Greg Alderson Associates

18 September 2023

The Geneal, Manager
Byron Shire Council
PO Box 219
MULLUMBIMBY NSW 2482)

RE: RFI Response to Council dated 22 August 2023 for 11 Burns Street, Byron Bay

This office has been engaged by Davis Architect to address Council's RFI dated 22 August 2023 for the proposed development at 11 Burns Street, Byron Bay.

The RFI is stated as follows;

"In accordance with prescriptive measure 9 of B3.2.1 in DCP 2014, construction of Somerset Lane for the full frontage of the property and extended to Wordsworth Street will be required. The concept engineering plans must be amended to provide a minimum 3m wide road pavement with one way cross fall, kerb and gutter and associated drainage. Plans must demonstrate compliance with Council's adopted engineering standards, currently the Northern Rivers Local Government Development Design and Construction Manuals, and include catchment details, stormwater calculations (major/minor system design), pit and pipe details (including discharge location), driveway access details and transitions to the existing"

1. GAA Site Visit to Somerset Lane

GAA team visited the site on 11th of September 2023 to understand the current configuration of Somerset Lane. Site findings reveal the following on Somerset Lane;

- Most of portion of Somerset Lane is unsealed with no formalised drain and wheel rutting exist on the Road.
- The existing Road (Somerset Lane) currently falls from the south LHS of the pavement to the north RHS of the pavement. Typically, stormwater runoff from the properties on the Southern side of the proposed development generally falls to the Somerset Lane and then to properties North of Somerset Lane.
- Similar development along Somerset Lane discharges their stormwater directly to Somerset Lane. As can be seen in Figure 1

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Figure 1: Similar development discharging stormwater to Somerset Lane directly

- The table drain on Wordsworth Road is shallow, it's not feasible to get compliant pipe fall and cover from Somerset Lane through an underground outlet pipe system to Wordsworth Road.

2. GAA Road & Driveway Response to Council RFI

The responses are summarised below and should be should be read in conjunction with GAA plans 23305.RFI.CIV.01.08.2023_Roadworks attached to this letter

1. GAA has proposed to upgrade the Somerset Lane (from site frontage to Wordsworth Lane) to a 3m wide bitumen seal to meet the requirement of Chapter D6.4.3 – Subdivision.

   The proposed seal would provide smooth, firm trafficable surface for vehicle movements and remove the wheel rutting on the sealed road. The proposed sealed lane would have a one-way cross fall to a proposed table drain.

2. GAA has provided access transition details for the two driveways servicing the subdivision from either from Burns Street or Somerset Lane in accordance with AS2890, Council and NRLG standard. From our design investigation, site accessibility is not a problem in terms of layout and grade.

3. GAA Stormwater Response to Council RFI

GAA undertook a stormwater assessment of the catchment contributing flow to Somerset Lane and it is summarised below (Refer GAA drawing for drainage calculations)

Catchment contributing flow to Somerset Lane: 0.62ha

Q5 flow = 171 l/s

Q100 flow = 331l/s.

The existing road capacity (Somerset Lane) = 45 l/s

The proposed road seal 3m seal including kerb and gutter capacity = 131 l/s

3a. GAA Stormwater Proposal

GAA has proposed a 3m wide seal with a grassed table drain of an estimated capacity of = 167 l/s which is almost adequate to carry minor system, Q5 flow of (171l/s) and it will provide a massive improvement on the existing road on Somerset Lane which has an existing estimated capacity of 45 l/s. The proposed table drain will take the site's runoff to Wordsworth Lane.

3b. Stormwater Discussion

GAA has not proposed an underground pipe system for Somerset Lane because the table drain on Wordsworth Road is shallow and it's not feasible to get compliant pipe fall and cover to the table drain on Wordsworth Road.

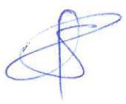
The development involves the addition of a new dwelling to the back of the property which will only result in an increase of 0.85 veh/hr as per Guide to Generating Traffic Development. It would be uneconomic to provide an underground pipe system on Somerset Lane for a development of small scale also considering that similar development in the area discharges their stormwater to Somerset Lane without any formalised drainage.

Conclusion

GAA has proposed to upgrade the Somerset Lane (from site frontage to Wordsworth Road) to a 3m wide bitumen seal to meet the requirement of Chapter D6.4.3 – Subdivision.

A grass table drain has been proposed on Somerset Lane to take the site's runoff to Wordsworth Road.

A Kerb and channel system (KC) is a preferred option to GAA proposed grassed table drain. An underground pipe system is not feasible for the site based on the slope constraint in terms of getting a complaint pipe fall and cover to Wordsworth Road.
Yours Faithfully,



Sodiq Azeez
Civil Engineer, RPEng
Greg Alderson and Associate

Attached: GAA drawing

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	TITLE
1	23305-CIV-01	DRAWING LIST & SITE OVERVIEW
2	23305-CIV-02	CONCEPT WORKS OVERVIEW PLAN
3	23305-CIV-03	CONCEPT ACCESS TO PROPOSED DWELLING AND LONG SECTION
4	23305-CIV-04	CONCEPT ACCESS TO EXISTING DWELLING AND LONG SECTION
5	23305-CIV-05	TYPICAL CROSS SECTION AND HYDROLOGY
6	23305-CIV-06	CATCHMENT CONTRIBUTING FLOW TO Somerset LANE
7	23305-CIV-07	ROAD STORMWATER CAPACITY
8	23305-CIV-08	B85 TURNPATH TO PROPOSED DWELLING

SITE LOCALITY

SOURCE: NSW LPI SIX MAPS

REV	REVISION DESCRIPTION	BY	DATE
A	FOR INFORMATION	AE	01/08/2023

Z:\JOBS\23\23305 - Anthony Wood - 11 Burns Street\CIVIL\CAD\c3d\23305.RFI.CIV.01.08.2023_Roadworks.dwg

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Client: ANTHONY WOOD

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Title: DRAWING LIST & SITE LOCALITY

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
SA	N.T.S			01/08/2023
Checked: AE	Original Size: A3	No. in set: 01 of 06		Revision: A
Job Number: 23305	Drawing Number: 23305-CIV-01			

KEY:

- EXISTING BOUNDARY
- PROPOSED GRASS SWALE
- EXISTING TABLE DRAIN
- PROPOSED ROAD SEAL WIDENING (3m WIDTH)
- PROPOSED DRIVEWAY ACCESS

Approximate

Existing swale on Wordsworth Street

Wordsworth Street

Proposed dish drain

Edge of existing road

3.0m

Somerset Lane

Property boundary

Proposed swale

Edge of existing road

Somerset Lane (UNSEALED)

3.0m

Property boundary

Existing upright kerb

Existing edge of seal

Burns Street

EXISTING DWELLING

Proposed asphalt

6.1m

4.2m

4.2m

6.2m

Proposed Driveway to existing dwelling garage

Proposed Driveway to proposed dwelling garage

6.7m

5.7m

Property boundary

Edge of existing road

REV	REVISION DESCRIPTION	BY	DATE
A	FOR INFORMATION	AE	01/08/2023

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

REFER COVER SHEET FOR NOTES UNLESS NOTED OTHERWISE

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Client: ANTHONY WOOD

Title: CONCEPT WORKS OVERVIEW PLAN

FOR INFORMATION

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Project: PROPOSED DUAL OCCUPANCY

Drawn:	Scale:		Checked:	Date:
SA	1:250			01/08/2023
Checked:	Original Size:	No. in set:		Revision:
AE	A3	02 of 06		A
Job Number:	Drawing Number:			
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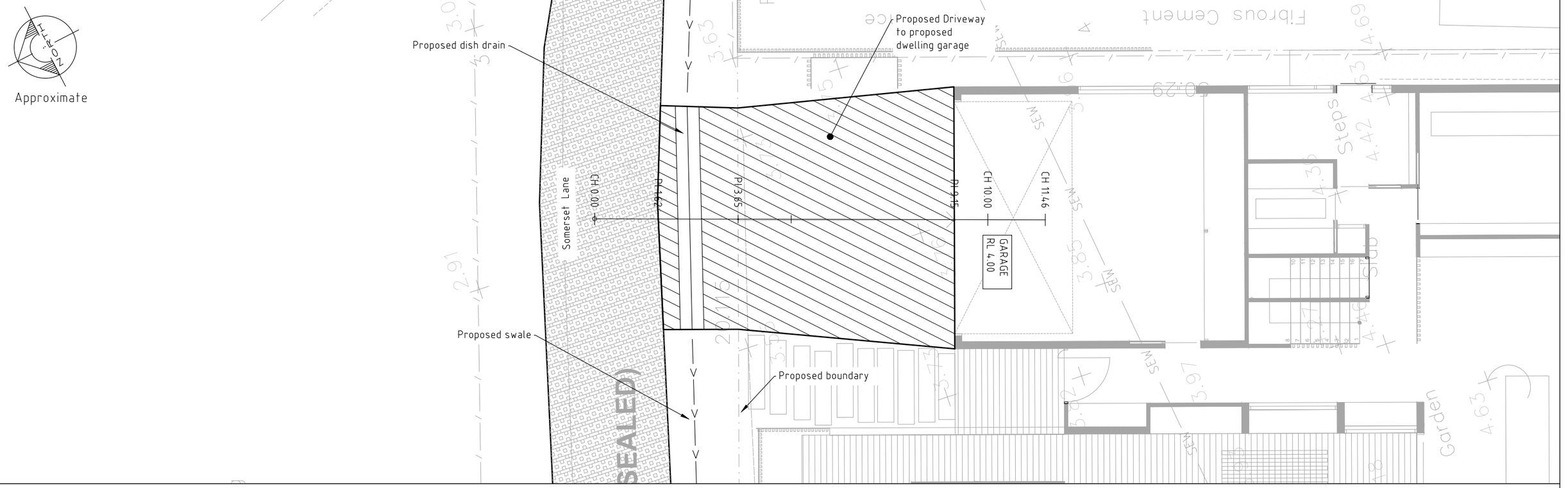

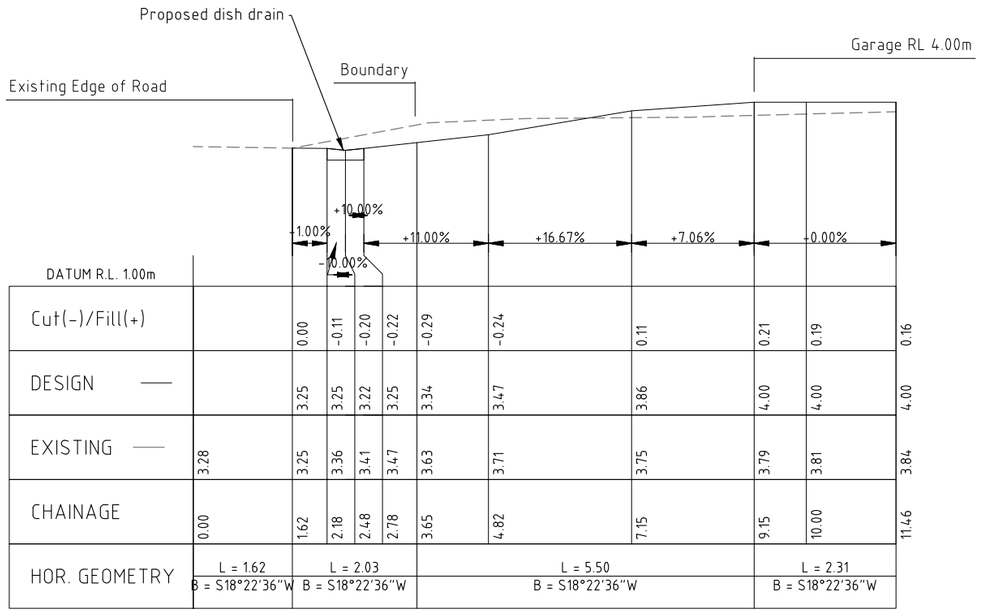

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DESIGN		3.25	3.25	3.22	3.25	3.34	3.47	3.86	4.00	4.00	4.00	
EXISTING	3.28	3.25	3.36	3.41	3.47	3.63	3.71	3.75	3.79	3.81	3.84	
CHAINAGE	0.00	1.62	2.18	2.48	2.78	3.65	4.82	7.15	9.15	10.00	11.46	
HOR. GEOMETRY	L = 1.62 B = S18°22'36"W	L = 2.03 B = S18°22'36"W				L = 5.50 B = S18°22'36"W			L = 2.31 B = S18°22'36"W			

Long Section - Driveway to Proposed Dwelling Scale 1:100

REV	REVISION DESCRIPTION	BY	DATE
A	FOR INFORMATION	AE	01/08/2023

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Client: ANTHONY WOOD

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Title: CONCEPT ACCESS TO PROPOSED DWELLING AND LONG SECTION

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
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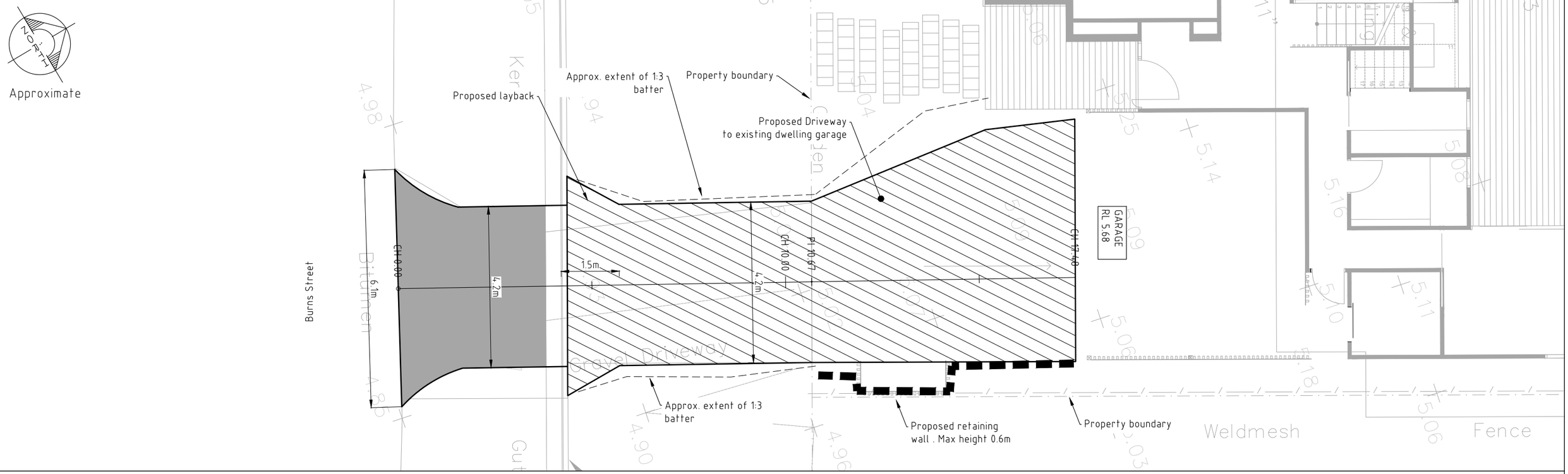
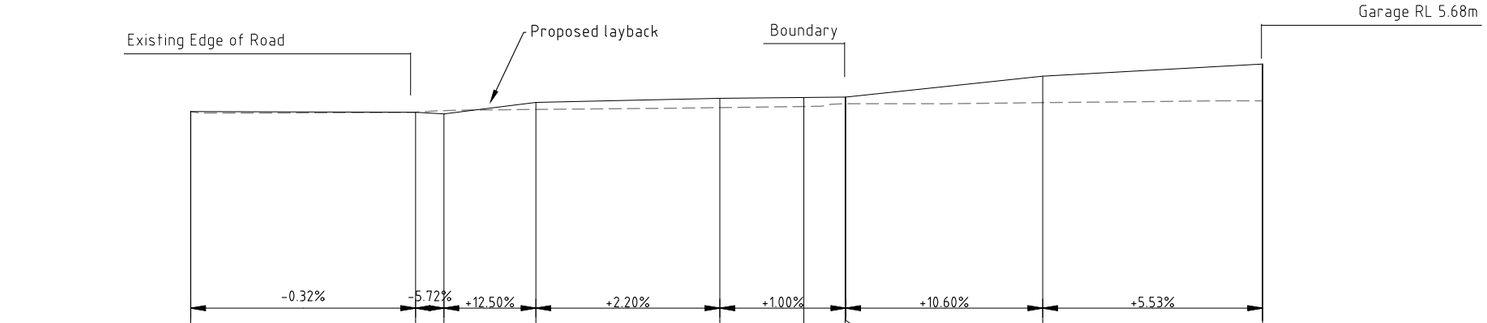
Job Number: 23305	Drawing Number: 23305-CIV-03			





DATUM R.L. 1.00m

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DESIGN	4.91	4.89	4.87	5.05	5.12	5.13	5.14	5.14	5.48		5.68
EXISTING	4.91	4.89	4.92	4.94	4.97	4.99	5.03	5.03	5.05		5.08
CHAINAGE	0.00	3.67	4.13	5.63	8.63	10.00	10.67	10.68	13.90		17.48
HOR. GEOMETRY	L = 10.67 B = N17°17'52"E						L = 6.81 B = N17°17'56"E				

Long Section - Proposed Access to Existing Building Scale 1:100

REV	REVISION DESCRIPTION	BY	DATE
A	FOR INFORMATION	AE	01/08/2023

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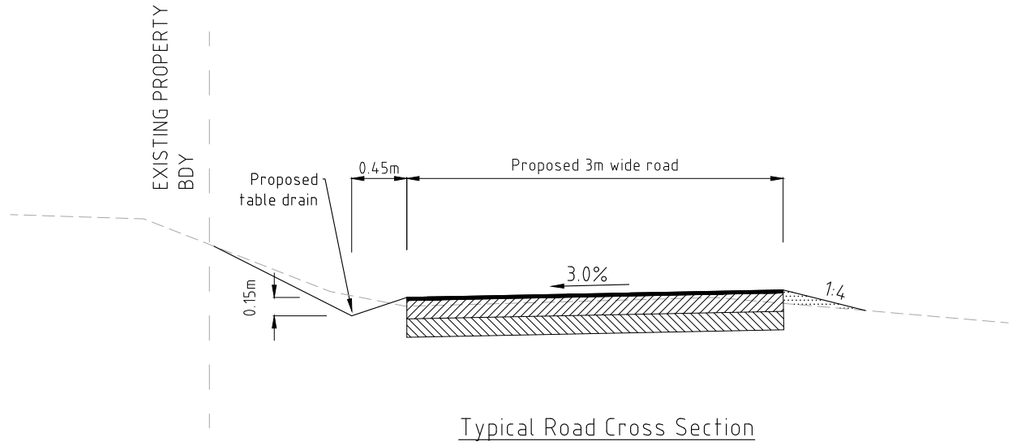
Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Title: CONCEPT ACCESS TO EXISTING DWELLING AND LONG SECTION

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
SA	AS SHOWN			01/08/2023
Checked:	Original Size:	No. in set:		Revision:
AE	A3	04 of 06		A
Job Number:	Drawing Number:			
23305	23305-CIV-04			



Typical Road Cross Section
SCALE 1:50

IFD chart region		= Byron Bay			
time of conecentraion t'c (mins		= 5			
Recurrence Interval (yrs)	**Rainfall Intensity (mm/hr)**	**C**	**Area (Ha)**	**CxA**	**Peak Flow (m^3/s)**
3 month	-				#N/A
5	126	0.790	0.62	0.49	0.171
10	138	0.840		0.52	0.200
20	154	0.882		0.55	0.234
50	176	0.966		0.60	0.293
100	192	1.000		0.62	0.331

Hydrology for Catchment discharging
to Somerset Lane
SCALE N.T.S

REV	REVISION DESCRIPTION	BY	DATE
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Client: ANTHONY WOOD

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Title: TYPICAL CROSS SECTION AND HYDROLOGY

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn: SA | Scale: AS SHOWN | Checked: | Date: 01/08/2023

Checked: AE | Original Size: A3 | No. in set: 05 of 06 | Revision: A

Job Number: 23305 | Drawing Number: 23305-CIV-05

REV	REVISION DESCRIPTION	BY	DATE
A	FOR INFORMATION	AE	01/08/2023

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Client: ANTHONY WOOD

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

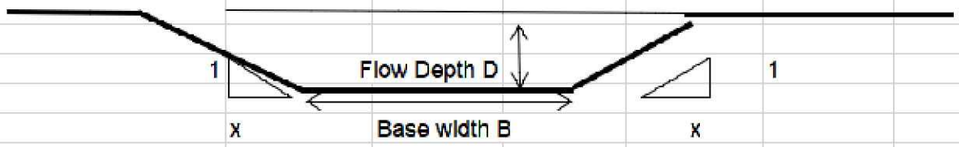
Title: CATCHMENT CONTRIBUTING FLOW TO SOMERSET LANE

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
SA	AS SHOWN			01/08/2023
Checked:	Original Size:	No. in set:		Revision:
AE	A3	06 of 06		A
Job Number:	Drawing Number:			
23305	23305-CIV-06			

Symmetric Uniform Channel



$Q=AR^{2/3}S^{1/2} \times 1/n$

Channel ID	Base Width B (m)	Side slope x (1V:xH) Left	Side slope x (1V:xH) Right	Flow Depth D (m)	Top Flow width (m)	Manning's n	Area = A (m2)	Wetted Per = P(m)	R = A/P	Slope = S (m/m)	Q (m3/s)	Velocity (m/s)	V*d product	rock size
1	0	5.12	35	0.07	2.8084	0.035	0.098294	2.816	0.035	0.023	**0.045**	0.46	0.03	0.01

Existing Road Capacity
SCALE N.T.S

Road Capacity One way crossfall (Mannings Eqn) - Table Drain

$Q=AR^{2/3}S^{1/2} \times 1/n$	
Average Slope = S =	0.0230
Flow Depth at invert (m) =	0.207
Invert to Road Crown x (m) =	3.44
Invert to Road Crown y (m) =	0.10
Table drain	
Table Drain mannings n =	0.035
Invert to right x (m) =	0.45
Invert to lip y (m) =	0.15
Invert to TOK x (m) =	0.30
Invert to TOK y (m) =	0.15
Road Details	
Road surface manning n =	0.015
Road x (1) (m) =	3
Road Crossfall 1 (%)	3
Road x (2) (m) =	0
Road Crossfall 2 (%)	0

Flow Details	Table drain	Road	*Total Section*
Area = A (m^2) =	0.108	0.054	***0.162***
Wetted Perimeter = P (m) =	0.867	1.901	***2.768***
R = A/P =	0.124	0.028	***0.058***
Flow Capacity Q (m3/s) =	**0.116**	**0.051**	***0.167***

Width of Flow from inv (m) =	*2.35*
Velocity (m/s) =	*1.03*
D*V product (at invert) =	*0.21*

Proposed Road Capacity with Table Drain
SCALE N.T.S

Road Capacity One way crossfall (Mannings Eqn) - Kerb and Channel

$Q=AR^{2/3}S^{1/2} \times 1/n$	
Average Slope = S =	0.0230
Flow Depth at invert (m) =	0.100
Invert to Road Crown x (m) =	3.44
Invert to Road Crown y (m) =	0.10
Kerb and Channel	
KC mannings n =	0.013
Invert to Lip x (m) =	0.45
Invert to lip y (m) =	0.04
Invert to TOK x (m) =	0.03
Invert to TOK y (m) =	0.15
Road Details	
Road surface manning n =	0.015
Road x (1) (m) =	3
Road Crossfall 1 (%)	3
Road x (2) (m) =	0
Road Crossfall 2 (%)	0

Flow Details	K&C	Road	*Total Section*
Area = A (m^2) =	0.038	0.060	***0.098***
Wetted Perimeter = P (m) =	0.554	2.001	***2.555***
R = A/P =	0.068	0.030	***0.038***
Flow Capacity Q (m3/s) =	**0.073**	**0.059**	***0.131***

Width of Flow from inv (m) =	*2.45*
Velocity (m/s) =	*1.35*
D*V product (at invert) =	*0.13*

Proposed Road Capacity with Kerb and Channel
SCALE N.T.S

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Client: ANTHONY WOOD

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Title: ROAD STORMWATER CAPACITY

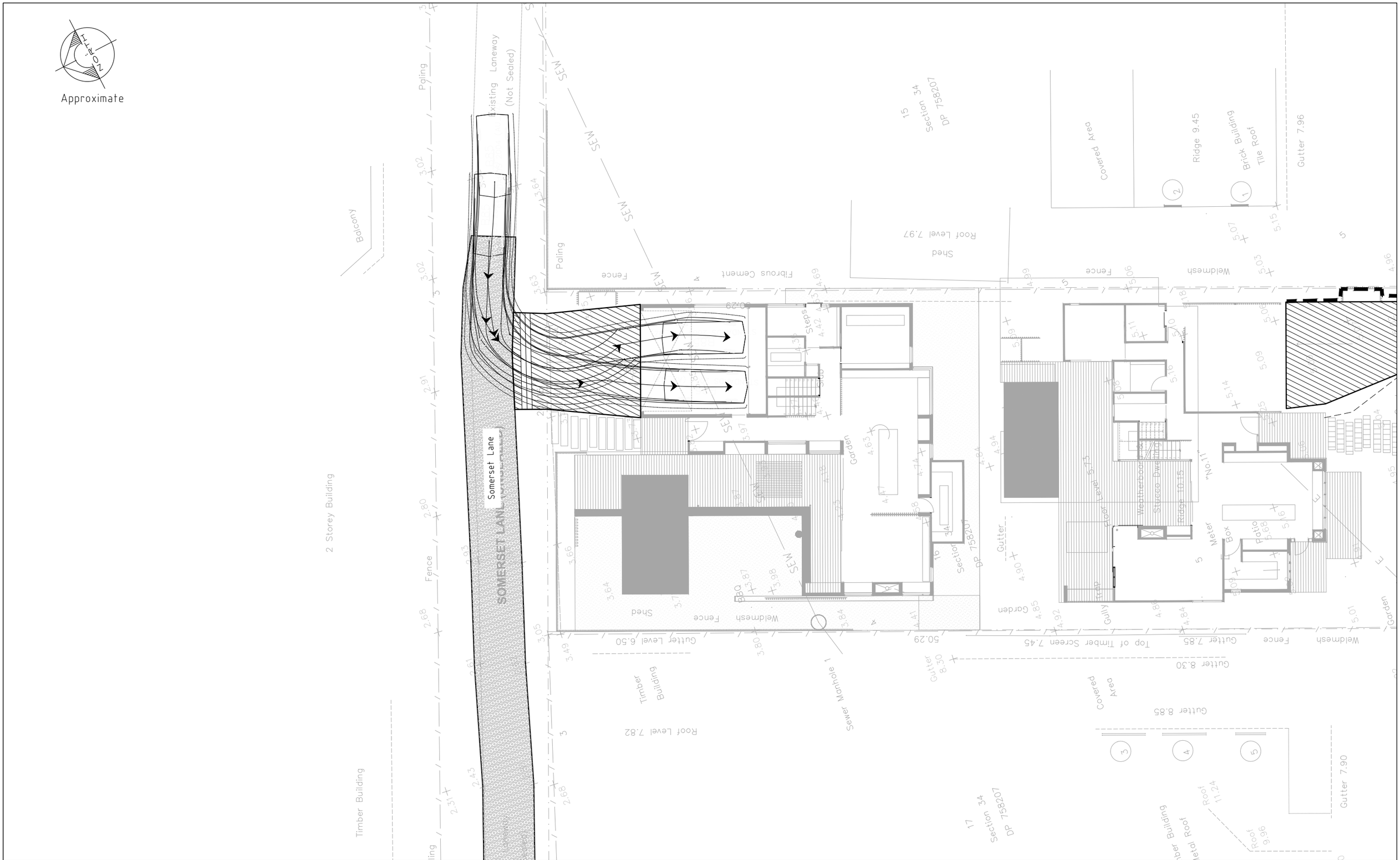
Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
SA	AS SHOWN			01/08/2023
Checked:	Original Size:	No. in set:		Revision:
AE	A3	07 of 06		A
Job Number:	Drawing Number:			
23305	23305-CIV-07			

NORTH

Approximate



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REFER COVER SHEET FOR NOTES UNLESS NOTED OTHERWISE

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Client: ANTHONY WOOD

Title: B85 TURN PATH TO PROPOSED DWELLING

Site address: 11 BURNS STREET, BYRON BAY NSW 2481 LOT 16 DP 758207

Project: PROPOSED DUAL OCCUPANCY

FOR INFORMATION

Drawn:	Scale:		Checked:	Date:
SA	1:200			01/08/2023
Checked:	Original Size:	No. in set:		Revision:
AE	A3	08 of 06		A
Job Number:	Drawing Number:			
23305	23305-CIV-08			