

9th December 2024

OSE Reference: 24040

Freshwater Planning Pty Ltd
17 Barron View Drive
Freshwater Qld 4870

Attention: Matthew Andrejic

Re: RAL/23/0010 – Subdivision for NQ Farming Pty Ltd at 30 Peters Street Mareeba – RFI – Stormwater drainage.

Dear Mathew,

Further to your request we have completed our investigation into the issue raised in item 1 of Council's RFI dated 19th September 2024.

We have considered the fully developed upstream catchment, as requested by Council, and prepared runoff calculations for AEP 20%, 5%, 2% and 1% events. The results of these calculations are shown on the attached stormwater calculation spreadsheet.

Following a detailed survey of the crossing area (see attached plan), flood levels were modelled for each event at the proposed crossing location, 30 metres downstream and 30 metres upstream of the crossing. The resulting flows and levels are shown in the table below:

	Dstream	Crossing	Ustream
Invert	394.053	394.810	396.090
Q5	394.742	395.350	396.596
Q20	394.870	395.429	396.617
Q50	394.885	395.484	396.630
Q100	394.894	395.593	396.639

Levels and flood profiles for the 1% and 2% AEP events, at each location, are shown on the attached cross sections. We then determined levels for a possible road crossing of the gully. The proposed long section is shown on the attached sketch SK-1 and SK-2 shows the plan and location of the proposed road centreline.

Discussion:

The Q100 flow is contained within the gully at the proposed crossing point, however, upstream and downstream the low area adjacent to the gully is flooded. Whilst the low area is flooded it does not intrude into the proposed allotments.

The preliminary design proposes to fill the low area and install a Q20 culvert in the invert. Subject to final design considerations, it is intended to have the road level 150mm below the Q100 level to allow stormwater to overflow during that event. This would allow traffic to safely use the crossing. A second option will be examined using a Q20 culvert in the invert and a second culvert, with a Q5 capacity, installed at a higher level to assist in preventing overflow of the road during the Q100 event.

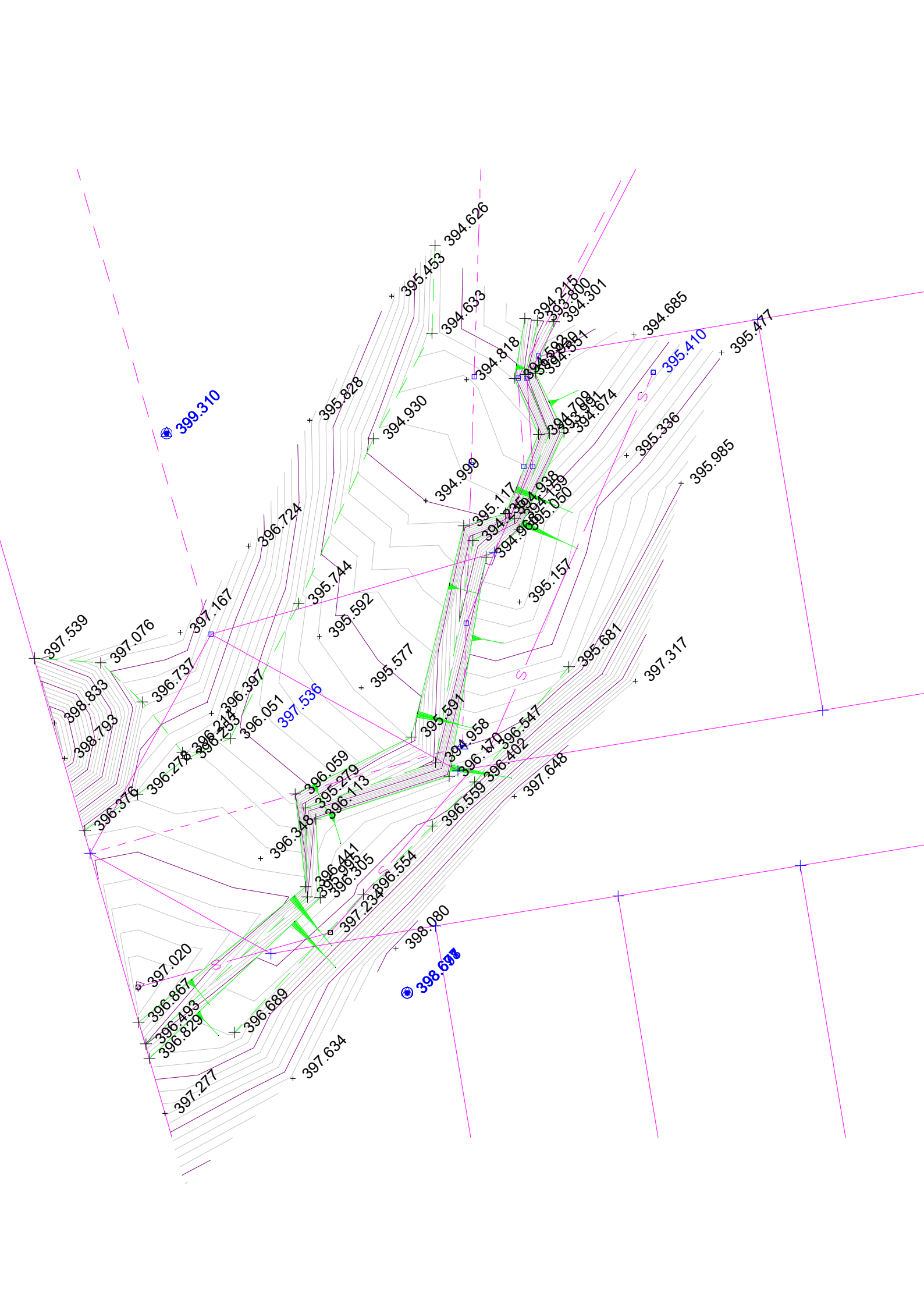
At final design stage the access road will be designed to allow for a full pavement width of 8 metres with provision for a 2-metre-wide pedestrian footpath.

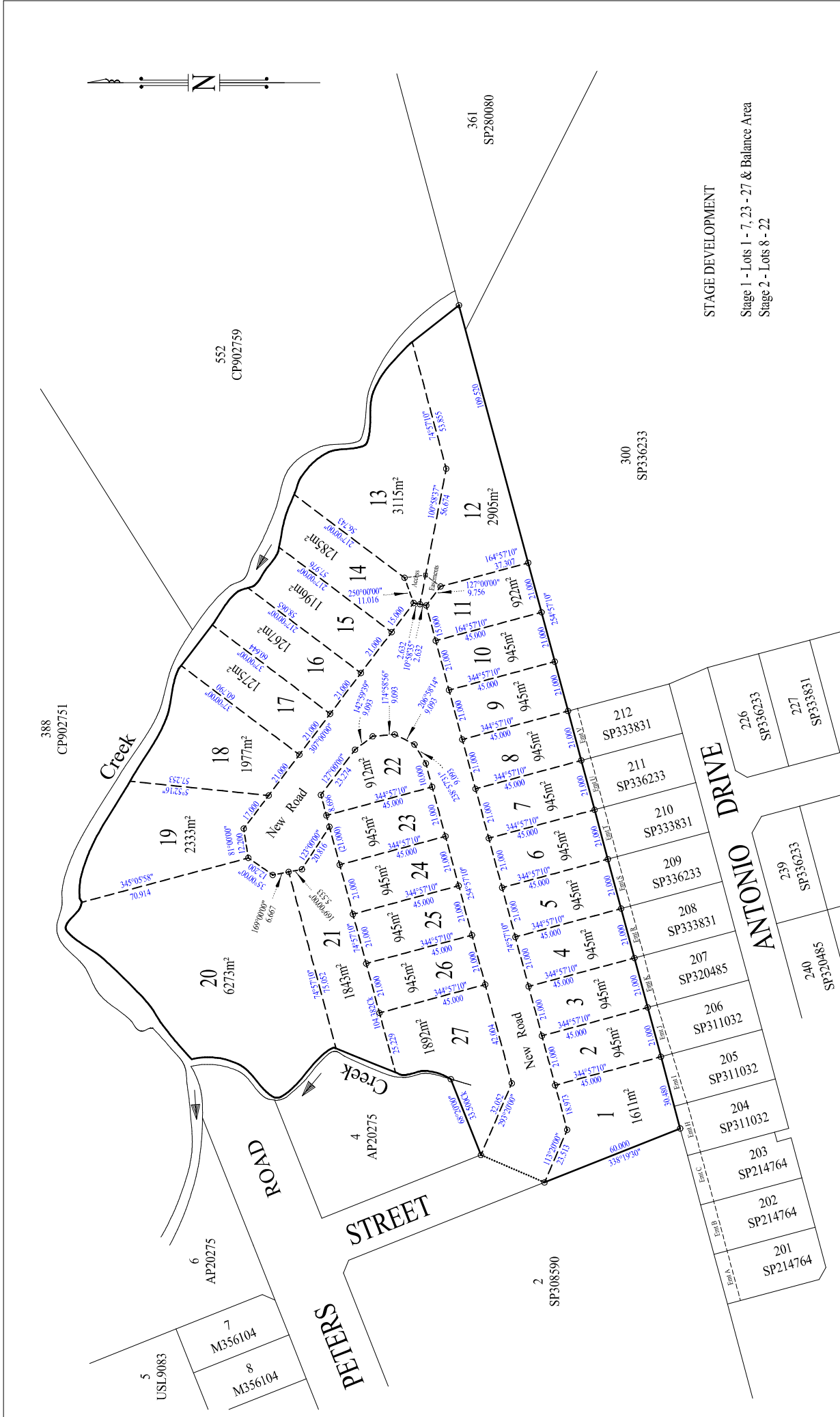
We trust that the provision of this report and the attached documentation satisfies the requirements of the Council RFI in relation to the crossing. Should you require any further details or assistance please do not hesitate to contact our office.

Yours Sincerely,



Alan McPherson
Senior Civil Engineer, RPEQ 809
OSE Group Pty Ltd





DEVELOPMENT PLAN
 PROPOSED RECONFIGURATION
 OF A LOT (1 LOT INTO 27 LOTS)
 STAGED DEVELOPMENT

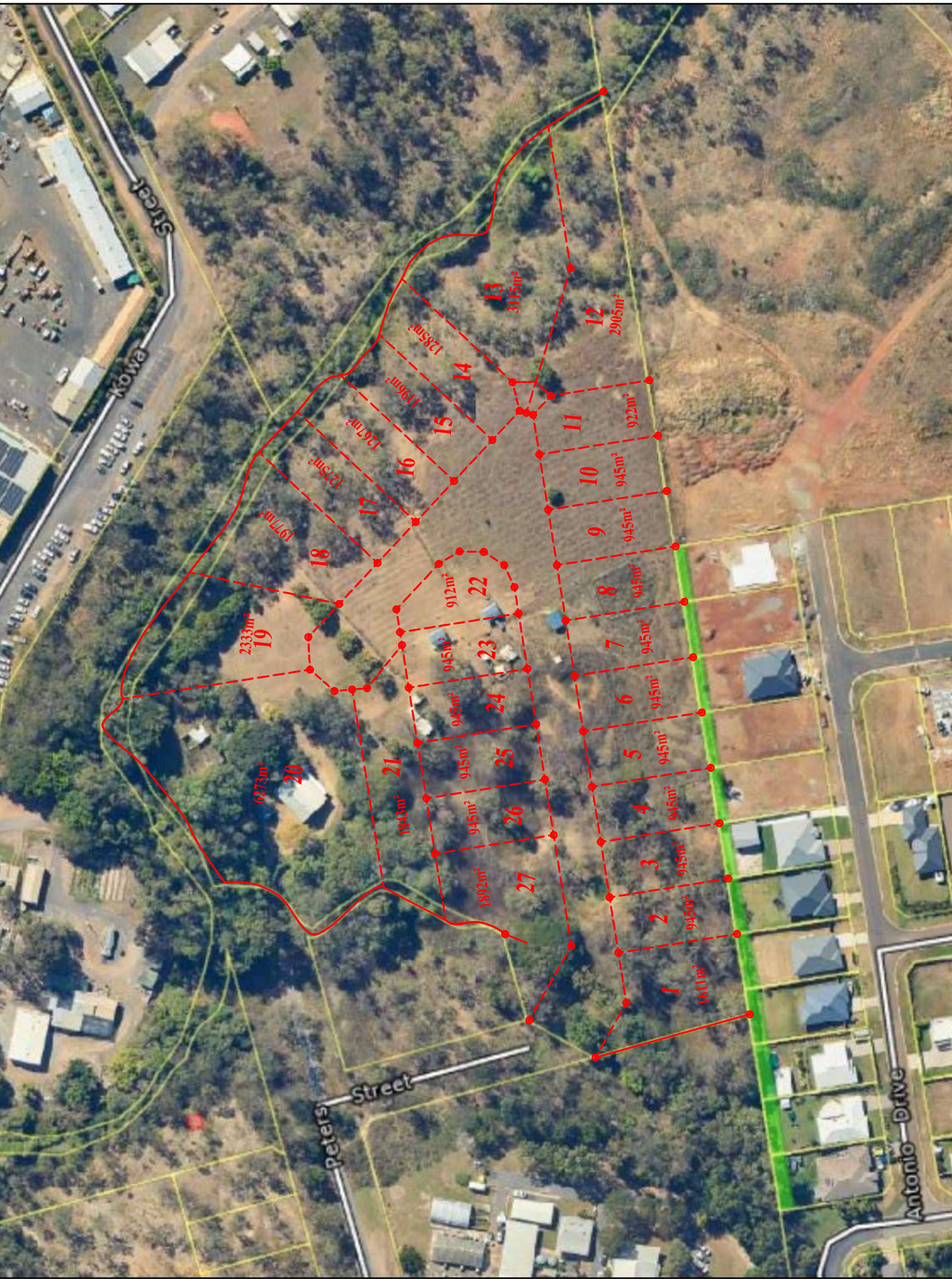
LOCAL GOVERNMENT: MSC
 LOCALITY: MAREEBA
 SITUATED AT:
 PETERS STREET

REGISTERED OWNER
 NQ FARMING PTY LTD

PROPERTY DESCRIPTION
 LOT 453 ON SP247821

AMENDMENTS A - ORIGINAL	

STAGE DEVELOPMENT
 Stage 1 - Lots 1 - 7, 23 - 27 & Balance Area
 Stage 2 - Lots 8 - 22



CATCHMENT	CATCH AREA (HA)	ARI	AEP	C _{ARI}	TIME OF CONC (MINS)	T _c SLOPE (%)	LENGTH OF CONC (m)	I _{ARI}	FLOW - Q (m ³ /s)	DRAIN
q5	8.83	4.48	20	0.77	17	5	400	106	2.00	
q20	8.83	20	5	0.85	17	5	400	139	2.90	
q50	8.83	50	2	0.93	17	5	400	158	3.60	
q100	8.83	100	1	0.97	17	5	400	173	4.12	

Fi 0.45-0.85 SAY 0.7

1110

62.8

C10

0.81

Contains Q2 only

Fy Cy

Q5	0.95	0.77
Q10	1	0.81
Q20	1.05	0.85
Q50	1.15	0.93
Q100	1.2	0.97

LHS RHS DEPTH
 1on1.5 1on1.5 0.75m
 1on4.3 1on1.8 0.7m
 1on3 1on3.6 0.32m

Downstream

Crossing

Upstream

http://www.bom.gov.au/water/designRainfalls/revised-ifa/?design=ifds&sdmin=true&sdhr=true&sdday=true&nsd%5B%5D=17&nsdunit%5B%5D=m&coordinate_type=en&eastng=333029&northng=8118949&zone=55&user_label=Mareeba&values=ir

Annual Exceedance Probability (AEP)

Duration	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	134	151	202	235	265	303	330
2 min	116	130	172	199	223	254	277
3 min	108	122	162	187	211	240	262
4 min	103	117	155	180	203	231	252
5 min	99.3	112	150	174	196	223	243
10 min	83.9	94.8	127	148	167	191	208
15 min	73.1	82.6	111	129	146	167	182
17 min	69.6	78.7	106	123	139	158	173
20 min	65.1	73.5	98.5	114	129	148	161
25 min	58.8	66.3	88.8	103	116	133	145
30 min	53.7	60.6	81	94	106	121	132
45 min	43	48.4	64.6	74.9	84.5	96.5	105
1 hour	36.2	40.7	54.2	62.8	70.8	80.8	88.1

ntensities&update=

Channel Report

<Name>

User-defined

Invert Elev (m) = 97.9000
Slope (%) = 2.8500
N-Value = 0.030

Highlighted

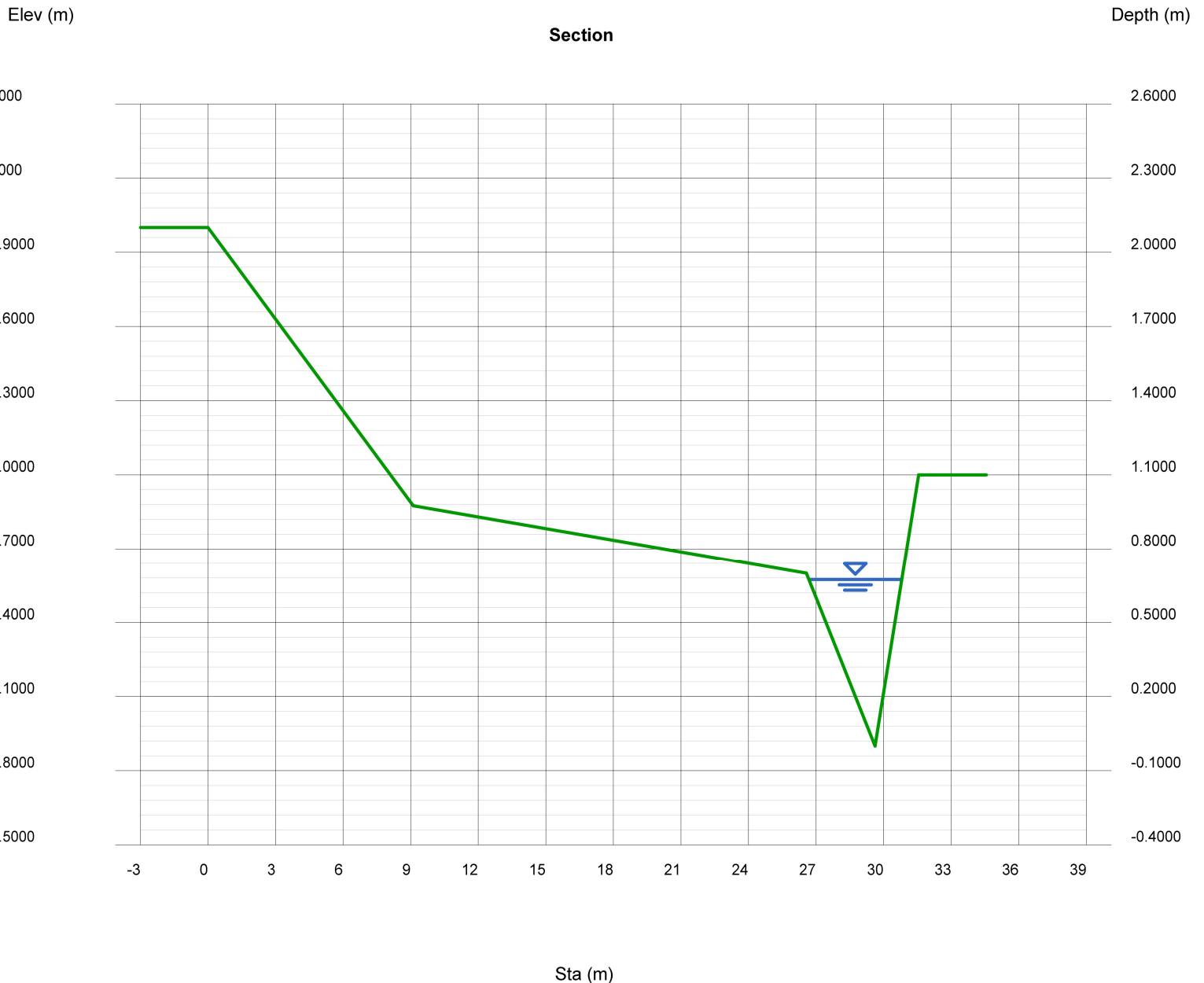
Depth (m) = 0.6736
Q (cms) = 3.6000
Area (sqm) = 1.3886
Velocity (m/s) = 2.5925
Wetted Perim (m) = 4.3770
Crit Depth, Yc (m) = 0.8260
Top Width (m) = 4.1230
EGL (m) = 1.0164

Calculations

Compute by: Known Q
Known Q (cms) = 3.6000

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(9.1150, 98.8750, 0.030)-(26.5650, 98.6000, 0.030)-(29.6150, 97.9000, 0.030)-(31.5550, 99.0000, 0.030)



Channel Report

<Name>

User-defined

Invert Elev (m) = 97.9000
Slope (%) = 2.8500
N-Value = 0.030

Highlighted

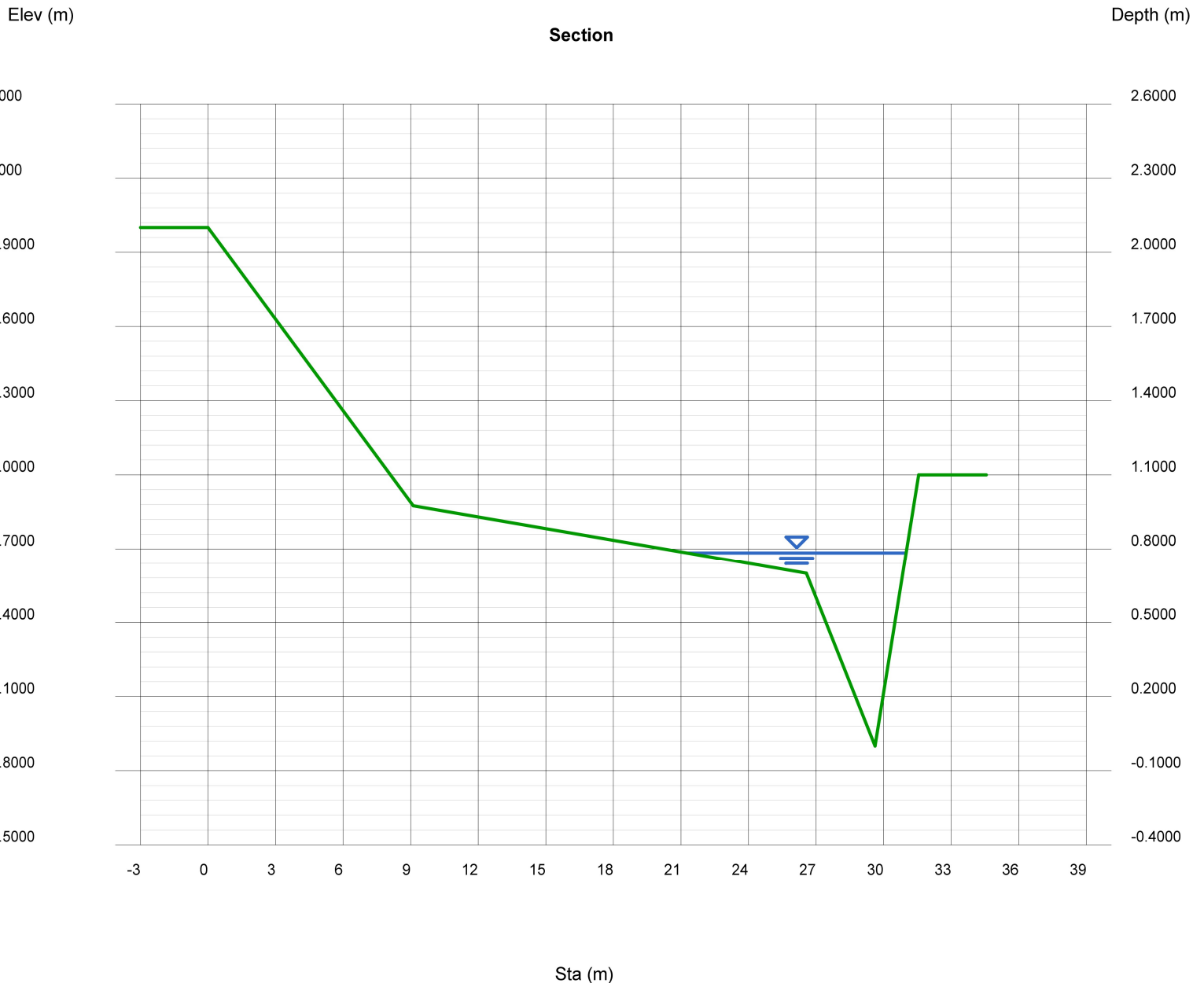
Depth (m) = 0.7833
Q (cms) = 4.1200
Area (sqm) = 2.0831
Velocity (m/s) = 1.9778
Wetted Perim (m) = 10.0061
Crit Depth, Yc (m) = 0.8534
Top Width (m) = 9.7195
EGL (m) = 0.9829

Calculations

Compute by: Known Q
Known Q (cms) = 4.1200

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(9.1150, 98.8750, 0.030)-(26.5650, 98.6000, 0.030)-(29.6150, 97.9000, 0.030)-(31.5550, 99.0000, 0.030)



Channel Report

<Name>

User-defined

Invert Elev (m) = 98.4000
Slope (%) = 3.2000
N-Value = 0.030

Highlighted

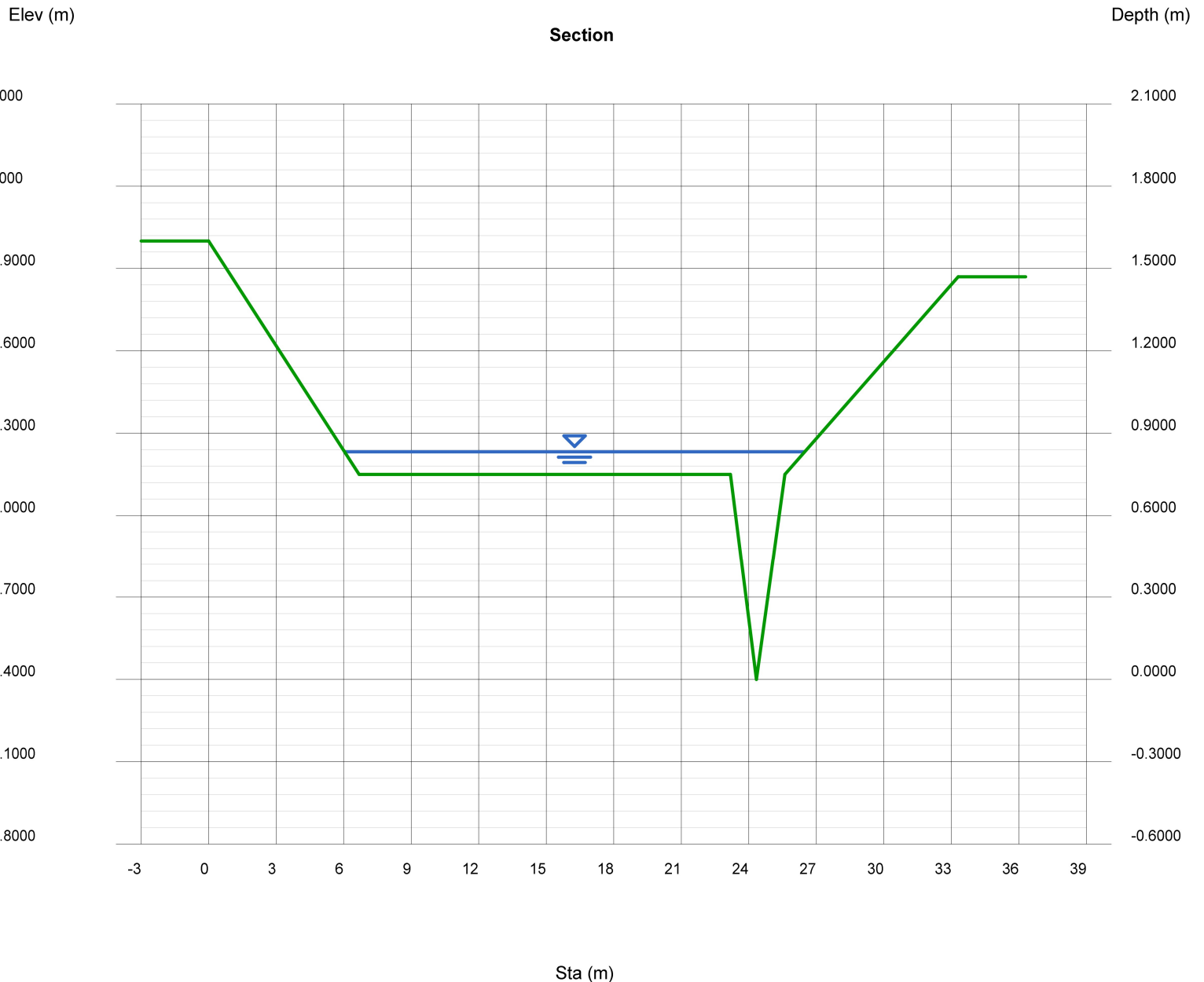
Depth (m) = 0.8321
Q (cms) = 3.6000
Area (sqm) = 2.5212
Velocity (m/s) = 1.4279
Wetted Perim (m) = 20.8764
Crit Depth, Yc (m) = 0.8565
Top Width (m) = 20.4388
EGL (m) = 0.9361

Calculations

Compute by: Known Q
Known Q (cms) = 3.6000

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(6.6850, 99.1500, 0.030)-(23.1850, 99.1500, 0.030)-(24.3350, 98.4000, 0.030)-(25.6000, 99.1500, 0.030)-(33.3000, 99.8700, 0.030)



Channel Report

<Name>

User-defined

Invert Elev (m) = 98.4000
Slope (%) = 3.2000
N-Value = 0.030

Highlighted

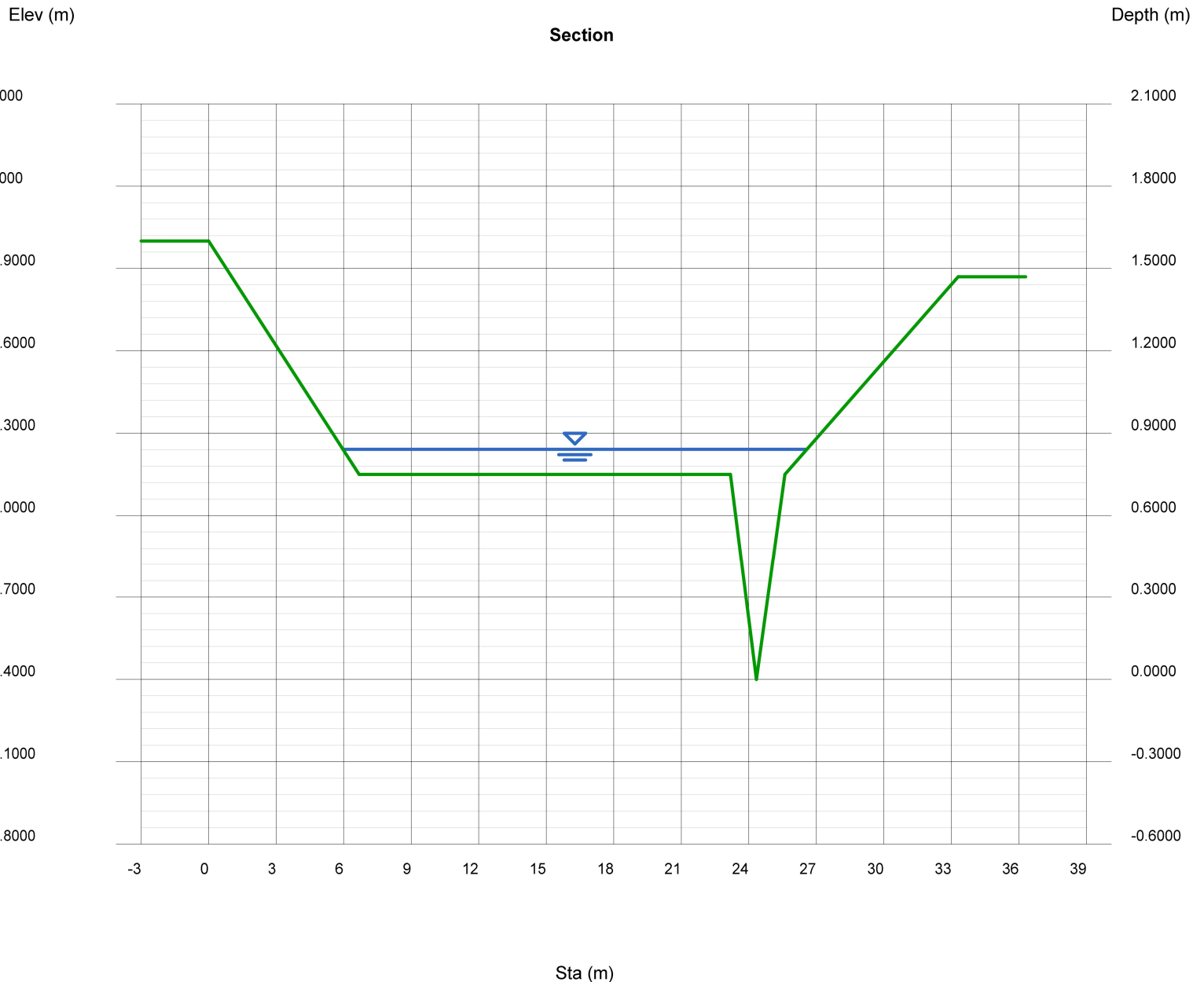
Depth (m) = 0.8412
Q (cms) = 4.1200
Area (sqm) = 2.7089
Velocity (m/s) = 1.5209
Wetted Perim (m) = 21.0472
Crit Depth, Yc (m) = 0.8717
Top Width (m) = 20.6085
EGL (m) = 0.9592

Calculations

Compute by: Known Q
Known Q (cms) = 4.1200

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(6.6850, 99.1500, 0.030)-(23.1850, 99.1500, 0.030)-(24.3350, 98.4000, 0.030)-(25.6000, 99.1500, 0.030)-(33.3000, 99.8700, 0.030)



Channel Report

<Name>

User-defined

Invert Elev (m) = 98.9500
Slope (%) = 2.0000
N-Value = 0.030

Highlighted

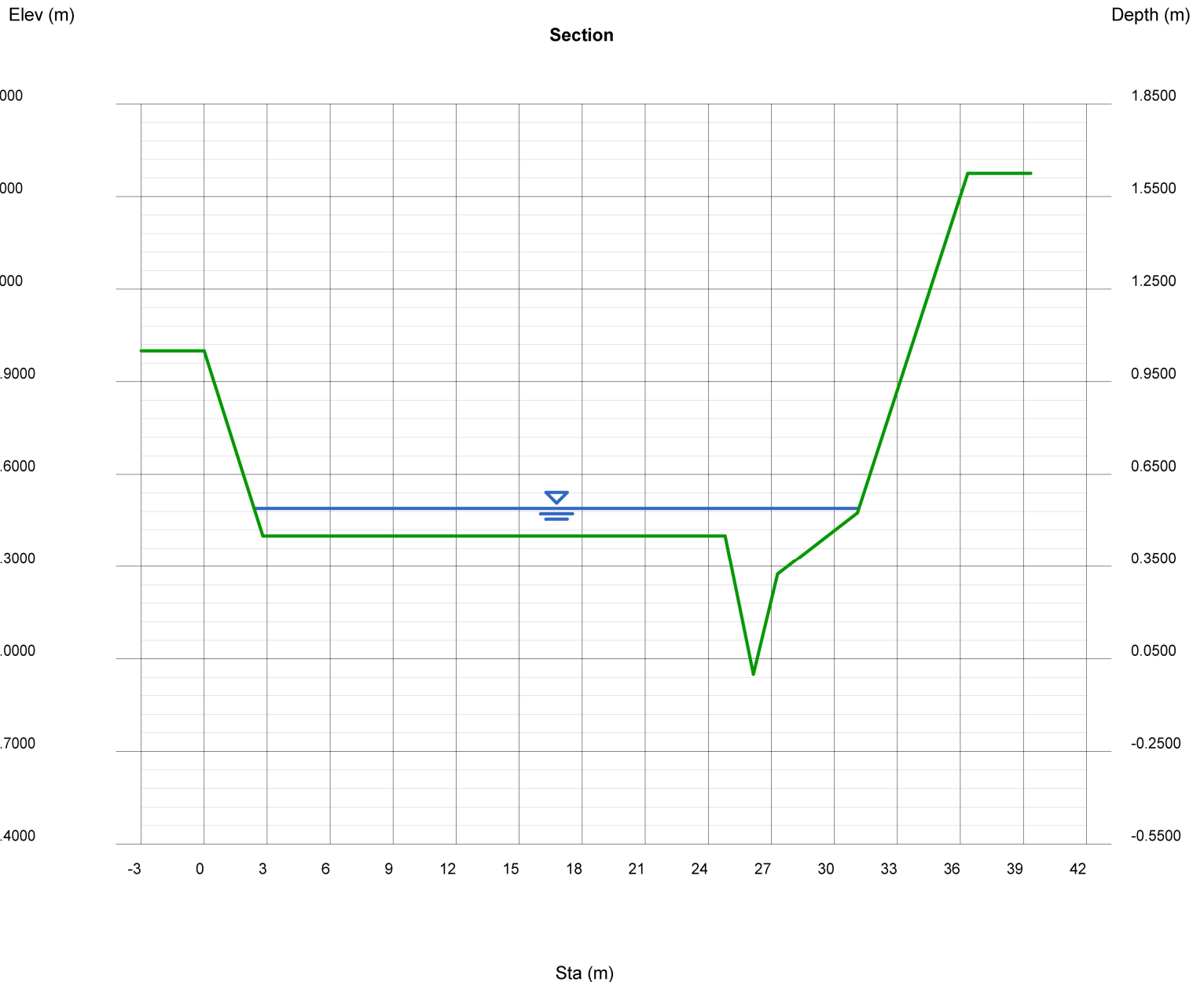
Depth (m) = 0.5395
Q (cms) = 3.6000
Area (sqm) = 3.2812
Velocity (m/s) = 1.0972
Wetted Perim (m) = 28.9211
Crit Depth, Yc (m) = 0.5425
Top Width (m) = 28.7868
EGL (m) = 0.6009

Calculations

Compute by: Known Q
Known Q (cms) = 3.6000

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(2.8000, 99.4000, 0.030)-(24.8000, 99.4000, 0.030)-(26.1500, 98.9500, 0.030)-(27.3000, 99.2750, 0.030)-(31.1000, 99.4750, 0.030)-(36.3500, 100.5750, 0.030)



Channel Report

<Name>

User-defined

Invert Elev (m) = 98.9500
Slope (%) = 2.0000
N-Value = 0.030

Highlighted

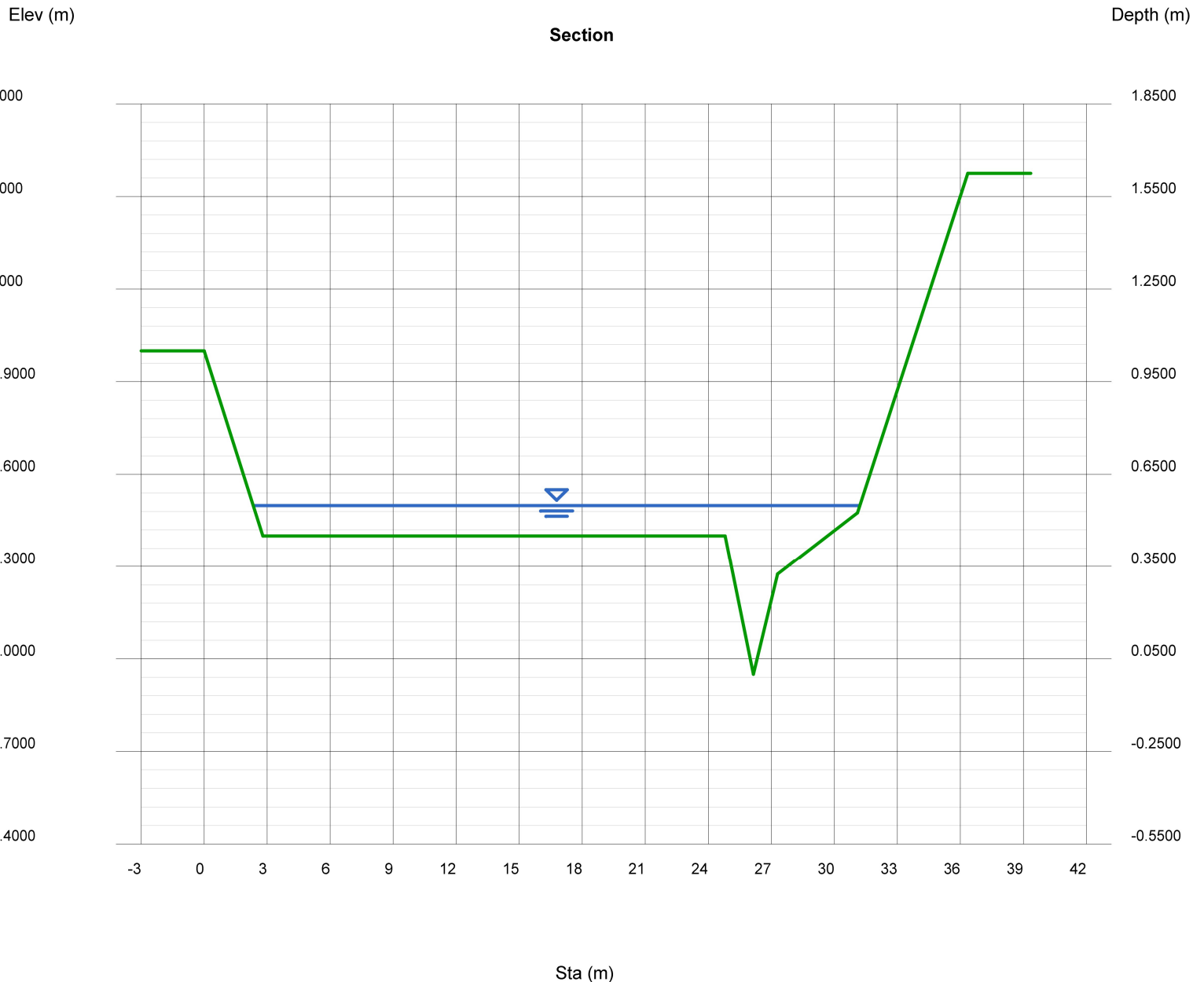
Depth (m) = 0.5486
Q (cms) = 4.1200
Area (sqm) = 3.5448
Velocity (m/s) = 1.1623
Wetted Perim (m) = 29.0093
Crit Depth, Yc (m) = 0.5547
Top Width (m) = 28.8731
EGL (m) = 0.6175

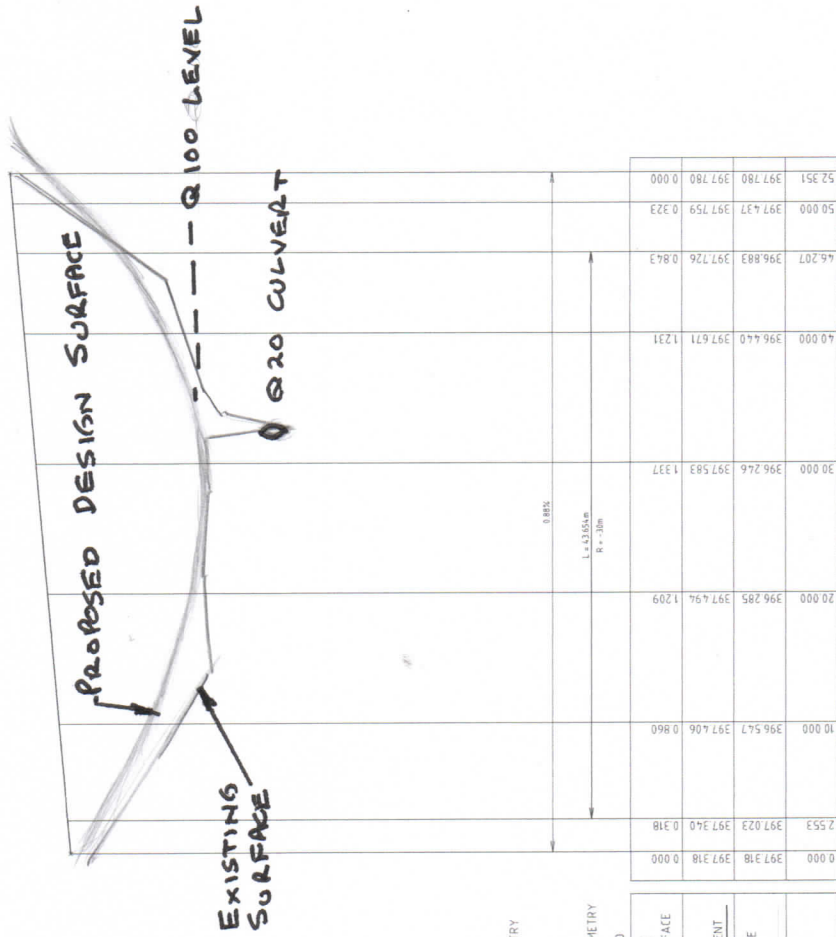
Calculations

Compute by: Known Q
Known Q (cms) = 4.1200

(Sta, El, n)-(Sta, El, n)...

(0.0000, 100.0000)-(2.8000, 99.4000, 0.030)-(24.8000, 99.4000, 0.030)-(26.1500, 98.9500, 0.030)-(27.3000, 99.2750, 0.030)-(31.1000, 99.4750, 0.030)-(36.3500, 100.5750, 0.030)





VERTICAL GEOMETRY

GRADE (%)

HORIZONTAL GEOMETRY

DATUM RL 393.000

CUT / FILL DEPTH

TO EXISTING SURFACE

DESIGN LEVELS

CONTROL ALIGNMENT

EXISTING SURFACE

LEVELS

CHAINAGE

ROAD CONTROL

0.000	397.318	397.318	0.000
2.553	397.023	397.340	0.318
10.000	396.527	397.406	0.860
20.000	396.285	397.924	1.209
30.000	396.246	397.583	1.337
40.000	396.440	397.671	1.231
46.207	396.883	397.726	0.843
50.000	397.437	397.759	0.323
52.951	397.780	397.780	0.000

LONGITUDINAL SECTION
SCALE HORIZONTAL - 1:200 VERTICAL - 1:20

NOT FOR CONSTRUCTION



23/19

1891.725m²

52.351
50

CT 46.207

40

R=30

CENTRELINE

30

20

ROAD 01

0.000

C 2.553

INFORMATION DOCUMENT

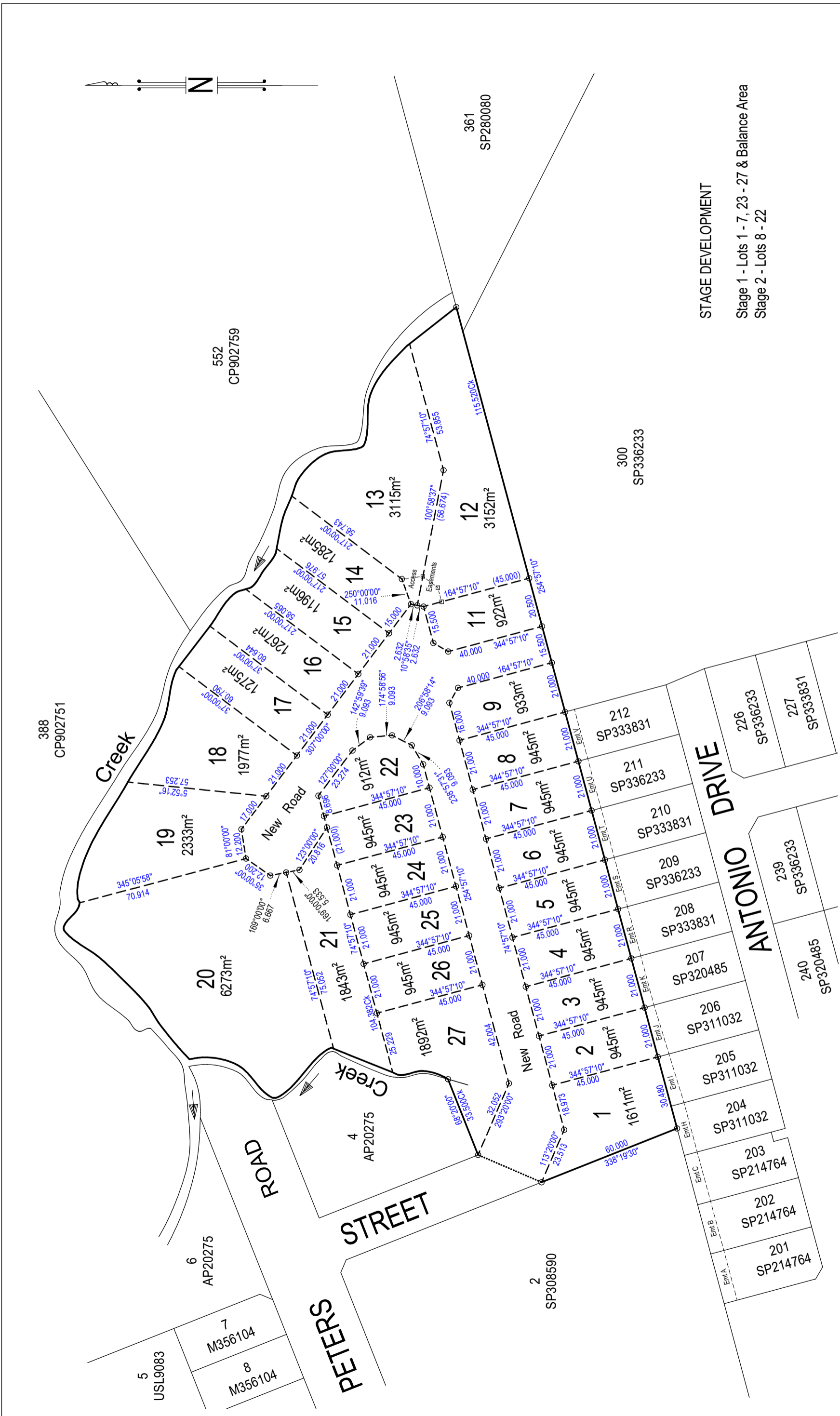
QUADRO DRAIN - 01

515-2

LAYOUT PLAN
CONTROL LINE

NOT FOR CONSTRUCTION

SCALE 1:100



AMENDMENTS
A - ORIGINAL

PROPERTY DESCRIPTION
 LOT 453 ON SP247821

REGISTERED OWNER
 NQ FARMING PTY LTD

LOCAL GOVERNMENT: MSC
 LOCALITY: MAREEBA
 SITUATED AT :
 PETERS STREET

DEVELOPMENT PLAN
PROPOSED RECONFIGURATION
OF A LOT (1 LOT INTO 27 LOTS)
STAGED DEVELOPMENT

DWG NO. 9118 - LL1 26.07.2023 REV A

TWINE SURVEYS PTY LTD
 36 Mabel St, Atherton 4883
 PO Box 146, Atherton 4883
 P 07 40911303
 E info@twinesurveys.com.au



STAGE DEVELOPMENT
 Stage 1 - Lots 1 - 7, 23 - 27 & Balance Area
 Stage 2 - Lots 8 - 22

300
 SP336233

361
 SP280080

552
 CP902759

388
 CP902751

5
 USL9083

7
 M356104

8
 M356104

6
 AP20275

PETERS STREET

2
 SP308590

ANTONIO DRIVE

239
 SP336233

240
 SP320485

205
 SP311032

206
 SP311032

207
 SP320485

208
 SP333831

209
 SP336233

210
 SP333831

211
 SP336233

212
 SP333831

226
 SP336233

227
 SP333831

9
 933m²

8
 945m²

7
 945m²

6
 945m²

5
 945m²

4
 161m²

1
 161m²

2
 945m²

3
 945m²

4
 945m²

5
 945m²

6
 945m²

7
 945m²

8
 945m²

9
 945m²

10
 945m²

11
 922m²

12
 3152m²

13
 3115m²

14
 1285m²

15
 1196m²

16
 1267m²

17
 1275m²

18
 1977m²

19
 2333m²

20
 6273m²

21
 1843m²

22
 912m²

23
 945m²

24
 945m²

25
 945m²

26
 945m²

27
 1892m²

4
 AP20275

6
 AP20275

2
 SP308590