

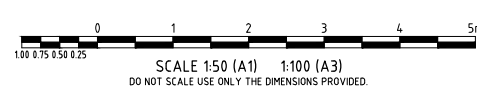
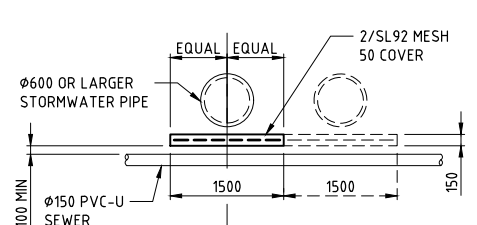
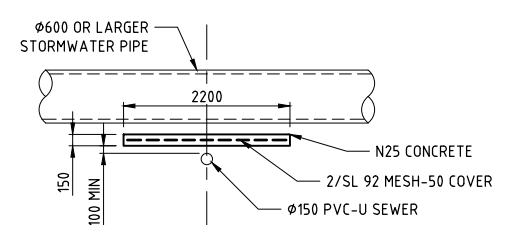
Catchment	Area (Ha)
1-1	0.3020ha
1-10	0.2327ha
1-11	0.3225ha
1-12	0.3111ha
1-13	0.1667ha
1-14	0.1483ha
1-15	0.2727ha
1-16	0.3391ha
1-17	0.2541ha
1-18	0.2618ha
1-19	0.1210ha
1-2	0.3208ha
1-20	0.1973ha
1-21	0.4385ha
1-22	0.2277ha
1-23	0.0784ha
1-3	0.1658ha
1-4	0.0361ha
1-5	0.3159ha
1-6	0.1551ha
1-7	0.2347ha
1-8	0.1267ha
1-9	0.2388ha
2-1	0.2211ha
2-11	0.2674ha
2-13	0.1295ha
2-15	0.2665ha
2-16	0.3460ha
2-19	0.1233ha
2-20	0.1279ha
2-21	0.4582ha
2-22	0.1401ha
2-5	0.3109ha
2-6	0.1198ha
2-7	0.3188ha
3-1	0.1274ha
3-13	0.0258ha
3-15	0.3526ha
3-16	0.2741ha
3-20	0.0542ha
3-21	0.3123ha
4-1	0.3572ha
4-15	0.1372ha
4-16	0.2239ha
4-20	0.0384ha
4-21	0.4134ha
4-22	0.2571ha
4-6	0.2167ha
5-1	0.2737ha
5-21	0.3333ha
5-22	0.1213ha
5-6	0.1122ha
6-1	0.1405ha
6-15	0.0466ha
6-16	0.2080ha
6-6	0.1634ha
7-1	0.3924ha
7-15	0.1924ha
7-6	0.1234ha

- LEGEND**
- 57.50--- FINISHED SURFACE CONTOURS (0.25m INTERVALS)
 - LOT BOUNDARY
 - ⊙ STORMWATER MAINTENANCE HOLE
 - ⊕ STORMWATER CATCHPITS
 - ⊓ STORMWATER HEADWALL
 - STORMWATER FIELD INLET
 - STORMWATER DRAINAGE (375mm DIA RCP UNLESS NOTED OTHERWISE)
 - EXISTING STORMWATER DRAINAGE
 - STORMWATER CATCHMENT
 - ULTIMATE STORMWATER CATCHMENT
 - ⊙ STORMWATER STRUCTURE NUMBER
 - BARRIER TYPE KERB AND CHANNEL
 - MOUNTABLE TYPE KERB AND CHANNEL
 - EDGE OF SURFACING
 - OPEN CHANNEL

AS CONSTRUCTED
 I, RYAN MACHIN, OF SURVEY SOLUTIONS AUSTRALIA, HEREBY CERTIFY THAT THE WORKS AS SHOWN ON THE AS CONSTRUCTED DRAWINGS REFLECT ANY CHANGES THAT WERE MADE DURING THE COURSE OF CONSTRUCTION.
 Ryan Machin DATE 29.03.2023
 RYAN MACHIN SBO No 6760
 SURVEYING SOLUTIONS AUSTRALIA
 ABN: 75 632 383 316 M: (+61) 428 258 917
 49 Gaircoctera Drive Bushland Beach, QLD 4818

AS CONSTRUCTED CERTIFICATION
 THE WORK ON THIS DRAWING HAS BEEN CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE DESIGN DRAWINGS AND THE INTENT OF THE GUIDELINES OF TOWNVILLE CITY COUNCIL
 APPROVED: *Chad Wain* RPEQ: 12732
 for and on behalf of Empower Engineer & Project Managers

Accepted As Constructed



NOTE:-
 THIS AS CONSTRUCTED CERTIFICATION IS RELEVANT TO STAGE 13B ONLY.

0	AS CONSTRUCTED	MC	PDW	CH	OR	27/03/23	ENGINEERING CERTIFICATION
No.	Amendments	Drawn	Design	Design	Chk	Appd	Date

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Chad Wain
 Registered Engineer 12732
 Date 29/3/2023
 Register

THE Reserve
 From the developers of Kalynda Chase
 urbex designed for life

Empower
 ENGINEERS & PROJECT MANAGERS
 ABN 23 010 743 692

Client **URBEX PTY LTD**
 Project **THE RESERVE - STAGE 13B**
 Title **Q2 STORMWATER DRAINAGE CATCHMENT PLAN**

Da'um
 AHD
 PSM 200645
 RL 14.410
 (MGA) COORD

AS CONSTRUCTED
 Project No. Drawing No. Rev
 B00393-CD201 0

NOTE:

1. ALL DRAINAGE PIPES ARE 375 UNLESS NOTED OTHERWISE.
2. ALL DRAINAGE PIPES ARE CLASS 3 RCP UNLESS NOTED OTHERWISE.
3. ALL REINFORCED CONCRETE PIPES ARE RUBBER RING JOINTED UNLESS NOTED OTHERWISE.
4. REFER TCC STANDARD DRAWING NUMBER SD-205 FOR MANHOLE DETAILS.
5. REFER TCC STANDARD DRAWING NUMBER SD-200 FOR GULLY PIT DETAILS.
6. REFER TCC STANDARD DRAWING NUMBER SD-200 FOR PRECAST LINTEL DETAILS.
7. REFER TCC STANDARD DRAWING NUMBER SD-215 FOR FIELD INLET DETAILS.
8. REFER TCC STANDARD DRAWING NUMBER SD-085 FOR KERB ADAPTOR DETAILS.
9. ALL MANHOLES WERE BENCHMARKED TO TCC REQUIREMENTS.

EXISTING SERVICES LOCATIONS SHOWN ARE APPROXIMATE ONLY. THEY HAVE BEEN DERIVED FROM TYPICAL SERVICE LEVEL DEPTHS.

NOTE:

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AS CONSTRUCTED CERTIFICATION

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APPROVED: *Chick Wicks* RPEQ: 12732

for and on behalf of Empower Engineer & Project Managers



PIPE SIZE (mm)	375	375	525	600	600	600	600	375	450
PIPE CLASS	PP	PP	PP	3	3	3	3	PP	PP
PIPE GRADE (%)	0.634x%	0.703x%	0.503x%	0.799x%	0.526x%	0.49x%	0.53x%	0.401x%	0.549x%
PIPE GRADE (1 in)	1 in 157.8x	1 in 142.2x	1 in 198.7x	1 in 125.2	1 in 190.2	1 in 204.66x	1 in 189.63x	1 in 249.6x	1 in 182.2x
FULL PIPE VELOCITY (m/s)	Vf=0.29	Vf=0.52	Vf=0.79	Vf=0.85	Vf=0.92	Vf=1.20	Vf=1.44	Vf=0.44	Vf=0.72
NORMAL DEPTH VELOCITY (m/s)	Vn=1.01	Vn=1.18	Vn=1.45	Vn=1.88	Vn=1.61	Vn=1.70	Vn=1.75	Vn=0.97	Vn=1.20
DATUM (m)	-1.0							0.0	
PIPE FLOW (Cumecs)	0.032	0.057	0.171	0.240	0.261	0.338	0.406	0.049	0.115
PIPE CAPACITY AT GRADE (Cumecs)	0.136	0.136	0.304	0.549	0.434	0.434	0.434	0.111	0.180
WATER LEVEL IN STRUCTURE	14.550								
HYDRAULIC GRADE LEVEL	14.512	14.510	14.460	14.316	14.220	13.798	13.814	14.557	14.555
DEPTH TO INVERT	1.038x	1.094x	1.090x	1.184x	1.220x	1.202x	1.182x	1.065x	1.065x
INVERT LEVEL OF DRAIN	13.893x	13.856x	13.722x	13.340x	13.063x	12.440x	12.408x	13.739x	13.708x
FINISHED SURFACE LEVEL	14.987x	15.020x	15.082x	14.754x	14.580x	14.362x	14.323x	14.823x	14.823x
PIPE LENGTH RUNNING CHAINAGE	0.000	5.834x	17.201x	23.035x	51.659x	24.780x	102.496	7.738x	7.466
EASTING NORTHING	468025.608E 7865644.567N	468024.541E 7865638.178N	468006.497E 7865637.884N	468005.957E 7865585.474N	468008.861E 7865560.079N	468015.391E 7865549.323N	468016.302E 7865548.884N	468015.866E 7865651.865N	468009.028E 7865648.868N

LINE 6 7

Accepted As Constructed

AS CONSTRUCTED

I, RYAN MACHIN, OF SURVEY SOLUTIONS AUSTRALIA, HEREBY CERTIFY THAT THE WORKS AS SHOWN ON THE AS CONSTRUCTED DRAWINGS REFLECT ANY CHANGES THAT WERE MADE DURING THE COURSE OF CONSTRUCTION.

Ryan Machin DATE: 29.03.2023

RYAN MACHIN SBQ No 6760

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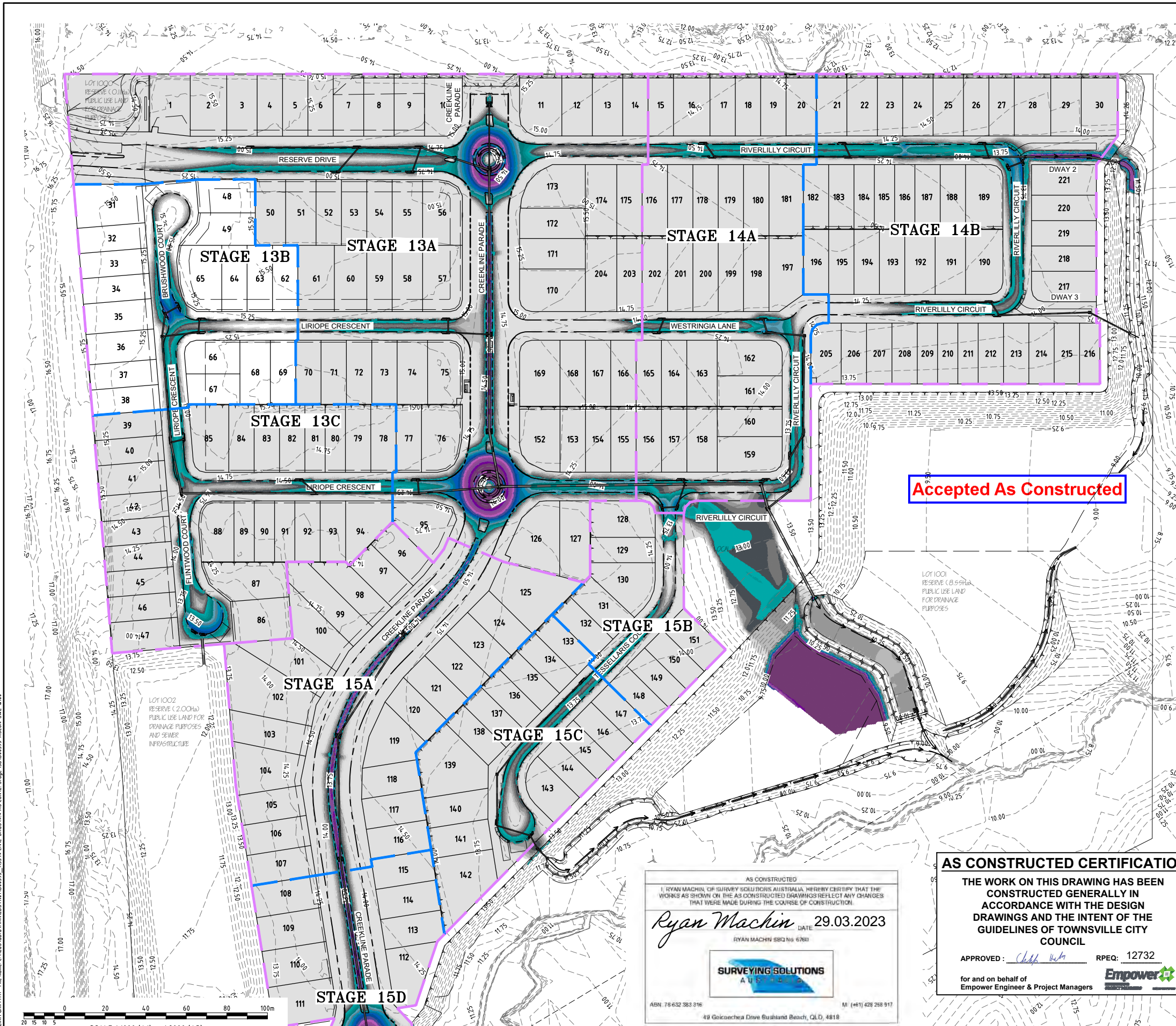
49 Gairloch Drive Bungalow Beach, QLD, 4818

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Chick Wicks
Registered Engineer
29/3/2023
12732
Date Register



Client	URBEX PTY LTD	Datum	AHD
Project	THE RESERVE - STAGE 13B	PSM	200645
Title	STORMWATER DRAINAGE LONGITUDINAL SECTION	RL	14.410
		(MGA) COORD	
		AS CONSTRUCTED	
No.	Amendments	Project No.	Drawing No.
0		B00393-CD202	0



LEGEND

- STAGE BOUNDARY
- SUBSTAGE BOUNDARY
- LOT BOUNDARY
- TOP OF BATTER
- BARRIER TYPE KERB AND CHANNEL
- MOUNTABLE TYPE KERB AND CHANNEL
- STORMWATER DRAINAGE (375mm DIA RCP UNLESS NOTED OTHERWISE)
- ESTIMATED EXTENT OF Q100 STORM EVENT

DEPTH COLOURING NOTES

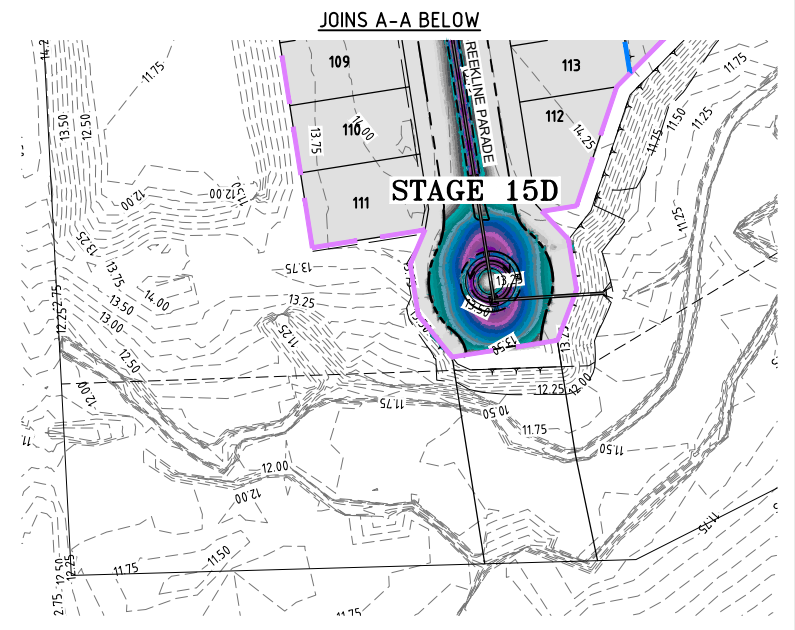
- THE DEPTH COLOURING SHOWN HAS BEEN DERIVED USING XPSTORM SOFTWARE.
- THE COLOURING SHOWN REPRESENTS THE RESULTS ONLY WHERE A CONCENTRATION OF FLOWS ACROSS THE PROPOSED DESIGN PROFILE WILL OCCUR, IGNORING SHALLOW SHEET FLOWS AT TOP OF CATCHMENTS.
- THE FLOWS USED TO DETERMINE DEPTHS ARE CALCULATED TOTAL Q100 CATCHMENT FLOWS MINUS Q2 PIPED FLOWS. THIS IS CONSERVATIVE, AS PIT AND PIPE FLOWS WILL CONVEY MORE THAN Q2 DURING HIGHER A Q100 EVENT. CONSERVATIVELY, FLOWS USED IN THE MODELLING ARE PEAK FLOWS AND ARE NOT CALCULATED USING HYDROGRAPHS FOR THE DIFFERING CATCHMENTS.
- BASED ON PREVIOUS FLOOD MODELLING BY OTHERS, Q100 FLOOD LEVELS SOUTH OF THE SITE IN THREE MILE CREEK VARY FROM RL 13.3m (WESTERN SIDE) TO RL 13.2m (EASTERN SIDE)

Q100 FLOOD DEPTH RANGE
FLOOD WATER DEPTH (WIDTHS AS SHOWN)

Lightest Grey	-0.02m
Light Grey	0.02m - 0.04m
Medium-Light Grey	0.04m - 0.06m
Medium Grey	0.06m - 0.08m
Dark Grey	0.08m - 0.10m
Light Blue	0.10m - 0.12m
Medium Blue	0.12m - 0.14m
Dark Blue	0.14m - 0.16m
Very Dark Blue	0.16m - 0.18m
Dark Purple	0.18m - 0.20m
Medium Purple	0.20m - 0.22m
Light Purple	0.22m - 0.24m
Very Light Purple	0.24m - 0.26m
Lightest Purple	0.26m - 0.28m
Lightest Blue	0.28m - 0.30m
Lightest Green	0.30m - 0.32m
Lightest Yellow	0.32m - 0.34m
Lightest Orange	0.34m - 0.36m
Lightest Red	0.36m - 0.38m
Lightest Purple	0.38m - 0.40m
Lightest Grey	-0.40m

NOTE:-
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Accepted As Constructed



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I, RYAN MACHIN, OF SURVEYING SOLUTIONS AUSTRALIA, HEREBY CERTIFY THAT THE WORKS AS SHOWN ON THE AS CONSTRUCTED DRAWINGS REFLECT ANY CHANGES THAT WERE MADE DURING THE COURSE OF CONSTRUCTION.

Ryan Machin DATE 29.03.2023
RYAN MACHIN SBQ No. 6780

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APPROVED: *Chiff* RPEQ: 12732
for and on behalf of Empower Engineer & Project Managers

Empower
ENGINEERS & PROJECT MANAGERS
ABN 23 010 743 692

0	AS CONSTRUCTED	MC	PDW	CH	OR	27/03/23	ENGINEERING CERTIFICATION
No.	Amendments	Drawn	Design	Design	Chk	Appd	Date

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Client	URBEX PTY LTD	Datum	AHD
Project	THE RESERVE - STAGE 13B	PSM	200645
Title	ESTIMATED EXTENT OF Q100 STORMWATER EVENT PLAN	RL	14.410
		(MGA) COORD	
		Project No.	B00393-CD203
		Drawing No.	0
		Rev	0