TAYLOR
CONSULTING
CIVIL & STRUCTURAL ENGINEERS

19 September 2019
Our Ref: DMS

General Manager
Northern Beaches Council
725 Pittwater Council
Dee Why NSW 2099

Dear Sir/Madam,

Re: Overland Flow Study - Proposed Subdivision - 2A West Street Balgowlah

With reference to the development application for the above property this report seeks to evaluate the characteristics of the 1 in 100 year catchment stormwater flow regime associated within the context of the proposed development of the site.

This report contains information regarding appropriate development of the site in the context of the 1 in 100 year design overland flow regime and seeks to provide guidance on maintaining the safety of occupants and integrity of the various structural elements.

SITE DESCRIPTION

The existing unsubdivided site is situated in the Balgowlah precinct of the Northern Beaches Shire and has an area of **1604 m²**.

The western portion of the site contains a single residential dwelling on a suspended floor structure with outbuildings and concrete hardstand areas. The eastern half of the site remains largely undeveloped.

COUNCIL DRAINAGE SYSTEM

A 450mm diameter Council drainage line drains from a grated sag-pit located in West Street, a cul-de-sac immediately to the west of the site. This stormwater line from this pit runs in the drainage reserve and parallel to the southern boundary of the subject site.

The line junctions with other pipes at the southern-eastern corner of the site and subsequently a 525mm diameter R.C.P then runs to the north and along the eastern boundary and within a narrow drainage reserve.

A locality map and detail survey of the site is contained within Appendix A of this report.

PROPOSED DEVELOPMENT

It is proposed to subdivide the existing site and create a new 500m² lot which can be accessed via New Street via a new suspended concrete driveway.

Preliminary plans by Ric Turner Architects for a potential dwelling which could be constructed at the site are attached in Appendix B.

CATCHMENT FLOWS

The total catchment draining to the subject site is **4.5 Ha.** A catchment area map showing the schematic layout of the Council piped drainage system is attached in Appendix C.

Total peak flows generated from the catchment for the 100yr ARI critical storm event were calculated using The Rational Method to be **2.36 m^3/s** and the input parameters for the determination of this flowrate are contained within Appendix D.

COUNCIL DRAINAGE SYSTEM

Flows in excess of the piped system capacity in the West Street cul-de-sac sag-point, surcharge and eventually build to a depth that enables a weir-style overland flow regime across the footpath area and into the area immediately downstream.

Overland flows into this area would be compelled in a north-easterly direction although there appears to be no clearly defined flowpath and the uniformity of the contours across the site (see Appendix A) indicate there is potential for overland flows across a large area of the site.

50% INLET CAPACITY BLOCKAGE

In accordance with Council policy, a 50% blockage factor was applied to the pipe draining into the watercourse. As the capacity for a 450mm diameter pipe at 5% is approx. **$0.8m^3/s$** then it follows that the overland flow rate across the site is **$1.96m^3/s$.**

FLOW EXTENTS

By conservatively assuming an overland flow width of 3.0m, the corresponding depth of flow across the site for a 30% slope can be calculated to be 150mm.

If 150mm overland depth is therefore adopted as the 1 in 100 year flow depth across the central portion of the site then the Flood Planning Level (FPL) at any point of the site can be determined to be 650mm (500+150) above the existing ground surface levels.

A site plan showing the extents of the 1 in 100 year overland flow event is contained within Appendix E.

OVERLAND FLOW ASSESSMENT

This conservative assessment of the existing overland flow regime indicates that it is appropriate to adopt 150mm of flow depth across the site for the 1 in 100 year overland flow event.

The nature of the overland flow regime is such that it supports the provision of a new dwelling with an elevated floor plate and suspended driveway and parking areas to allow any overland flows to safely pass beneath the dwelling.

Buildings with a 200mm floor plate will therefore have a 450mm of crawl space as per the requirements of the N.C.C.

In that way the existing site surface can largely be maintained, ensuring that the nature of the overland regime is not significantly altered and that there are no adverse effects to neighbouring properties as a result of the site's subdivision and subsequent development.

Any new structures within the flow regime would need to be designed for the impacts of hydraulic forces and debris associated with a typical overland flow regime.

SUMMARY

It is proposed to develop the site such that the objectives of Council's DCP Flood Risk Management Policy are met.

This report has determined the scale and extent of the 1 in 100 year overland flow event across the site.

The report shows that the proposed subdivision and eventual construction of a residential dwelling can be compatible with the existing flow regime and does not adversely affect neighbouring properties by interfering with the flow.

The report also demonstrates that Flood Planning Level for the site 650mm above the existing surface level at any point.

Should you require any further information please contact the undersigned

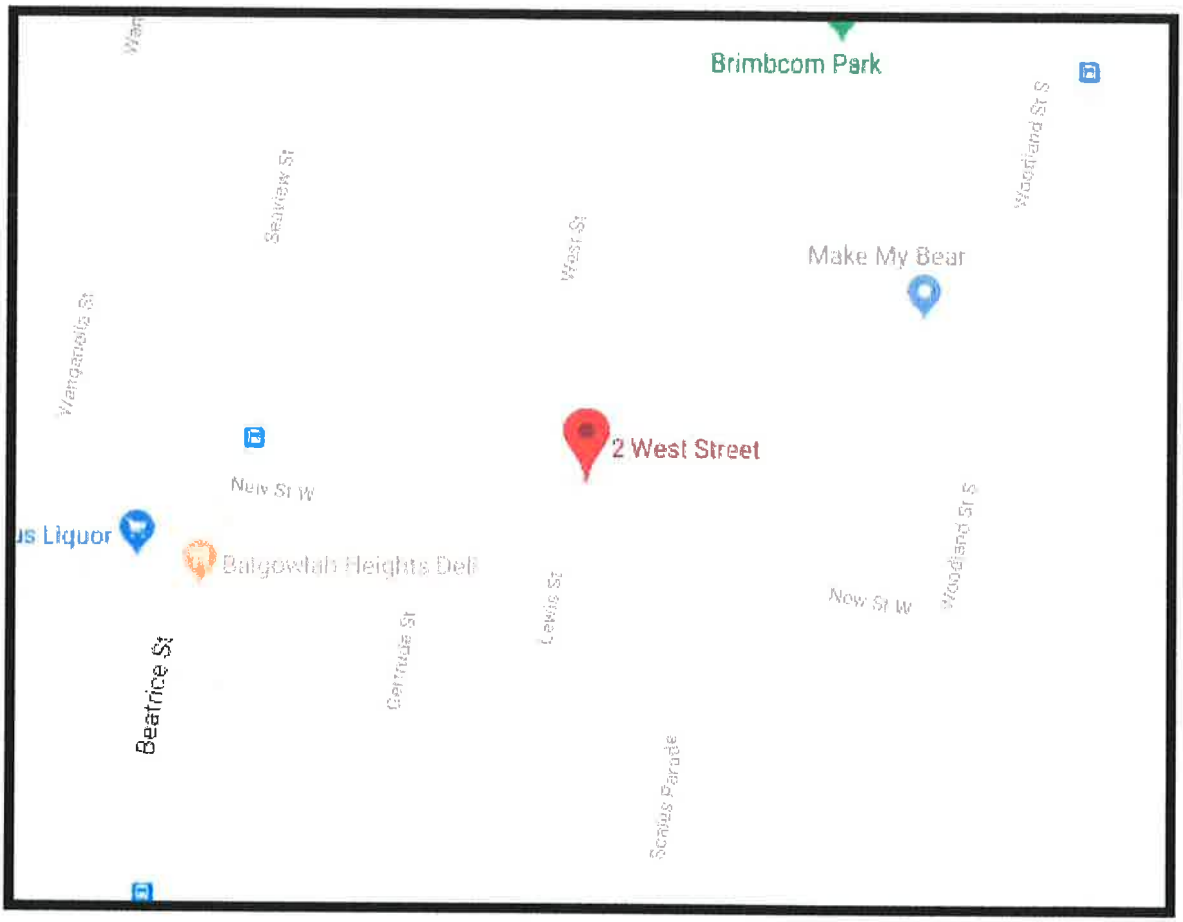
Yours faithfully,

TAYLOR CONSULTING

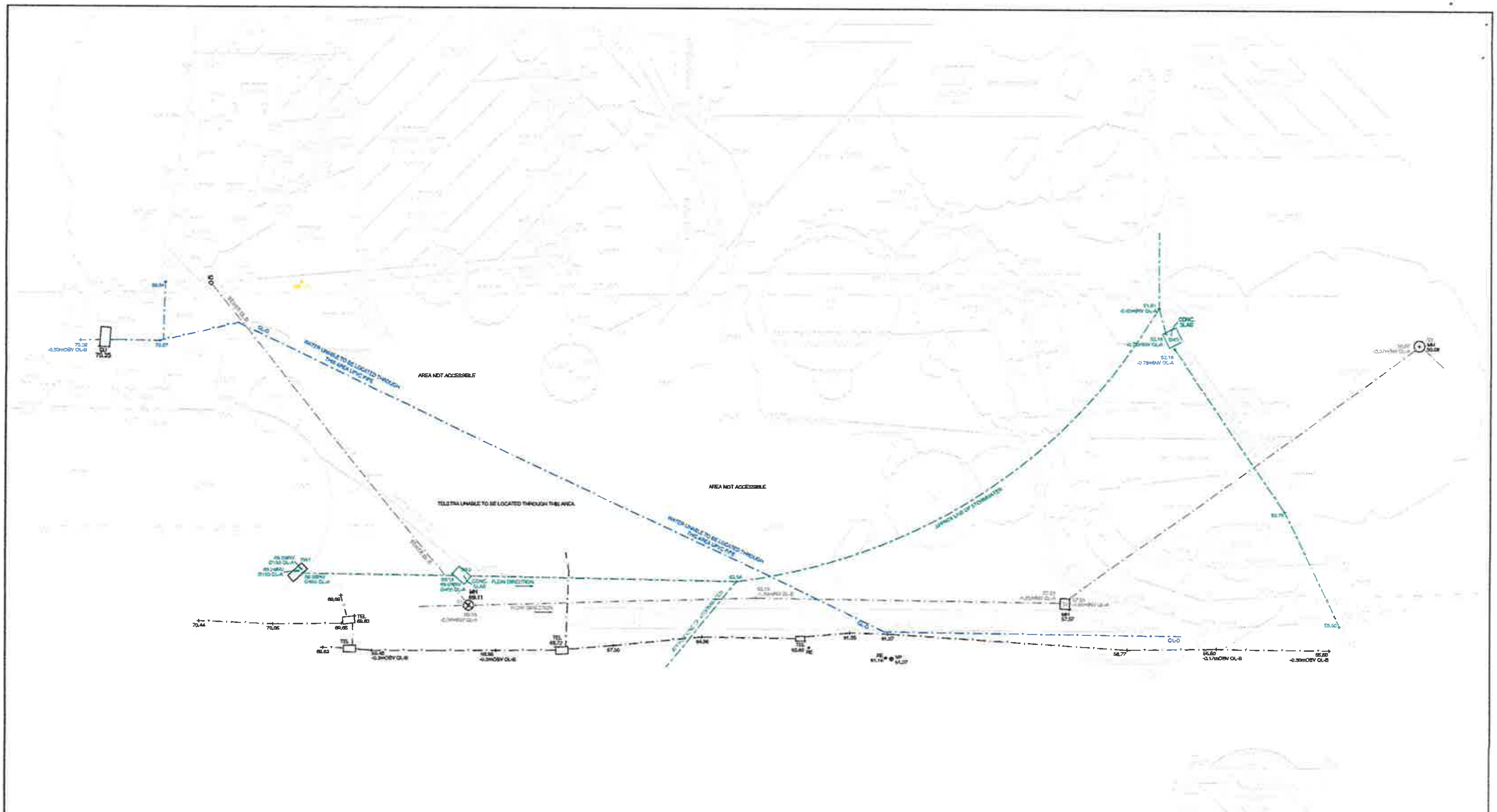
DAMIEN SCHAEFER – Director

B.E. Civil (Hons) M.I.E. Aust.

APPENDIX A



Locality Map – 2 West Street Balgowlah



NOTES
- UTILITIES HAVE BEEN LOCATED USING ELECTROMAGNETIC LOCATING AND GPR EQUIPMENT
- AS-5488-2019 QUALITY LEVELS HAVE BEEN ADOPTED
- LEVELS OF SURVEYED OBSERVATIONS ARE AT GROUND LEVEL UNLESS NOTED OTHERWISE
- NOTATION "-0.50m INV QL-B" REPRESENTS A QUALITY LEVEL B DEPTH TO THE INVERT OF A SERVICE AS PER AS-5488-2019 AND APPLIES TO THE POINT AND NOT THE LINE
- DIAMETERS AND MATERIALS HAVE BEEN OBTAINED FROM DBYD DRAWINGS UNLESS QL-A
- STH 755 AND BENCH MARK FROM SURVEY DRAWING 40861/2019 PROVIDED BY HILL & BLUME SURVEYORS HAVE BEEN ADOPTED FOR HORIZONTAL AND VERTICAL DATUM
- NO BOUNDARY DEFINITION HAS BEEN CARRIED OUT
- NON DESTRUCTIVE EXCAVATION IS RECOMMENDED BEFORE CARRYING OUT ANY CONSTRUCTION WORKS
- PLEASE REFER TO LOCATING REPORT FOR INFORMATION REGARDING UTILITY LOCATION

A1 — 0 2 4 6 8 10 — DO NOT SCALE — METRES

Rev	Drn	Revision/Issue	Date
-	CH	GENERAL ISSUE	15/08/19

ALS Australian Locating Services
18/75 Pacific Highway
Waitara NSW 2077
Ph. 02 9010 4235
EMAIL admin@locating.com.au
ABN 12 109 087 050

LEGEND

LH	- SEWER LAMP HOLE	WF	- WATER FOUNTAIN
LP	- LIGHT POLE	WM	- WATER METRE
TEL	- TELECOM	PH	- POTHOLE
OF	- OPTIC FIBRE	FH	- FIRE HYDRANT
DL	- DRAINAGE LINE	SV	- STOP VALVE
PP	- POWER POLE	KO	- KERB OUTLET
		GU	- GULLY
		RE	- RODDING EYE
(DSV)	DEVERT OF SERVICE	VP	- VENT PIPE
		UTL	- UNABLE TO LOCATE

WATERMAIN, ELECTRICITY, TELECOMMUNICATIONS, GAS, GAS (HPG), SEWER, STORMWATER, NBN LINE, OPTUS LINE, OPTICAL FIBRE LINE, NEXT GEN LINE, SLIT TRENCH, FUEL LINE, UNKNOWN, TPG, FIRE, AAPT

Vertical Datum
DATUM: AHD
BM ADOPTED: PM 1135
RL: 73.321

Drawing Title: EXISTING UTILITIES & SERVICES

Client Details: PETER MCAULEY

Project: 2a WEST STREET BALGOWLAH

Date	Drn	Chk	Pse
JULY 2019	CH	DJB	DJB

Scale	Drawing No.	Rev.
1:100@A1	202379	-

DATUM : A.H.D.

0 1 2 3 4 5 10

(P) PUBLIC RESERVE
(X) EASEMENT TO DRAIN WATER 1.0 WIDE BY DP739842
(Y) EASEMENT FOR SEWERAGE PURPOSES OVER EXISTING LINE OF PIPES BY DP739842
(Z) APPROXIMATE POSITION OF EXSISTING LINE OF PIPES.

T.N.
M.M.A.
APPROX 0°58'37"
APPROX 12.5°

LEGEND

	Building	BALC	Balcony Height
	Walls	BOL	Bollard
	Kerb Bottom	BS	Bus Stop
	Concrete edge	BW	Bottom of Window
	Kerb top	CHIM.	Chimney Height
	Barrier	ER	Earth Rod
	Hedge	FH	Fire Hydrant
	Fence	FL	Floor Level
	Overhead Powerline	GU	Gully
	Manholes	GFL	Ground Floor Level
△1	Survey Station & Name	GM	Gas Meter
	Bench Mark	GV	Gas Valve
		HT	Height
	Sapling	IC	Inspection Cover
		LGFL	Lower Floor Level
	Tree, 12/0.5/10 (Spread/Trunk/Height)	MH	Manhole
		PARA	Parapet Height
		PP	Power Pole
	Area Of Undergrowth	SFL	Second Floor Level
		SIL	Sill Height
	Gate	SP	Sign Post
		SV	Stop Valve
IC	Inspection chamber	SVP	Sewer Vent Pipe
CL	Cover level	TD	Top of Door
IL	Invert level	TOW	Top of Door/Window
Inv Ø0.25	Pipe Invert (diameter)	TEL	Telstra
—GU	Gully	TG	Top of Gutter
—KO	Kerb Gully	TL	Traffic Light
MH	Manhole	TW	Top of Window
		TOF	Top of Fence
		TOW	Top of Wall
		UND	Underside Height
		WM	Water Meter
		W—B	Wall to Boundary

NOTES:

1. ALL DIMENSIONS AND LEVELS SHOULD BE CHECKED ON SITE PRIOR TO DESIGN AND CONSTRUCTION.
2. THE INFORMATION ON THIS SURVEY IS TO BE USED FOR DA PURPOSES ONLY.
3. IF THERE IS ANY POINT OR FEATURE i.e.(FLOOR LEVEL, WALL POSITION, ROOF OR RIDGE HEIGHT ETC) CRITICAL TO THE PREPARATION OF DESIGN PLANS OR CONSTRUCTION, THAT POINT OR FEATURE SHOULD BE MADE KNOWN TO US SO IT'S ACCURACY CAN BE CONFIRMED PRIOR TO THE COMPLETION OF DESIGN PLANS OF COMMENCEMENT OF CONSTRUCTION.
4. SOME STRUCTURES AND FEATURES ARE APPROXIMATE ONLY. IF USED FOR DESIGN CONFIRMATION OF ACCURACY SHOULD BE CONFIRMED.
5. FENCES ARE APPROXIMATE ONLY UNLESS SPECIFICALLY DIMENSIONED TO BOUNDARY.
6. SURVEY MARKS MUST BE PLACED PRIOR TO CONSTRUCTION OR ERECTION OF FENCES.
7. TREE INFORMATION HAS BEEN SURVEYED FROM GROUND LEVEL AND THEREFORE SHOULD BE TREATED AS APPROXIMATE ONLY. THE EXTENT OF THE CANOPY IS APPROXIMATE AND DIAGRAMMATIC ONLY.
8. STAIR RISES, STEPS AND LANDINGS HAVE NOT BEEN INDIVIDUALLY LOCATED AND ARE DIAGRAMMATIC ONLY.
9. THE RECORDS OF THE SERVICE PROVIDERS HAVE NOT BEEN INVESTIGATED, ONLY THOSE SERVICES THAT ARE VISIBLE AND ACCESSIBLE AT THE DATE OF SURVEY HAVE BEEN SHOWN.
10. SERVICES SHOWN ARE INDICATIVE ONLY, OTHER SERVICES MAY EXIST THAT ARE NOT SHOWN. THEREFORE FIELD CONFIRMATION SERVICE LOCATORS SHOULD BE OBTAINED TO CONFIRM EXACT POSITION AND DEPTH.
11. SITE AREA SHOWN HAS BEEN CALCULATED BY SURVEY.
12. A SITE AND BOUNDARY SURVEY HAS BEEN CARRIED OUT.
13. ORIGIN OF LEVELS IS PM 1135, RL73.321 TO A.H.D
14. BEARINGS ARE ON MAGNETIC MERIDIAN.
15. THE TITLE NOTES THAT THERE IS RESTRICTION TO THE USE OF LAND BY DP739842.

DIAL 1100 BEFORE YOU DIG

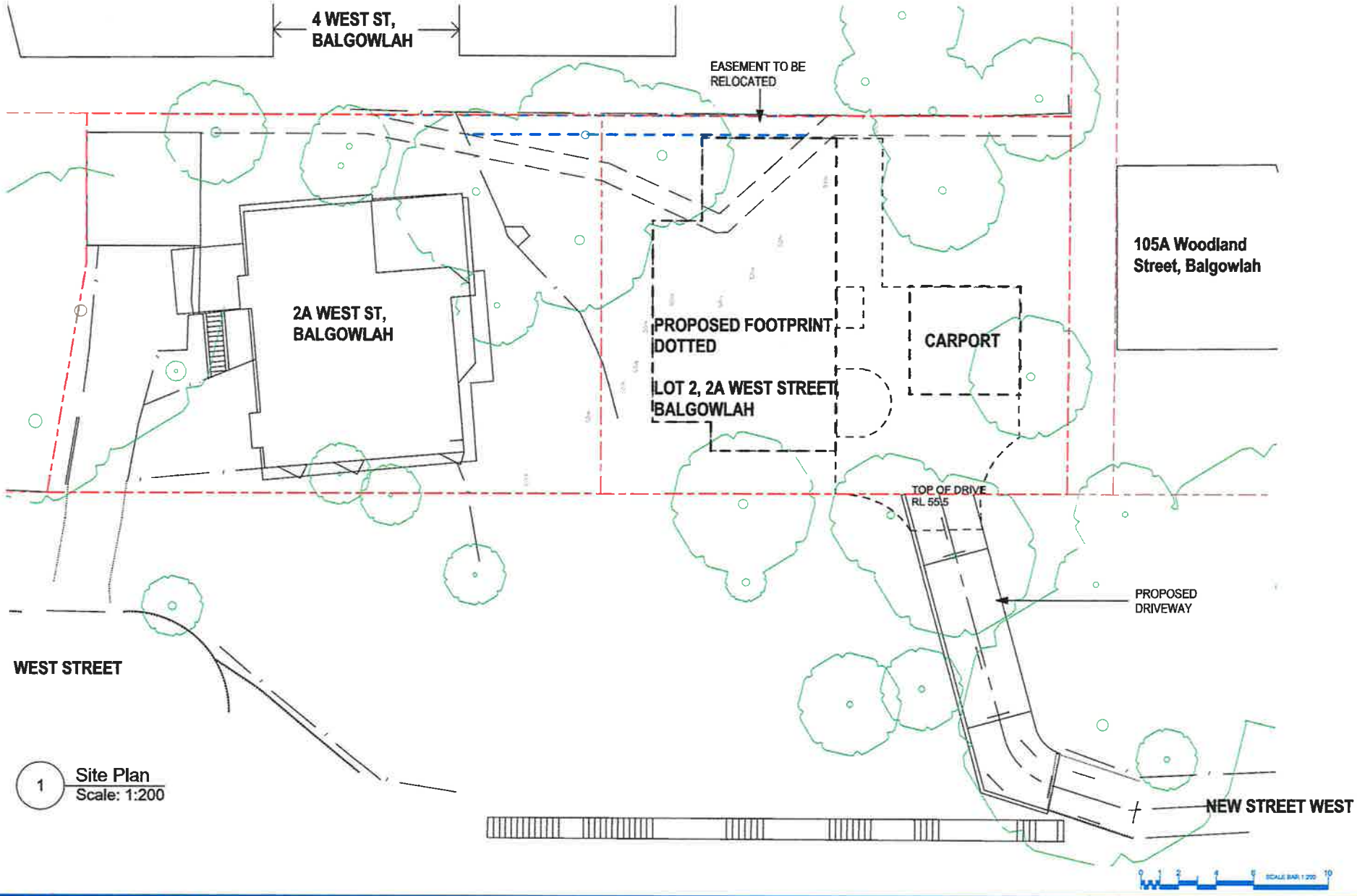
Hill & Blume
CONSULTING SURVEYORS
ACN 000 721 004

Hill & Blume Pty Ltd
102 Crown Street
Woolloomooloo
NSW 2011
Tel (02) 9332 4888
Fax (02) 9331 6422
surveyors@hillandblume.com.au

PROJECT
SHOWING SELECTED LEVELS
AND DETAIL OVER
LOT 22 IN DP 739842 BEING
2A WEST STREET W, BALGOWLAH HEIGHTS.

LGA	REGISTERED SURVEYOR
NORTHERN BEACHES	
SCALE: 1:100	DRAWN/PAPER SIZE: DGM/A0
SURVEY DATE: 31/07/18	DRAWING No.: 60661001A

APPENDIX B



TURNER HUGHES ARCHITECTS
www.turnerhughes.com.au
L2, 121 Alexander Street,
Crows Nest NSW 2065
P: (02) 9439-3200
ABN: 93 053 938 579
tha@turnerhughes.com.au

Title: Site Plan

Project: Lot 2, 2A West Street, Balgowlah

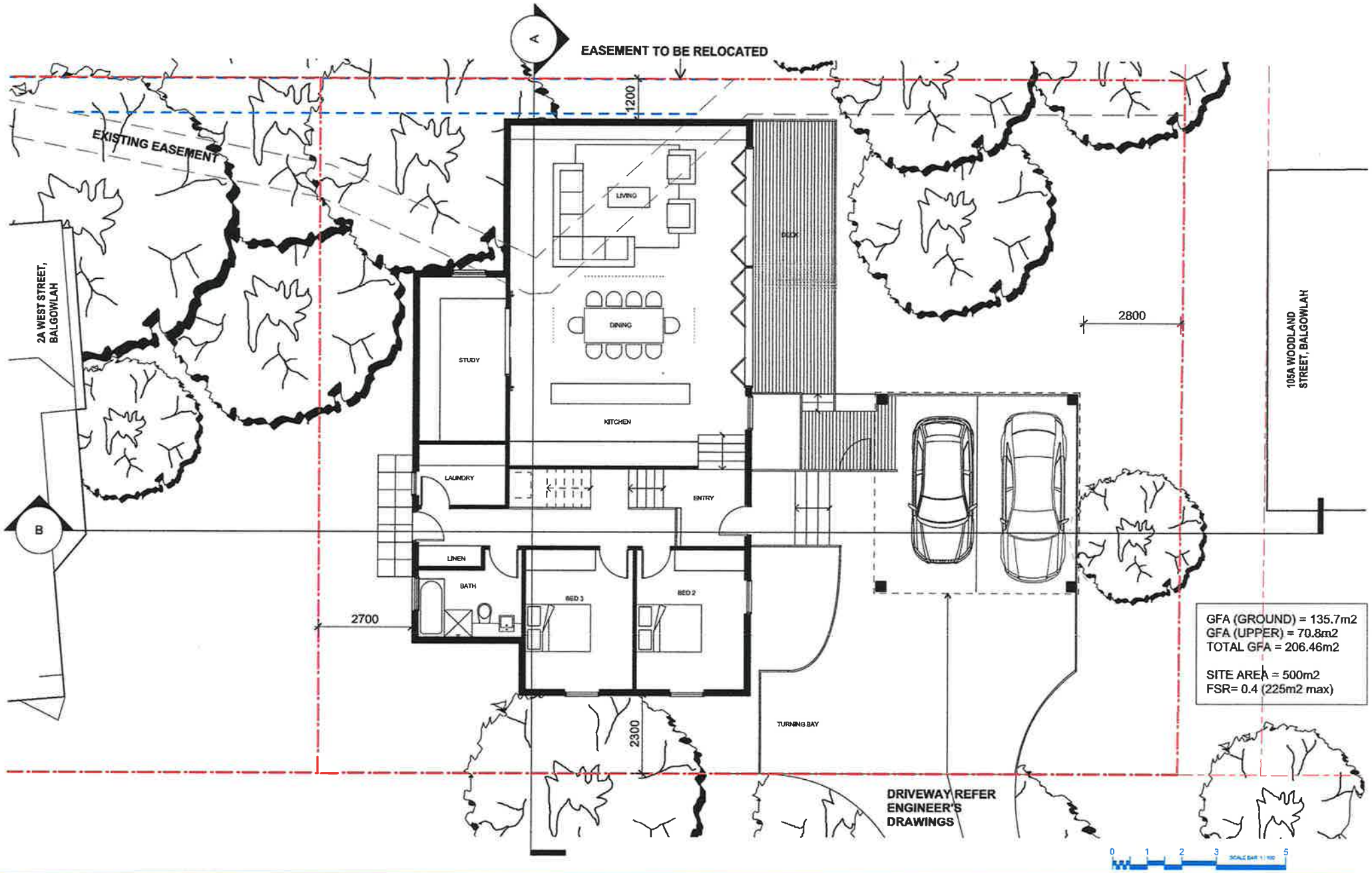
Date:19/9/19
Drawn: RP

Scale:1:200 @ A3

Drawing Number:
385 SKD-01 A

north

385 McAuley House - Scheme 3.vwx



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ABN: 93 053 938 579
tha@turnerhughes.com.au

19/9/19

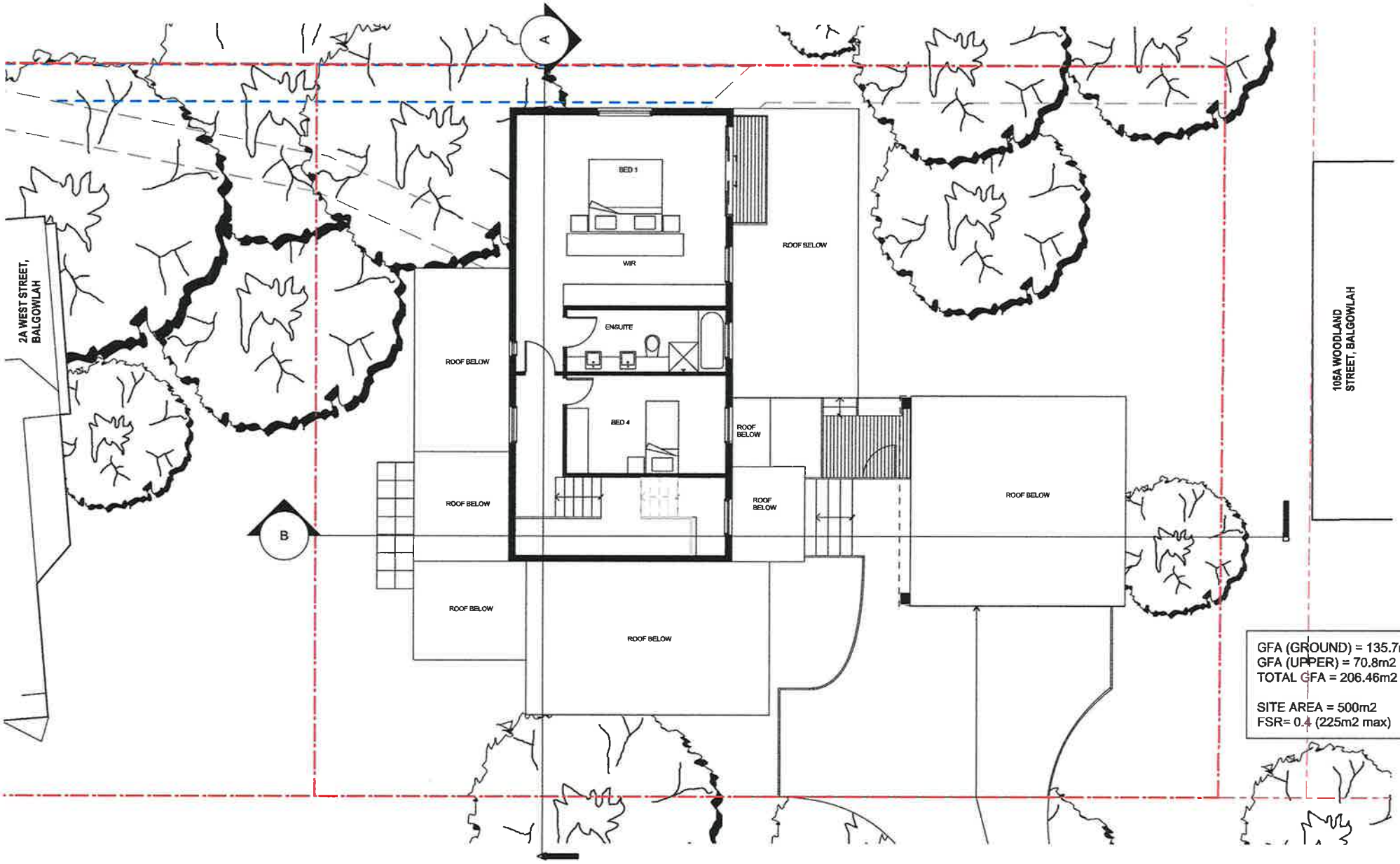
Title: Ground Plan

Project: Lot 2, 2A West Street, Balgowlah

Date:19/9/19
Drawn: RP

Scale:1:100 @ A3

Drawing Number:
385 SKD-02 A



GFA (GROUND) = 135.7m2
GFA (UPPER) = 70.8m2
TOTAL GFA = 206.46m2

SITE AREA = 500m2
FSR= 0.4 (225m2 max)

0 1 2 3 5

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ABN: 93 053 938 579
tha@turnerhughes.com.au

19/9/19

Title: Upper Floor Plan

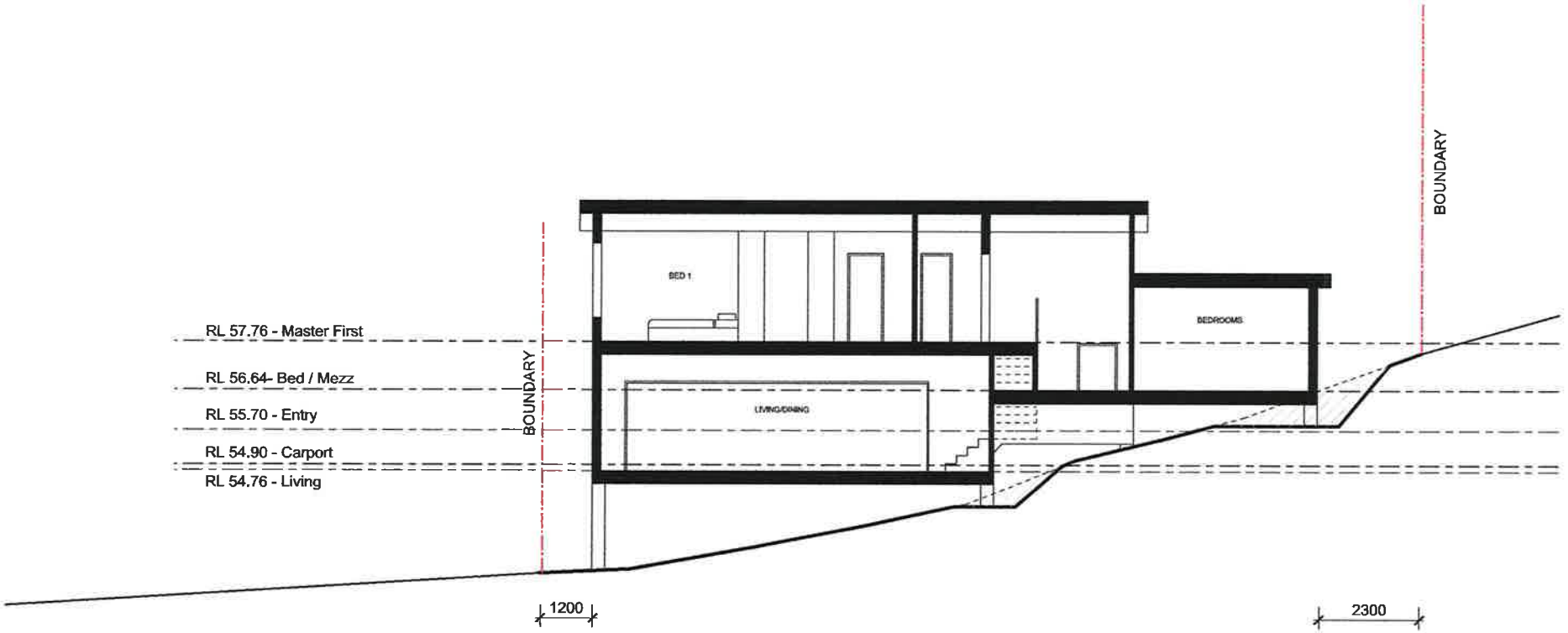
Project: Lot 2, 2A West Street, Balgowlah

Date:19/9/19
Drawn: RP

Drawing Number:
385 SKD-03 A

Scale:1:100 @ A3

north



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tha@turnerhughes.com.au

385 McAuley House - Scheme 3.vwx

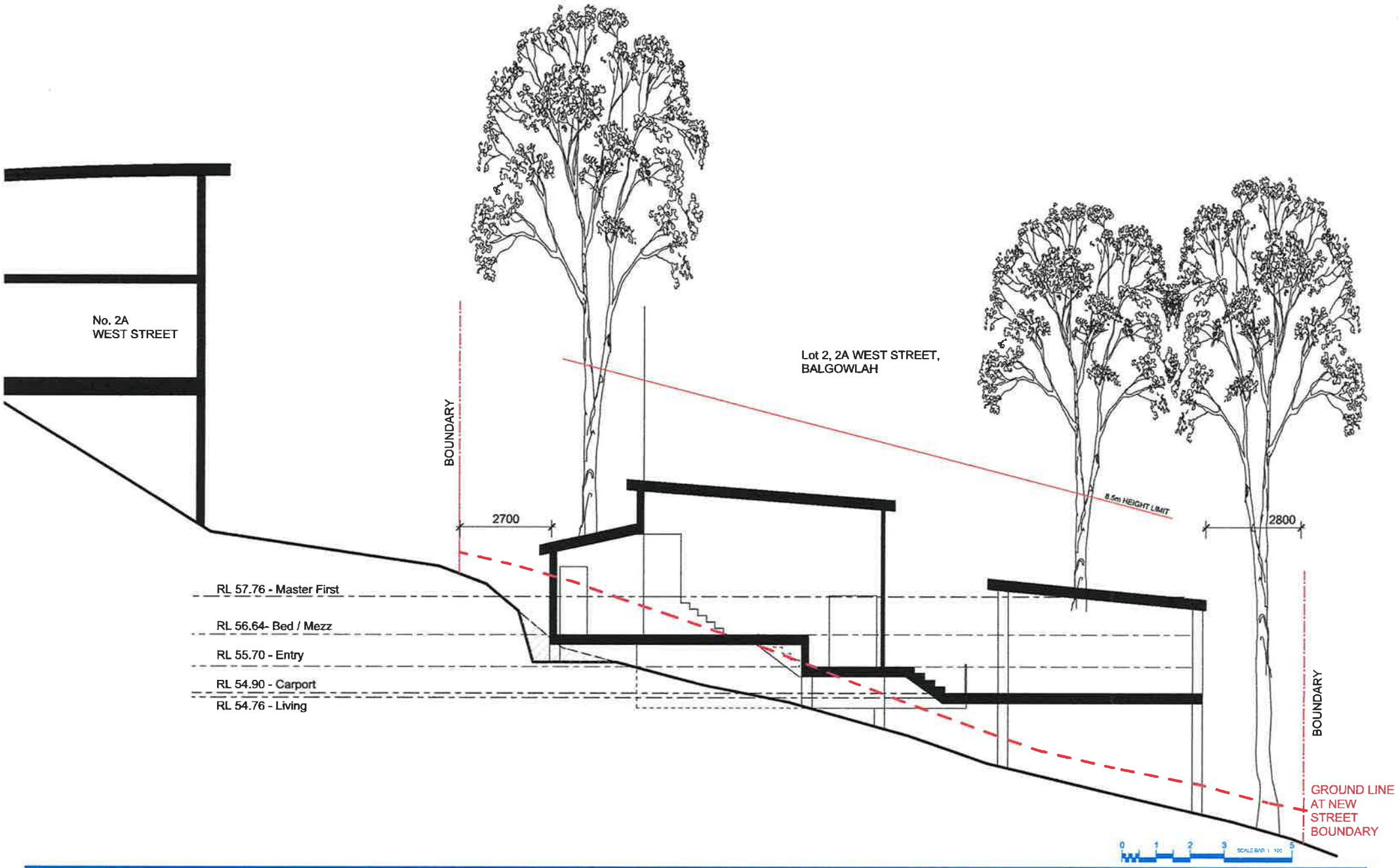
Title: Section A-A

Project: Lot 2, 2A West Street, Balgowlah

Date:19/9/19
Drawn: RP

Scale:1:100 @ A3

Drawing Number:
385 SKD-04 A



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P: (02) 9439-3200
ABN: 93 053 938 579
tha@turnerhughes.com.au

19/9/19

Title: Section B-B

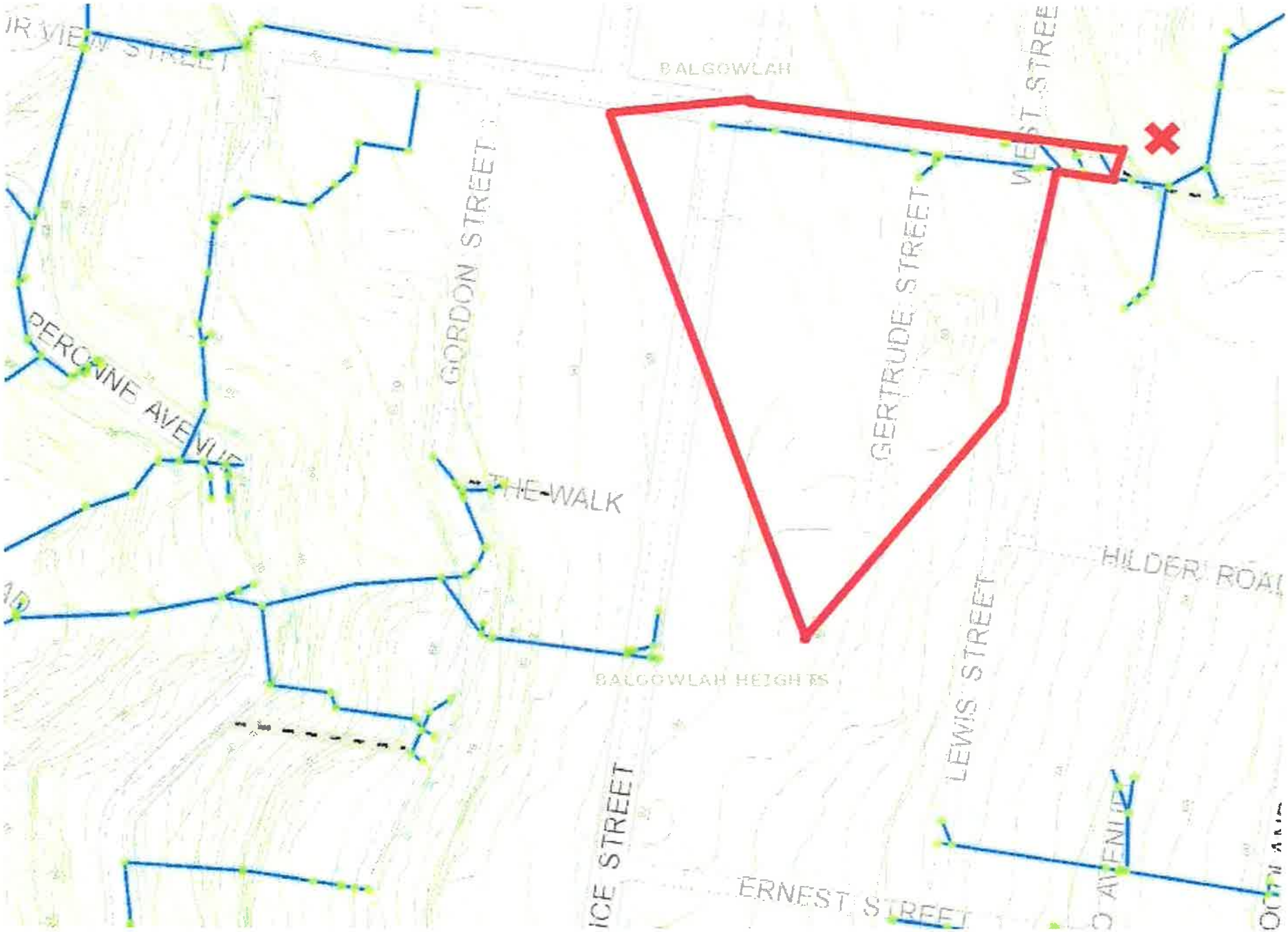
Project: Lot 2, 2A West Street, Balgowlah

Date:19/9/19
Drawn: RP

Scale:1:100 @ A3

Drawing Number:
385 SKD-05 A

APPENDIX C


BALGOWLAH
GORDON STREET
GERTRUDE STREET
PERONNE AVENUE
THE WALK
BALGOWLAH HEIGHTS
LEWIS STREET
ERNEST STREET

APPENDIX D

OVERLAND FLOW ANALYSIS

2A WEST ST BALGOWLAH

21 SEPT 2019

TAYLOR
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CIVIL & STRUCTURAL ENGINEERS
Suite 7 22-26 Fisher Rd Dee Why NSW 2099
www.taylorconsulting.net.au

* CATCHMENT AREA

- MEASURED FROM MAP

= 44,250m²

= 4.5 HA

* TIME OF CONCENTRATION

= property time = 5MINS

GUTTER FLOW 150m @ 2% = 3MINS

GUTTER FLOW 200M @ 10% = 2 MINS

t_c = 10 MINS

* RAINFALL INTENSITY

FROM CHART A45366

I_{10}^{100} = 210 mm/hr

* CO-EFFICIENT OF RUN-OFF

FROM CHART A45317

FOR I = 210mm/hr

$\therefore C = 2.4/2.7$

$= 0.9$

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* RATIONAL METHOD

$= \frac{CIA}{360}$

$= (0.9 \times 210 \times 4.5) / 360$

$= 2.36 m^3/s$

* R.C.P. CAPACITY

FROM CHART $\phi 450$ @ 5i. (SAG)

$Q_{cap} = 0.8 m^3/s$

→ SAG 50% BLOCKED

$\therefore$ In PIPE $\phi 450 = 0.4 m^3/s$

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* OVERLAND FLOW RATE

= CATCHMENT FLOW - PIPED FLOW
= 2.36 - 0.4
= 1.96 m^3/s

* OPEN CHANNEL ANALYSIS

→ assume rectangular flow width ~3m
→ (CONSERVATIVE AS FLOWS LIKELY TO SPREAD MUCH WIDER DUE TO LACK OF EXISTING WATERCOURSE & UNIFORMITY OF CONTOURS)

* MANNING'S EQUATION

$$Q = \frac{1}{n} A R^{2/3} S^{\frac{1}{2}}$$

SOLVE FOR FLOW DEPTH GIVES 0.15m

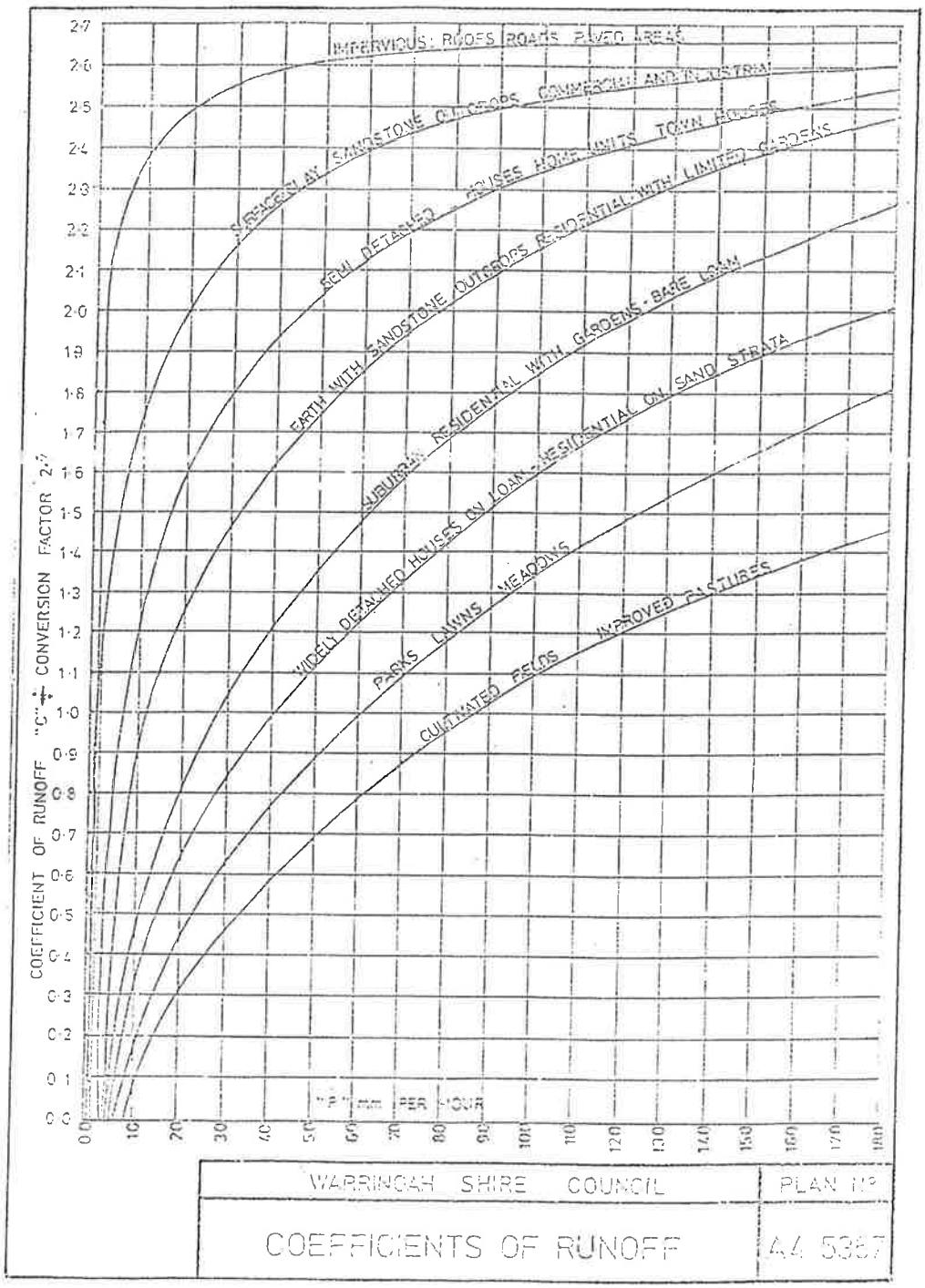
$n = 0.035$
$S_0 = 0.33$
WIDTH = 3.0m
$Q_{100} = 1.96 m^3/s$

* FLOOD PLANNING LEVEL

= 0.15 + 0.5m
= 0.65 AT ANY ONE POINT

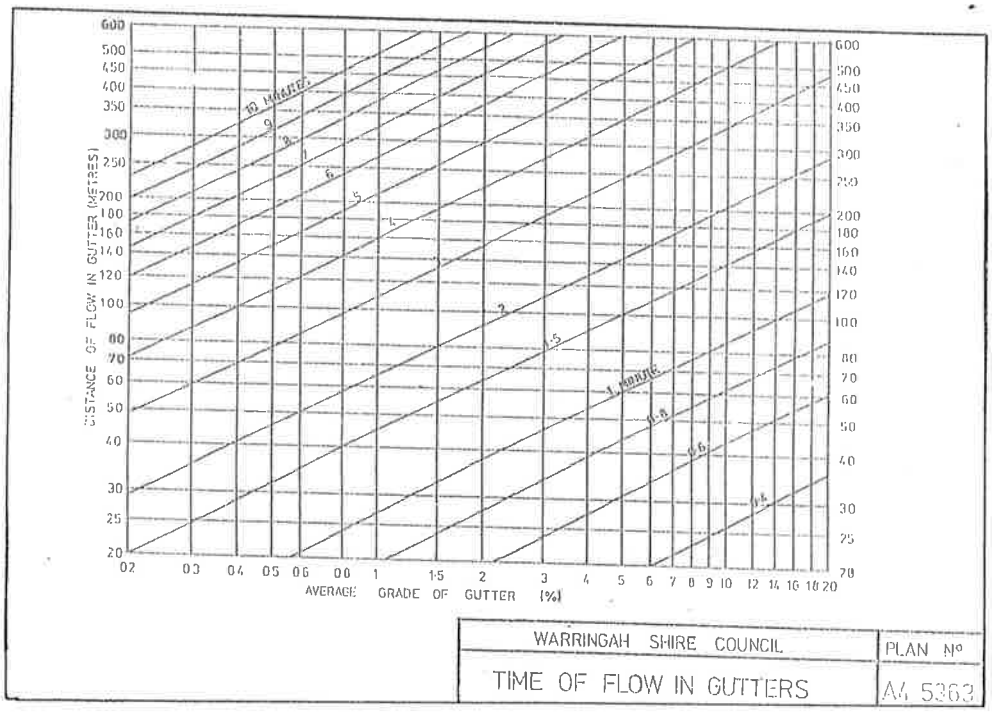
Drainage - Coefficient of Runoff A3 5367.bmp

Notebook: Stormwater - General
Created: 19/05/2016 12:42
Tags: Coefficient of Runoff, flood, flood risk report



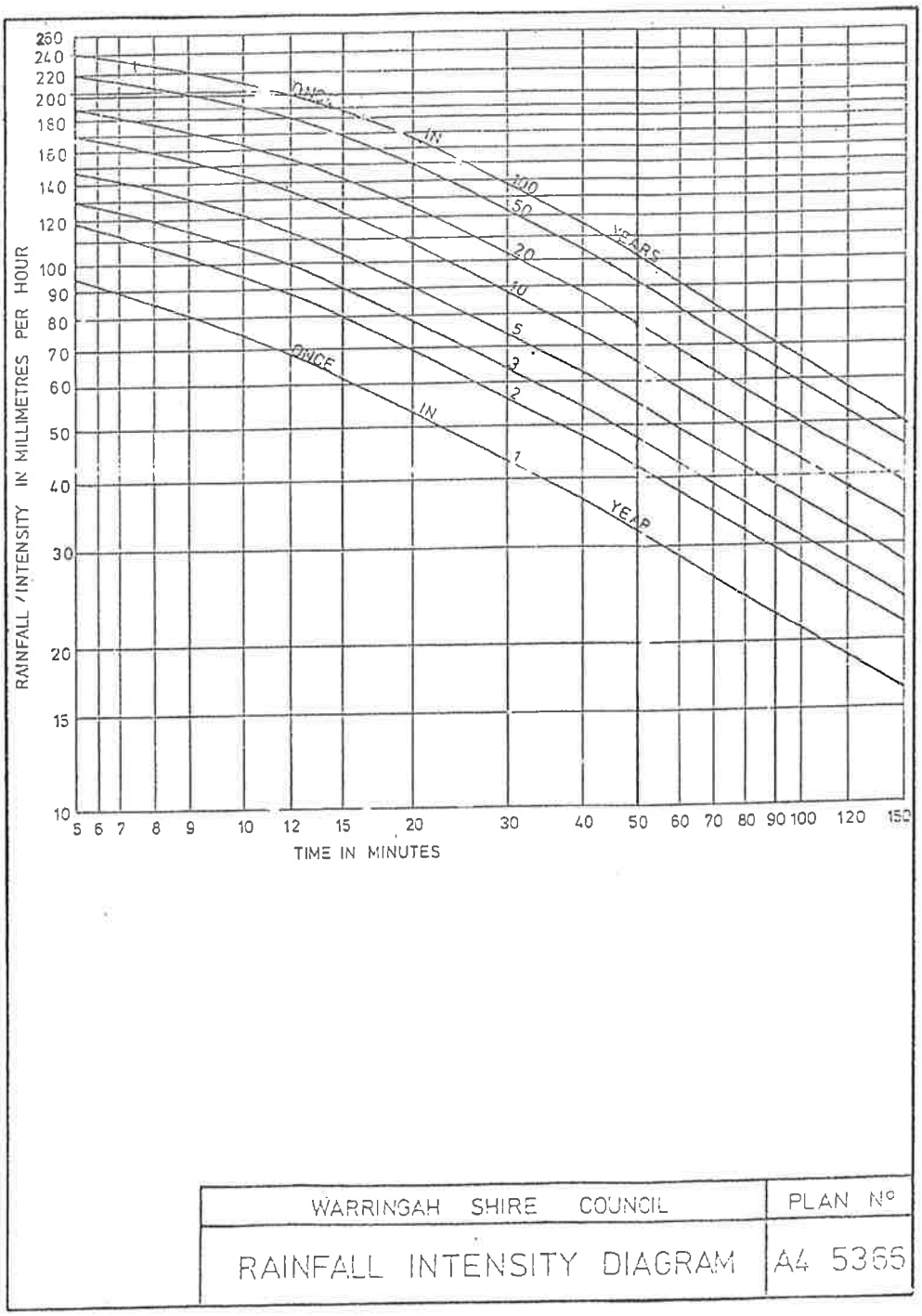
Drainage - Time of Flow in Gutter A3 5363.bmp

Notebook: Stormwater - General
Created: 19/05/2016 12:46
Tags: flood, gutter, Gutter flow time



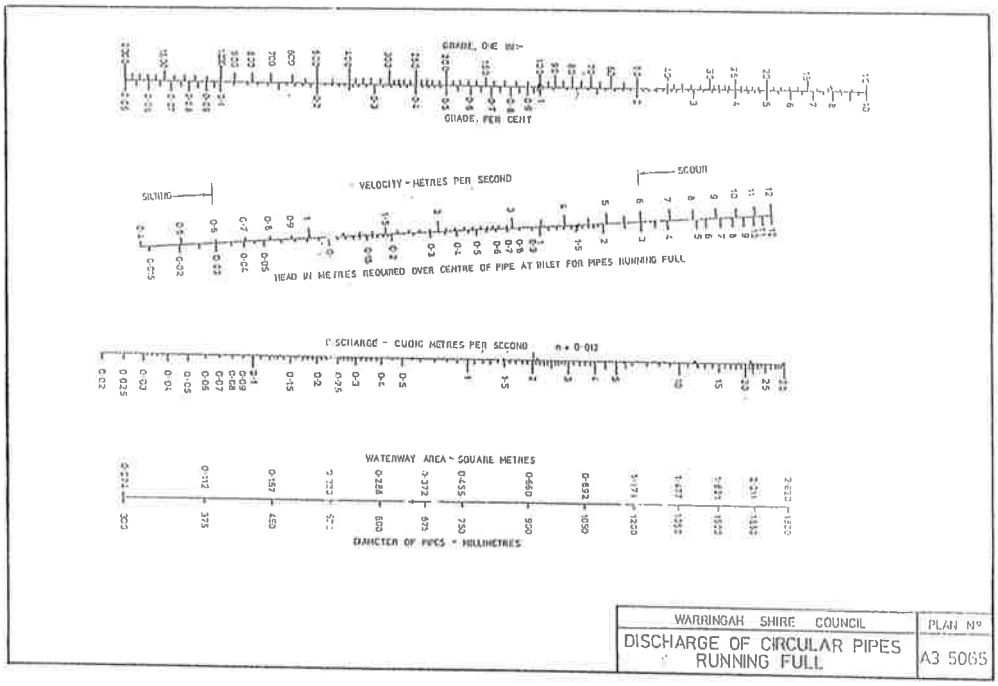
Drainage - Rainfall Intensity A4 5365.bmp

Notebook: Stormwater - General
Created: 19/05/2016 12:45
Tags: flood, intensity, rainfall



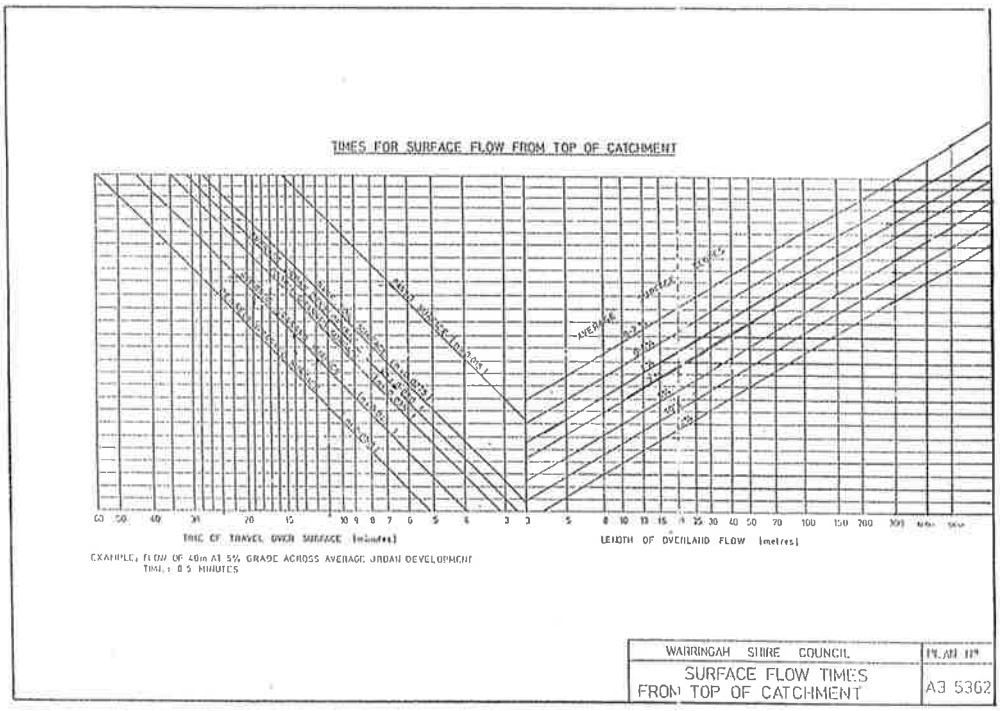
Drainage - Discharge of Circular Pipes Running Full A3 5065.bmp

Notebook: Stormwater - General
Created: 19/05/2016 12:44
Tags: Discharge, flood, pipe, pipe flow, pipe information

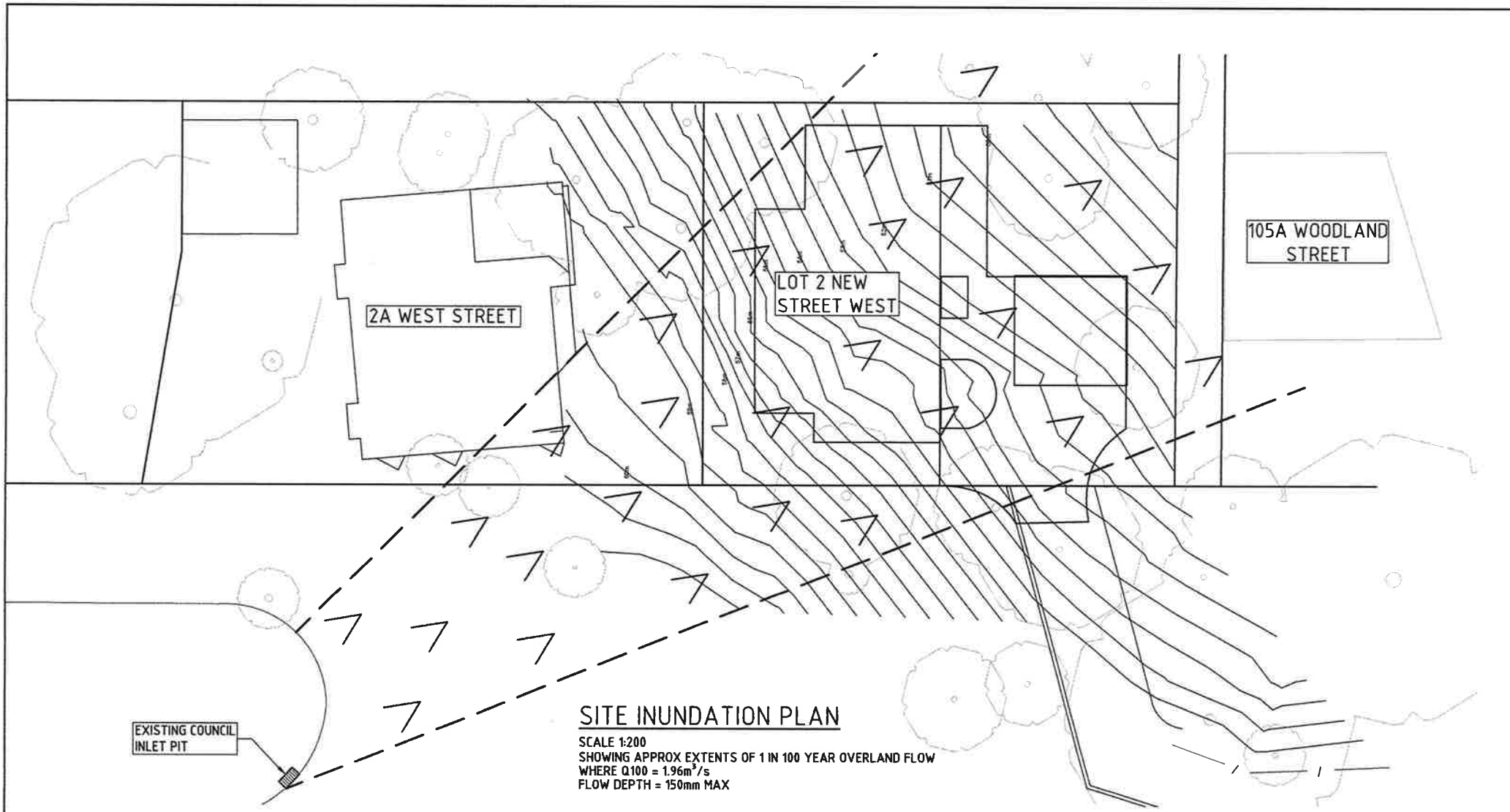


Drainage - Surface Flow Times From Top of Catchment A3 5362.bmp

Notebook: Stormwater - General
Created: 19/05/2016 12:46
Tags: flood, surface flow time



APPENDIX E



SITE INUNDATION PLAN

SCALE 1:200
SHOWING APPROX EXTENTS OF 1 IN 100 YEAR OVERLAND FLOW
WHERE Q100 = 1.96m³/s
FLOW DEPTH = 150mm MAX

ISSUE DATE	REVISION

TITLE
SITE INUNDATION PLAN – 100 YR ARI
2A WEST STREET, BALGOWLAH

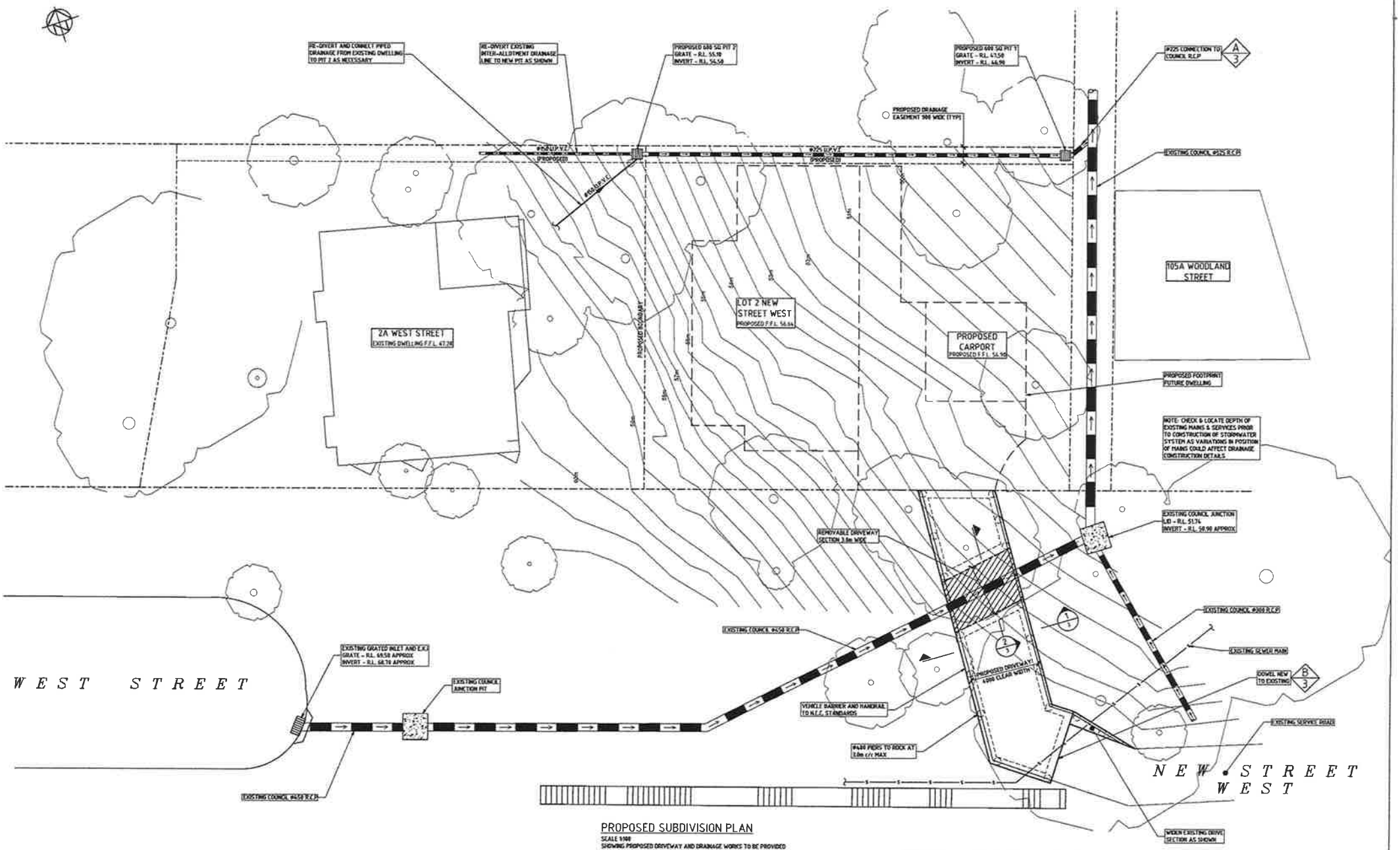
DRAWN	DATE	CHECKED	SCALE @ A3
AVW	19 SEPTEMBER 2019	BE Civil (Hons) MIE Aust.	1:200

TAYLOR CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING NO SHEET – 1

"Seascape" Suite 7 22-26 Fisher Rd Dee Why NSW 2099 | T 02 9982 7092 | F 02 9982 5898 | enquire@taylorconsulting.net.au | www.taylorconsulting.net.au

APPENDIX F



PROPOSED SUBDIVISION PLAN

SCALE 1:100

SHOWING PROPOSED DRIVEWAY AND DRAINAGE WORKS TO BE PROVIDED

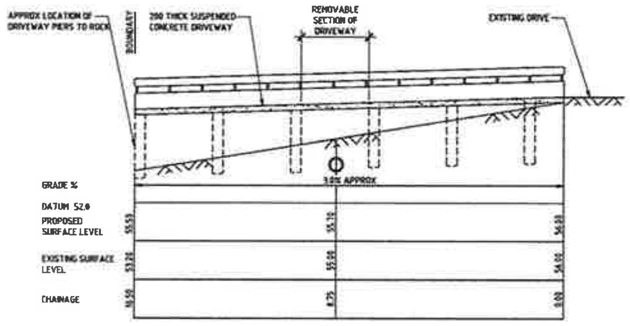
ISSUE	DATE	REVISION

TITLE: PROPOSED SUBDIVISION PLAN
2A WEST STREET, BALGOWLAH

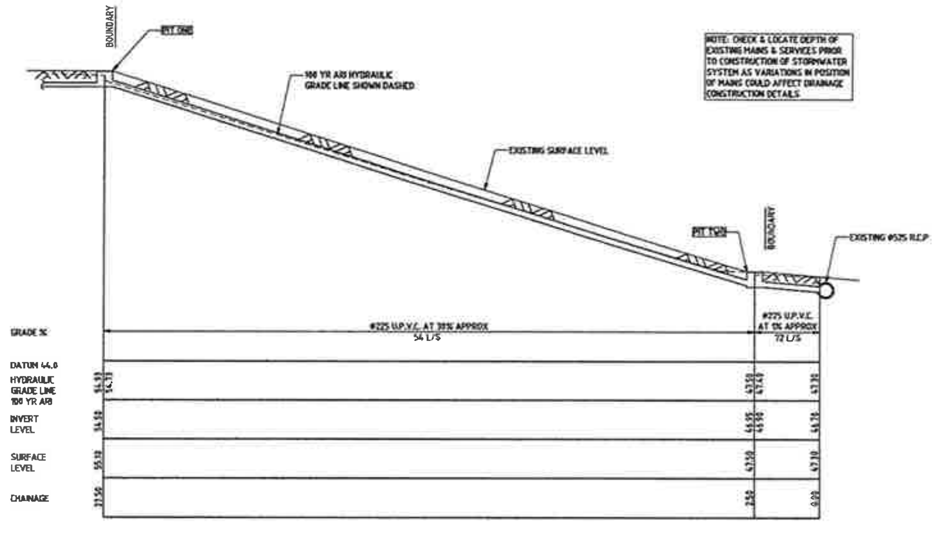
DRAWN	DATE	CHECKED	SCALE @ A3
AW	19 SEPTEMBER 2019	BE Civil (Hons) ME Aust	1:100 1:20

TAYLOR CONSULTING

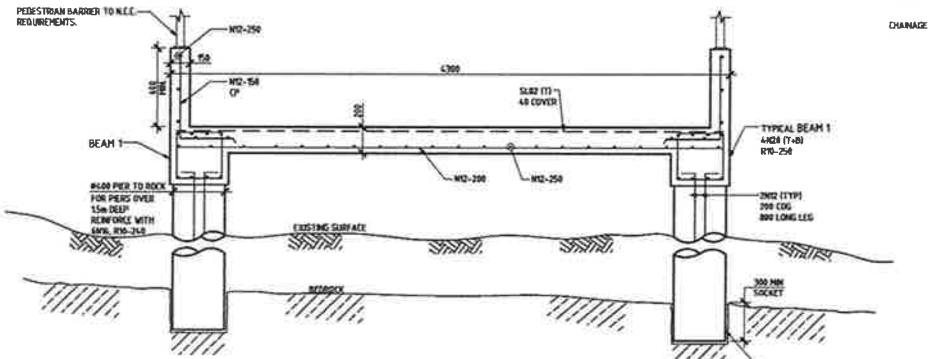
DRAWING NO. SHEET-2



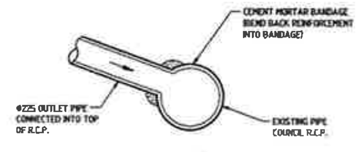
DRIVEWAY LONG-SECTION
SCALE 1:100 NATURAL



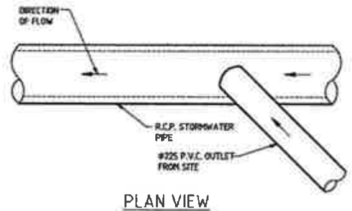
INTER-ALLOTMENT DRAINAGE LINE LONG-SECTION
SCALE 1:100 NATURAL



SECTION 1/2
SCALE 1:20

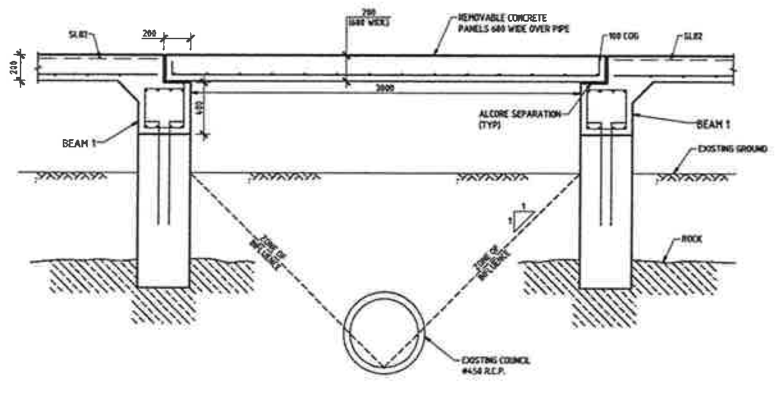


DETAIL A/2
1:20

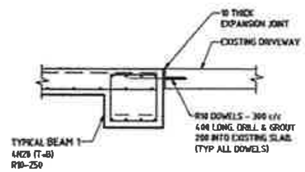


PLAN VIEW
1:20

TYPICAL OUTLET PIPE CONNECTION TO EXISTING R.C.P.
1:20



SECTION 2/2
SCALE 1:20



TYPICAL SLAB DOWEL CONNECTION DETAIL

DETAIL B/2
SCALE 1:20

GENERAL CIVIL CONSTRUCTION NOTES

1. ROAD AND DRAINAGE WORKS TO BE IN ACCORDANCE WITH COUNCIL'S SPECIFICATION FOR ENGINEERING WORKS – AUS-SPEC#1 AND/OR COUNCIL'S MINOR WORKS SPECIFICATION.
2. VEHICLE CROSSING, ACCESS RAMPS AND GUTTER SHALL BE POURED IN PLAIN CONCRETE AND FINISHED WITH STEEL TROWEL. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 25MPA AT 28 DAYS
3. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED BY THE USE OF VIBRATORY COMPACTION EQUIPMENT UNTIL IT SHOWS NO SIGNS OF MOVEMENT, OR AS DIRECTED BY COUNCIL OR THE SUPERVISING ENGINEER.
4. VEHICLE CROSSING TO BE CONSTRUCTED IN ACCORDANCE WITH APPROVED LEVELS AND SPECIFICATIONS ISSUED BY COUNCIL.
5. NEW KERB & GUTTERING TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL SPECIFICATIONS.
6. REINSTATE AND MAKE GOOD ALL LAYBACKS, PATHS AND TURFED AREAS TO SATISFACTION OF SUPERVISING ENGINEER.
7. REGULAR COMPACTION TESTS ARE REQUIRED BY COUNCIL PRIOR TO ADDITION OF EACH LAYER OF SUB-BASE OR WEARING COURSE.
8. COUNCIL'S DEVELOPMENT ENGINEER IS TO BE GIVEN 48 HOURS NOTICE WHEN THE WORKS REACH THE FOLLOWING STAGES:

(A) INSTALLATION OF SILT AND SEDIMENT CONTROL DEVICES.
(B) SUBGRADE LEVEL / BASECOURSE LEVEL
(C) PRIOR TO POURING OF STORMWATER GULLY PITS
(D) PRIOR TO BACKFILLING OF PIPELINES
(E) PRIOR TO POURING OF KERB & GUTTER
(F) PRIOR TO POURING VEHICLE CROSSING
(G) SEALING ROAD PAVEMENT

9. ALL STEEL ELEMENTS TO BE STAINLESS GRADE 316 OR EQUIVALENT (MARINE GRADE)
10. BENEATH ALL KERB & GUTTER AND PRAM RAMPS PLACE & COMPACT DGB20 IN 150 LAYERS TO 98% STANDARD DENSITY AS NECESSARY

CONSTRUCTION NOTES

GENERAL

[illegible]

FOUNDATIONS

1. Excavation shall be taken into ROCK. [illegible]
2. [illegible]

CONCRETE

1. [illegible]
2. [illegible]

Element	Slump mm	Max. Size Agg. mm	f'c MPa	Special Requirements
DRIVEWAY	80	20	40	-
PIERS	80	20	40	-

[illegible]

3. [illegible] shown otherwise.

Element	Exposure Classification		
	A1	B1	B2
[illegible]	-	50	50
[illegible]	25	40	50
[illegible]	25	40	45
[illegible]	20	40	45

[illegible]

4. Reinforcement symbols:
N denotes Grade 500 deformed normal ductility bar to AS 4671.
R denotes Grade 250 plain round normal ductility bar to AS 4671.
SL denotes Grade 500 low ductility square welded mesh to AS 4671.
RL denotes Grade 500 low ductility rectangular welded mesh to AS 4671.
[illegible]
denotes square fabric.
denotes extent of reinforcement.

5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. Fabric lap detail:

[illegible]

BRICK AND CONCRETE BLOCK MASONRY

[illegible]

REINFORCED CONCRETE BLOCK MASONRY

[illegible]

Element	Strength Grade of Units	Mortar Mix Cement : Lime : Sand

[illegible]

STRUCTURAL STEELWORK

[illegible]

TIMBER

1. [illegible]
2. Timber stress grade shall be F7 unless noted otherwise.

ISSUE DATE	REVISION

TITLE
SUB-DIVISION LONG-SECTIONS & DETAILS
2A WEST STREET, BALGOWLAH

DRAWN	DATE	CHECKED	SCALE @ A3
ALG	23 SEPTEMBER 2019	BE Civil (Hons) MIE Aust	1:100 1:20

TAYLOR CONSULTING

DRAWING NO
SHEET-3