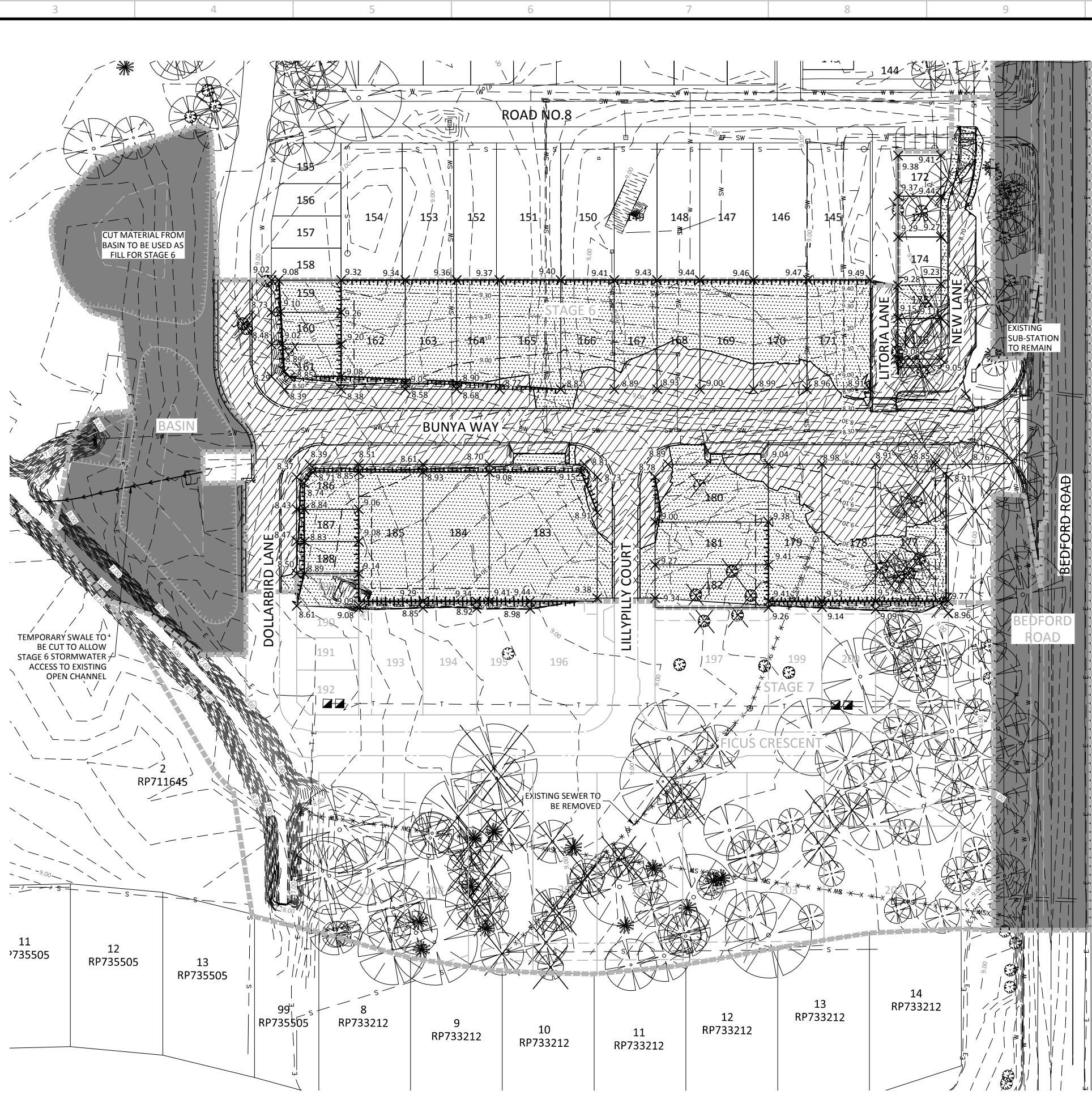


**EARTHWORKS NOTES**

- NOTWITHSTANDING THE LIMITS OF CUTTING & FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT AT THE PRE-START MEETING, ALTERATIONS TO THE EARTHWORKS MAY BE INSTRUCTED BY THE SUPERINTENDENT DURING CONSTRUCTION. FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY THE WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION.
- REFER TO THE SPECIFICATION FOR COMPACTION DETAILS. ALL FILL MATERIALS WILL BE PLACED IN ACCORDANCE WITH THE APPROVED SPECIFICATION.
- EXCAVATED MATERIAL NOT REQUIRED FOR ROADWORKS OR NOMINATED SITE FILLING SHALL BE LOCATED ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- ALL SITE PREPARATION SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007, "GUIDELINES ON EARTHWORKS FOR COMMERCIAL & RESIDENTIAL DEVELOPMENTS".
- WHERE UNSUITABLE MATERIAL IN AREAS TO BE FILLED IS ENCOUNTERED, THIS WILL BE TREATED AS SET OUT IN THE SPECIFICATION.
- LEVEL 1 INSPECTION & TESTING IS TO BE IMPLEMENTED ON THE SITE IN ACCORDANCE WITH AS 3798-2007 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL & RESIDENTIAL DEVELOPMENTS". THE INSPECTION & TESTING AUTHORITY IS TO PROVIDE A COMPLIANCE CERTIFICATE & REPORT SETTING OUT THE INSPECTIONS, SAMPLING & TESTING CARRIED OUT DURING THE BULK EARTHWORKS.
- THE TOTAL COST OF THE GEOTECHNICAL INSPECTION & TESTING AUTHORITY (GITA) FOR THE LEVEL 1 INSPECTION & TESTING IS TO BE INCLUDED IN THE LUMP SUM OF THE TENDER. THE GITA IS TO MAINTAIN DAILY SITE RECORD SHEETS AS SET OUT IN AS 3798-2007. UNLESS NOTED OTHERWISE THE FREQUENCY OF TESTING IS TO BE IN ACCORDANCE WITH TABLE 8.1 OF AS 3798-2007.
- THE CONTRACTOR IS TO COMPLY WITH ALL REGULATIONS CONCERNING WORK HOURS, WARNING SIGNS, FENCING OR SECURITY & EMISSIONS FROM THE SITE INCLUDING DUST, WATER, SILT, NOISE & SMOKE. FILL BATTER SLOPES ARE TO BE OVERFILLED & TRIMMED BACK TO PROFILE.
- THE EARTHWORKS FOR RETAINING WALLS IN FILL IS TO BE OVERFILLED & CUT BACK TO SUIT THE RETAINING WALL & CONSTRUCTION METHODS.
- ALL VEHICLES EXITING FROM THE SITE WILL DO SO VIA THE TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP. VEHICLES WILL BE CLEANED & TREATED AS TO PREVENT MATERIAL BEING TRACKED OR DEPOSITED ON THE ADJOINING PUBLIC ROADS. REFER EROSION & SEDIMENT DRAWINGS FOR FURTHER DETAILS OF EROSION & SEDIMENT CONTROLS.

**NOTE:**  
STAGE 6 HAS BEEN DESIGN CONCURRENTLY WITH BASIN AND BEDFORD ROAD. REFER TO BASIN AND BEDFORD ROAD PACKAGE DWGS FOR DETAILS.



- LEGEND**
- | EXISTING | PROPOSED |  |
|----------|----------|--|
|          |          | MRC MOUNTABLE KERB AND CHANNEL             |
|          |          | MRC MEDIUM KERB                            |
|          |          | MRC CARPARK KERB                           |
|          |          | MRC DISH DRAIN                             |
|          |          | IPWEAQ MOUNTABLE KERB TYPE M6              |
|          |          | IPWEAQ MOUNTABLE KERB TYPE M6 WITH N20 BAR |
|          |          | IPWEAQ EDGE RESTRAINT TYPE ER2             |
|          |          | EDGE OF BITUMEN                            |
|          |          | PROPERTY BOUNDARY                          |
|          |          | EASEMENT                                   |
|          |          | DRIVEWAY                                   |
|          |          | STORMWATER DRAINAGE                        |
|          |          | OPEN CHANNEL                               |
|          |          | TOP OF BATTER                              |
|          |          | TOE OF BATTER                              |
|          |          | CONTOURS                                   |
|          |          | FENCE                                      |
|          |          | SEWER                                      |
|          |          | WATER                                      |
|          |          | TELSTRA                                    |
|          |          | UNDER GROUND POWER                         |
|          |          | FOOTPATH                                   |
|          |          | ABANDONED SERVICE                          |
|          |          | STAGE BOUNDARY                             |
|          |          | 9.76 +<br>BULK EARTHWORKS LEVEL            |
|          |          | TREE                                       |
|          |          | TREE TO BE REMOVED                         |
|          |          | CUT  |
|          |          | FILL                                       |
|          |          | REFER TO OTHER STAGE PACKAGE DWGS          |

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PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES  
A3 UNREDUCED  
A3 REDUCED

SCALES UNREDUCED / REDUCED  
A 0 5 10 15 20 25m 1:500 / 1:1000

**AS BUILT**

REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LRALRA	JT	NR	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LRALRA	JT	NR	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LRALRA	JT	NR	NR
A	13.11.12	ISSUE TO SURVEYOR				

ASSOCIATED CONSULTANTS		APPROVED	CHECKED
		NICK ROZIS 7729 RPEQ	J. TAYLOR
		DATE 29/11/2012	DATE 29/11/12

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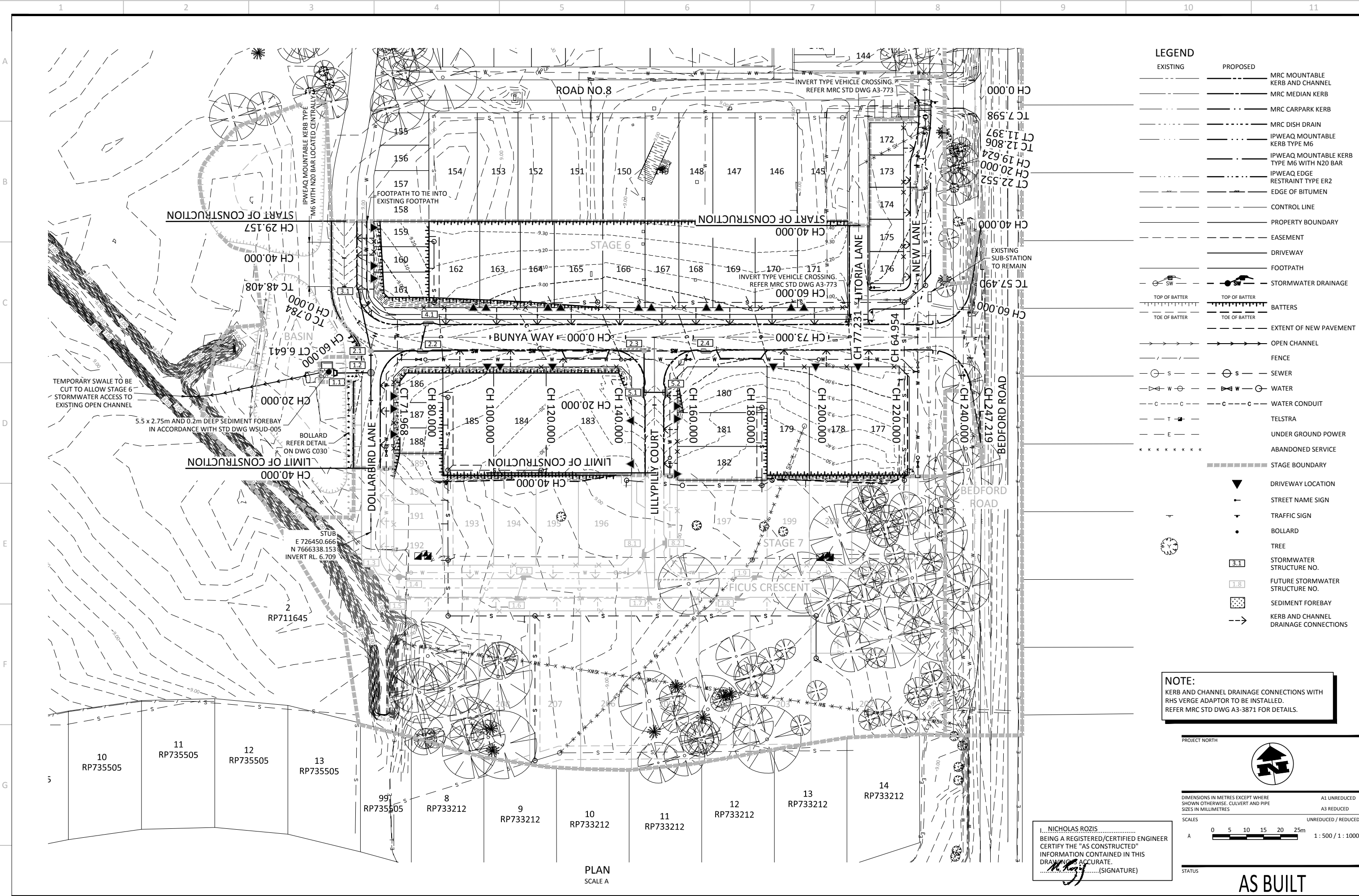
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CLIENT  
URBAN LAND DEVELOPMENT AUTHORITY

PROJECT  
ANDERGROVE, MACKAY  
STAGE 6

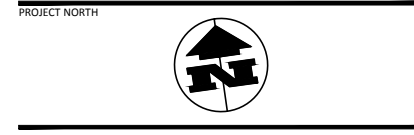
SUBJECT			PROJECT No.
BULK EARTHWORKS PLAN			12121
DRAWING No.	REVISION		
C011	E		





EXISTING	PROPOSED	
---	---	MRC MOUNTABLE KERB AND CHANNEL
---	---	MRC MEDIAN KERB
---	---	MRC CARPARK KERB
---	---	MRC DISH DRAIN
---	---	IPWEAQ MOUNTABLE KERB TYPE M6
---	---	IPWEAQ MOUNTABLE KERB TYPE M6 WITH N20 BAR
---	---	IPWEAQ EDGE RESTRAINT TYPE ER2
---	---	EDGE OF BITUMEN
---	---	CONTROL LINE
---	---	PROPERTY BOUNDARY
---	---	EASEMENT
---	---	DRIVEWAY
---	---	FOOTPATH
---	---	STORMWATER DRAINAGE
---	---	BATTERS
---	---	EXTENT OF NEW PAVEMENT
---	---	OPEN CHANNEL
---	---	FENCE
---	---	SEWER
---	---	WATER
---	---	WATER CONDUIT
---	---	TELSTRA
---	---	UNDER GROUND POWER
---	---	ABANDONED SERVICE
---	---	STAGE BOUNDARY
---	---	DRIVEWAY LOCATION
---	---	STREET NAME SIGN
---	---	TRAFFIC SIGN
---	---	BOLLARD
---	---	TREE
---	---	STORMWATER STRUCTURE NO.
---	---	FUTURE STORMWATER STRUCTURE NO.
---	---	SEDIMENT FOREBAY
---	---	KERB AND CHANNEL DRAINAGE CONNECTIONS

**NOTE:**  
KERB AND CHANNEL DRAINAGE CONNECTIONS WITH RHS VERGE ADAPTOR TO BE INSTALLED. REFER MRC STD DWG A3-3871 FOR DETAILS.



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DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES.	A3 UNREDUCED
SCALES	UNREDUCED / REDUCED
A 0 5 10 15 20 25m	1:500 / 1:1000

STATUS **AS BUILT**

PLAN SCALE A

REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
F	11.02.14	AS BUILT	EB	JT	JT	NR
E	14.01.14	INTERSECTION AMENDED	AY	AY	BBE	NR
D	03.10.13	DRIVEWAYS AMENDED	LRALRA	JT	NR	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LRALRA	JT	NR	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LRALRA	JT	NR	NR

ASSOCIATED CONSULTANTS

APPROVED	CHECKED
NICK ROZIS 7729	J. TAYLOR
DATE 29/11/2012	DATE 29/11/12

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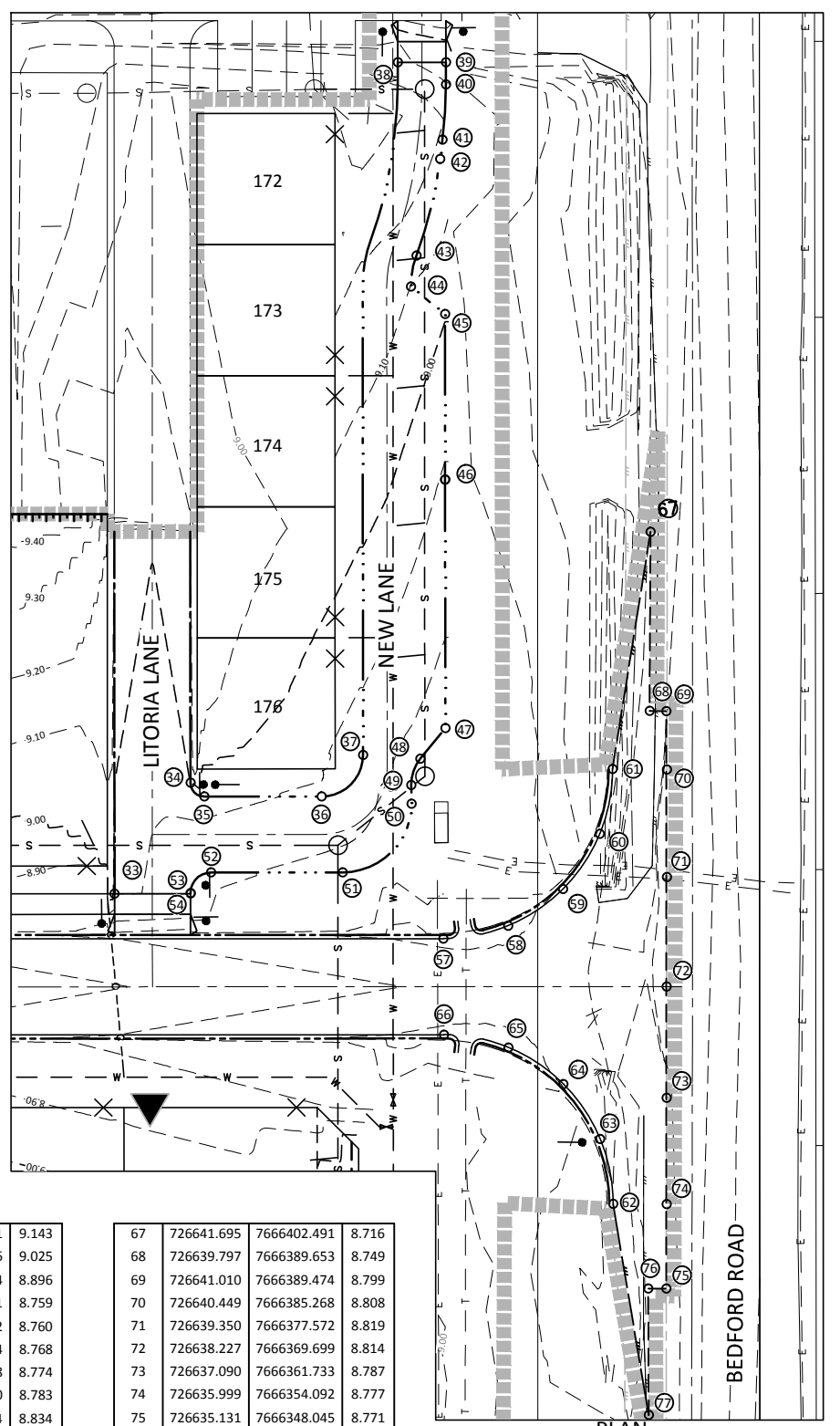
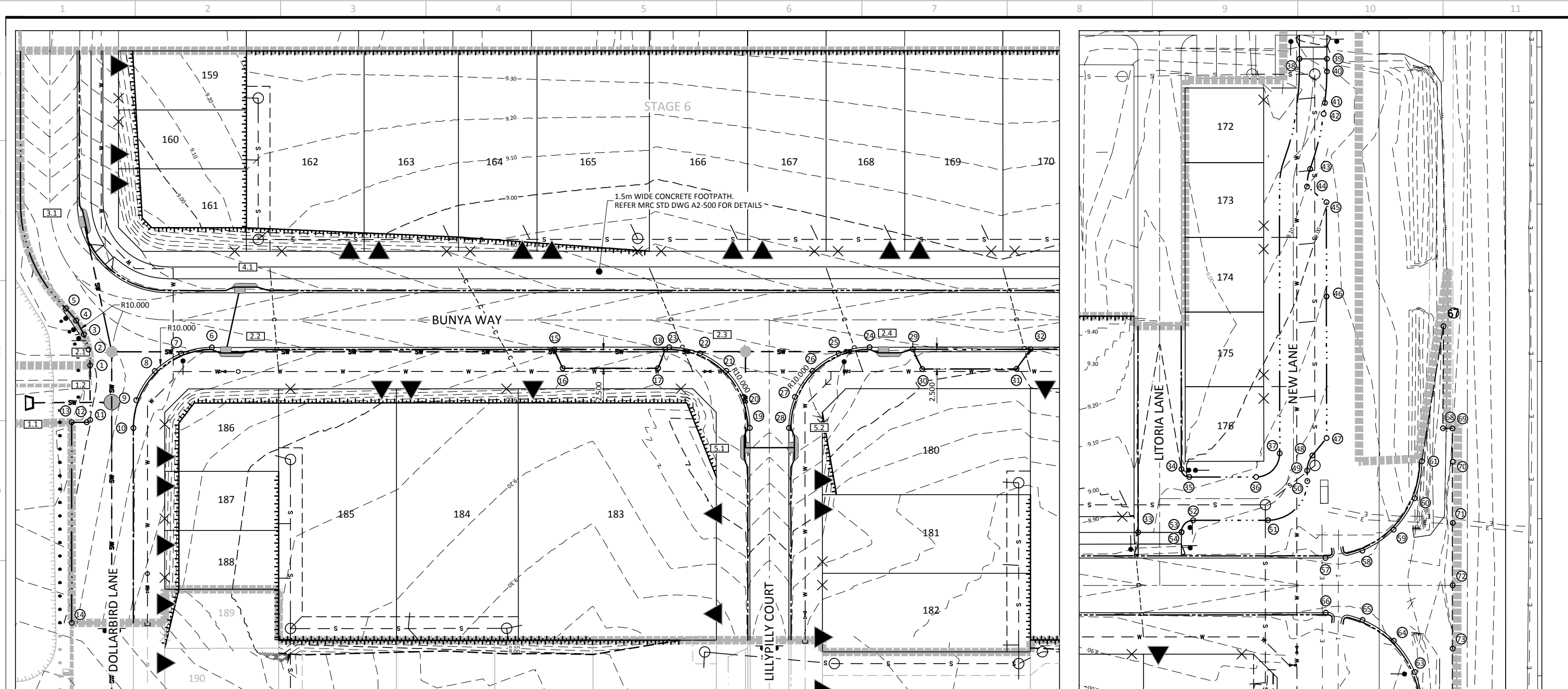
CLIENT  
**URBAN LAND DEVELOPMENT AUTHORITY**

PROJECT  
**ANDERGROVE, MACKAY STAGE 6**

SUBJECT  
**ROADWORKS AND DRAINAGE LAYOUT PLAN**

PROJECT No.	12121
DRAWING No.	C031
REVISION	F





**LEGEND**

EXISTING	PROPOSED	EXISTING	PROPOSED

**PLAN SCALE A**

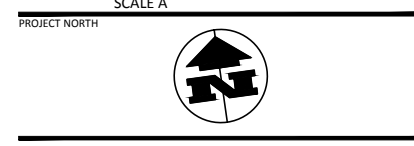
POINT	EASTING	NORTHING	LEVEL
1	726455.187	7666389.767	7.985
2	726455.267	7666391.779	8.024
3	726454.942	7666393.767	8.052
4	726454.225	7666395.649	8.083
5	726453.146	7666397.349	8.092
6	726470.854	7666389.857	8.208
7	726466.853	7666389.633	8.181
8	726463.243	7666387.895	8.158
9	726460.572	7666384.908	8.148
10	726459.248	7666381.126	8.164
11	726454.214	7666382.884	7.990
12	726453.875	7666382.629	7.992
13	726451.845	7666382.916	7.927
14	726448.273	7666357.650	8.068
15	726513.971	7666383.487	8.525
16	726514.679	7666380.970	8.607
17	726526.710	7666379.269	8.675
18	726527.957	7666381.510	8.619
19	726537.221	7666370.100	8.517
20	726536.997	7666374.101	8.532
21	726535.260	7666377.712	8.557

**SETOUT POINT TABLE**

22	726532.272	7666380.383	8.587
23	726528.490	7666381.707	8.621
24	726553.739	7666378.137	8.740
25	726549.738	7666377.913	8.688
26	726546.127	7666376.175	8.626
27	726543.457	7666373.188	8.564
28	726542.132	7666369.406	8.533
29	726559.157	7666377.098	8.806
30	726559.995	7666374.455	8.893
31	726571.870	7666372.776	8.923
32	726573.988	7666375.001	8.848
33	726599.533	7666381.994	8.870
34	726606.103	7666389.180	8.981
35	726606.953	7666388.050	8.955
36	726615.416	7666386.855	8.892
37	726618.787	7666389.411	8.877
38	726628.316	7666438.762	9.151
39	726631.781	7666438.270	9.058
40	726631.557	7666436.689	9.108
41	726630.743	7666432.755	9.194
42	726630.371	7666431.395	9.177
43	726627.694	7666424.711	9.156

44	726626.978	7666422.531	9.143
45	726629.156	7666420.216	9.025
46	726627.478	7666408.334	8.896
47	726624.961	7666390.511	8.759
48	726622.853	7666388.562	8.760
49	726621.942	7666386.754	8.768
50	726621.777	7666385.428	8.774
51	726616.131	7666381.200	8.783
52	726606.683	7666382.534	8.834
53	726604.988	7666381.258	8.866
54	726604.983	7666381.223	8.866
57	726622.677	7666375.418	8.576
58	726627.461	7666375.686	8.590
59	726631.777	7666377.766	8.648
60	726634.968	7666381.340	8.686
61	726636.546	7666385.863	8.721
62	726632.172	7666354.668	8.731
63	726631.900	7666359.445	8.710
64	726629.822	7666363.754	8.636
65	726626.254	7666366.941	8.576
66	726621.739	7666368.522	8.571

67	726641.695	7666402.491	8.716
68	726639.797	7666389.653	8.749
69	726641.010	7666389.474	8.799
70	726640.449	7666385.268	8.808
71	726639.350	7666377.572	8.819
72	726638.227	7666369.699	8.814
73	726637.090	7666361.733	8.787
74	726635.999	7666354.092	8.777
75	726635.131	7666348.045	8.771
76	726633.835	7666348.235	8.714
77	726632.583	7666339.143	8.714

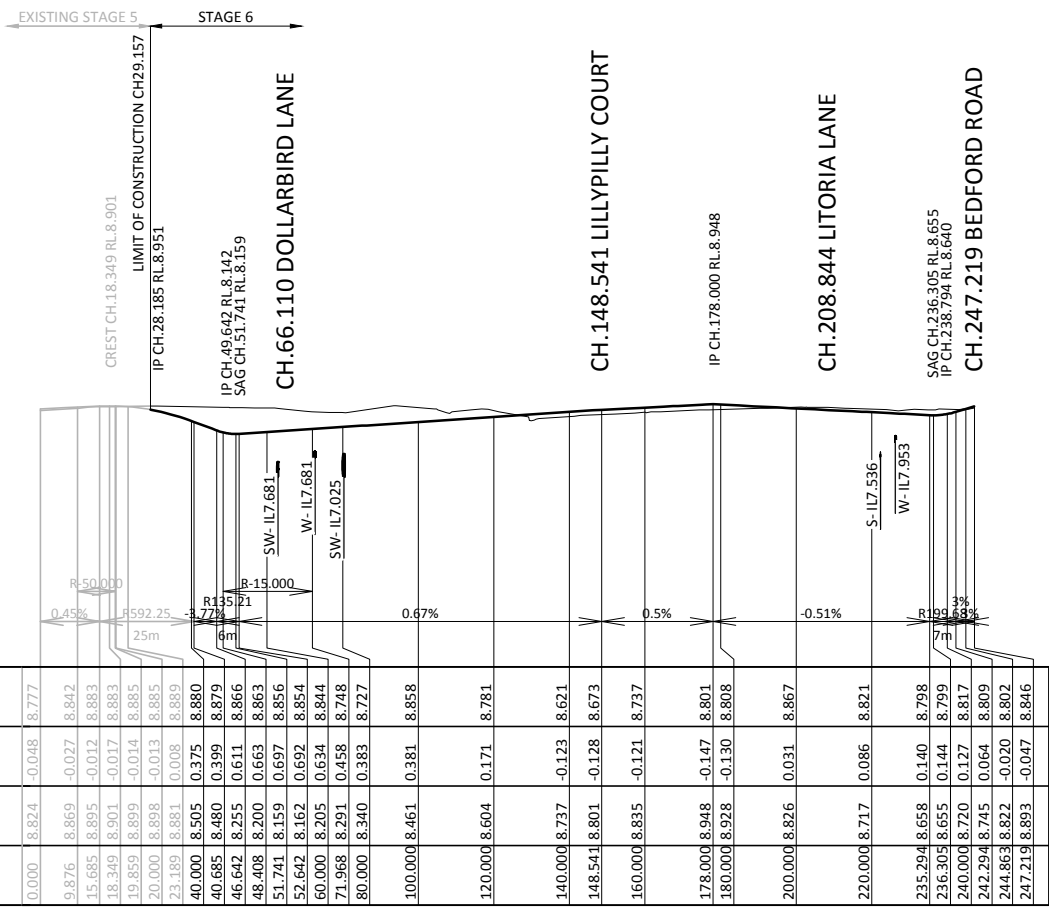


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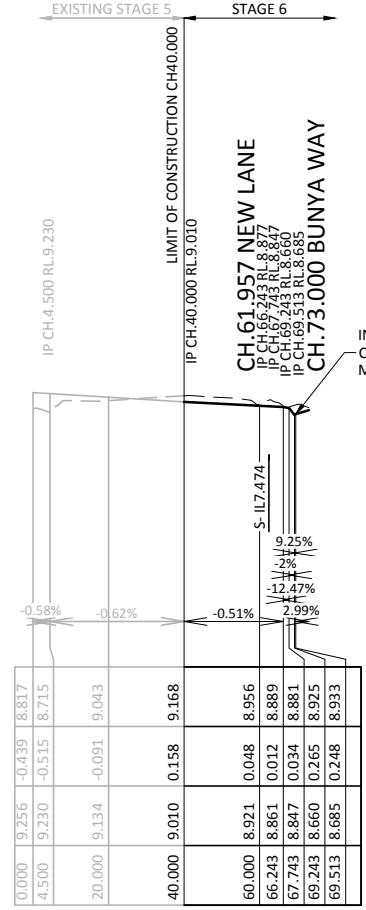
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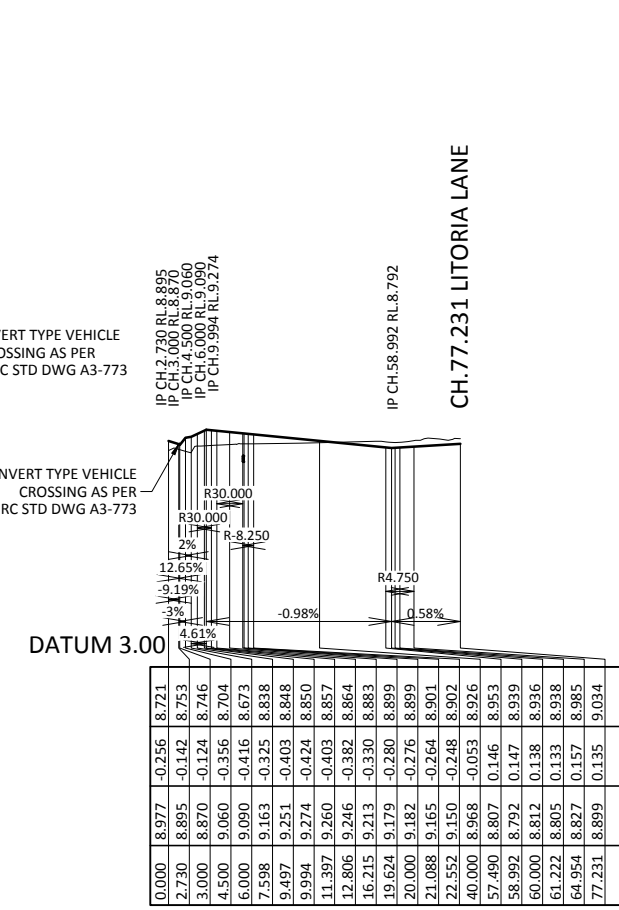
HORIZONTAL DATA  
VERTICAL DATA  
DATUM 2.00



BUNYA WAY LONGITUDINAL SECTION  
HORIZONTAL SCALE A  
VERTICAL SCALE B

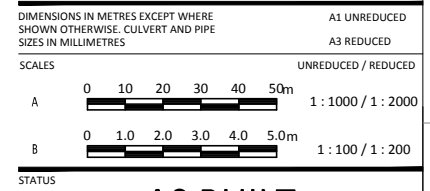


LITORIA LANE LONGITUDINAL SECTION  
HORIZONTAL SCALE A  
VERTICAL SCALE B



NEW LANE LONGITUDINAL SECTION  
HORIZONTAL SCALE A  
VERTICAL SCALE B

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E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LR	LR	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LR	LR	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LR	LR	JT	NR
A	13.11.12	ISSUE TO SURVEYOR	LR	LR	JT	NR

ASSOCIATED CONSULTANTS	APPROVED	CHECKED
	NICK ROZIS 7729 RPEQ	J. TAYLOR
	DATE 29/11/2012	DATE 29/11/12

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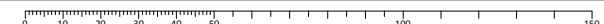
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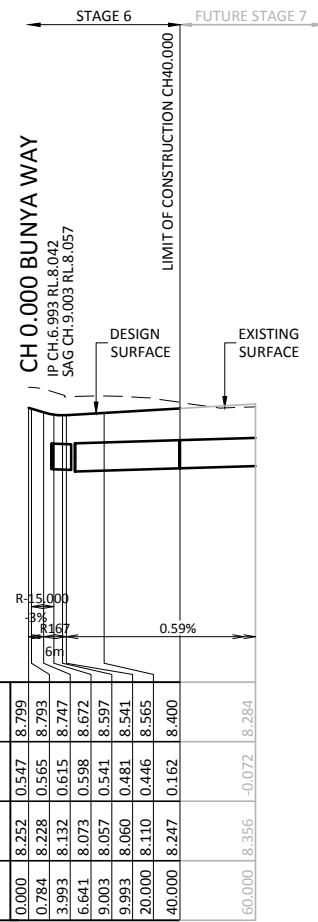
CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

PROJECT: ANDERGROVE, MACKAY STAGE 6

SUBJECT: BUNYA WAY, LITORIA WAY AND NEW LANE LONGITUDINAL SECTIONS

PROJECT No.	12121
DRAWING No.	C040
REVISION	E

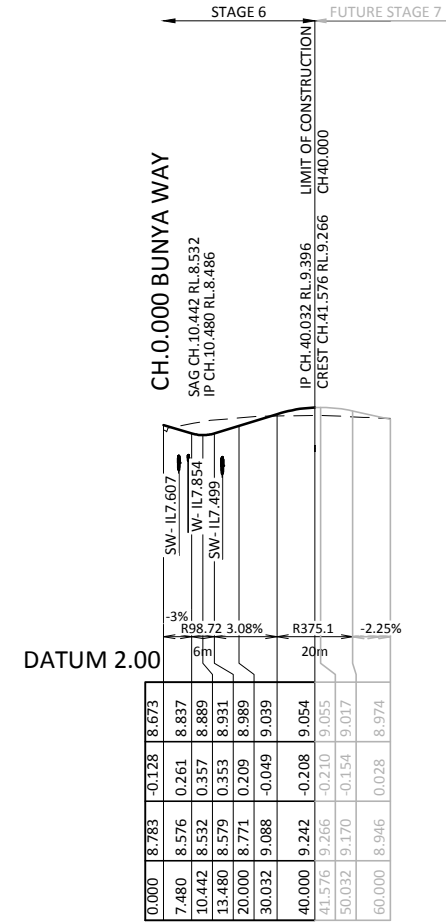




HORIZONTAL DATA  
 VERTICAL DATA  
 DATUM 1.00

EXISTING SURFACE LEVEL	CUT / FILL DEPTH TO EXISTING SURFACE	CONTROL LINE FINISHED LEVEL	CONTROL LINE CHAINAGES
0.000	8.252	0.547	8.799
0.784	8.228	0.565	8.793
3.993	8.132	0.615	8.747
6.641	8.073	0.598	8.672
9.003	8.057	0.541	8.597
9.993	8.060	0.481	8.541
20.000	8.110	0.446	8.565
40.000	8.247	0.162	8.400
60.000	8.356	-0.072	8.284

DOLLARBIRD LANE LONGITUDINAL SECTION  
 HORIZONTAL SCALE A  
 VERTICAL SCALE B



DATUM 2.00

EXISTING SURFACE LEVEL	CUT / FILL DEPTH TO EXISTING SURFACE	CONTROL LINE FINISHED LEVEL	CONTROL LINE CHAINAGES
0.000	8.783	-0.128	8.673
7.480	8.576	0.261	8.837
10.442	8.532	0.357	8.889
13.480	8.579	0.353	8.931
20.000	8.771	0.209	8.989
30.032	9.088	-0.049	9.039
40.000	9.242	-0.208	9.054
41.576	9.266	-0.210	9.055
50.032	9.170	-0.154	9.017
60.000	8.946	0.028	8.974

LILLYPILLY COURT LONGITUDINAL SECTION  
 HORIZONTAL SCALE A  
 VERTICAL SCALE B

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DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

SCALES  
 UNREDUCED / REDUCED  
 A 0 10 20 30 40 50m 1:1000 / 1:200  
 B 0 1.0 2.0 3.0 4.0 5.0m 1:100 / 1:200

STATUS  
**AS BUILT**

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REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
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ASSOCIATED CONSULTANTS	APPROVED	CHECKED
	NICK ROZIS 7729 RPEQ	J. TAYLOR
	DATE 29/11/2012	DATE 29/11/12

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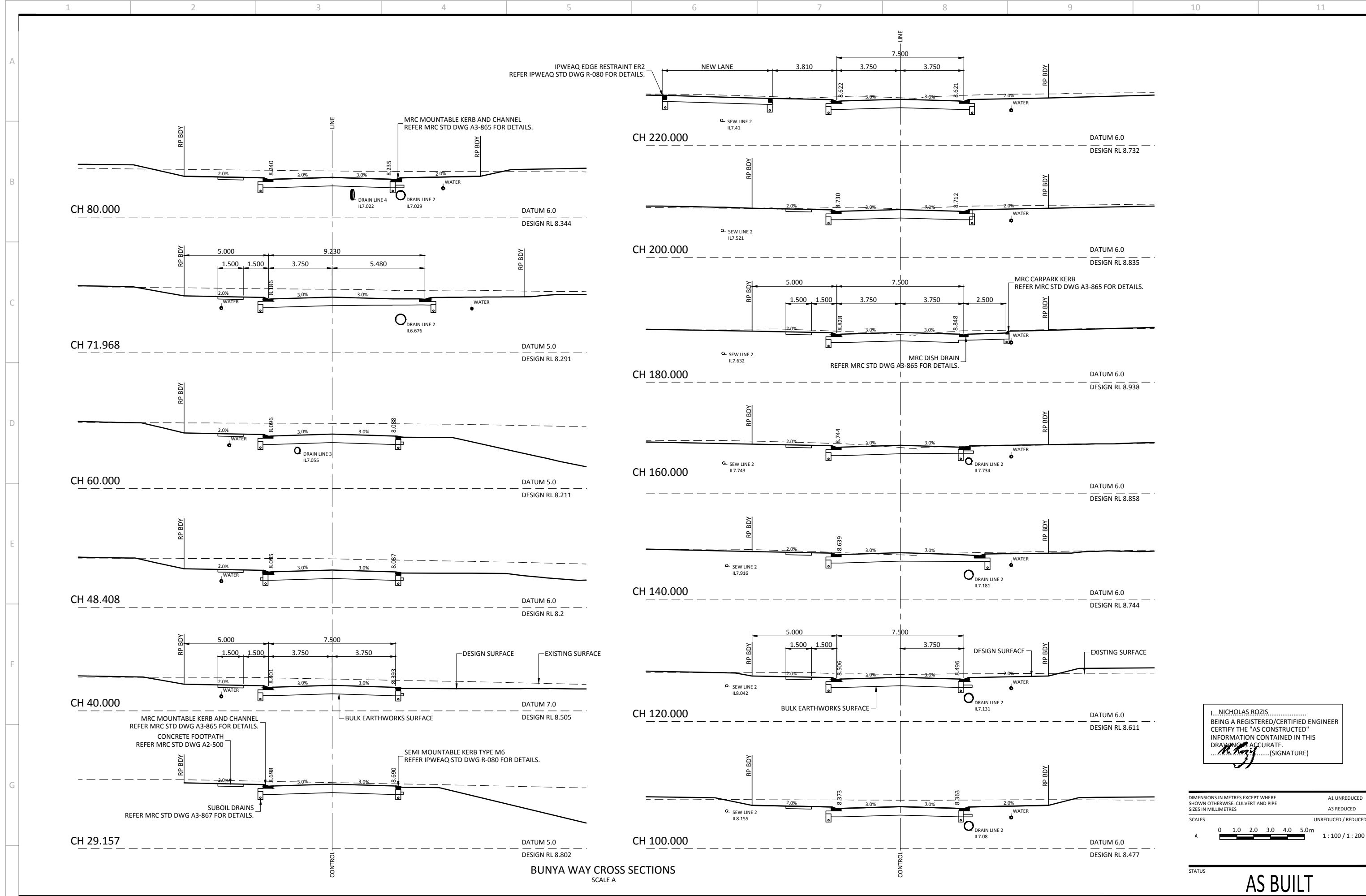
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CLIENT  
**URBAN LAND DEVELOPMENT AUTHORITY**

PROJECT  
**ANDERGROVE, MACKAY STAGE 6**

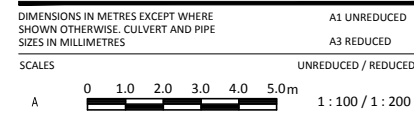
SUBJECT  
**DOLLARBIRD LANE AND LILLYPILLY COURT LONGITUDINAL SECTIONS**

PROJECT No.	DRAWING No.	REVISION
12121	C041	E



BUNYA WAY CROSS SECTIONS  
SCALE A

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REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LRA	LRA	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LRA	LRA	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LRA	LRA	JT	NR
A	13.11.12	ISSUE TO SURVEYOR	LRA	LRA	JT	NR

ASSOCIATED CONSULTANTS	APPROVED	CHECKED
	NICK ROZIS 7729 RPEQ	J. TAYLOR
	DATE 29/11/2012	DATE 29/11/12

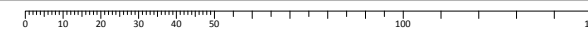
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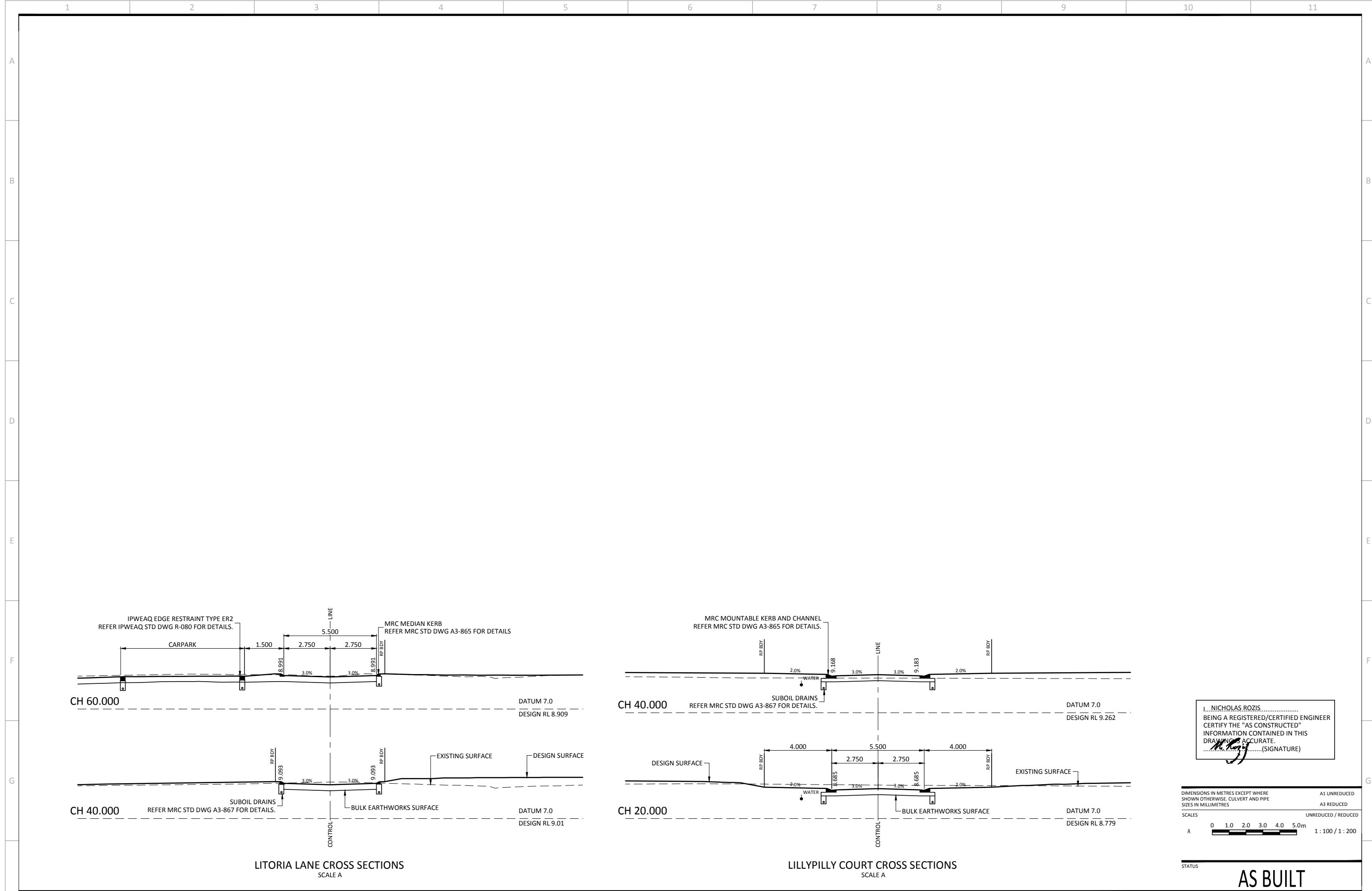
PROJECT  
**ANDERGROVE, MACKAY STAGE 6**

SUBJECT  
**BUNYA WAY CROSS SECTIONS**

PROJECT No.  
**12121**  
 DRAWING No. REVISION  
**C042 E**







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DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES.  
 SCALES: UNREDUCED / REDUCED  
 A 0 1.0 2.0 3.0 4.0 5.0m 1:100 / 1:200

STATUS: **AS BUILT**

REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
D	11.02.14	AS BUILT	EB	JT	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LRA	LRA	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LRA	LRA	JT	NR
A	13.11.12	ISSUE TO SURVEYOR				

ASSOCIATED CONSULTANTS		APPROVED	CHECKED
		NICK ROZIS 7729 RPEQ	J. TAYLOR
		DATE 29/11/2012	DATE 29/11/12

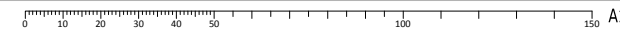
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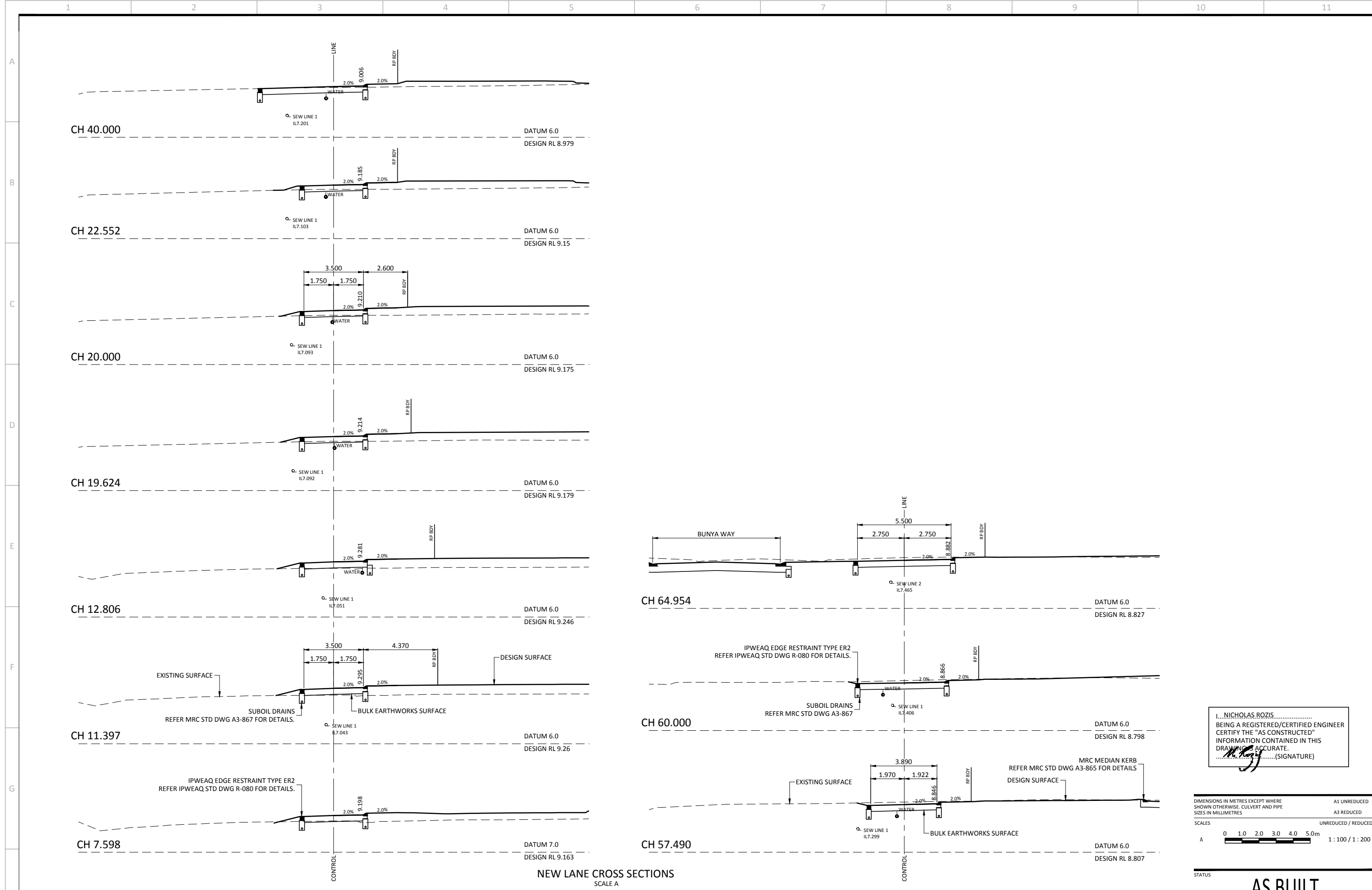
CLIENT: **URBAN LAND DEVELOPMENT AUTHORITY**

PROJECT: **ANDERGROVE, MACKAY STAGE 6**

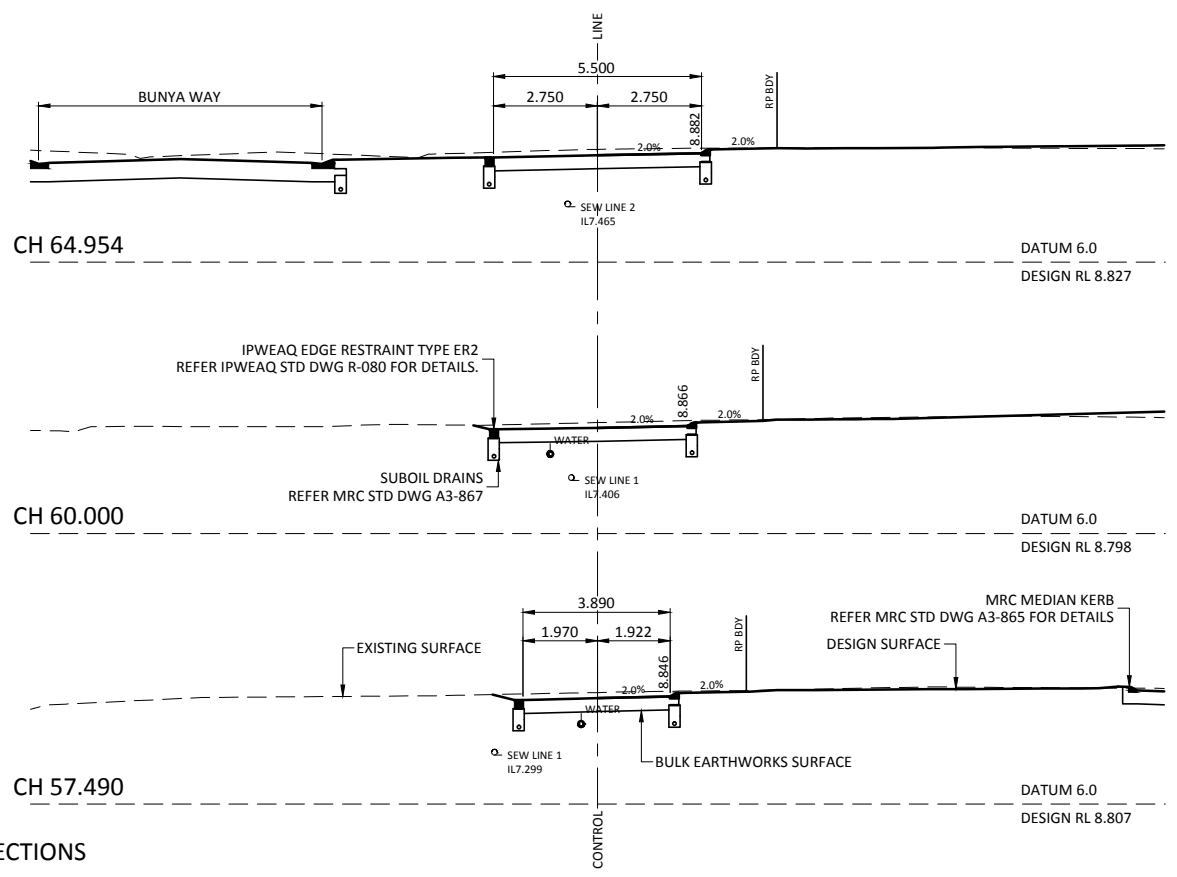
SUBJECT: **LITORIA LANE AND LILLYPILLY COURT CROSS SECTIONS**

PROJECT No. **12121**  
 DRAWING No. **C043** REVISION **D**

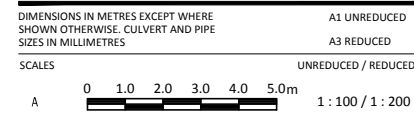




NEW LANE CROSS SECTIONS  
SCALE A



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REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
D	11.02.14	AS BUILT	EB	JT	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LR	LRA	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LR	LRA	JT	NR
A	13.11.12	ISSUE TO SURVEYOR				

ASSOCIATED CONSULTANTS		APPROVED	CHECKED
		NICK ROZIS 7729 RPEQ	J. TAYLOR
		DATE 29/11/2012	DATE 29/11/12

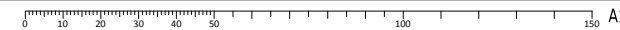
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Bornhorst & Ward Pty Ltd Brisbane Australia Phone (07) 3013 4699 Facsimile (07) 3013 4611 mail@bornhorstward.com.au www.bornhorstward.com.au A.C.N. 001 151 354 A.B.N. 78 010 151 354	CLIENT <b>URBAN LAND DEVELOPMENT AUTHORITY</b>
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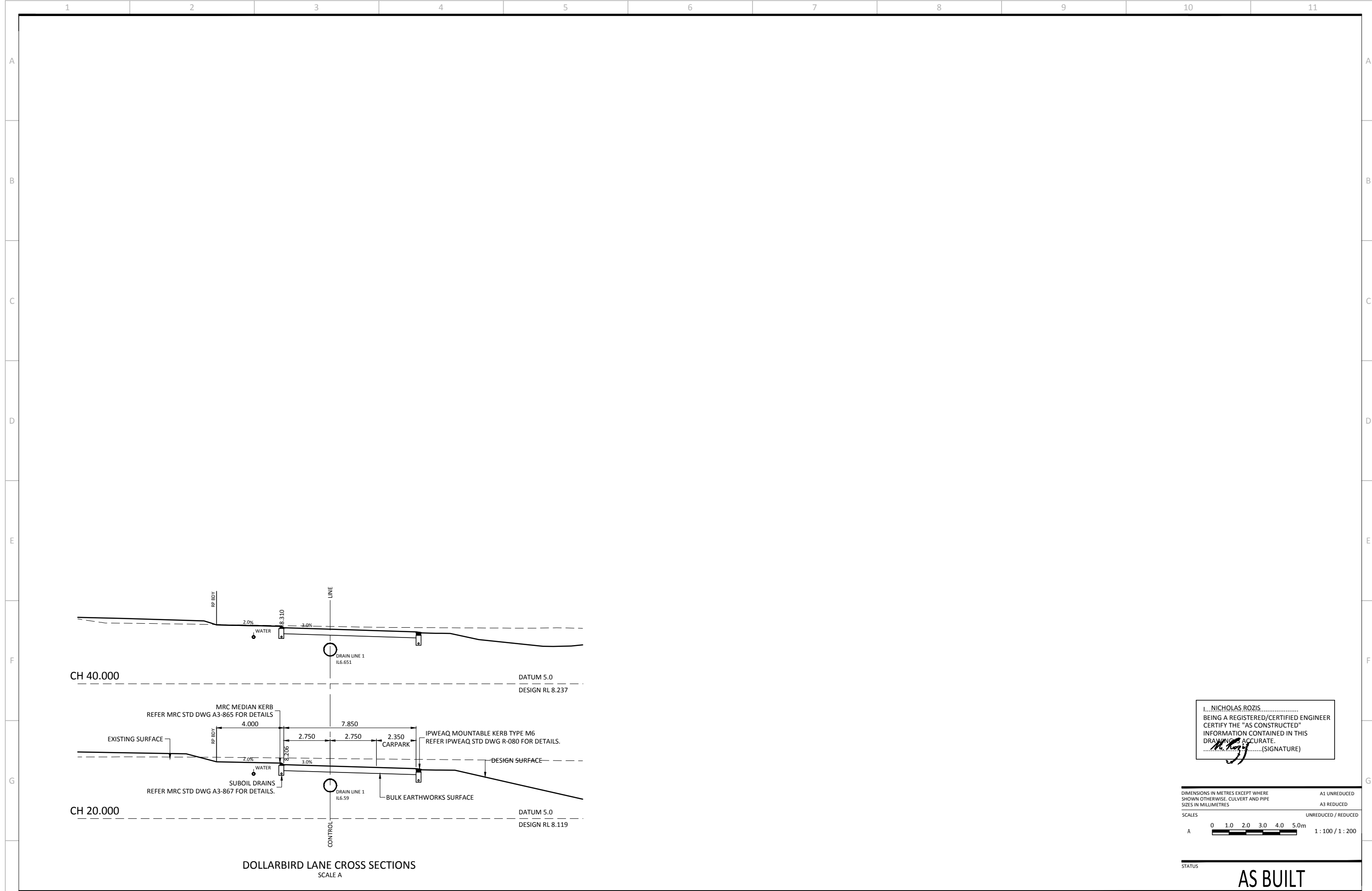
PROJECT <b>ANDERGROVE, MACKAY STAGE 6</b>	SUBJECT <b>NEW LANE CROSS SECTIONS</b>
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PROJECT No. <b>12121</b>	REVISION <b>D</b>
DRAWING No. <b>C044</b>	

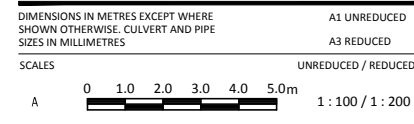
**AS BUILT**







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STATUS **AS BUILT**

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REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LR	LR	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LR	LR	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LR	LR	JT	NR
A	13.11.12	ISSUE TO SURVEYOR	LR	LR	JT	NR

ASSOCIATED CONSULTANTS

APPROVED  
**NICK ROZIS** 7729  
 RPEQ  
 DATE 29/11/2012

CHECKED  
**J. TAYLOR**  
 DATE 29/11/12

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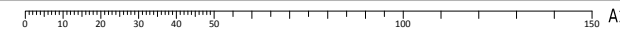
CLIENT  
**URBAN LAND DEVELOPMENT AUTHORITY**

PROJECT  
**ANDERGROVE, MACKAY STAGE 6**

SUBJECT  
**DOLLARBIRD LANE CROSS SECTIONS**

PROJECT No.  
**12121**

DRAWING No. REVISION  
**C045 E**

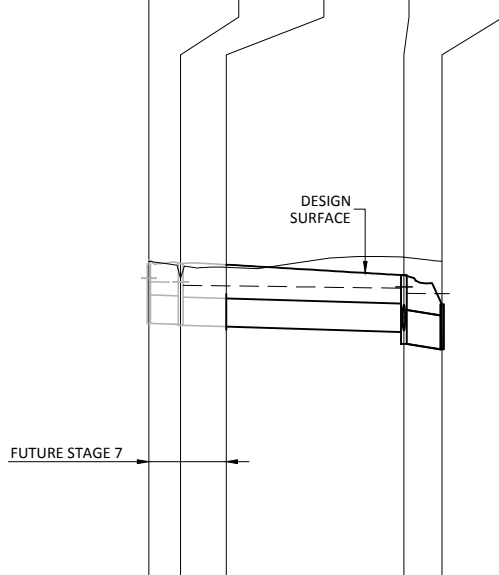


STRUCTURE NAME	1.4	1.3	1.2A	1.2	1.1
STRUCTURE DESCRIPTION	MRC INLET PIT L.I.L.; S TYPE Lintel; MOUNTABLE K&C OVER MRC MANHOLE 1200 DIA	MRC MANHOLE 1200mm DIA	STUB	MRC MANHOLE 1500mm DIA	HEADWALL

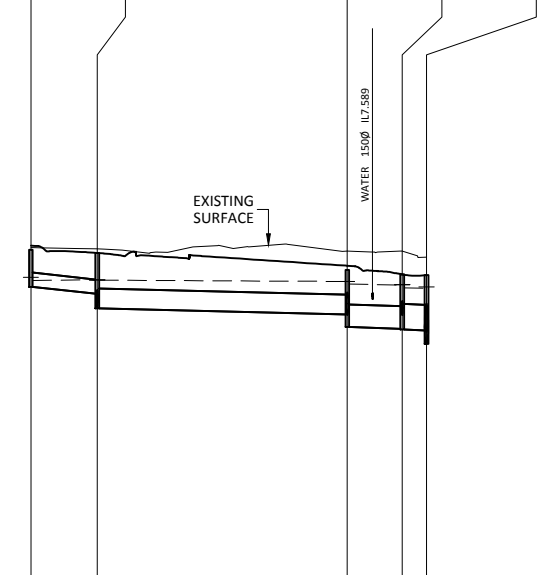
**SETOUT DETAILS FOR MANHOLES & GULLIES**

STRUCTURE TYPE	SET-OUT POINT	LEVEL REFERENCE
MANHOLE & ROOFWATER PIT	CENTRE OF MAIN SHAFT	FINISHED SURFACE LEVEL - MANHOLE/PIT COVER
GULLY PIT ROADWAY TYPE CHANNEL	CO-ORDINATE SETOUT (CENTRE OF GULLY) CHAINAGE SETOUT	LIP OF KERB
FIELD INLET AND ROOFWATER PIT	CENTRE OF GULLY	TOP OF GRATE OR COVER
END WALL	CENTRE OF END WALL (END OF INLET/OUTLET PIPE)	INVERT OF OUTLET/INLET PIPE

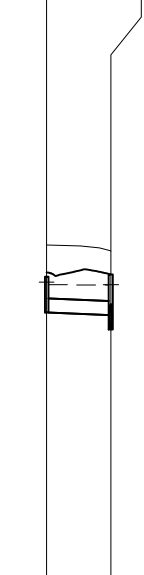
PIPE SIZE (mm)	750	750	750	900
PIPE CLASS	3	3	3	3
PIPE GRADE (%)	0.30%	0.30%	0.30%	1.37%
PIPE SLOPE (1 in X)	333.33	335.71	335.71	72.99
DATUM RL -6.0				
DEPTH TO INVERT	1.547	1.567	1.601	1.195
INVERT LEVEL OF DRAIN	6.820	6.800	6.774	6.109
DESIGN SURFACE LEVEL	8.367	8.375	8.038	7.304
SETOUT COORDINATES / ROAD CHAINAGE/OFFSET	114.072 CH 78.652	122.509 CH 70.378	134.572 E 726450.666	181.573 CH 11.786
CHAINAGE	8.437	12.063	47.000	10.065



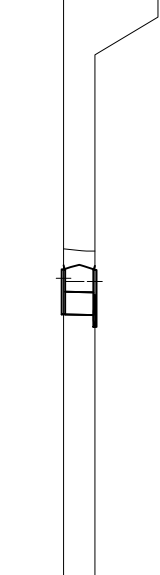
STRUCTURE NAME	2.4	2.3	2.2	2.1	1.2
STRUCTURE DESCRIPTION	MRC INLET PIT L.I.L.; S TYPE Lintel; MOUNTABLE K&C	MRC MANHOLE 1050mm DIA	MRC INLET PIT L.I.L.; S TYPE Lintel; MOUNTABLE K&C	MRC MANHOLE 1050mm DIA	MRC MANHOLE 1500mm DIA
PIPE SIZE (mm)	375	525	600	675	
PIPE CLASS	3	3	3	3	
PIPE GRADE (%)	1.14%	0.22%	0.55%	1.44%	
PIPE SLOPE (1 in X)	87.72	454.55	181.82	71.43	
DATUM RL -6.0					
DEPTH TO INVERT	1.031	1.121	1.190	1.468	1.782
INVERT LEVEL OF DRAIN	7.729	7.529	7.025	6.619	6.256
DESIGN SURFACE LEVEL	8.760	8.650	8.215	8.087	8.038
SETOUT COORDINATES / ROAD CHAINAGE/OFFSET	0.000 CH 163.085	17.587 CH 4.043	83.709 CH 79.376	14.545 CH 5.381	104.662 CH 11.786
CHAINAGE	17.587	66.122	83.709	6.408	



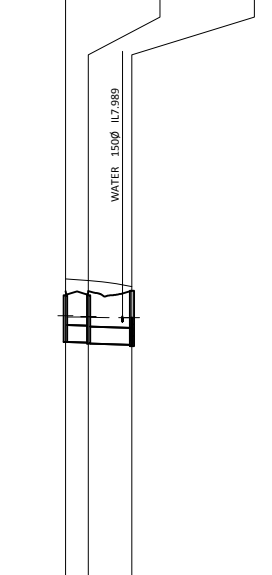
STRUCTURE NAME	3.1	2.1
STRUCTURE DESCRIPTION	MRC INLET PIT (SAG) L.I.L.; S TYPE Lintel; TYPE MOUNTABLE K&C	MRC MANHOLE 1050mm DIA
PIPE SIZE (mm)	375	
PIPE CLASS	3	
PIPE GRADE (%)	0.77%	
PIPE SLOPE (1 in X)	129.87	
DATUM RL -6.0		
DEPTH TO INVERT	1.203	1.453
INVERT LEVEL OF DRAIN	6.854	6.724
DESIGN SURFACE LEVEL	8.057	8.087
SETOUT COORDINATES / ROAD CHAINAGE/OFFSET	0.000 CH 51.789	16.967 CH 5.381
CHAINAGE	16.967	



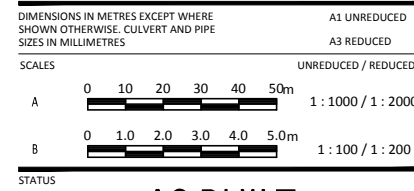
STRUCTURE NAME	4.1	2.2
STRUCTURE DESCRIPTION	MRC INLET PIT L.I.L.; S TYPE Lintel; MOUNTABLE K&C	MRC INLET PIT L.I.L.; S TYPE Lintel; MOUNTABLE K&C
PIPE SIZE (mm)	600	
PIPE CLASS	3	
PIPE GRADE (%)	0.18%	
PIPE SLOPE (1 in X)	555.56	
DATUM RL -6.0		
DEPTH TO INVERT	1.199	1.201
INVERT LEVEL OF DRAIN	7.029	7.014
DESIGN SURFACE LEVEL	8.228	8.215
SETOUT COORDINATES / ROAD CHAINAGE/OFFSET	0.000 CH 81.148	8.277 CH 79.376
CHAINAGE	8.277	



STRUCTURE NAME	5.2	5.1	2.3
STRUCTURE DESCRIPTION	MRC INLET PIT (SAG) L.I.L.; S TYPE Lintel; TYPE MOUNTABLE K&C	MRC INLET PIT (SAG) L.I.L.; S TYPE Lintel; TYPE MOUNTABLE K&C	MRC MANHOLE 1050mm DIA
PIPE SIZE (mm)	450	450	
PIPE CLASS	3	3	
PIPE GRADE (%)	0.41%	0.26%	
PIPE SLOPE (1 in X)	243.90	384.62	
DATUM RL -6.0			
DEPTH TO INVERT	1.264	1.285	1.421
INVERT LEVEL OF DRAIN	7.306	7.281	7.229
DESIGN SURFACE LEVEL	8.570	8.566	8.650
SETOUT COORDINATES / ROAD CHAINAGE/OFFSET	0.000 CH 15.545	6.085 CH 15.545	17.588 CH 4.043
CHAINAGE	6.085	11.502	



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**STORMWATER DRAINAGE LONGITUDINAL SECTION**  
 HORIZONTAL SCALE A  
 VERTICAL SCALE B

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MANHOLE/END NAME	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1
MANHOLE TYPE	1050 DIA	1050 DIA	1050 DIA	1050 DIA	1050 DIA	EZI PIT	1050 DIA	EZI PIT	1050 DIA
LID TYPE	B	B	B	B	B	B	B	B	B
JUNCTION LINE				2			3		
DROP TYPE	A	A	A	A	A	A	A	A	A
DEPTH TO HC	0.853	0.650	0.684	0.653	0.627				
HOUSE CONNECTION									
INVERT LEVEL	IL 8.40m	IL 8.28m	IL 8.15m	IL 8.15m	IL 8.06m				
HC TYPE	CL	CL	CL	CL	CL				
HC LOT No.	Lot 172	Lot 173	Lot 174	Lot 175	Lot 176				
CH. FROM D/S MH	2.987	12.269	21.599	31.616	41.201		22.621	0.000	16.673

MANHOLE/END NAME	4/1	1/2	2/2	3/2
MANHOLE TYPE	1050 DIA	EZI PIT	1050 DIA	EZI PIT
LID TYPE	B	B	B	B
JUNCTION LINE	1			
DROP TYPE	A	A	A	A
DEPTH TO HC	0.608	0.579	0.639	0.588
HOUSE CONNECTION				
INVERT LEVEL	IL 7.87m	IL 7.95m	IL 8.09m	IL 8.13m
HC TYPE	A	A	A	A
HC LOT No.	Lot 171	Lot 170	Lot 169	Lot 168
CH. FROM D/S MH	18.311	32.998	45.427	57.774

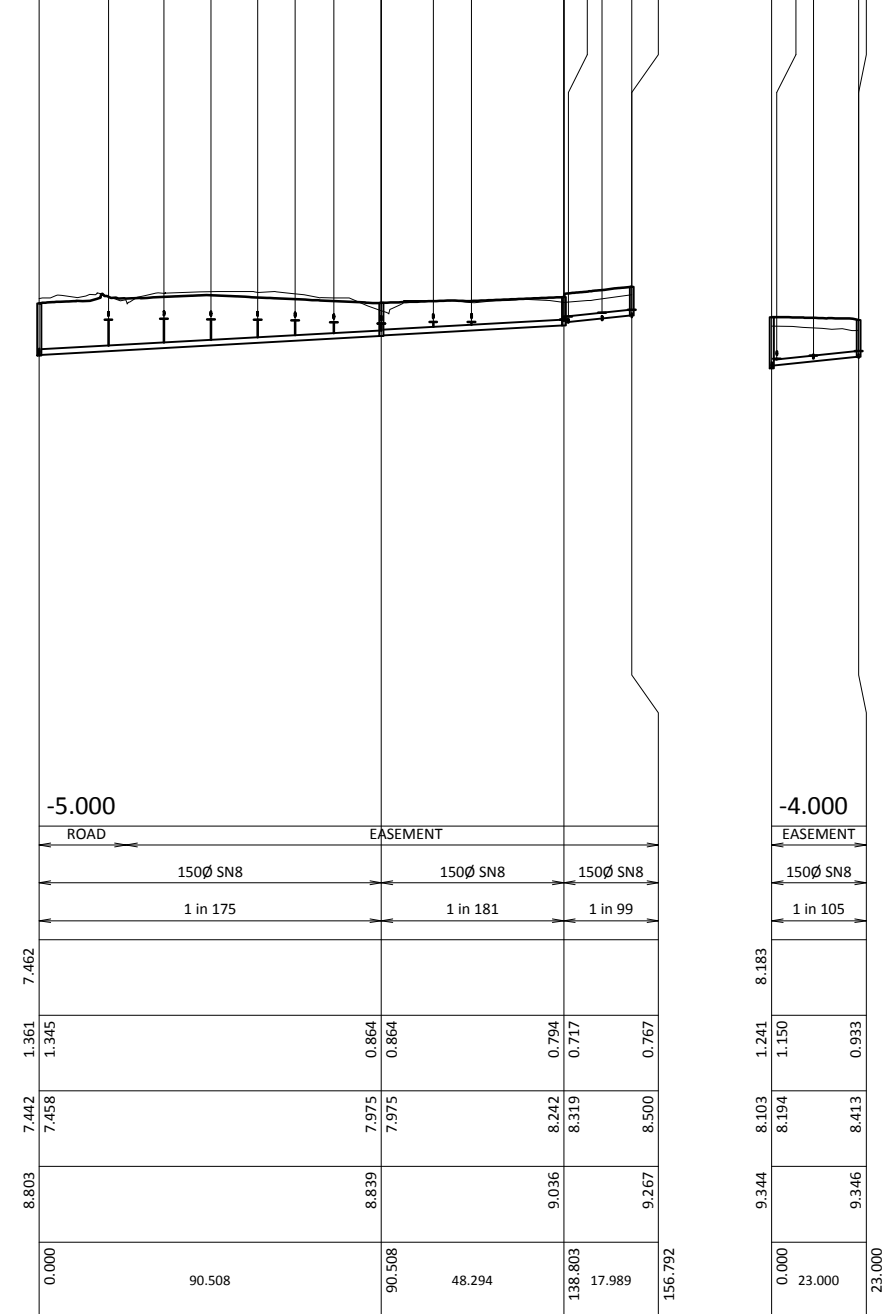
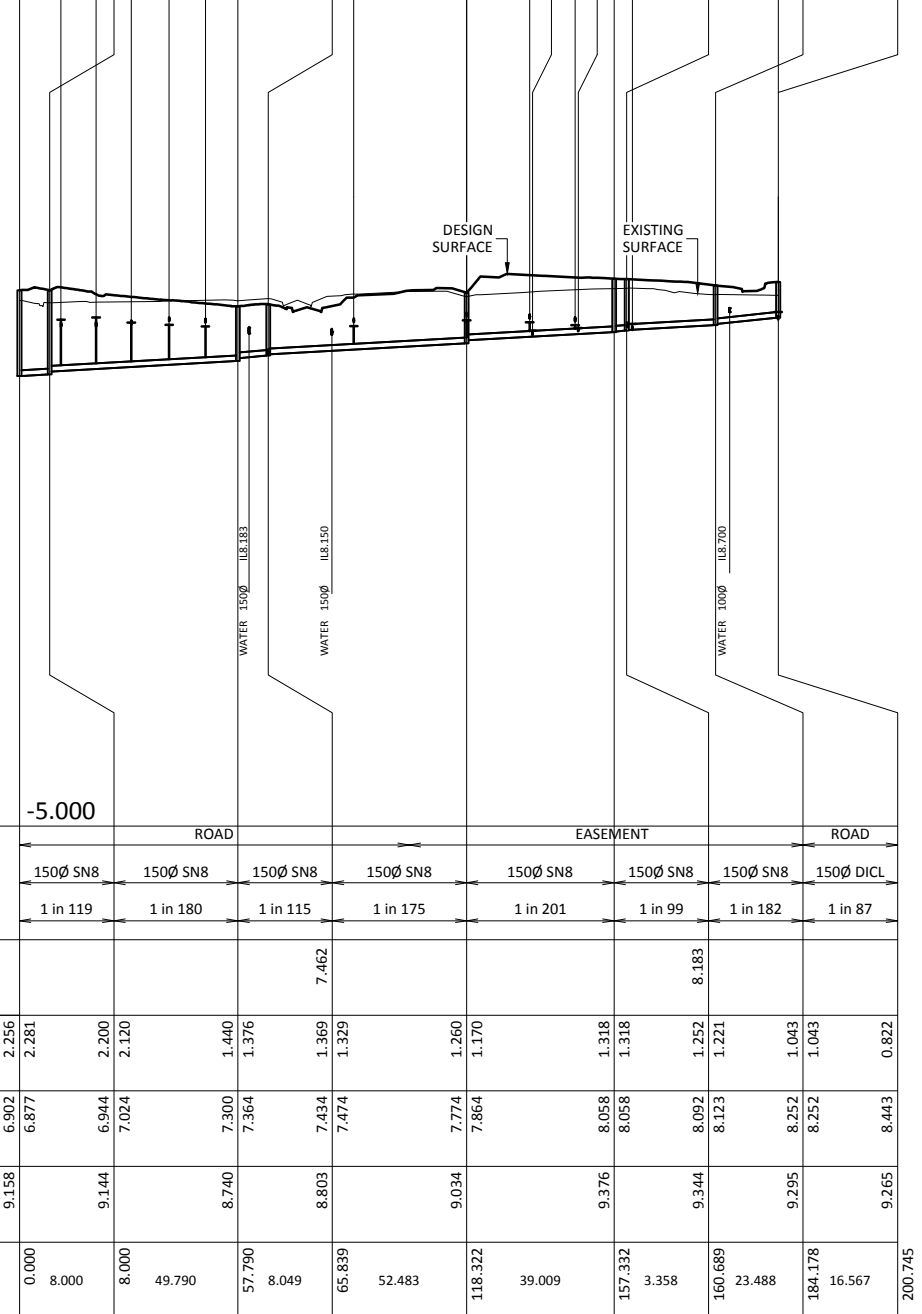
MANHOLE/END NAME	7/1	1/3
MANHOLE TYPE	1050 DIA	1050 DIA
LID TYPE	B	B
JUNCTION LINE	1	
DROP TYPE	A	A
DEPTH TO HC	1.105	0.998
HOUSE CONNECTION		
INVERT LEVEL	IL 8.45m	IL 8.69m
HC TYPE	A	A
HC LOT No.	Lot 182	Lot 181
CH. FROM D/S MH	1.965	23.000

**FINISHED LEVELS OF MH COVERS**

LOCATION	HEIGHT (mm)
NEW SUBDIVISIONS	75
ROADS, LANE WAYS, FOOTWAYS & DRIVEWAYS	FLUSH
OTHER AS SPECIFIED (EG ABOVE FLOOD LEVEL)	

REFER MRC STD DWG A3-04223 FOR DETAILS

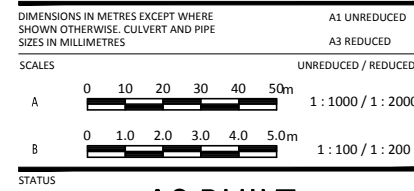
**NOTE:**  
ADD LEVELS TO "DESIGN SURFACE LEVEL"  
AS REQUIRED FOR TABLE ABOVE



DATUM RL	-5.000							
STREET ETC	ROAD				EASEMENT			
DIAMETER	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø DI CL
GRADE	1 in 119	1 in 180	1 in 115	1 in 175	1 in 201	1 in 99	1 in 182	1 in 87
JUNCTION INVERT LEVEL				7.462			8.183	
DEPTH TO INVERT	2.256	2.281	2.200	2.120	1.440	1.376	1.369	1.329
INVERT LEVEL OF SEWER	6.902	6.877	6.944	7.024	7.300	7.364	7.434	7.474
DESIGN SURFACE LEVEL	9.158		9.144		8.740		8.803	
RUNNING CHAINAGE	0.000	8.000	8.000	49.790	57.790	8.049	65.839	52.483

DATUM RL	-5.000			-4.000		
STREET ETC	ROAD		EASEMENT		EASEMENT	
DIAMETER	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8	150Ø SN8
GRADE	1 in 175	1 in 181	1 in 99	1 in 105		
JUNCTION INVERT LEVEL						
DEPTH TO INVERT	1.361	1.345	0.864	0.864	0.794	0.717
INVERT LEVEL OF SEWER	7.442	7.458	7.975	7.975	8.242	8.319
DESIGN SURFACE LEVEL	8.803		8.839		9.036	
RUNNING CHAINAGE	0.000	90.508	90.508	48.294	138.803	17.989

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**SEWER LONGITUDINAL SECTION**  
HORIZONTAL SCALE A  
VERTICAL SCALE B

REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LR	LR	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LR	LR	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LR	LR	JT	NR
A	13.11.12	ISSUE TO SURVEYOR				

ASSOCIATED CONSULTANTS	APPROVED	CHECKED
	NICK ROZIS 7729 RPEQ	J. TAYLOR
	DATE 29/11/2012	DATE 29/11/12

**BORNHORST + WARD**  
CONSULTING ENGINEERS  
CIVIL AND STRUCTURAL  
Level 4, 67 Astor Terrace, Spring Hill, QLD 4000  
A.C.N. 010 151 354 A.B.N. 78 010 151 354

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**URBAN LAND DEVELOPMENT AUTHORITY**

PROJECT  
**ANDERGROVE, MACKAY STAGE 6**

SUBJECT  
**SEWERAGE LONGITUDINAL SECTIONS SHEET 1**

PROJECT No. 12121  
DRAWING No. C062  
REVISION E

MANHOLE/END NAME	1/4	2/4	3/4	4/4
MANHOLE TYPE	B 1050 DIA	B 1050 DIA	B 1050 DIA	B EZI PIT
LID TYPE	B	B	B	B
JUNCTION LINE		5		
DROP TYPE	A	A	A	A
DEPTH TO HC			0.942	0.871
HOUSE CONNECTION		IL 7.74m	IL 7.85m	IL 7.94m
INVERT LEVEL			IL 8.03m	IL 8.12m
HC TYPE		A	A	A
HC LOT No.		lot 207	lot 206	lot 205
CH. FROM D/S MH		1.250	15.338	30.120

MANHOLE/END NAME	2/4	3/5	2/5	3/5	4/5	3/5	1/6
MANHOLE TYPE	B 1050 DIA	B 1050 DIA	B EZI PIT	B 1050 DIA	B EZI PIT	B 1050 DIA	B EZI PIT
LID TYPE	B	B	B	B	B	B	B
JUNCTION LINE	4			6		5	
DROP TYPE	A	A	A	A	A	A	A
DEPTH TO HC	0.775	1.026	1.014	0.796	0.881	1.010	0.850
HOUSE CONNECTION	IL 7.87m	IL 7.79m	IL 7.86m	IL 7.94m	IL 8.07m	IL 8.03m	IL 8.24m
INVERT LEVEL							
HC TYPE	C	A	A	C	A	A	A
HC LOT No.	lot 207	lot 208	lot 209	lot 192	lot 193	lot 190	lot 187
CH. FROM D/S MH	0.000	3.065	18.314	16.413	0.000	10.790	13.346

MANHOLE/END NAME	3/5	1/6
MANHOLE TYPE	B 1050 DIA	B EZI PIT
LID TYPE	B	B
JUNCTION LINE	5	
DROP TYPE	A	A
DEPTH TO HC	0.939	0.807
HOUSE CONNECTION	IL 8.20m	IL 8.53m
INVERT LEVEL		
HC TYPE	C	A
HC LOT No.	lot 185	lot 184
CH. FROM D/S MH	2.406	14.490

**FINISHED LEVELS OF MH COVERS**

LOCATION	HEIGHT (mm)
NEW SUBDIVISIONS	75
ROADS, LANE WAYS, FOOTWAYS & DRIVEWAYS	FLUSH
OTHER AS SPECIFIED (EG ABOVE FLOOD LEVEL)	

REFER MRC STD DWG A3-04223 FOR DETAILS

**NOTE:**  
ADD LEVELS TO "DESIGN SURFACE LEVEL"  
AS REQUIRED FOR TABLE ABOVE

DATUM RL	-5.000
STREET ETC	EASEMENT VERGE
DIAMETER	150Ø SN8 150Ø SN8 150Ø SN8
GRADE	1 in 216 1 in 175 1 in 98
JUNCTION INVERT LEVEL	7.475
DEPTH TO INVERT	1.521 1.501 1.417 1.382 1.174 1.100 1.160
INVERT LEVEL OF SEWER	7.200 7.220 7.418 7.453 7.926 8.000 8.128
DESIGN SURFACE LEVEL	8.721 8.835 9.100 9.288
RUNNING CHAINAGE	0.000 42.692 42.692 83.000 125.692 12.500 138.192

DATUM RL	-5.000
STREET ETC	EASEMENT ROAD EASEMENT
DIAMETER	150Ø SN8 150Ø DICL 150Ø SN8 150Ø SN8
GRADE	1 in 162 1 in 182 1 in 155 1 in 96
JUNCTION INVERT LEVEL	7.475
DEPTH TO INVERT	1.400 1.384 1.021 0.930 1.135 1.153 7.992 0.814
INVERT LEVEL OF SEWER	7.435 7.451 7.609 7.700 7.790 7.772 7.944 7.964 8.189
DESIGN SURFACE LEVEL	8.835 8.630 8.925 9.074 9.003
RUNNING CHAINAGE	0.000 25.653 25.653 16.413 42.066 26.602 68.668 21.489 90.157

DATUM RL	-4.000
STREET ETC	EASEMENT
DIAMETER	150Ø SN8
GRADE	1 in 102
JUNCTION INVERT LEVEL	8.032
DEPTH TO INVERT	1.167 1.085 0.920
INVERT LEVEL OF SEWER	7.952 8.034 8.304
DESIGN SURFACE LEVEL	9.119 9.224
RUNNING CHAINAGE	0.000 27.627 27.627

**SEWER LONGITUDINAL SECTION**  
HORIZONTAL SCALE A  
VERTICAL SCALE B

I, NICHOLAS ROZIS, BEING A REGISTERED/CERTIFIED ENGINEER CERTIFY THE "AS CONSTRUCTED" INFORMATION CONTAINED IN THIS DRAWING IS ACCURATE.  
*(Signature)* (SIGNATURE)

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

SCALES: UNREDUCED / REDUCED

A: 0 10 20 30 40 50m 1:1000 / 1:2000

B: 0 1.0 2.0 3.0 4.0 5.0m 1:100 / 1:200

STATUS: **AS BUILT**

REV.	DATE	AMENDMENT / ISSUE	DWN	DES	CHK	APP
E	11.02.14	AS BUILT	EB	JT	JT	NR
D	03.10.13	DRIVEWAYS AMENDED	LR	LR	JT	NR
C	18.06.13	ISSUE FOR CONSTRUCTION	LR	LR	JT	NR
B	16.11.12	ISSUE FOR PRE-CONSTRUCTION CERTIFICATION	LR	LR	JT	NR
A	13.11.12	ISSUE TO SURVEYOR	LR	LR	JT	NR

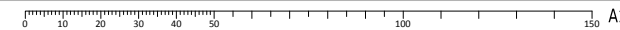
ASSOCIATED CONSULTANTS	APPROVED	CHECKED
NICK ROZIS 7729 RPEQ	J. TAYLOR	
DATE 29/11/2012	DATE 29/11/12	

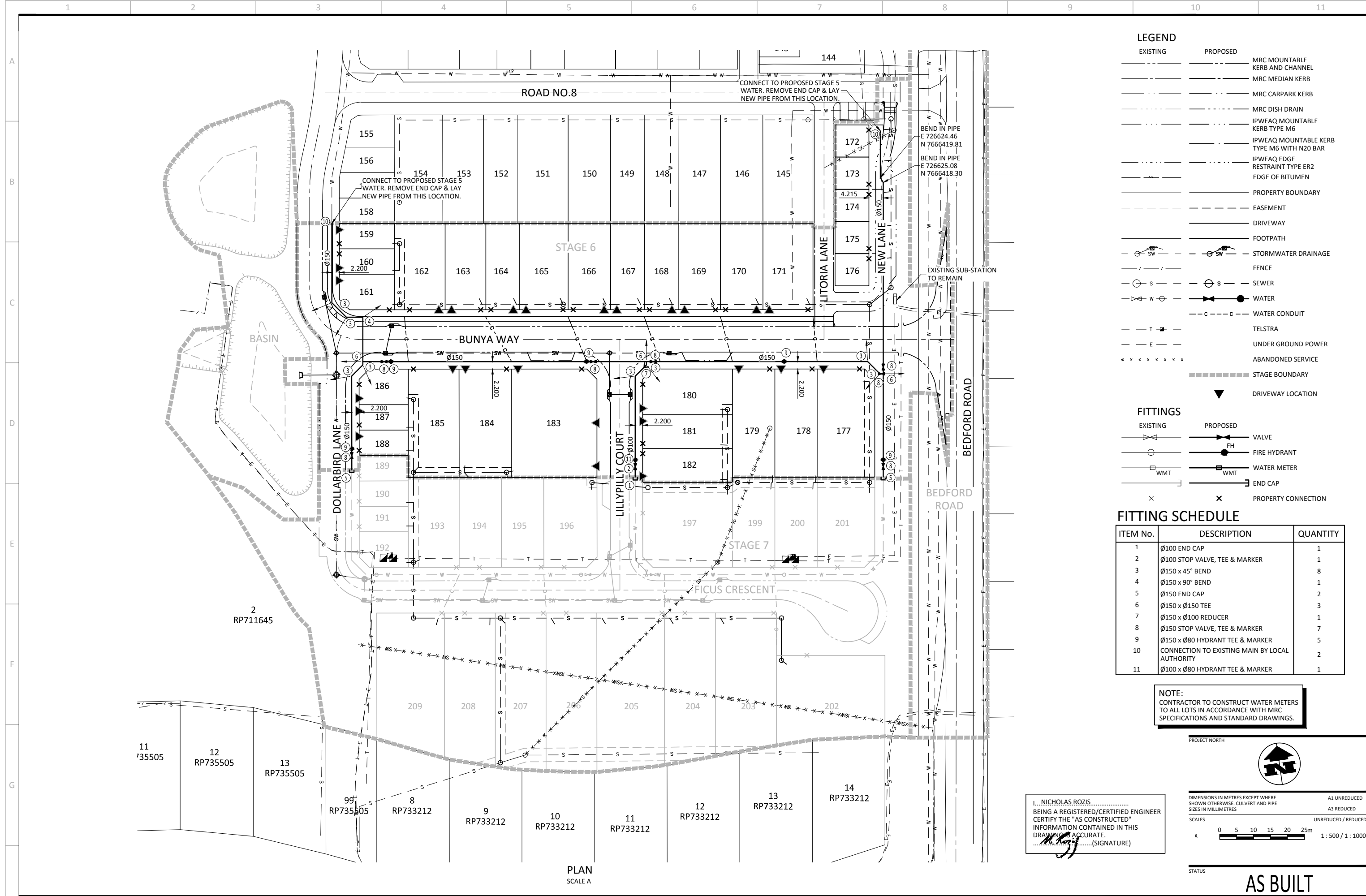
**BORNHORST + WARD**  
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CLIENT: URBAN LAND DEVELOPMENT AUTHORITY

PROJECT: ANDERGROVE, MACKAY STAGE 6	SUBJECT: SEWERAGE LONGITUDINAL SECTIONS SHEET 2	PROJECT No. 12121
		DRAWING No. C063
		REVISION E





### LEGEND

EXISTING	PROPOSED	DESCRIPTION
---	---	MRC MOUNTABLE KERB AND CHANNEL
---	---	MRC MEDIAN KERB
---	---	MRC CARPARK KERB
---	---	MRC DISH DRAIN
---	---	IPWEAQ MOUNTABLE KERB TYPE M6
---	---	IPWEAQ MOUNTABLE KERB TYPE M6 WITH N20 BAR
---	---	IPWEAQ EDGE RESTRAINT TYPE ER2
---	---	EDGE OF BITUMEN
---	---	PROPERTY BOUNDARY
---	---	EASEMENT
---	---	DRIVEWAY
---	---	FOOTPATH
---	---	STORMWATER DRAINAGE
---	---	FENCE
---	---	SEWER
---	---	WATER
---	---	WATER CONDUIT
---	---	TELSTRA
---	---	UNDER GROUND POWER
---	---	ABANDONED SERVICE
---	---	STAGE BOUNDARY
---	---	DRIVEWAY LOCATION

### FITTINGS

EXISTING	PROPOSED	DESCRIPTION
---	---	VALVE
---	---	FIRE HYDRANT
---	---	WATER METER
---	---	END CAP
---	---	PROPERTY CONNECTION

### FITTING SCHEDULE

ITEM No.	DESCRIPTION	QUANTITY
1	Ø100 END CAP	1
2	Ø100 STOP VALVE, TEE & MARKER	1
3	Ø150 x 45° BEND	8
4	Ø150 x 90° BEND	1
5	Ø150 END CAP	2
6	Ø150 x Ø150 TEE	3
7	Ø150 x Ø100 REDUCER	1
8	Ø150 STOP VALVE, TEE & MARKER	7
9	Ø150 x Ø80 HYDRANT TEE & MARKER	5
10	CONNECTION TO EXISTING MAIN BY LOCAL AUTHORITY	2
11	Ø100 x Ø80 HYDRANT TEE & MARKER	1

**NOTE:**  
CONTRACTOR TO CONSTRUCT WATER METERS TO ALL LOTS IN ACCORDANCE WITH MRC SPECIFICATIONS AND STANDARD DRAWINGS.

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES.

SCALES: UNREDUCED / REDUCED

A 0 5 10 15 20 25m 1:500 / 1:1000

I, **NICHOLAS ROZIS**  
BEING A REGISTERED/CERTIFIED ENGINEER  
CERTIFY THE "AS CONSTRUCTED"  
INFORMATION CONTAINED IN THIS  
DRAWING IS ACCURATE.  
*(Signature)*

PLAN  
SCALE A

<b>REV.</b>   <b>DATE</b>   <b>AMENDMENT / ISSUE</b>   <b>DWN</b>   <b>DES</b>   <b>CHK</b>   <b>APP</b> E   22.01.14   AS BUILT   EB   JT   JT   NR D   03.10.13   DRIVEWAYS AMENDED   LR   LRA   JT   NR C   18.06.13   ISSUE FOR CONSTRUCTION   LR   LRA   JT   NR B   16.11.12   ISSUE FOR PRE-CONSTRUCTION CERTIFICATION   LR   LRA   JT   NR A   13.11.12   ISSUE TO SURVEYOR   LR   LRA   JT   NR				<b>ASSOCIATED CONSULTANTS</b> APPROVED: <b>NICK ROZIS</b> 7729 RPEQ DATE 29/11/2012 CHECKED: <b>J. TAYLOR</b> DATE 29/11/12				<b>BORNHORST + WARD</b> CONSULTING ENGINEERS CIVIL AND STRUCTURAL Level 4, 67 Astor Terrace, Spring Hill, QLD 4000 Phone (07) 3013 4699 Facsimile (07) 3013 4611 mail@bornhorstward.com.au www.bornhorstward.com.au A.C.N. 010 151 354 A.B.N. 78 010 151 354				CLIENT: <b>URBAN LAND DEVELOPMENT AUTHORITY</b> PROJECT: <b>ANDERGROVE, MACKAY STAGE 6</b> SUBJECT: <b>WATER RETICULATION LAYOUT PLAN</b> PROJECT No. <b>12121</b> DRAWING No. <b>C071</b> REVISION <b>E</b>			
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