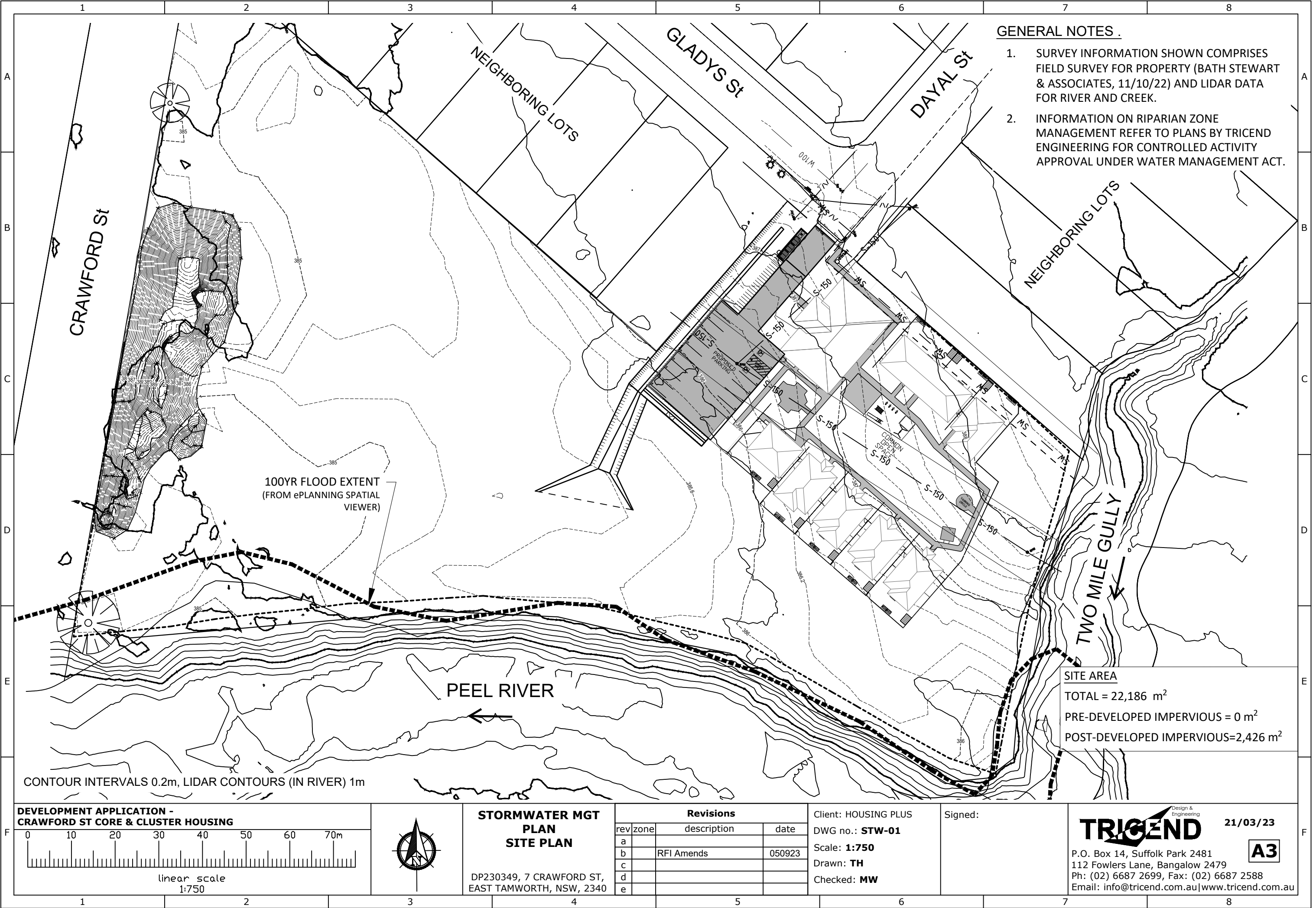
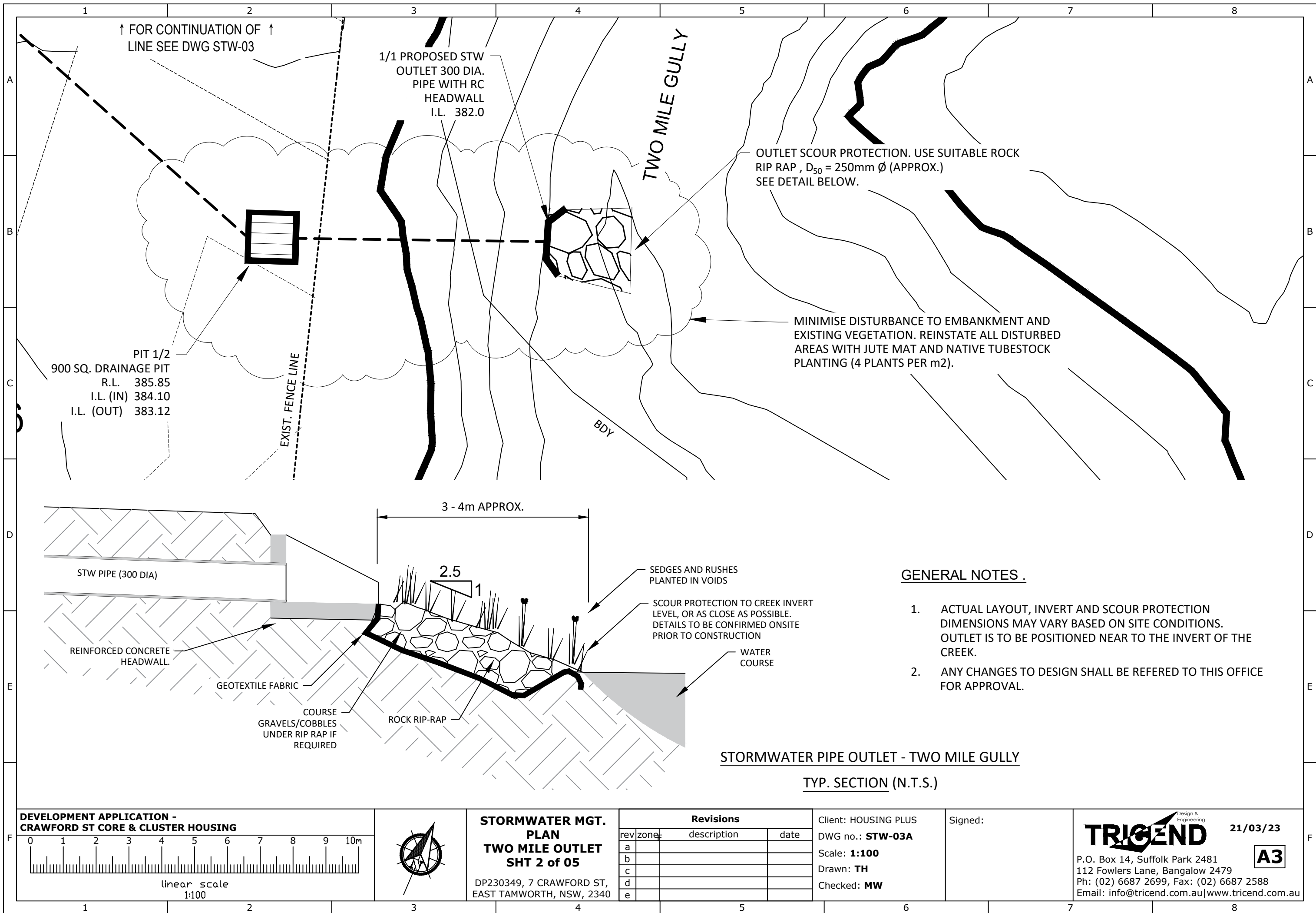
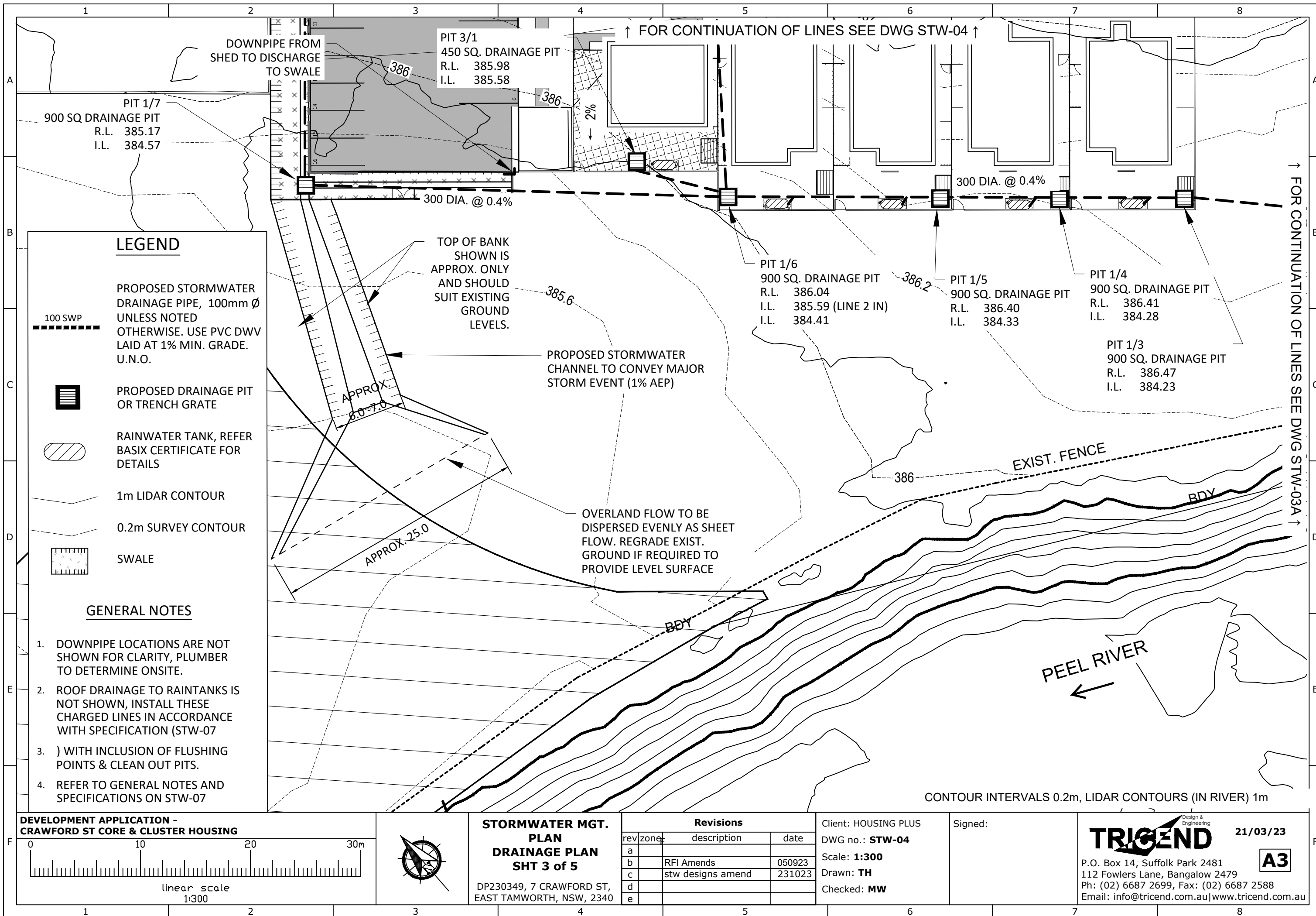








GENERAL NOTES

1. REFER TO DR-6A FOR SWALE DETAILS

SEE DWG STW-07 FOR
FRONTAGE AND DRIVEWAY
CROSSING STORMWATER
MANAGEMENT DETAILS

RETAINING WALL -
SEE SECTIONS ON
DWG STW-6A

ARROWS INDICATES FALL OF
PAVEMENT - SEE DRIVEWAY
PLAN BY TRICEND ENGINEERING
FOR DURTHER DETAIL

EXISTING SEWER MAIN &
EASEMENT AS PER SURVEY BY
(BATH STEWART & ASSOCIATES,
11/10/22)

LEGEND

	PROPOSED DESIGN LEVELS (AHD)		EXISTING TELEPHONE WIRES
	GRATED INLET PIT		EXISTING STORM WATER PIPE
	SWALE - PERPENDICULAR LINES INDICATE BATTER		EXISTING SEWAGE PIPE
			0.2m SURVEY CONTOUR
			PROPOSED STORM WATER PIPE
			RETAINING WALL

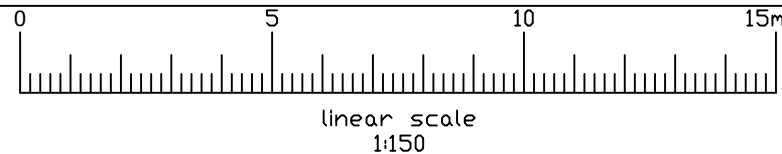
PIT 1/8
600SQ DRAINAGE PIT
R.L. 386.10
I.L. 385.49

PIT 1/7
900 SQ DRAINAGE PIT
R.L. 385.17
I.L. 384.57

PROPOSED FENCE TO HAVE
CLEAR OPENING UNDER
THE FENCE FOR THE
WIDTH OF THE SWALE.
REFER TO SWALE DETAIL 2
ON STW-06A.

CONTOUR INTERVAL 0.2m

DEVELOPMENT APPLICATION -
CRAWFORD ST CORE & CLUSTER HOUSING



STORMWATER MGT. PLAN DRAINAGE PLAN SHT 4 of 5

DP230349, 7 CRAWFORD ST,
EAST TAMWORTH, NSW, 2340

Revisions

rev	zone	description	date
a			
b		RFI Amends	050923
c	E6	swale amend	231023
d			
e			

Client: HOUSING PLUS
DWG no.: **STW-05A**

Scale: **1:150**

Drawn: **TH**

Checked: **MW**

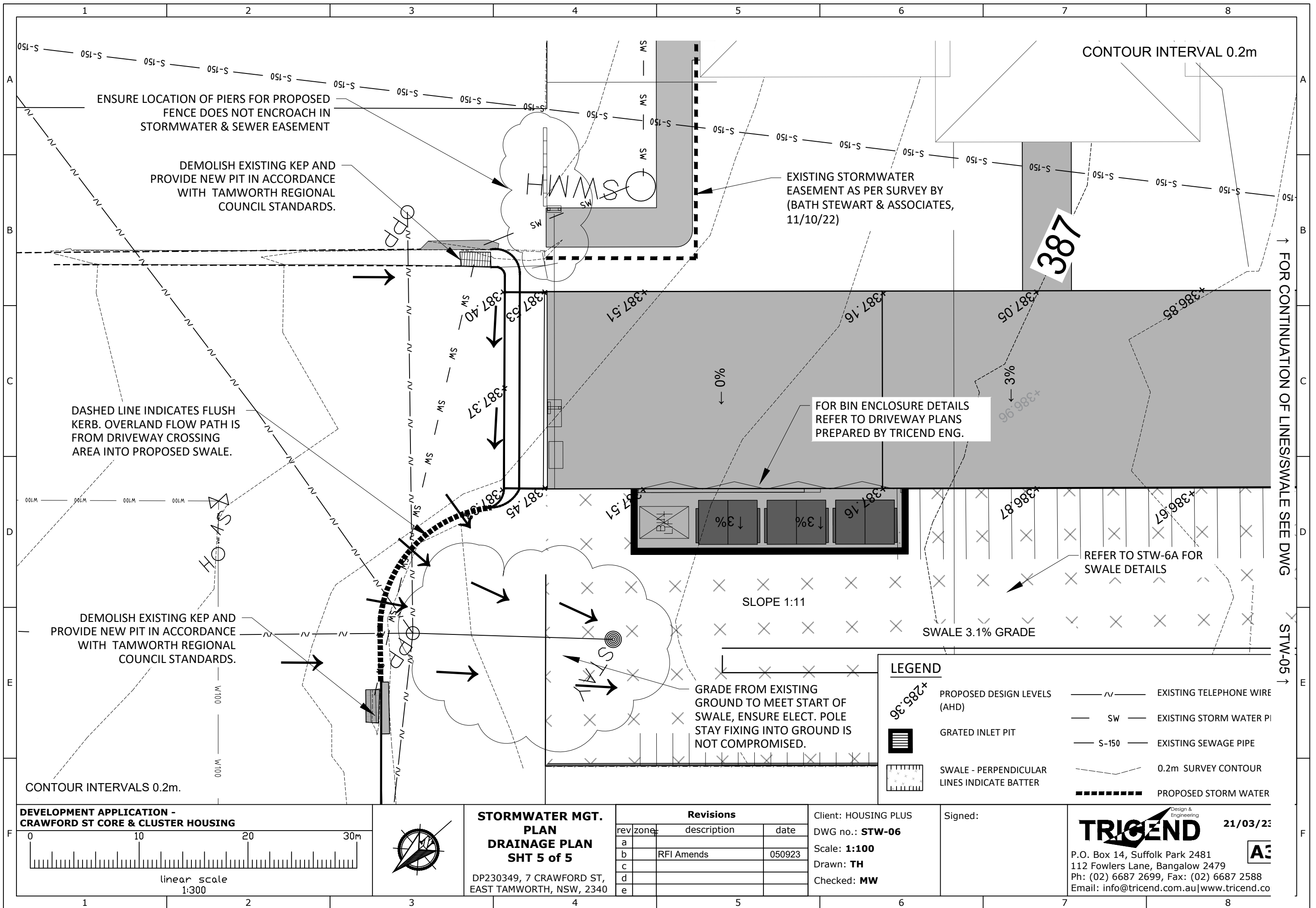
Signed:

TRICEND

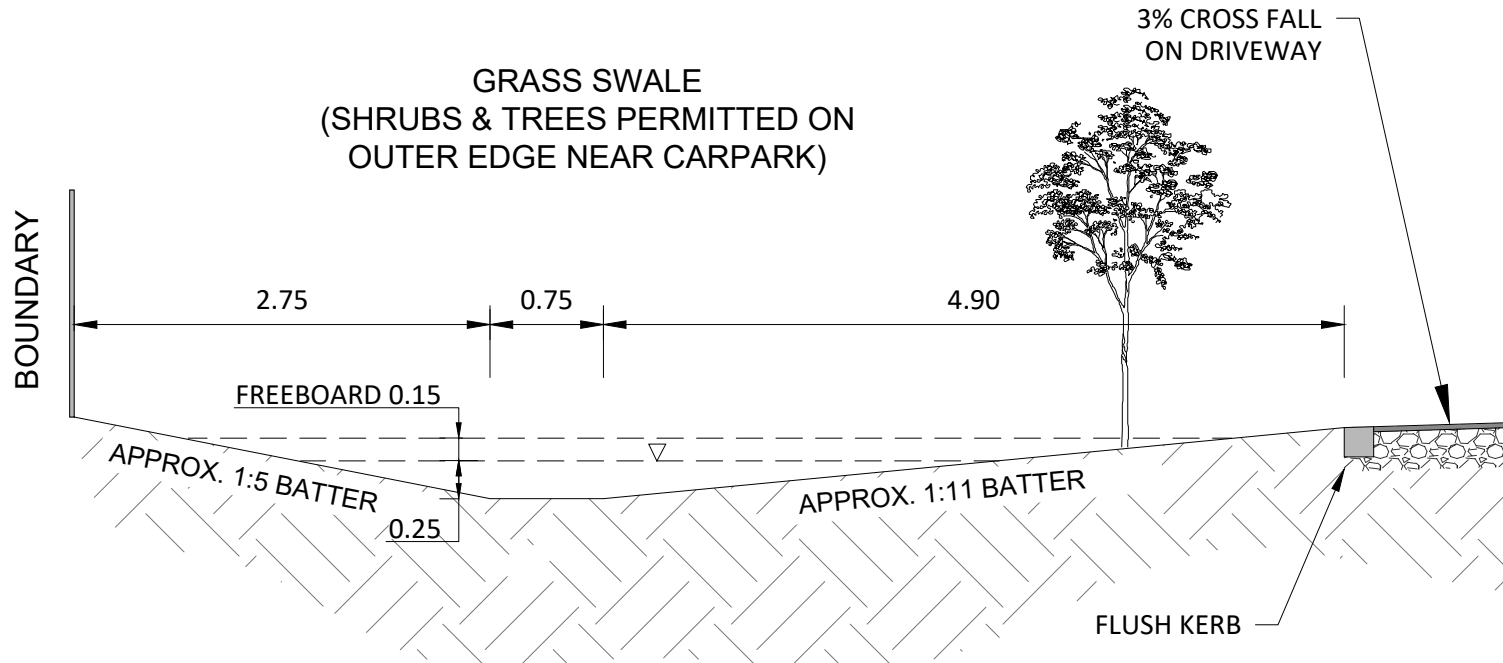
21/03/23

A3

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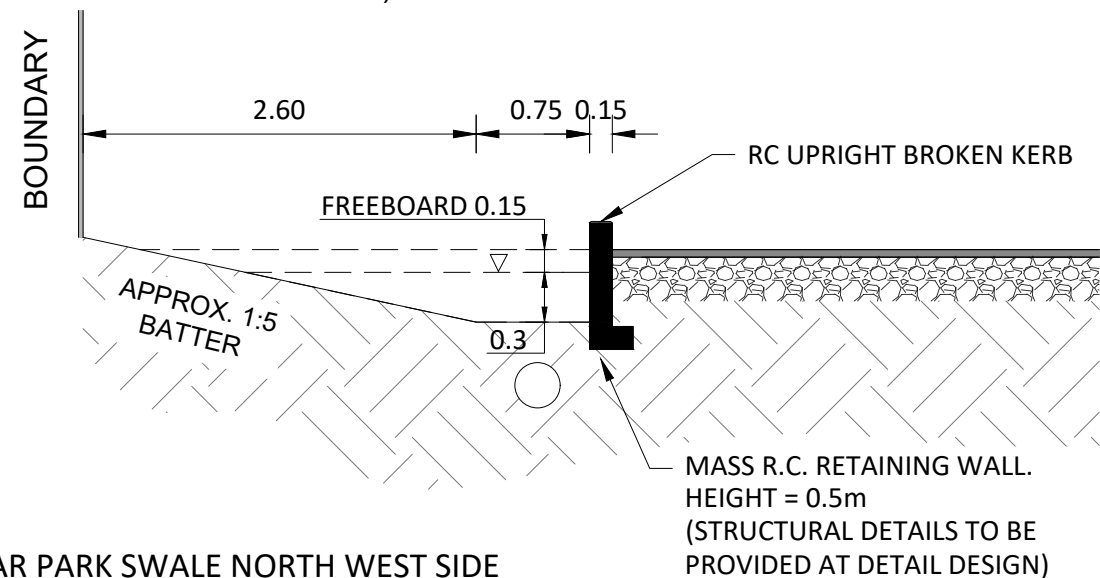
GRASS SWALE
(SHRUBS & TREES PERMITTED ON
OUTER EDGE NEAR CARPARK)



SWALE DESIGN DETAILS
 $Q_{100} = 895 \text{ L/s (125\% CAPACITY)}$
Grade = 3.1%
Flow depth = 250mm
Freeboard = 150mm
Velocity = 1.4 m/s
Mannings = 0.035

DETAIL 1 - DRIVEWAY SWALE
1:50

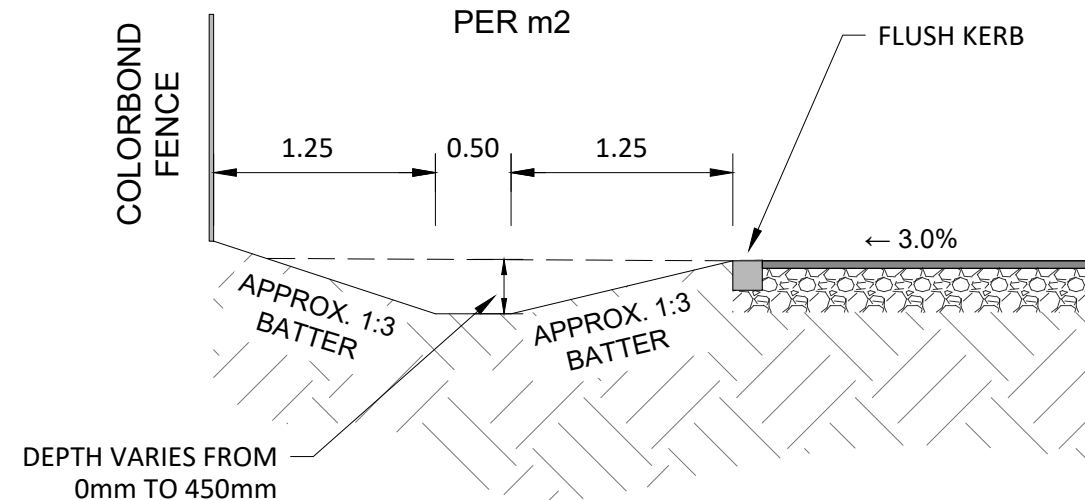
GRASS SWALE
(GRASS ONLY - NO
SHRUBS OR TREES
PERMITTED)



DETAIL 2 - CAR PARK SWALE NORTH WEST SIDE
1:50

SWALE DESIGN DETAILS
 $Q_{100} = 895 \text{ L/s (125\% CAPACITY)}$
Grade = 3.5%
Flow depth = 300mm
Freeboard = 150mm
Velocity = 1.7 m/s
Mannings = 0.035

VEGETATED SWALE WITH
SMALL SEDGES & SHRUBS , 2
PER m2



DETAIL 3 - CAR PARK SWALE SOUTHERN SIDE
(TYP. SECTION)
1:50

GENERAL NOTES

- GRASS SWALE IS TO BE MAINTAINED AND MOWED REGULARLY. LONG GRASS IS NOT NOT PERMITTED AS IT WILL REDUCE SWALE CAPACITY.

DEVELOPMENT APPLICATION -
CRAWFORD ST CORE & CLUSTER HOUSING

**STORMWATER MGT
PLAN
DETAILS SHT 1 OF 2**

DP230349, 7 CRAWFORD ST,
EAST TAMWORTH, NSW, 2340

Revisions

rev	zone	description	date
a			
b		RFI Amends	050923
c		swales amended	231023
d			
e			

Client: HOUSING PLUS
DWG no.: **STW-06A**

Scale: **N.T.S.**

Drawn: **TH**

Checked: **MW**

Signed:

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STORMWATER NOTES

1.

ALL STORMWATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH AS3500.3.
2.

THE DOWNPIPES AND STORMWATER DRAINAGE LAYOUT SHOWN ON THE PLANS IS DIAGRAMMATIC ONLY AND MAY NOT REPRESENT ACTUAL LOCATION.
3.

PROVIDE RAINWATER TANKS FOR ALL ROOF AREAS. REFER TO BASIX CERTIFICATES FOR % OF ROOF AREA TO BE CONNECTED TO THE RAINTANK.
4.

PROVIDE A FIRST FLUSH DEVICE ON ALL DOWNPIPES THAT DRAIN TO A RAINTANK.
5.

PROVIDE LEAF GUARDS ON ALL GUTTERS.
6.

ALL STORMWATER DRAINAGE TO BE NON-PRESSURE PVC-U STORMWATER PIPE, SOLVENT JOINT IN MIN. 100MM DIA. PIPE SIZES.
7.

ALL PIPEWORK SHALL BE PVC DWV GRADE WITH SCJ, WITH MIN. SN8 FOR CHARGED LINES.
8.

MINIMUM PIPE GRADIENTS ARE 1% U.N.O ON THE PLANS..
9.

PIPES SHALL BE MIN 100mm DIA. AND THEN TRANSITION TO 150mm U.N.O.
10.

FLUSHING POINTS ARE TO BE PROVIDED ON ALL CHARGED LINES TO PERMIT CLEANING OF THE LINES. ADOPT DETAIL SHOWN BELOW OR SIMILAR.
11.

ALL CHARGED LINES ARE TO HAVE A CLEAN OUT PIT TO ALLOW THE CHARGED LINE TO DRAIN WHEN IT IS FLUSHED DURING CLEANING/MAINTENANCE. PIT IS TO BE LOCATED AT THE LOWEST POINT ON THE CHARGED LINE AND SHALL BE 450 X 450mm WITH GRATED LID. LOCATE CLEAN OUT PITS TO ENSURE THEY DO NOT CAUSE SCOUR OR STRUCTURAL DAMAGE WHEN PIPES ARE FLUSHED OUT.
12.

PROVIDE A WATERTIGHT SCREW CAP TO CHARGED LINES IN THE 450 x 450 CLEAN OUT PIT.
13.

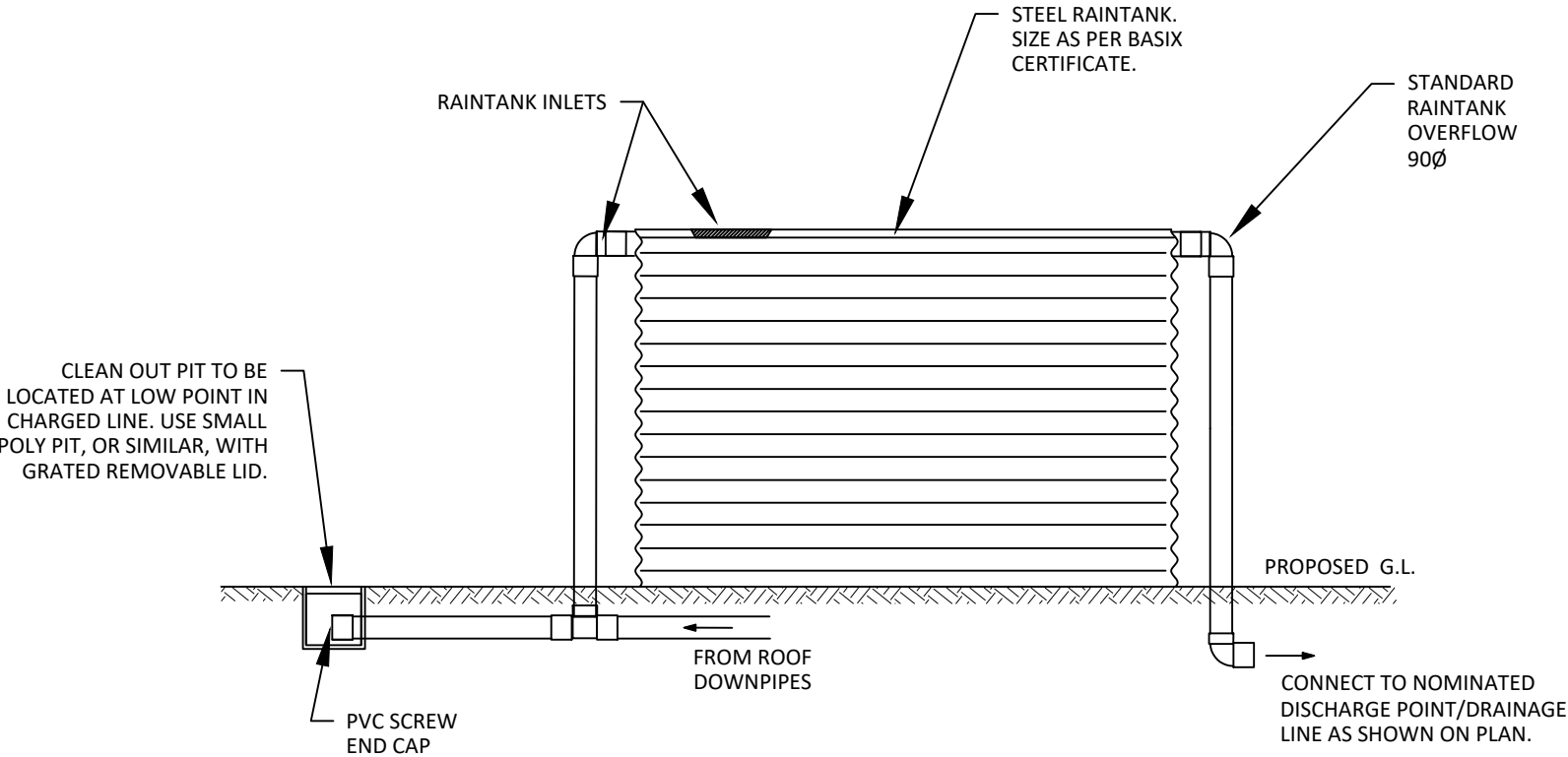
ALL PRESSURISED JOINTS ON CHARGED LINES ARE TO USE PRESSURE RATED SOLVENT.
14.

PROVIDE INSPECTION OPENINGS AND RODDING POINTS AT ALL BENDS.
15.

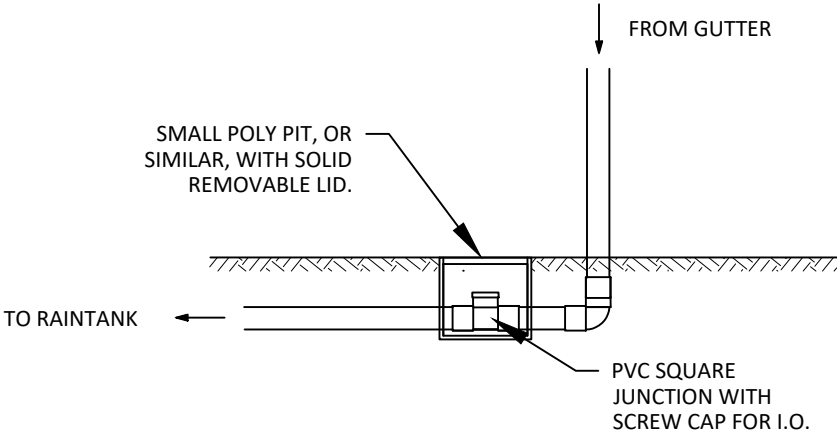
90 DEG. BENDS ARE NOT TO BE USED, RATHER USE 45 DEG. ANGLES WITH 2 x 22.5 DEG. BENDS.
16.

PIPES IN GROUNDS ARE TO HAVE MIN. COVER OF 300mm IN LANDSCAPING AND 450mm IN TRAFFICABLE AREAS.
17.

USE A GUTTER WITH A MINIMUM CROSS SECTIONAL AREA OF 6,707 mm². CONSIDER A 150mm HALF ROUND BY LYSAGHT.

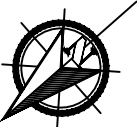


RAINWATER TANK & FLUSHING PIT DETAIL (N.T.S.)



I.O. & FLUSHING POINT (N.T.S.)
TO BE PROVIDED ON ALL CHARGED LINES TO ALLOW FOR FLUSHING OF THE PIPES.

DEVELOPMENT APPLICATION -
CRAWFORD ST CORE & CLUSTER HOUSING



STORMWATER MGT.
PLAN
DETAILS SHT 2 of 2

DP230349, 7 CRAWFORD ST,
EAST TAMWORTH, NSW, 2340

Revisions		
rev	zone	description
a		
b		RFI Amends
c		
d		
e		

Client: HOUSING PLUS
DWG no.: **STW-07**
Scale: **1:150**
Drawn: **TH**
Checked: **MW**

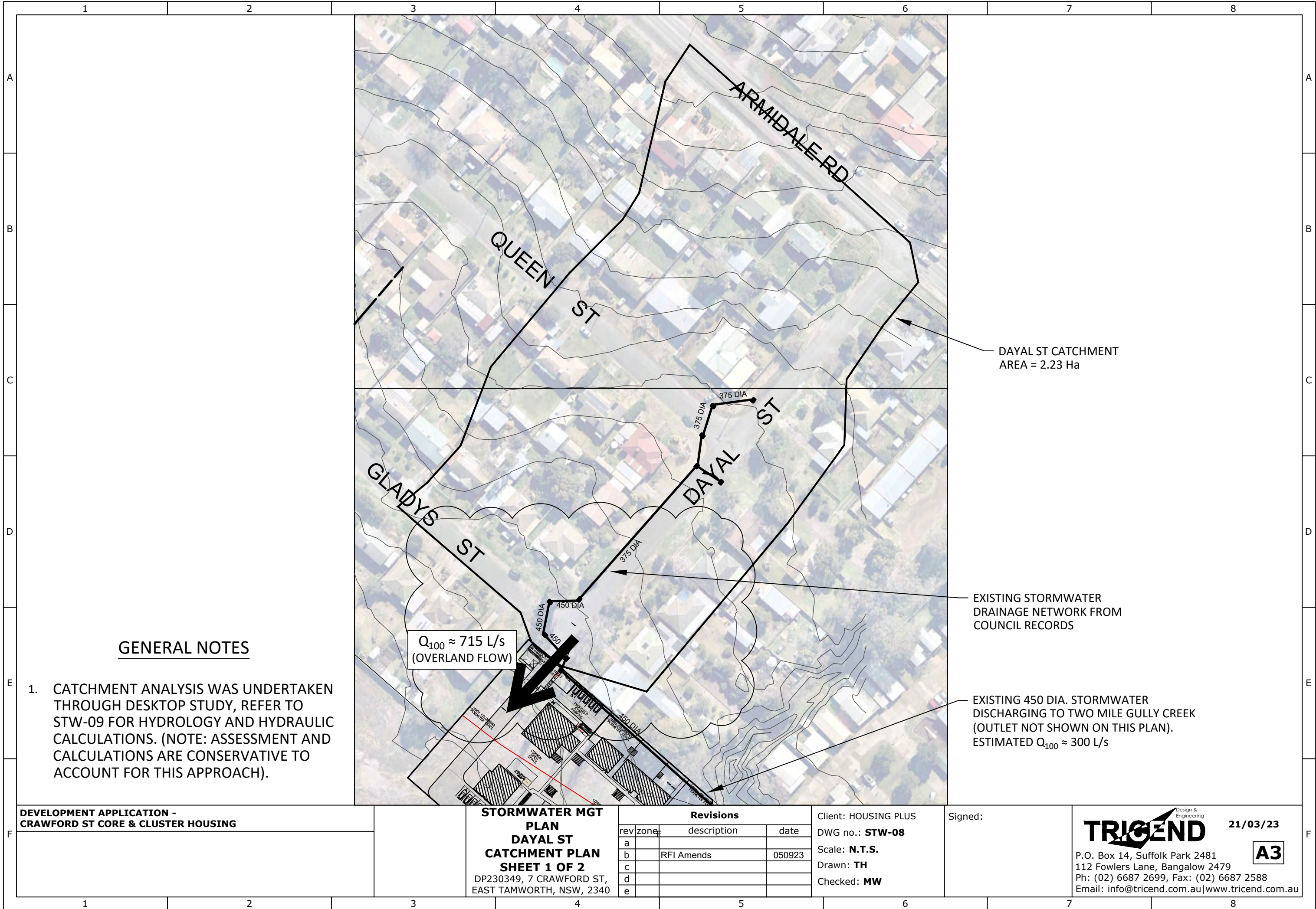
Signed:



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GENERAL NOTES

1. CATCHMENT ANALYSIS WAS UNDERTAKEN THROUGH DESKTOP STUDY, REFER TO STW-09 FOR HYDROLOGY AND HYDRAULIC CALCULATIONS. (NOTE: ASSESSMENT AND CALCULATIONS ARE CONSERVATIVE TO ACCOUNT FOR THIS APPROACH).

DEVELOPMENT APPLICATION -
CRAWFORD ST CORE & CLUSTER HOUSING

STORMWATER MGT
PLAN
DAYAL ST
CATCHMENT PLAN
SHEET 1 OF 2
DP230349, 7 CRAWFORD ST,
EAST TAMWORTH, NSW, 2340

Revisions		
rev	zone	description
a		
b		RFI Amends
c		
d		
e		

Client: HOUSING PLUS
DWG no.: **STW-08**
Scale: **N.T.S.**
Drawn: **TH**
Checked: **MW**

Signed:



21/03/23

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1

2

3

4

5

6

7

8

Dayal St catchment hydrology analysis using QUDM

Date: 19/12/2022

Rational Method

Q = C.I.A./360

Area

2.23Ha

tc (time of concentration)

10min

incremental gutter flow from Eqn 14.3 ARR87

fi (table 4.5.1)

0.7

(0.45 to 0.85)

1hr rainfall intensity for 10yr ARI

37mm/hr

Fy (table 4.5.2)

5yr ARI

0.95

10yr ARI

1

20yr ARI

1.05

100yr ARI

1.2

C10 (table 4.5.3)

0.7

(0.67 to 0.78)

15% climate change

Cy = Fy x C10

Intensity 10min duration

Q (m3/s)Q (m3/s)

5yr ARI

0.67

87mm/hr

0.36

0.41m3/s

10yr ARI

0.70

99mm/hr

0.43

0.49m3/s

20yr ARI

0.74

115mm/hr

0.52

0.60m3/s

100vr ARI

0.84

154mm/hr

0.80

0.92m3/s

Page 1

Core & cluster developmment - 7 Crawford St

Dayal St catchment - hydraulic analysis

Date: 19/12/2022

1) inlet pit capacity

9 pits in total

lintel size

grade (approx.)

capacity, L/s (note 1)

dayal

ongrade

2.4

3%

130

gladys

sag

0.9

80

gladys

sag

1.8

200

dayal

ongrade

1.8

3%

100

dayal

ongrade

0.9

3%

70

dayal

ongrade

1.8

3%

90

queen

ongrade

0.9

4%

70

sag

2

100

dayal

ongrade

2

4%

100

Cumulative

940

L/s

Note 1: inlet pit capacities are obtained from hydraulic calculations for various pit configurations using spreadsheet calculations shown this page.

2) Pipe capacity

u/s end

length,m

d/s end

pit RL

IL

depth

387.5

386.4

77.5

388.2

385.8

2.4

(estimate)

(estimate)(estimate)

450 dia discharge to creek

Grade

0.008

0.8%

Flow (flowing full) =

260L/s

QUDM Chart A1 2

Assume under pressure Q

300L/s

3) Overland flow estimate

1% AEP total flow

Pipe flow

Overland flow

922

300

=

622L/s

Pipe capacity is assumed to be limiting factor

715L/s (with 15% error allowance)

Conclusion

From the calculations and estimates undertaken in Section 1, 2 & 3 above it is estimated that in a 1%AEP event in the Dayal St catchment approxinmately 715 L/s will occur as overland flow through the proposed development site.

Matt Wierzbicki B.E. (Civil)

I E Aust No. : 587163

STORMWATER DRAINAGE PIPE SIZING SCHEDULE

Project Name: DEVELOPMENT APPLICATION - CORE AND CLUSTER HOUSING

Project No.: 067 TAMWORTH

Engineer: Matt Wierzbicki BE (Civil)

Date: 24/10/2023

Revision: B

upvc k = 0.01

Note 1 : Rainfall intensity from BOM 20yr ARI 5m duration 154mm/hr

DOWNPIPE	AREA	CATCHMENT AREA	TOTAL AREA	RUNOFF COEFF.	RAINFALL INTENSITY (Note 1)	DISCHARGE	SUB. TOTAL					CUM. TOTAL					
							Branch (eg : ST1)	SUB TOTAL DISCHARGE	MIN. PIPE GRADE	PIPE SIZE	PIPE ROUGHNESS K	CAPACITY	TOTAL DISCHARGE	MIN. PIPE GRADE	PIPE SIZE	PIPE ROUGHNESS K	CAPACITY
Line 1		m2	m2		mm/hr	L/s		L/s	%	mm		L/s	%	mm		L/s	
	R4	34.00	34.0	1	154	1.45		1.5	3.5	150	0.010	54	1.5	0.4	300	0.01	109
	SW	337.30	337.3	0.75	154	10.82		12.3	3.5	150	0.010	54	12.3	0.4	300	0.01	109
	P1	678.60	678.6	0.75	154	21.77	1.0	34.0	3.5	150	0.010	54	34.0	0.4	300	0.01	109
	P3	67.20	67.2	0.6	154	1.72		1.7	0.5	300	0.010	122	35.8	0.4	300	0.01	109
Cum. Total From Line 2	Line 2					30.13		31.9	0.5	300	0.010	122	65.9	0.4	300	0.01	109
	R5	95.50	95.5	1	154	4.09		35.9	0.5	300	0.010	122	70.0	0.4	300	0.01	109
	R6	121.21	121.2	1	154	5.19		41.1	0.5	300	0.010	122	75.2	0.4	300	0.01	109
	R7	121.21	121.2	1	154	5.19		46.3	0.5	300	0.010	122	80.4	0.4	300	0.01	109
	R8	121.21	121.2	1	154	5.19		51.5	0.5	300	0.010	122	85.5	0.4	300	0.01	109
	R9	121.21	121.2	1	154	5.19		56.7	0.5	300	0.010	122	90.7	0.4	300	0.01	109
Line 2								4.9	3.6	100	0.010	19	4.9	3.6	100	0.01	19
	R2	199.24	199.2	1	154	8.52		13.4	2.8	100	0.010	17	13.4	2.8	100	0.01	17
	R1	391.40	391.4	1	154	16.74		30.1	5.5	150	0.010	67	30.1	2.8	150	0.01	48
	P2	385.60	385.6	0.75	154	12.37		12.4	1	150	0.010	29	12.4	0.5	225	0.01	58
Total																	

DEVELOPMENT APPLICATION - CRAWFORD ST CORE & CLUSTER HOUSING

STORMWATER MGT PLAN DAYAL ST CATCHMENT PLAN SHEET 2 OF 2 DP230349, 7 CRAWFORD ST, EAST TAMWORTH, NSW, 2340

Revisions

rev	zone	description	date
a			
b		RFI Amends	050923
c		stw calc amended	231023
d			
e			

Client: HOUSING PLUS

DWG no.: STW-09

Scale: N.T.S.

Drawn: TH

Checked: MW

Signed:

21/03/23

A3

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