Stormwater Flow = L/s

Boyd's Formula has been used to determine the detention volume:

$$S_{max} = V_1 (1 - Q_p/I_p) , \text{ where}$$

S_{max} = Maximum Volume of temporary Storage (m³)

V_1 = Volume of inflow flood (m³)

I_p = Peak discharge of inflow hydrograph (m³/s)

Q_p = Peak discharge of outflow hydrograph (m³/s)

The peak outflow has been set to 1.87 L/s as per the pre-development assessment above.

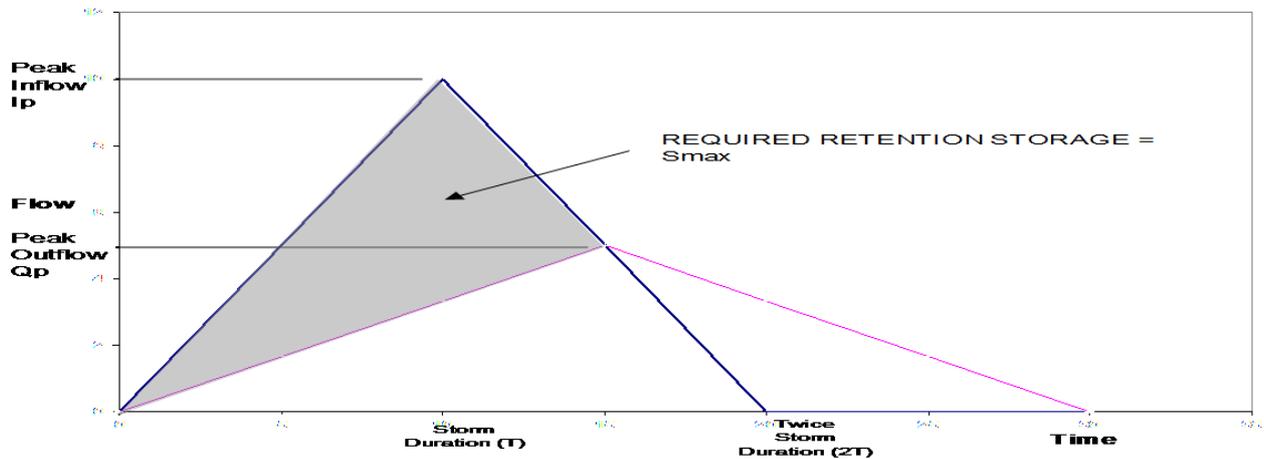


Figure 1. Boyd's Formula hydrographs and storage diagram

Catchment Area (A) =	0.0663	ha
Volumetric Runoff Coefficient (10 Year) =	0.78	
Frequency Factor (5 year)	0.95	From AR&R
5 Year Effective Catchment Area = $\Sigma CA =$	0.049	ha
Restricted outflow requirement =	0.00187	m ³ /s
Restricted outflow requirement =	1.87	L/s

Table 1. Boyd's Formula inputs

The 10 year runoff coefficient (C_{10}) is calculated using the AR&R formula $C_{10} = 0.1 + 0.8f$ where f is the fraction impervious 85% (required by TasWater).

Storm Duration (min)	5 year Intensity (mm/hr)	I_p (m ³ /s)	Q_p (m ³ /s)	V_1 (m ³)	S_{max} (m ³)
0	0	0	0	0	0
5	71	0.01	0.00	2.91	2.35
6	66.1	0.01	0.00	3.25	2.57
10	52.8	0.01	0.00	4.32	3.20
20	37.6	0.01	0.00	6.16	3.91
30	29.8	0.00	0.00	7.32	3.95
45	23.4	0.00	0.00	9	3.57
60	19.5	0.00	0.00	10	2.85

Table 2. Boyd's Formula storage calculations

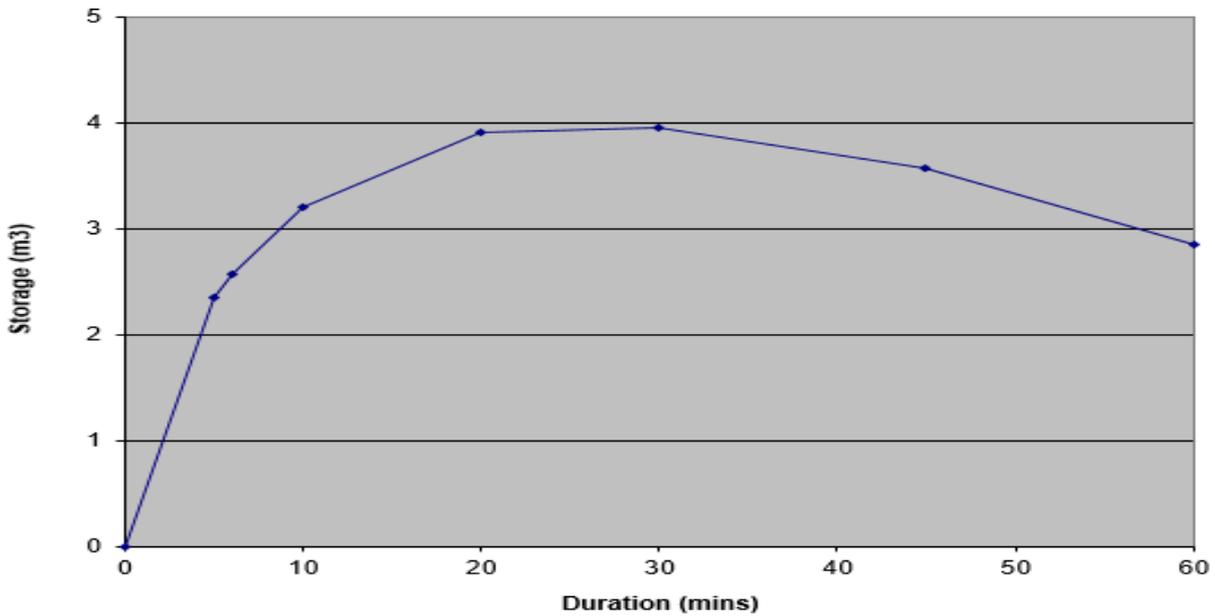


Figure 2. Boyd's Formula storage curve for 1:5 year storms of varying durations

It can be seen from Table 2 and Figure 2 that peak storage of 3.91 m³ occurs during the 20 minute storm event.

This volume can be achieved through the installation of 13.83m of DN600 polypropylene pipe. Installed with 300mm cover in an area not subject to vehicular loading would with 900mm to invert would require the installation of a 31mm diameter orifice plate. Figure 3 below shows a discharge relationship for this arrangement with outflows peaking at 1.89 L/s.

The installation of a trash screen on the upstream side of the orifice plate is recommended to prevent blockages of the small orifice.

Elevation-Discharge Relationship

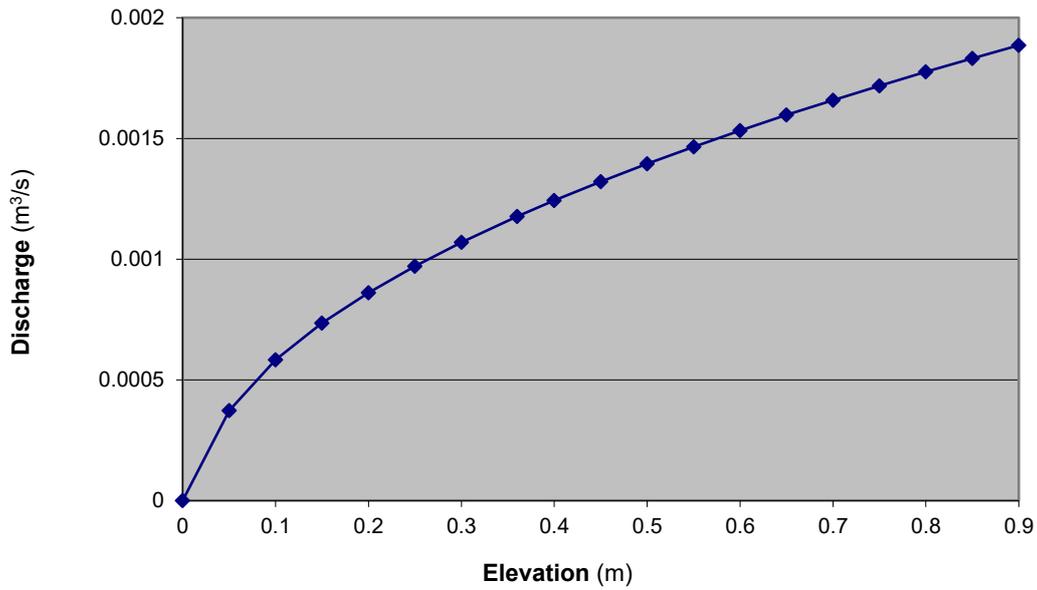


Figure 3. Elevation/Discharge Relationship for a 31mm orifice plate with 900mm storage head



Cameron Oakley
 CONSULTING ENGINEER
 HYDRODYNAMICA