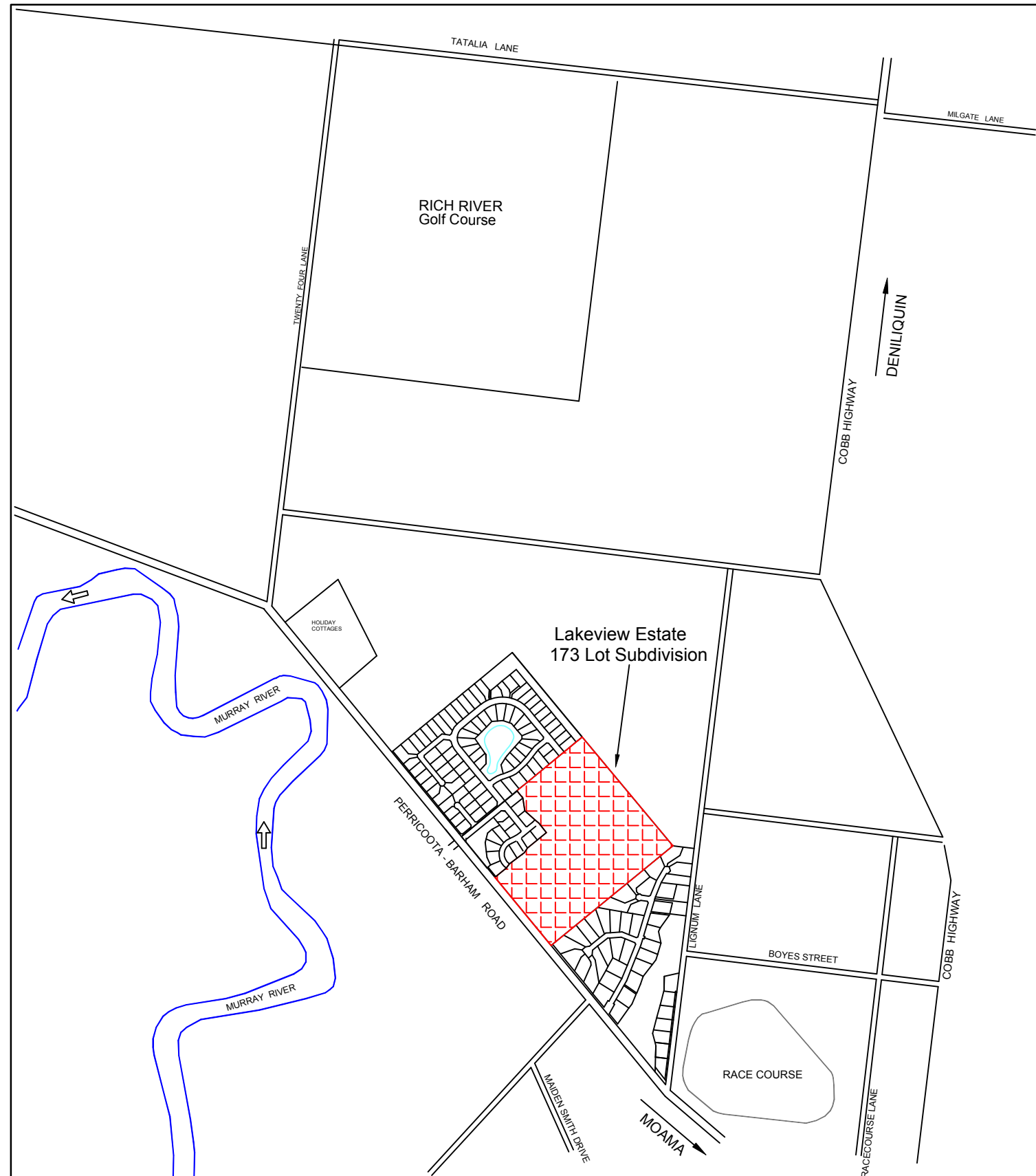




Villawood Properties Pty Ltd

Lakeview Estate - Stage 7

Drawing file: 17127 Face.dwg	LTO Ref: -	Council Ref: DA 173/11	Ref: 17127	Version 1
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LOCALITY PLAN - MOAMA

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May 2018	May 2018
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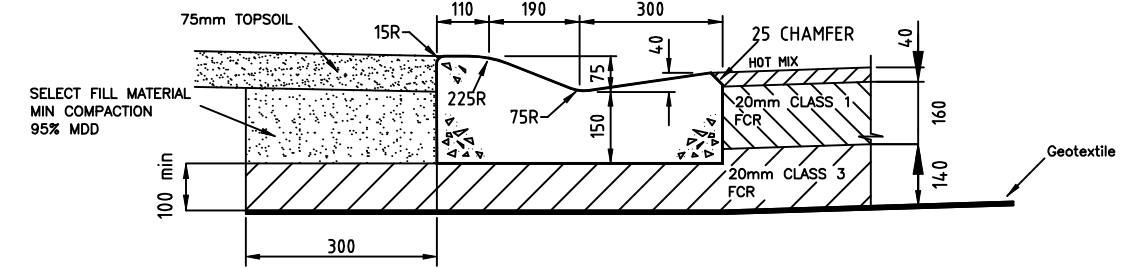
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Murray River Council - Moama					
Villawood Properties Pty Ltd					
Lakeview Estate - Stage 7					
Index & Locality Plan					
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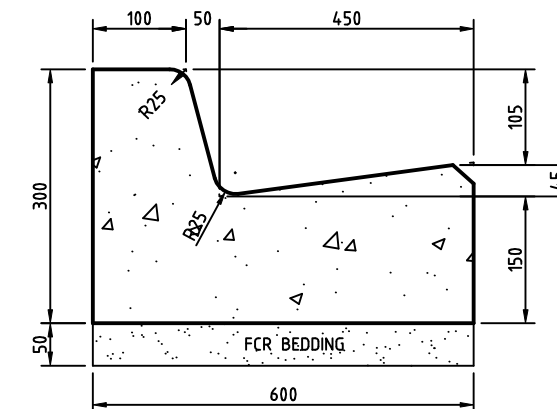
General Notes

1. Works are to comply with the current standards and specifications of the municipality. Contract is in accordance with AS2124-1992 including annexures.
2. This stage consists of Lots 140 to 155.
3. The contractor must adhere to the code of practise for "Safety Precautions in Trenching Operations" under the "Work Health and Safety Act 2011". All workers on this site must have a current WH&S General Induction for Construction Working NSW Certificate (White Card).
4. The contractor must contact all servicing authorities to arrange service locations prior to commencement of excavation for this project.
5. Easements shown on these plans are 2.0m wide drainage easements, sewer easements shown on these plans are 3.0m wide, unless indicated otherwise.
6. Drainage pipes and pits are to be at 1.0m offset to property boundaries unless shown otherwise.
7. Drainage pipes 300mm diameter and greater are to be rubber ring joint class 2 reinforced concrete unless shown otherwise. Pipes 225mm diameter and less are to be rubber ring joint uPVC.
8. Pits (including lids) are to be constructed in accordance with the current standards of the Murray River Council. Side entry pits in rollover kerb & channel are to be constructed using an approved rollover type lintel. Install bullnose converted Side Entry grates to Pit 2.4, 6.1, 22.2 and 32.1
9. Property drainage connections (150mm diameter) are to be provided in all easement pits, and in road drainage pits where shown. Property drainage connections are to be 150mm diameter uPVC SN8 and to have 600mm minimum cover. Connections to extend into properties by a minimum of 1.0m in length. 150mm PVC pipes shown in the road reserve are for house drain connections. Property connections shall be marked with a PVC riser pipe to 600mm above ground.
10. Step irons are not to be provided in any drainage pits.
11. Pipe stubs are to consist of one full pipe length unless shown otherwise.
12. Finished levels for Side Entry Pits must be determined from kerb levels, and lids should be sloped to suit nature strips etc. The FSL's indicated in the pit schedule are not kerb levels.
13. All trenches crossing pavement areas or beneath kerb or footpath are to be backfilled with 3% cement stabilised class 3 crushed rock.
14. Fill areas are to be cleared and stripped of all organic material and topsoil prior to placement of selected fill material. Fill areas are to be inspected by the supervising Engineer prior to any fill being placed. Fill is to be placed and compacted in layers, with a minimum compaction of 95% of the maximum dry density as determined by the standard compaction test being achieved. 98% of maximum dry density must be achieved within road pavement areas.
15. All concrete must have a minimum compressive strength of 25MPa at 28 days. Kerb & Channel concrete must have an equivalent strength using not less than 280kg of cement per m3 of concrete.
16. Maximum driveway grade for any allotment is 1 in 7.
17. Minimum finished grade on any allotment is 1 in 200.
18. Raw and treated water services crossing roads to be 32mm PN8 poly (if two properties being connected) or 25mm PN8 poly (if single property connected) sleeved in 50mm Class 12 uPVC service conduits.
19. Raw and treated water tapplings including saddles, 20mm Ø copper service connections, meter stop tap (treated) and ball valve (raw) to be provided 1m inside allotments. Tapping saddles are to be gunmetal style only.
20. All sewer manhole covers are to be solid ductile iron Class D covers and frame with concrete surround.
21. 50mm diameter Class 12 uPVC service conduits are to be provided for water and gas services at the locations indicated on the plans.
22. Electricity cable conduits are to be installed as shown on the Power cable reticulation plan, in accordance with the requirements and specifications of Essential Energy.
23. NBN conduits are to be installed as shown on the NBN cable plan.
24. The location of all service conduits is to be marked 5mm into the face of both kerbs, immediately above the conduit with a uniform 50mm high letter (W,G,E,T etc.). Where conduits cross footpaths, the location is to be marked in the path (near the edge) in the same fashion.
25. Nature strips are to be topsoiled to a depth of approximately 100mm using material stockpiled from stripping, or approved imported material.
26. Pavement Testing. Tests to be completed at a frequency of 1 test per 500m2 of pavement with test locations approximately 1 metre offset from the kerb & measured at 2/3 of the layer depth. Court bowls to be tested in 3 locations & intersections in 2. Pavement material to be placed and compacted in layers with minimum compaction of 100% of the maximum dry density as determined by the modified compaction test being achieved. Testing of trenches required as well as testing behind Kerb and channel.
27. All drainage and sewer pipes are to be inspected via CCTV after installation with a hard and electronic copy required to be provided to the Murray River Council. CCTV must include grades.
28. Side entry pit throat clearance to be 100mm max.
29. All pit lids to be constructed by Terra Firma Industries or similar.

MURRAY SHIRE COUNCIL MODIFIED SM2 K&G & PAVEMENT DETAILS



BARRIER KERB DETAIL (B600)



Pavement Composition & Notes

1. PAVEMENT COMPOSITION: APERA AVENUE, MARSANNE DRIVE, RIESLING DRIVE
 - a) 40mm DEPTH HOT MIX ASPHALT
 - b) 160mm DEPTH CONSOLIDATED 20mm CLASS 1 FCR (BASE COURSE)
 - c) 140mm DEPTH CONSOLIDATED 20mm CLASS 3 FCR (SUBBASE)
 - d) A14 BIDIM NONWOVEN GEOTEXTILE (EXTENDS 300mm BEHIND BACK OF KERB)
 - e) 200mm DEPTH IN SITU STABILISATION OF SUBGRADE MATERIAL (3% LIME & 1% CEMENT BY MASS)
2. The location of all service conduits is to be marked 5mm into the face of both kerbs, immediately above the conduit with a uniform 50mm high letter (W,G,E,T etc.). Where conduits cross footpaths, the location is to be marked in the path (near the edge) in the same fashion.
3. Nature strips are to be topsoiled to a depth of approximately 100mm using material stockpiled from stripping, or approved imported material.

6			Designed	Checked	Notes/Legend
5			R. Dawborn	N. Bowe	
4			May 2018	May 2018	
3			Approved		
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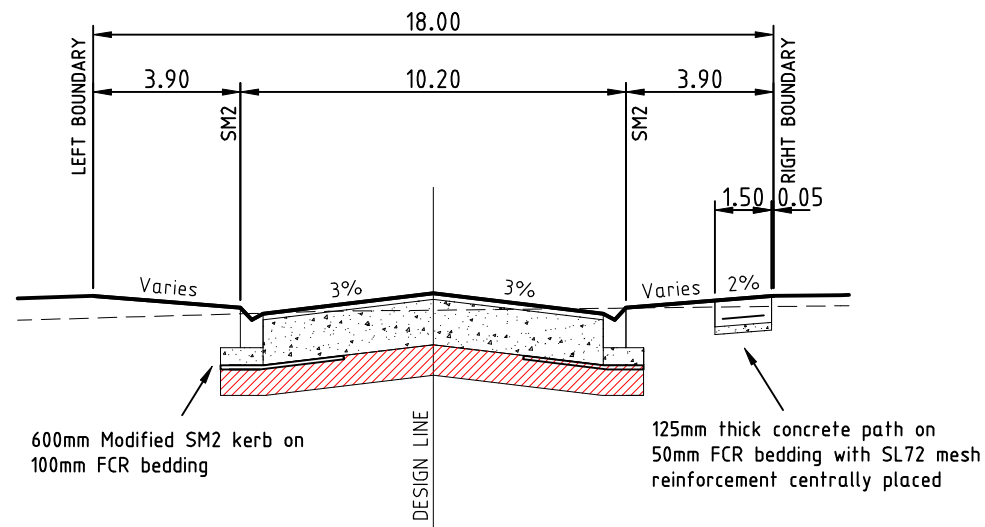
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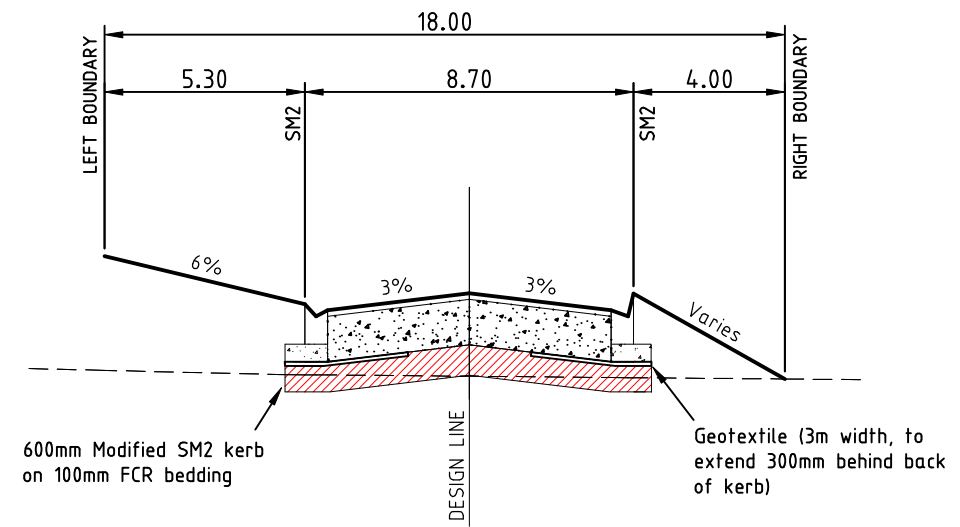
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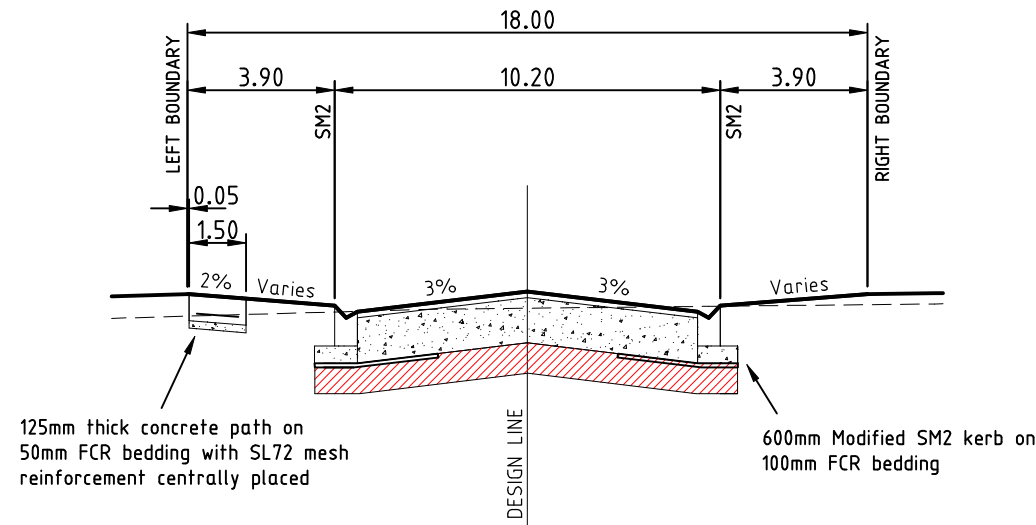
Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
General Notes & Kerb Details



Typical Cross Section - Apera Avenue CH223.20-250.08



Typical Cross Section - Riesling Drive CH697.93-860



Typical Cross Section - Marsanne Drive CH345.74-450

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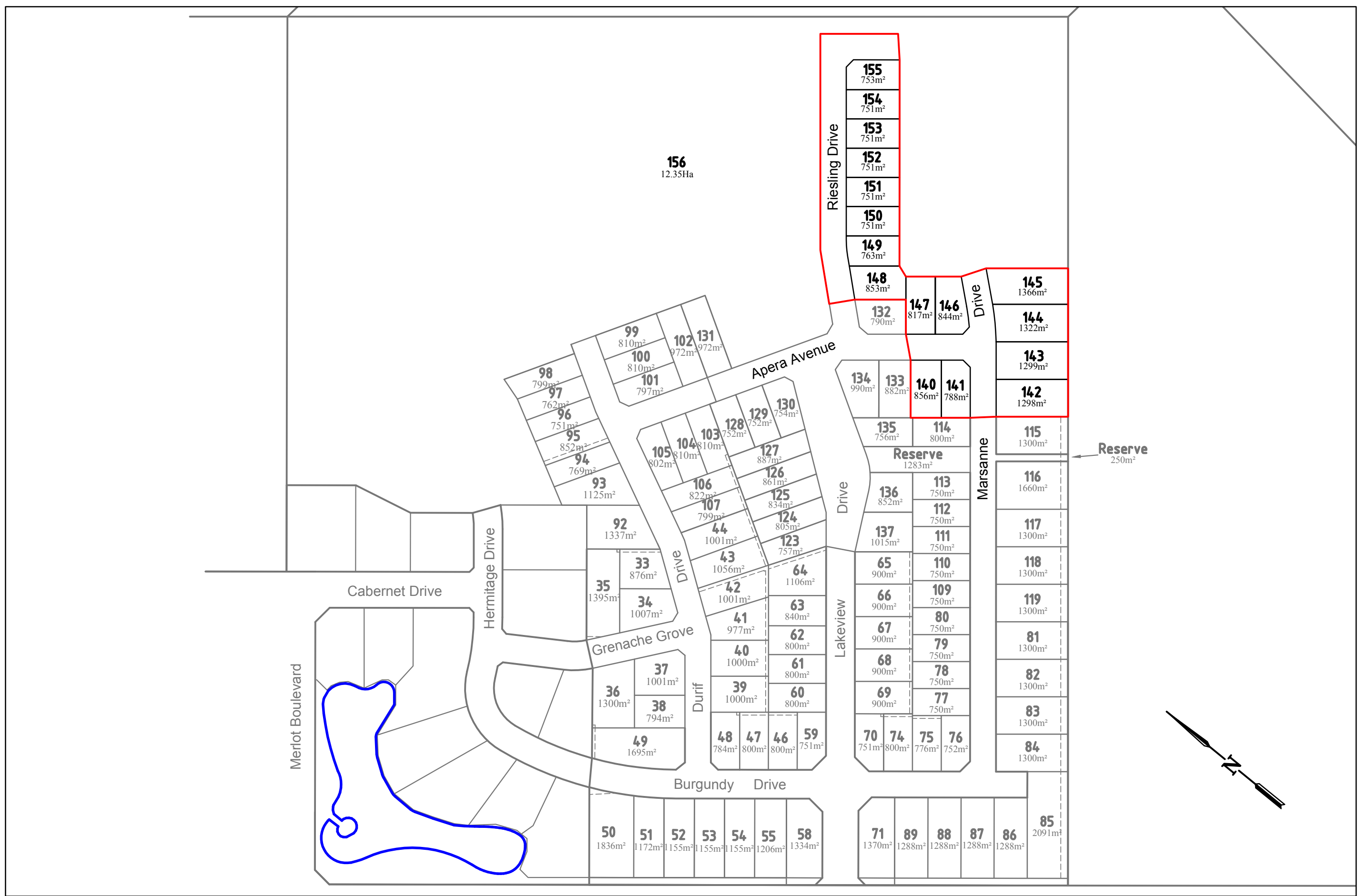
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Typical Cross Sections				
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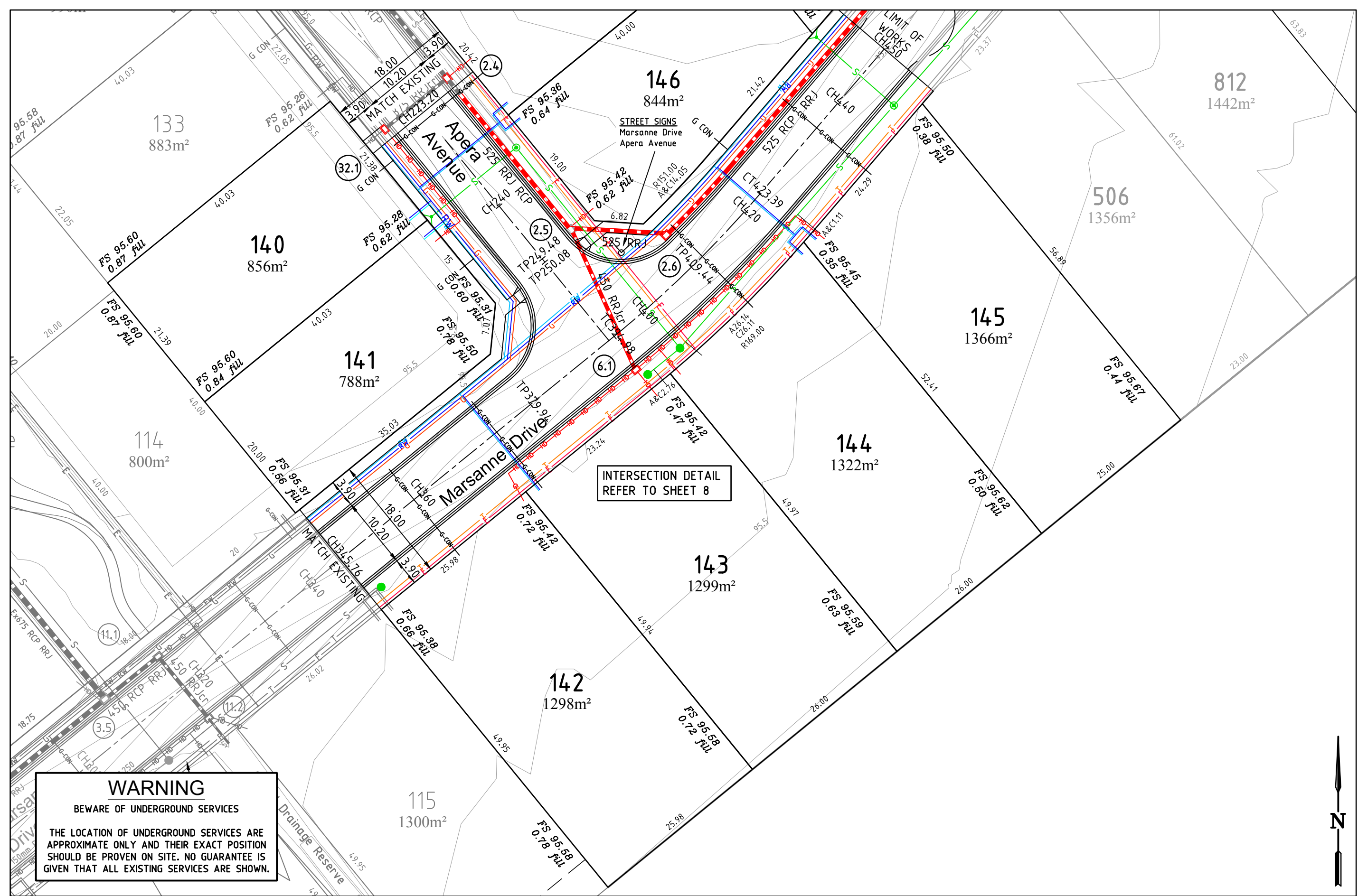
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Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Overall Layout Plan

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WARNING
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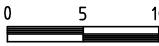
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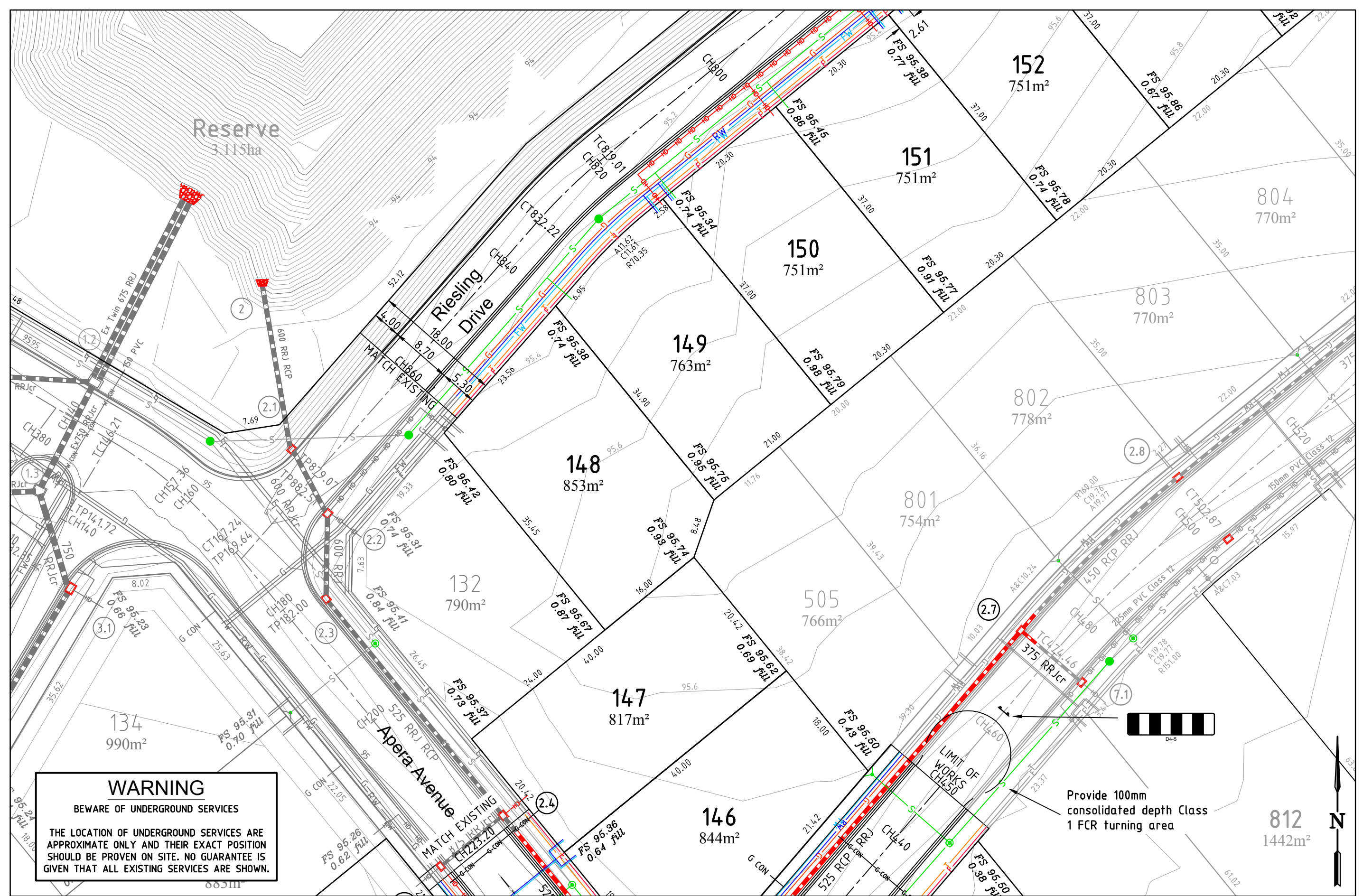
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Murray River Council - Moama
Villawood Properties Pty Ltd
 Lakeview Estate - Stage 7
 Layout Plan

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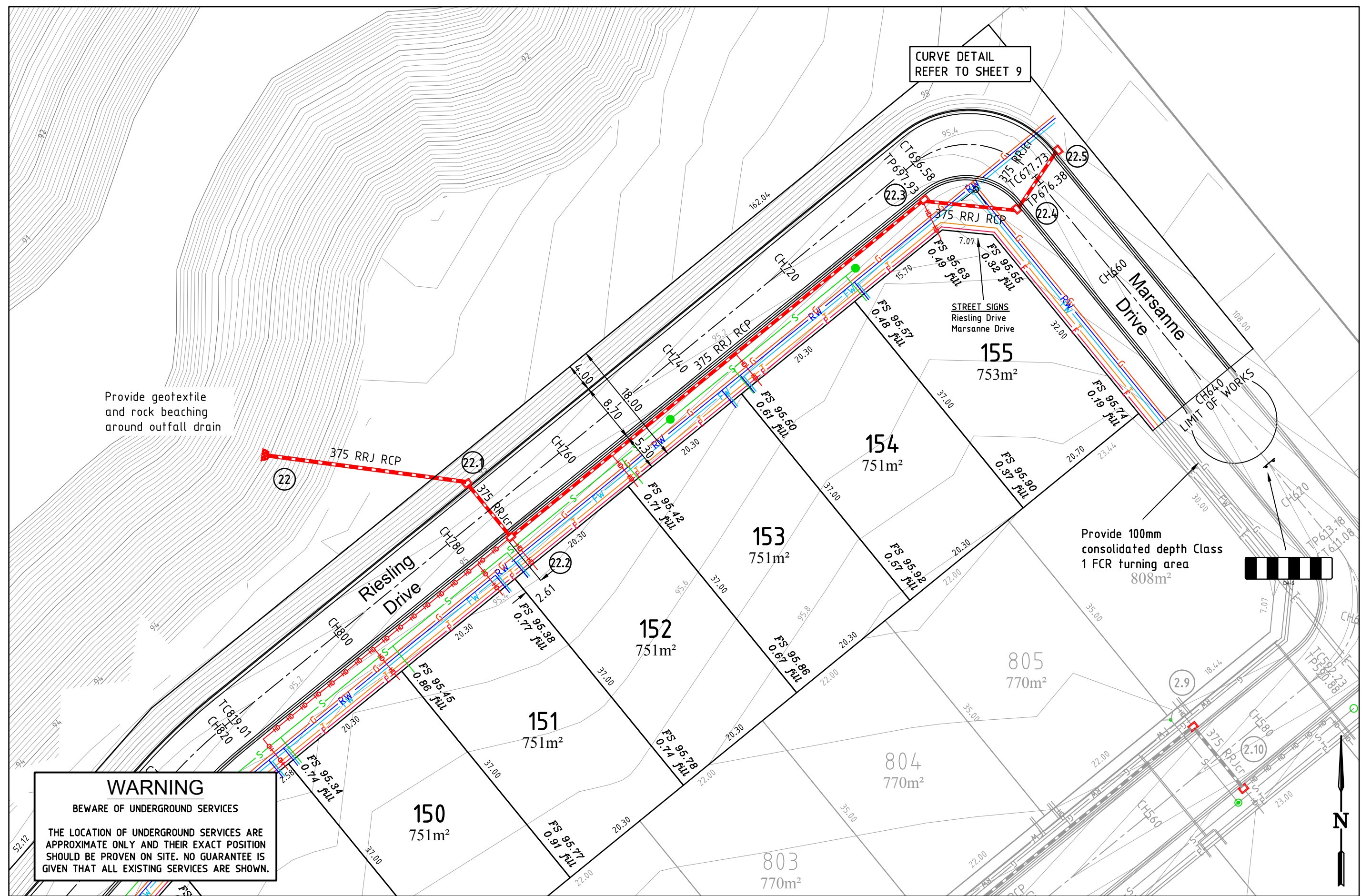
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Murray River Council - Moama
 Villawood Properties Pty Ltd
 Lakeview Estate - Stage 7
 Layout Plan 2



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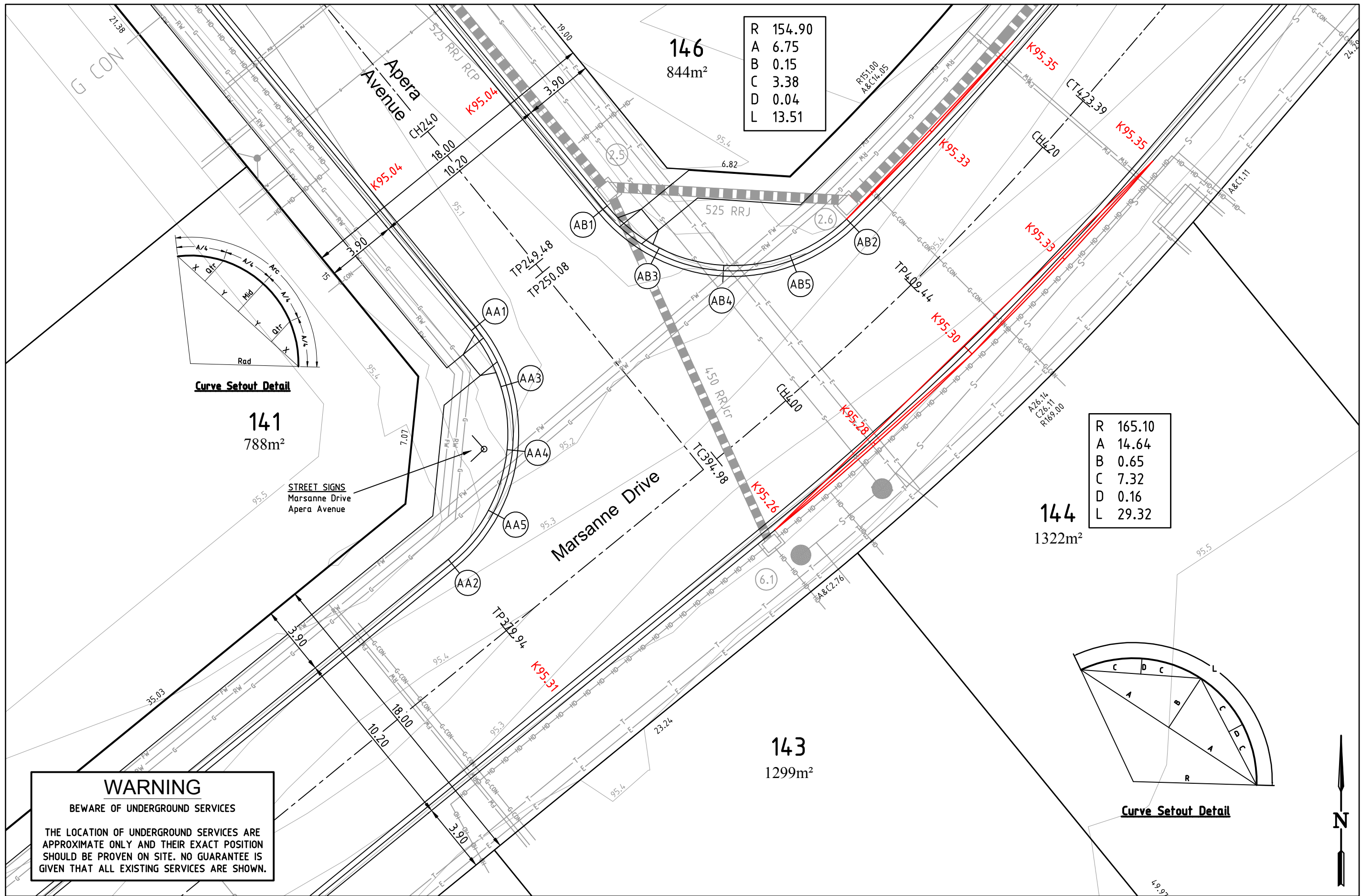
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Lakeview Estate - Stage 7						
Layout Plan 3						
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R	154.90
A	6.75
B	0.15
C	3.38
D	0.04
L	13.51

R	165.10
A	14.64
B	0.65
C	7.32
D	0.16
L	29.32

Curve Setout Detail

Curve Setout Detail

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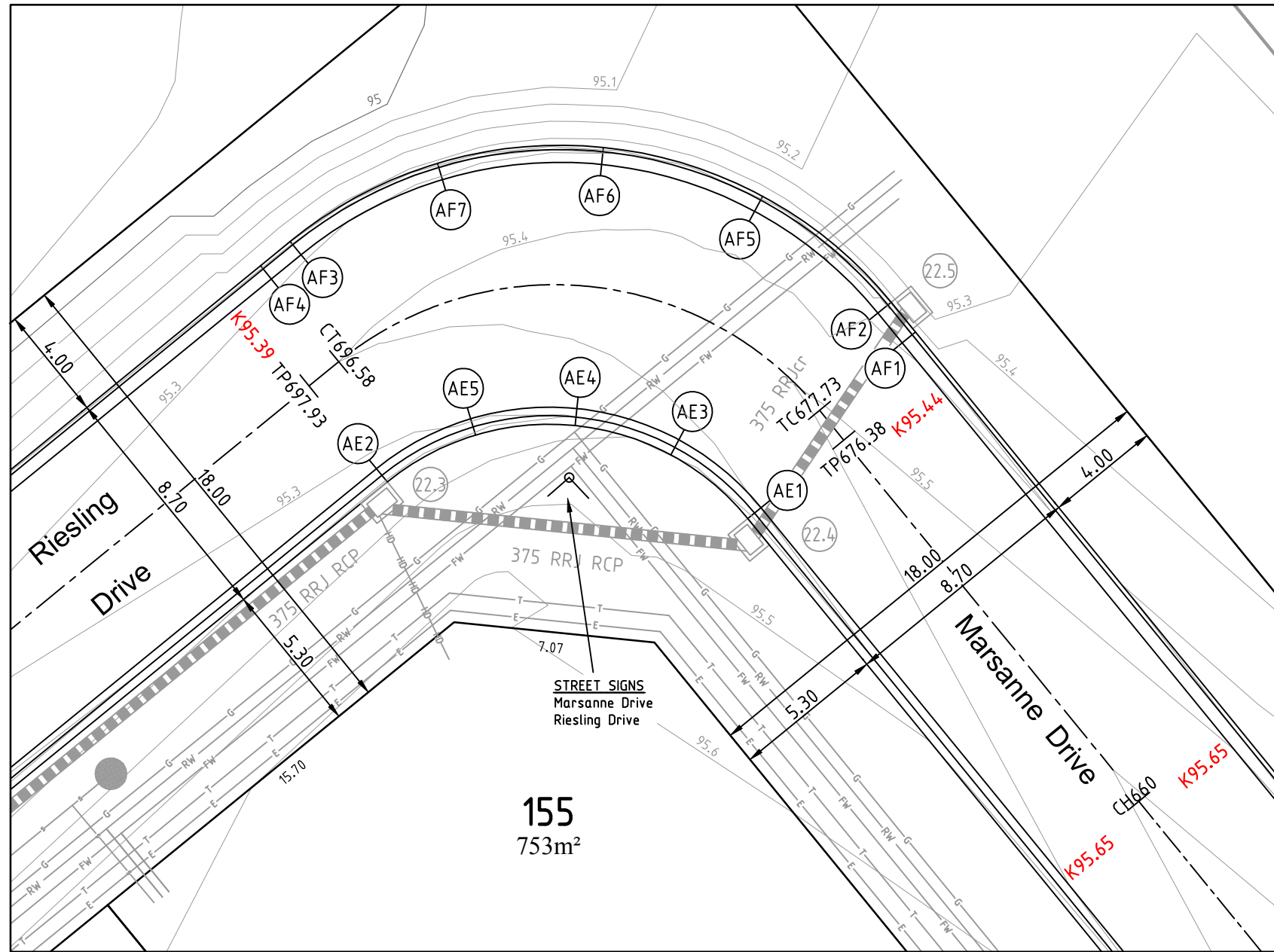
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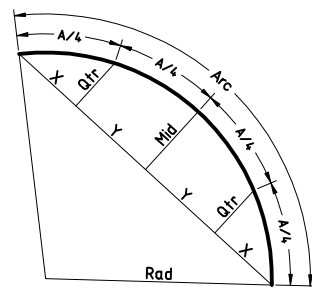
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Murray River Council - Moama
 Villawood Properties Pty Ltd
 Lakeview Estate - Stage 7
 Intersection Detail

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Curve Setout Detail

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Murray River Council - Moama			
Villawood Properties Pty Ltd Lakeview Estate - Stage 7			
Curve Detail			
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Alignment AA

Point no	Easting	Northing	RL
AA 1	296437.241	6003055.690	95.075
AA 2	296435.960	6003043.026	95.313
AA 3	296438.888	6003052.588	95.110
AA 4	296439.223	6003049.093	95.193
AA 5	296438.195	6003045.735	95.276

Curve no	I	Radius	Arc	Mid Ord	Qtr Ord	X	Y	I	Mid Ord RL
AA 1 2	90.000	9.000	14.137	2.636	1.951	2.920	3.444	3.534	95.193

Alignment AB

Point no	Easting	Northing	RL
AB 1	296444.766	6003062.600	95.073
AB 2	296458.036	6003061.861	95.305
AB 3	296447.655	6003060.271	95.108
AB 4	296451.238	6003059.305	95.189
AB 5	296454.906	6003059.867	95.270

Curve no	I	Radius	Arc	Mid Ord	Qtr Ord	X	Y	I	Mid Ord RL
AB 1 2	-95.177	-9.000	14.950	2.930	2.165	3.014	3.631	3.738	95.189

Alignment AE

Point no	Easting	Northing	RL
AE 1	296550.950	6003248.225	95.443
AE 2	296538.287	6003249.506	95.322
AE 3	296548.242	6003250.460	95.417
AE 4	296544.884	6003251.488	95.379
AE 5	296541.388	6003251.153	95.343

Curve no	I	Radius	Arc	Mid Ord	Qtr Ord	X	Y	I	Mid Ord RL
AE 1 2	-90.000	-9.000	14.137	2.636	1.951	2.920	3.444	3.534	95.379

Alignment AF

Point no	Easting	Northing	RL
AF 1	296556.836	6003254.772	95.435
AF 2	296555.983	6003255.818	95.428
AF 3	296534.877	6003257.954	95.403
AF 4	296533.831	6003257.100	95.397
AF 5	296551.468	6003259.543	95.456
AF 6	296545.872	6003261.257	95.448
AF 7	296540.046	6003260.699	95.425

Curve no	I	Radius	Arc	Mid Ord	Qtr Ord	X	Y	I	Mid Ord RL
AF 2 3	-90.000	-15.000	23.562	4.393	3.252	4.866	5.740	5.890	95.448

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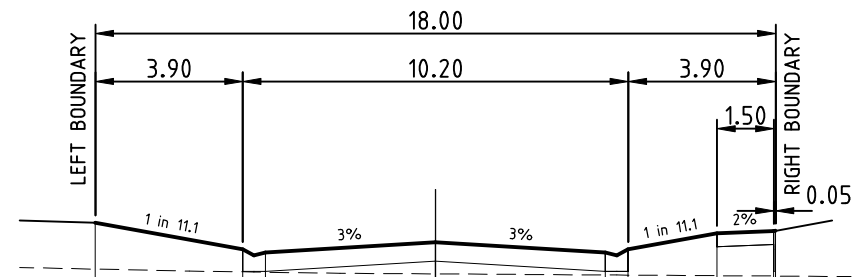
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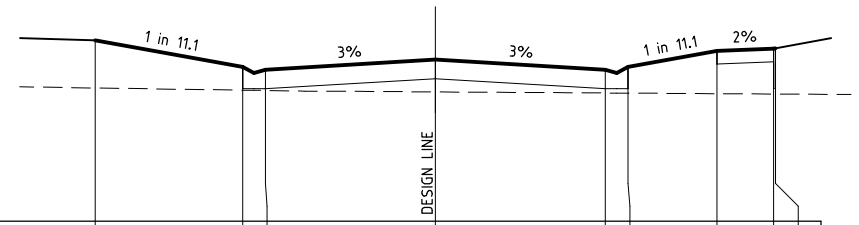
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Villawood Properties Pty Ltd					
Lakeview Estate - Stage 7					
Setout Detail					
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Datum 93

Design Level	95.4274	95.073	95.033	95.168	95.033	95.073	95.285	95.315	95.319
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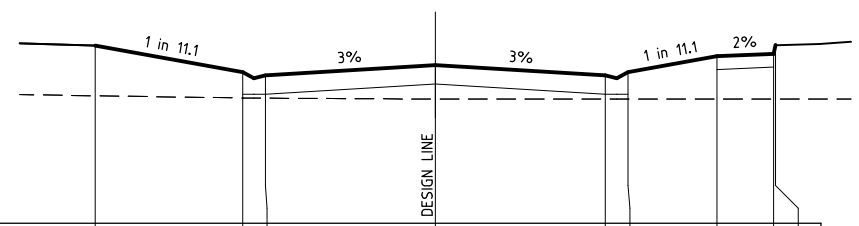
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Datum 93

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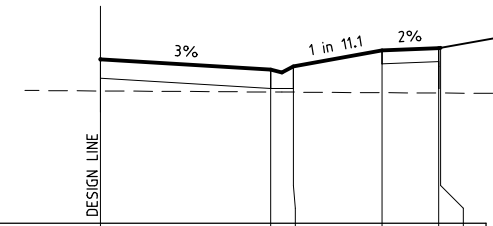
CH 240



Datum 93

Design Level	95.35	94.999	94.959	95.094	94.959	94.999	95.211	95.241	95.358
Existing Surface	94.687	94.659	94.657	94.644	94.644	94.644	94.644	94.643	94.643
Offset	-9	-5.1	-4.5	0	4.5	5.1	7.45	8.95	9

CH 223.20 - MATCH EXISTING



Datum 93

Design Level	95.17	95.035	95.075	95.287	95.317	95.321
Existing Surface	94.751	94.737	94.735	94.728	94.723	94.723
Offset	0	4.5	5.1	7.45	8.95	9

TP 250.08

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1	Original Issue	10/5/2018
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Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
May 2018	May 2018
Approved	

Notes/Legend

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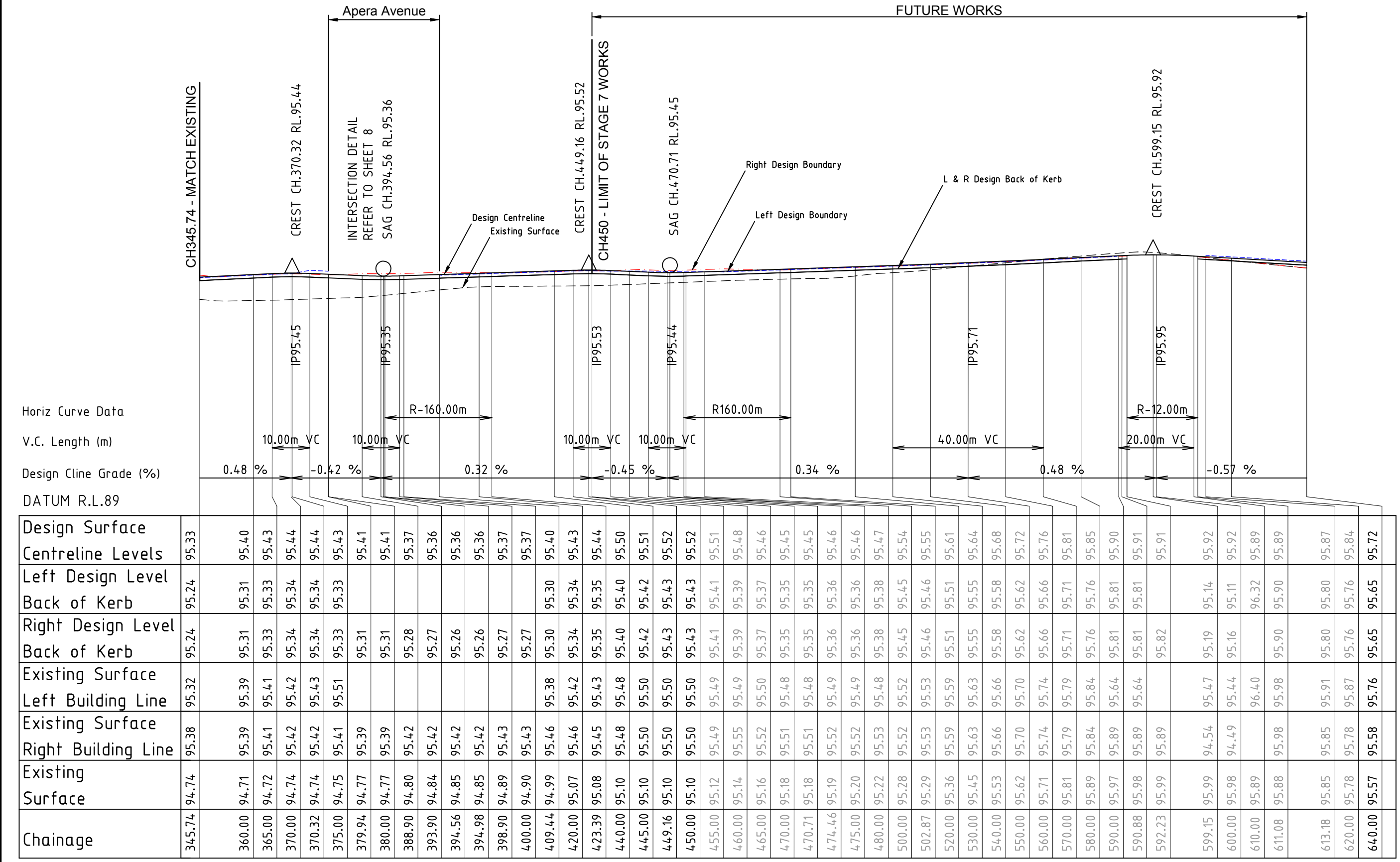
Scale (m)
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All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file: 17127 Apera.dwg
LTO Ref: -

Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Apera Avenue Cross Sections

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	12 of 32



Horiz Curve Data
 V.C. Length (m)
 Design Cline Grade (%)
 DATUM R.L.89

Design Surface	95.33	95.40	95.43	95.44	95.43	95.41	95.41	95.37	95.36	95.36	95.36	95.37	95.37	95.40	95.43	95.44	95.50	95.51	95.52	95.52	95.51	95.48	95.46	95.46	95.47	95.54	95.55	95.61	95.64	95.68	95.72	95.76	95.81	95.85	95.90	95.91	95.91	95.92	95.92	95.89	95.89	95.89	95.87	95.84	95.72			
Centreline Levels	95.33	95.40	95.43	95.44	95.43	95.41	95.41	95.37	95.36	95.36	95.36	95.37	95.37	95.40	95.43	95.44	95.50	95.51	95.52	95.52	95.51	95.48	95.46	95.46	95.47	95.54	95.55	95.61	95.64	95.68	95.72	95.76	95.81	95.85	95.90	95.91	95.91	95.92	95.92	95.89	95.89	95.89	95.87	95.84	95.72			
Left Design Level Back of Kerb	95.24	95.31	95.33	95.34	95.34	95.33	95.31	95.31	95.28	95.27	95.26	95.26	95.27	95.27	95.30	95.34	95.35	95.40	95.42	95.43	95.43	95.41	95.39	95.37	95.38	95.45	95.45	95.51	95.55	95.58	95.62	95.66	95.71	95.76	95.81	95.81	95.81	95.82	95.14	95.11	96.32	95.90	95.80	95.76	95.65			
Right Design Level Back of Kerb	95.24	95.31	95.33	95.34	95.34	95.33	95.31	95.31	95.28	95.27	95.26	95.26	95.27	95.27	95.30	95.34	95.35	95.40	95.42	95.43	95.43	95.41	95.39	95.37	95.38	95.45	95.45	95.51	95.55	95.58	95.62	95.66	95.71	95.76	95.81	95.81	95.81	95.82	95.19	95.16	96.32	95.90	95.80	95.76	95.65			
Existing Surface Left Building Line	95.32	95.39	95.41	95.42	95.43	95.51								95.38	95.42	95.43	95.48	95.50	95.50	95.50	95.49	95.49	95.50	95.48	95.48	95.52	95.53	95.59	95.63	95.66	95.70	95.74	95.79	95.84	95.84	95.64	95.64		95.47	95.44	96.40	95.98	95.91	95.87	95.76			
Existing Surface Right Building Line	95.38	95.39	95.41	95.42	95.42	95.41	95.39	95.39	95.42	95.42	95.42	95.43	95.43	95.46	95.46	95.45	95.48	95.50	95.50	95.50	95.49	95.55	95.52	95.51	95.51	95.52	95.52	95.53	95.59	95.63	95.66	95.70	95.74	95.79	95.84	95.89	95.89	95.89	95.89	95.89	95.88	95.98	95.85	95.78	95.58	95.58		
Existing Surface	94.74	94.71	94.72	94.74	94.74	94.75	94.77	94.77	94.80	94.84	94.85	94.85	94.89	94.90	94.99	95.07	95.10	95.10	95.10	95.10	95.12	95.14	95.16	95.18	95.18	95.19	95.20	95.22	95.28	95.29	95.36	95.45	95.53	95.62	95.71	95.81	95.89	95.97	95.98	95.99	95.99	95.99	95.99	95.98	95.85	95.78	95.57	
Chainage	345.74	360.00	365.00	370.00	370.32	375.00	379.94	380.00	388.90	393.90	394.56	394.98	398.90	400.00	409.44	420.00	423.39	440.00	445.00	449.16	450.00	455.00	460.00	465.00	470.00	470.71	474.46	475.00	480.00	500.00	502.87	520.00	530.00	540.00	550.00	560.00	570.00	580.00	590.00	590.88	592.23	599.15	600.00	610.00	611.08	613.18	620.00	640.00

Scales Hor 1 : 1000
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LONGITUDINAL SECTION - TP MARSANNE DRIVE

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1	Original Issue	10/5/2018
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Approved		

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Scale (m)
 H 1:1000 0 10 20
 V 1:100 0 1 2

All lengths are in metres
 and all levels are to Australian Height Datum
 (Original Sheet Size is A3)

Drawing file: 17127 Riestling.dwg
 LTO Ref: -

Murray River Council - Moama
 Villawood Properties Pty Ltd
 Lakeview Estate - Stage 7
 Marsanne Drive Longitudinal Section

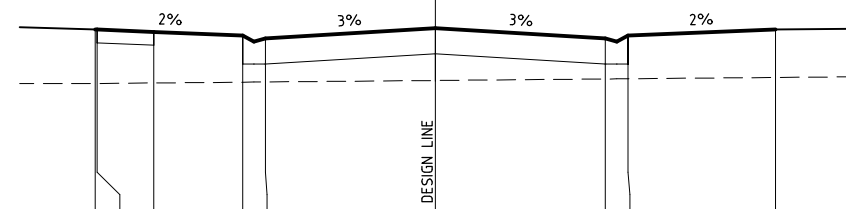
Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	13 of 32



Datum 93

Design Level	95.428	95.427	95.397	95.344	95.304	95.439	95.304	95.344	95.422
Existing Surface	94.698	94.698	94.705	94.715	94.717	94.736	94.755	94.758	94.774
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

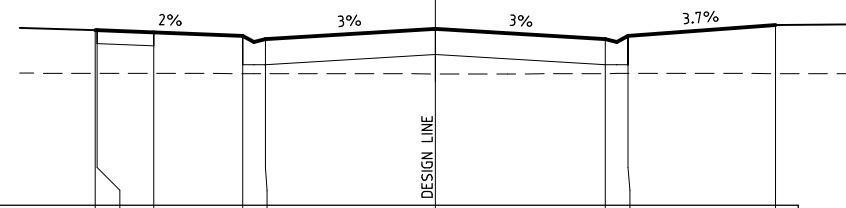
CH 370.323 - CREST



Datum 93

Design Level	95.385	95.384	95.354	95.307	95.267	95.402	95.267	95.307	95.385
Existing Surface	94.672	94.672	94.679	94.689	94.692	94.711	94.731	94.734	94.751
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

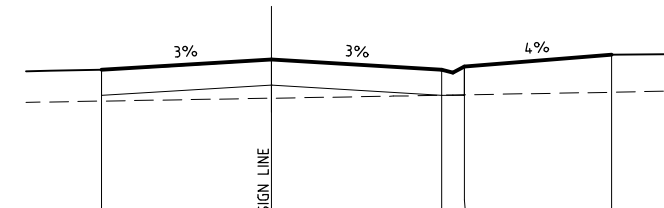
CH 360



Datum 93

Design Level	95.317	95.316	95.286	95.239	95.199	95.334	95.199	95.239	95.384
Existing Surface	94.747	94.747	94.745	94.743	94.743	94.739	94.743	94.745	94.743
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

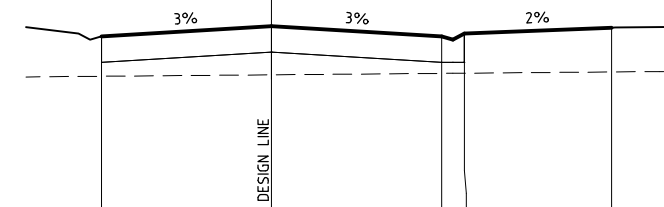
CH 345.74 - MATCH EXISTING



Datum 93

Design Level	95.224	95.359	95.224	95.264	95.42
Existing Surface	94.807	94.846	94.885	94.89	94.925
Offset	-4.5	0	4.5	5.1	9

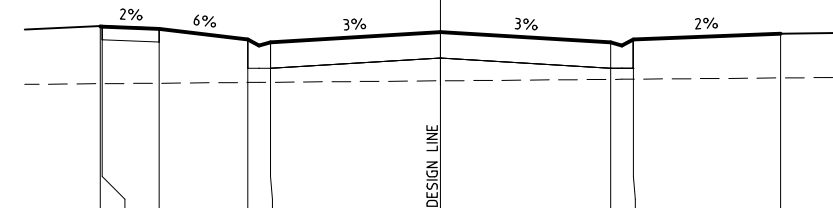
CH 394.56 - SAG



Datum 93

Design Level	95.273	95.408	95.273	95.313	95.391
Existing Surface	94.747	94.766	94.786	94.788	94.805
Offset	-4.5	0	4.5	5.1	9

CH 380



Datum 93

Design Level	95.487	95.484	95.454	95.313	95.273	95.408	95.273	95.313	95.391
Existing Surface	94.728	94.728	94.735	94.745	94.747	94.766	94.785	94.788	94.804
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

TP 379.944

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May 2018	May 2018
Approved	

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Scale (m)
H 1:200 0 2 4
V 1:100 0 1 2

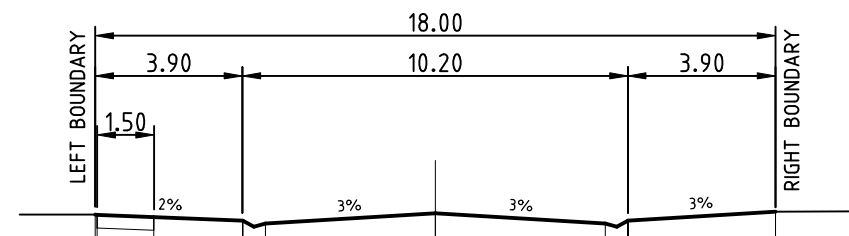
All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

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LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Marsanne Drive Cross Sections

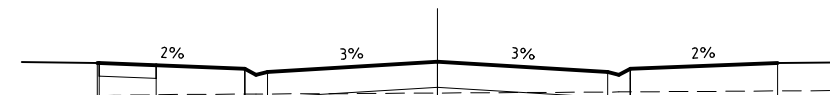
Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	15 of 32



Datum 93

Design Level	95.417	95.416	95.386	95.339	95.299	95.434	95.299	95.339	95.456
Existing Surface	95.001	95.001	95.014	95.035	95.041	95.072	95.086	95.088	95.101
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

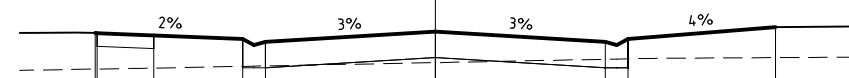
CH 420



Datum 93

Design Level	95.503	95.502	95.472	95.425	95.385	95.52	95.385	95.425	95.503
Existing Surface	95.07	95.071	95.081	95.09	95.092	95.104	95.118	95.12	95.132
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

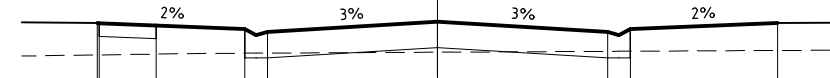
CH 450 - LIMIT OF STAGE SEVEN WORKS



Datum 93

Design Level	95.383	95.382	95.352	95.305	95.265	95.4	95.265	95.305	95.461
Existing Surface	94.906	94.907	94.919	94.942	94.948	94.992	95.036	95.041	95.057
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

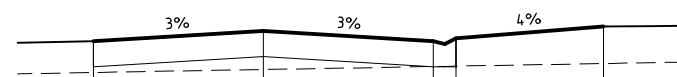
TP 409.436



Datum 93

Design Level	95.481	95.48	95.45	95.403	95.363	95.498	95.363	95.403	95.481
Existing Surface	95.06	95.06	95.07	95.083	95.084	95.096	95.107	95.109	95.119
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

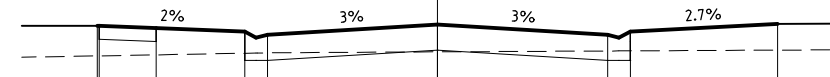
CH 440



Datum 93

Design Level	95.224	95.359	95.224	95.264	95.42
Existing Surface	94.81	94.849	94.889	94.894	94.929
Offset	-4.5	0	4.5	5.1	9

TC 394.977



Datum 93

Design Level	95.428	95.427	95.397	95.35	95.31	95.445	95.31	95.35	95.453
Existing Surface	95.03	95.03	95.044	95.064	95.07	95.083	95.094	95.096	95.106
Offset	-9	-8.95	-7.45	-5.1	-4.5	0	4.5	5.1	9

CT 423.393

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	May 2018		May 2018
Approved			

Notes/Legend

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Scale (m)
H 1:200 0 2 4
V 1:100 0 1 2

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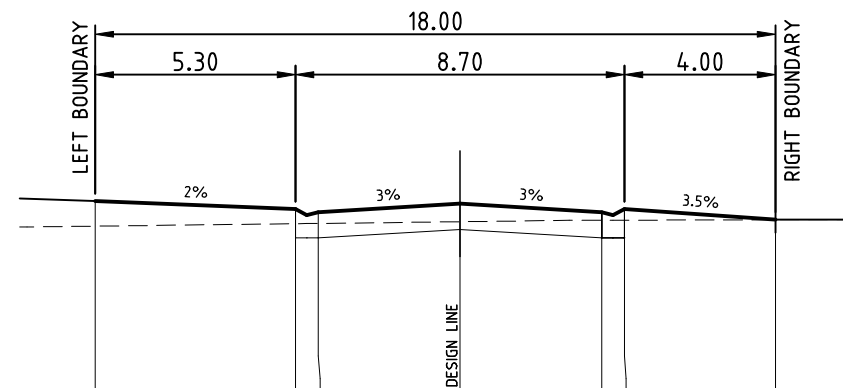
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LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7

Marsanne Drive Cross Sections 2

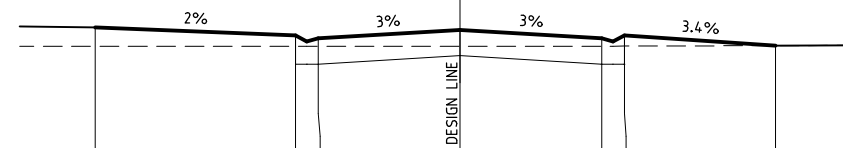
Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	16 of 32



Datum 93

Design Level	95.549	95.443	95.403	95.515	95.403	95.443	95.303
Existing Surface	95.217	95.25	95.253	95.276	95.295	95.296	95.303
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35

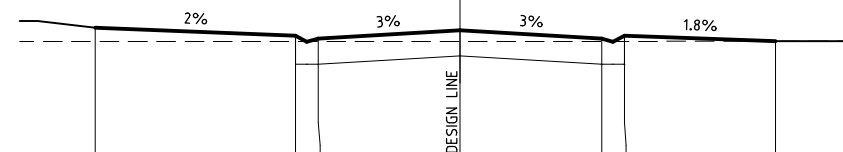
TP 676.382



Datum 94

Design Level	95.642	95.536	95.496	95.608	95.496	95.536	95.4
Existing Surface	95.39	95.39	95.39	95.39	95.392	95.393	95.4
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35

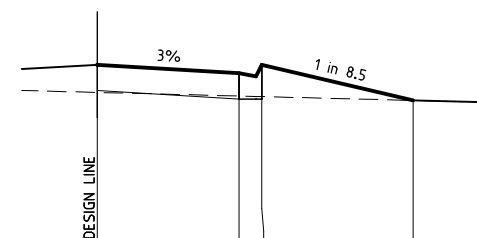
CH 660



Datum 94

Design Level	95.756	95.65	95.61	95.722	95.61	95.65	95.577
Existing Surface	95.573	95.573	95.573	95.573	95.573	95.574	95.577
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35

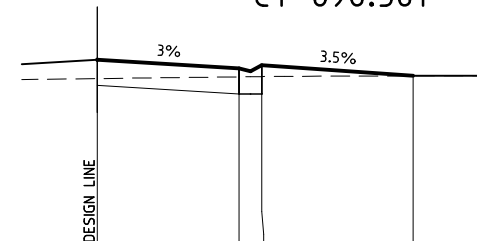
CH 640 - LIMIT OF STAGE SEVEN WORKS



Datum 93

Design Level	95.4	95.287	95.397	94.928
Existing Surface	95.034	94.986	94.979	94.928
Offset	0	3.75	4.35	8.35

CT 696.581



Datum 93

Design Level	95.507	95.395	95.435	95.295
Existing Surface	95.259	95.282	95.285	95.295
Offset	0	3.75	4.35	8.35

TC 677.732

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Scale (m) H 1:200 0 2 4
V 1:100 0 1 2

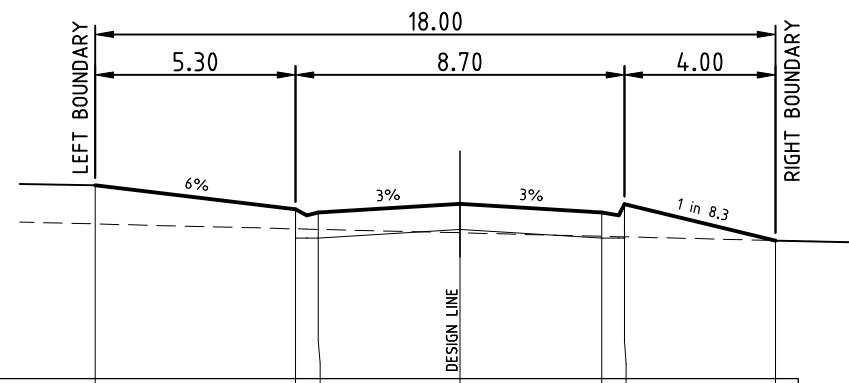
All lengths are in metres
and all levels are to Australian Height Datum
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LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Marsanne Drive Cross Sections 3

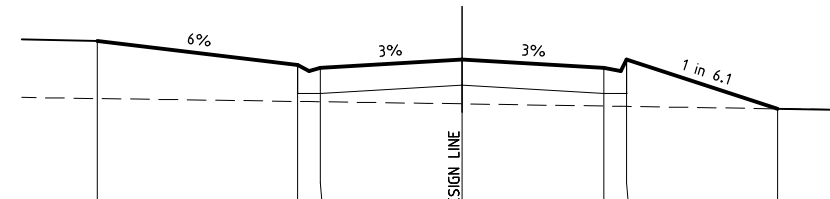
Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	17 of 32



Datum 93

Design Level	95.555	95.237	95.31	95.197	95.307	94.826
Existing Surface	95.045	94.98	94.927	94.882	94.874	94.826
Offset	-9.65	-4.35	0	3.75	4.35	8.35

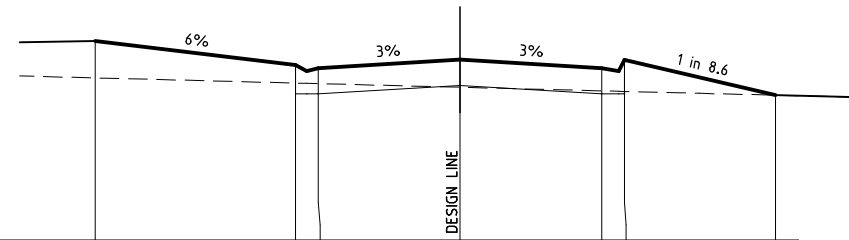
CH 720



Datum 93

Design Level	95.378	95.06	95.133	95.02	95.13	94.48
Existing Surface	94.615	94.577	94.545	94.516	94.511	94.48
Offset	-9.65	-4.35	0	3.75	4.35	8.35

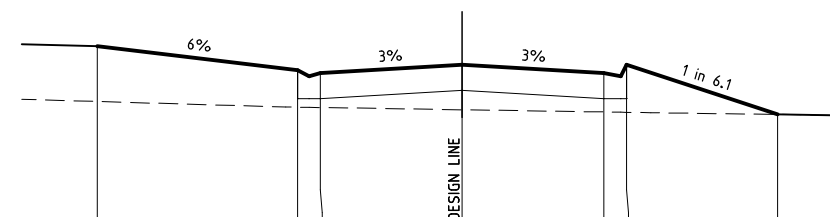
CH 772.62 - SAG



Datum 93

Design Level	95.632	95.314	95.387	95.274	95.384	94.918
Existing Surface	95.146	95.078	95.023	94.975	94.967	94.918
Offset	-9.65	-4.35	0	3.75	4.35	8.35

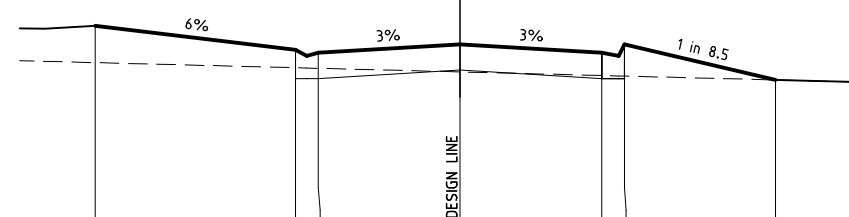
CH 700



Datum 93

Design Level	95.402	95.084	95.156	95.044	95.154	94.497
Existing Surface	94.668	94.592	94.559	94.53	94.525	94.497
Offset	-9.65	-4.35	0	3.75	4.35	8.35

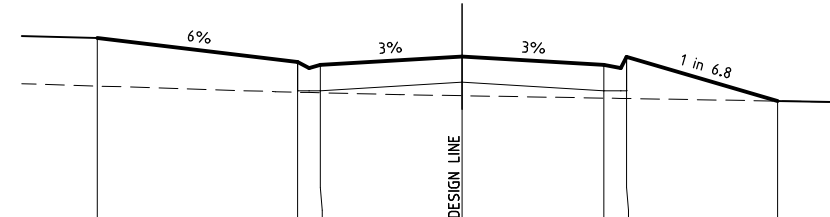
CH 760



Datum 93

Design Level	95.64	95.322	95.395	95.282	95.392	94.923
Existing Surface	95.153	95.085	95.03	94.982	94.974	94.923
Offset	-9.65	-4.35	0	3.75	4.35	8.35

TP 697.931



Datum 93

Design Level	95.478	95.16	95.233	95.12	95.23	94.644
Existing Surface	94.842	94.761	94.714	94.682	94.677	94.644
Offset	-9.65	-4.35	0	3.75	4.35	8.35

CH 740

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Scale (m)
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V 1:100 0 1 2

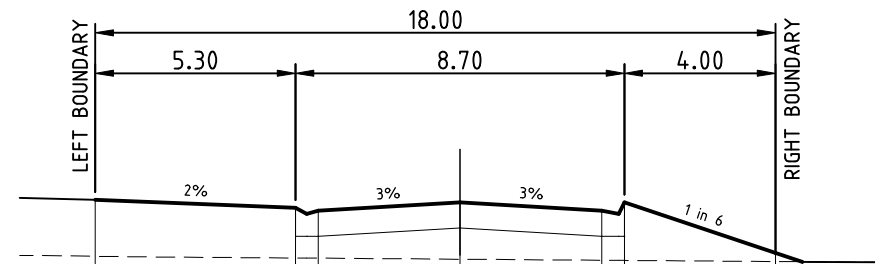
All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file: 17127 Riesting.dwg
LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Riesting Drive Cross Sections

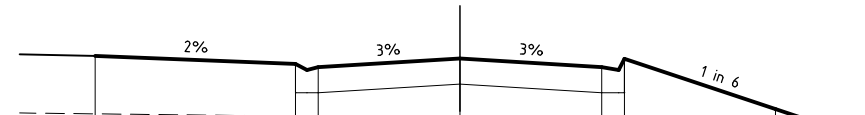
Council Ref:	Our Ref:	Version	Sheet
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Datum 93

Design Level	95.356	95.25	95.21	95.322	95.21	95.32	94.653	94.534
Existing Surface	94.607	94.584	94.582	94.568	94.554	94.552	94.537	94.534
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	9.061

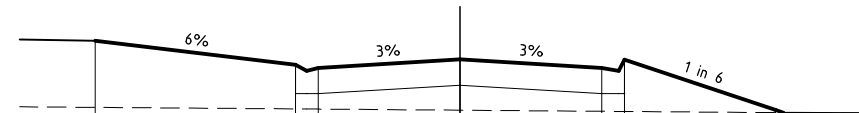
TC 819.011



Datum 93

Design Level	95.39	95.284	95.244	95.356	95.244	95.354	94.687	94.544
Existing Surface	94.624	94.595	94.591	94.572	94.559	94.558	94.546	94.544
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	9.209

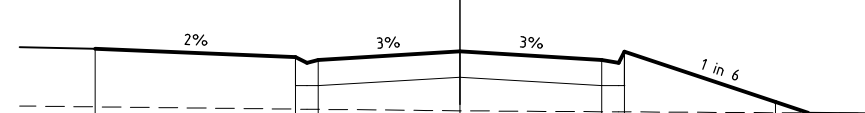
CT 832.223



Datum 93

Design Level	95.473	95.155	95.115	95.227	95.115	95.225	94.558	94.523
Existing Surface	94.593	94.573	94.57	94.556	94.542	94.539	94.524	94.523
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	8.559

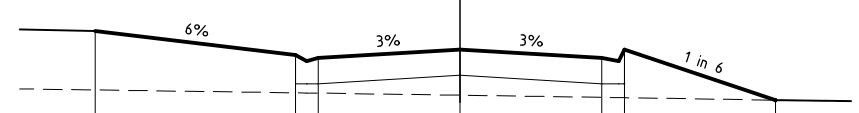
CH 800



Datum 93

Design Level	95.39	95.284	95.244	95.356	95.244	95.354	94.687	94.544
Existing Surface	94.624	94.594	94.591	94.572	94.559	94.557	94.546	94.544
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	9.21

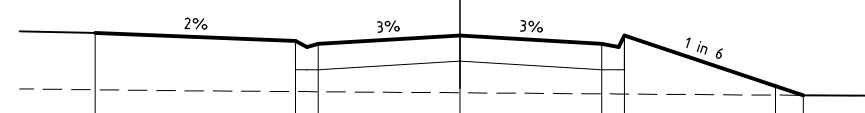
CH 832.076 - CREST



Datum 93

Design Level	95.386	95.068	95.028	95.141	95.028	95.138	94.471	94.471
Existing Surface	94.606	94.568	94.564	94.537	94.507	94.503	94.471	94.471
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	8.35

CH 780



Datum 93

Design Level	95.361	95.255	95.215	95.327	95.215	95.325	94.658	94.535
Existing Surface	94.608	94.584	94.582	94.568	94.554	94.552	94.537	94.535
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	9.088

CH 820

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1	Original Issue	10/5/2018
0	Draft	20/11/2017
Ver	Revision Description	Date

Designed	R. Dawborn	May 2018
Checked	N. Bowe	May 2018
Approved		

Notes/Legend

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Scale (m)
H 1:200 0 2 4
V 1:100 0 1 2

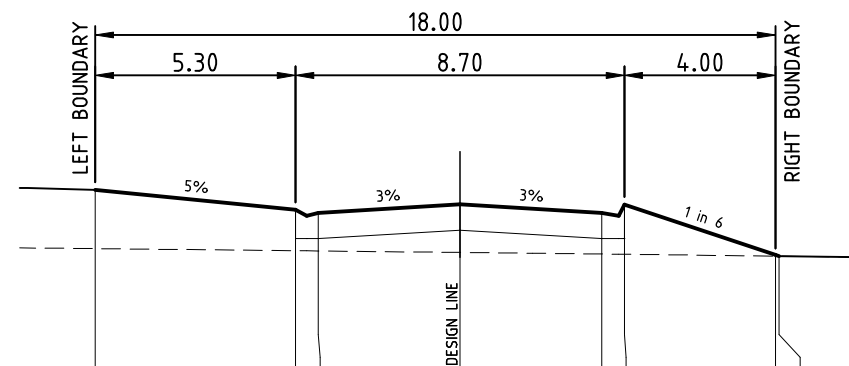
All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file: 17127 Riesting.dwg
LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Riesting Drive Cross Sections 2

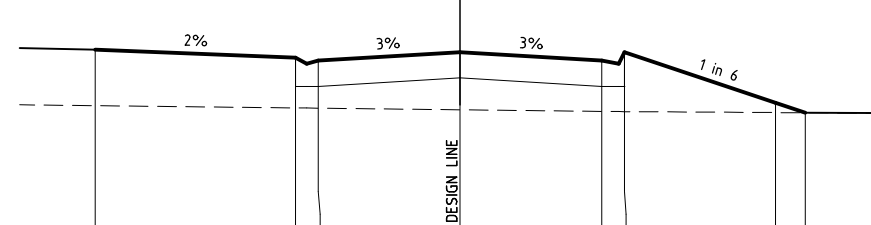
Council Ref:	Our Ref:	Version	Sheet
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Datum 93

Design Level	95.415	95.15	95.11	95.222	95.11	95.22	94.553	94.537
Existing Surface	94.637	94.609	94.606	94.586	94.565	94.562	94.538	94.537
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	8.442

CH 860 - MATCH EXISTING



Datum 93

Design Level	95.377	95.271	95.231	95.344	95.231	95.341	94.675	94.543
Existing Surface	94.637	94.606	94.602	94.581	94.559	94.557	94.545	94.543
Offset	-9.65	-4.35	-3.75	0	3.75	4.35	8.35	9.141

CH 840

6			Designed	Checked
5			R. Dawborn	N. Bowe
4			May 2018	May 2018
3			Approved	
2				
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Scale (m) H 1:200 0 2 4
V 1:100 0 1 2

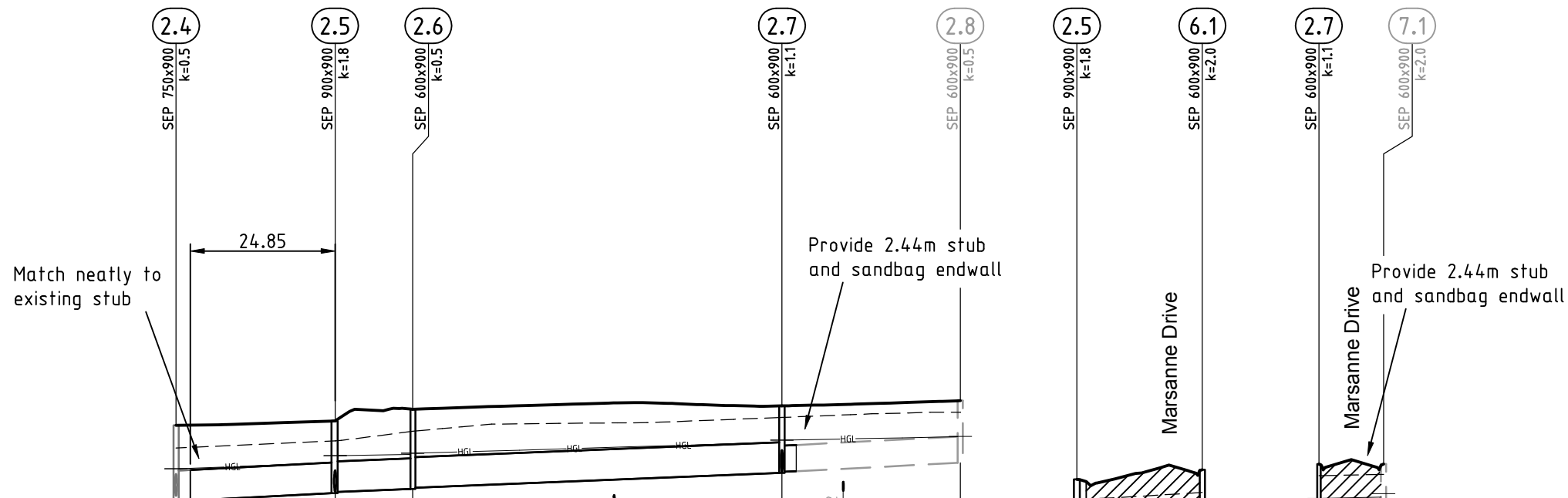
All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file:	LTO Ref:
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Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Riestling Drive Cross Sections 3

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	20 of 32



Design Flow (L/s)
Pipe Capacity (L/s)
Actual Velocity (m/s)
Full pipe vel (m/s)

Pipe Size (mm)
(Type)
Pipe Grade (1 in)
(%)

Datum R.L.

	2.4	2.5	2.6	2.7	2.8	2.5	6.1	2.7	7.1
Design Flow (L/s)	248	187	180	75	66	86	66	86	86
Pipe Capacity (L/s)	342	305	305	228	200	141	200	141	141
Actual Velocity (m/s)	1.71	1.48	1.47	1.29	1.63	1.34	1.63	1.34	1.34
Full pipe vel (m/s)	1.15	0.86	0.83	0.47	0.59	0.78	0.59	0.78	0.78
Pipe Size (mm)	525	525	525	450	375	375	375	375	375
(Type)	RCP RRJ	RCP RRJ	RCP RRJ	RCP RRJ	RCRRJ cr	RCRRJ cr	RCRRJ cr	RCRRJ cr	RCRRJ cr
Pipe Grade (1 in)	200	250	250	200	100.0	200	100.0	200	200
(%)	0.500	0.400	0.400	0.500	1.000	0.500	1.000	0.500	0.500
Datum R.L.	86.0					87.0		87.0	
Invert	93.723 93.743	93.880 93.900	93.953 93.973	94.226 94.246	94.30	93.880 93.900	94.115	94.226 94.246	94.301
Depth to Inv. From FSL	1.32 1.30	1.24 1.22	1.36 1.34	1.15 1.13		1.24 1.22	1.17	1.15 1.13	1.08
H.G.L. Levels	94.25 94.30	94.40 94.52	94.55 94.56	94.75 94.79		94.40 94.52	94.55	94.75 94.79	94.81
Finished Surface	95.04	95.12		95.38		95.12	95.28	95.38	95.38
Existing Surface	94.66	94.78	94.94	95.18		94.78	94.89	95.20	95.20
Pipe length & Chainage	84.31 13.58 97.89	111.60 113.46	124.92	188.24 10.52 198.76	218.84	0.00 21.51	21.51	0.00 11.10	11.10

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R. Dawborn	N. Bowe
May 2018	May 2018
Approved	

Notes/Legend

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Scale (m)
H 1:1000 0 10 20
V 1:100 0 1 2

All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file: 17127 Drains.dwg
LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Drainage Longitudinal Sections

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	21 of 32



Design Flow (L/s)	86	74	24	13	7
Pipe Capacity (L/s)	274	141	163	163	141
Actual Velocity (m/s)	2.20	1.29	1.06	0.90	0.66
Full pipe vel (m/s)	0.78	0.67	0.21	0.12	0.06
Pipe Size (mm)	375	375	375	375	375
(Type)	RCP RRJ	RCRRJ cr	RCP RRJ	RCP RRJ	RCRRJ cr
Pipe Grade (1 in)	53.6	200	150	150	200
(%)	1.866	0.500	0.667	0.667	0.500
Datum R.L.	87.0				

Invert	93.100	93.100	93.620	93.640	93.688	93.708	94.202	94.222	94.308	94.328	94.378	
Depth to Inv. From FSL	-0.01	-0.01	1.44	1.42	1.40	1.38	1.15	1.13	1.15	1.13	1.04	
H.G.L. Levels	93.24	93.24	94.00	94.06	94.07	94.12	94.58	94.58	94.68	94.68	94.75	
Finished Surface	93.09		95.06		95.09		95.35		95.45		95.42	
Existing Surface	94.45		94.51		94.58		95.09		95.25		95.28	
Pipe length & Chainage	0.00	27.86	27.86	9.60	37.46		74.09	111.55	112.94	124.49	9.97	134.47

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May 2018	May 2018	
Approved		

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Scale (m) H 1:1000 0 10 20
V 1:100 0 1 2

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LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Drainage Longitudinal Sections 2

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PIT SCHEDULE

Pit Name	TYPE	EASTING	NORTHING	INTERNAL WD	LEN	INLET DIA	INV LEV	OUTLET DIA	INV LEV	PIT SETOUT RL	DEPTH	REMARKS
22.5	Side Entry Pit	296556.711	6003255.638	0.600	0.900			375	94.378	95.415	1.037	
22.4	Side Entry Pit	296550.981	6003247.476	0.600	0.900	375	94.328	375	94.308	95.455	1.147	
22.3	Side Entry Pit	296538.107	6003248.778	0.600	0.900	375	94.222	375	94.202	95.347	1.145	
22.2	Side Entry Pit	296480.710	6003201.930	0.600	0.900	375	93.708	375	93.688	95.087	1.399	
22.1	Side Entry Pit	296474.640	6003209.367	0.600	0.900	375	93.640	375	93.620	95.057	1.437	
22	Concrete Endwall	296447.047	6003213.240	0.150	0.150	375	93.100			93.500	0.400	Rock beaching around outlet
6.1	Side Entry Pit	296453.875	6003043.902	0.600	0.900			375	94.115	95.282	1.167	
2.7	Side Entry Pit	296499.765	6003110.331	0.600	0.900	450	94.246	525	94.226	95.377	1.151	
2.7	Side Entry Pit	296499.765	6003110.331	0.600	0.900	375	94.246					
2.6	Side Entry Pit	296458.095	6003062.656	0.600	0.900	525	93.973	525	93.953	95.317	1.365	
2.5	Side Entry Pit	296444.794	6003063.397	0.900	0.900	525	93.900	525	93.880	95.118	1.239	
2.5	Side Entry Pit	296444.794	6003063.397	0.900	0.900	375	93.900					
2.4	Side Entry Pit	296427.538	6003084.538	0.750	0.900	525	93.743	525	93.723	95.044	1.321	

NOTE:

1. xy setout to pit centre
2. setout level to pit cover level

6			Designed	Checked	Notes/Legend	 TERRACO Civil Engineers Project Managers Development Consultants	Terraco P/L ABN 12 681 695 776 Corner Jewell Court & Rowena Street Bendigo Vic 3550 Ph: 03 5442 5799 Fax: 03 5441 5506 E: info@terraco.com.au	No Scale All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A3)		Murray River Council - Moama Villawood Properties Pty Ltd Lakeview Estate - Stage 7 Pit Schedule			
5		R. Dawborn	N. Bowe										
4		May 2018	May 2018										
3		Approved											
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1	Original Issue	10/5/2018											
0	Draft	20/11/2017											
Ver	Revision Description	Date					Drawing file:	LTO Ref:	Council Ref:	Our Ref:	Version	Sheet	
							17127 Drains.dwg	-	DA 173/11	17127	1	23 of 32	

GENERAL NOTES

1. All works are to be carried out in accordance with Murray River Council and current Water Services Association of Australia standards and specifications.
2. Contract is in accordance with AS2124-1992.
3. The contractor must locate all services prior to commencement of any works.
4. Sewers are to be 150mm Ø uPVC RRJ class SN8 (SEH grade) unless shown otherwise.
5. Sewer Jump Up levels shown refer to the required level at the property connection point 1.0m inside the property boundary. All Jump Ups to be brought up a minimum of 1.0m above the surface.
6. All sewer manhole covers to be solid ductile iron Class D cover and frame with concrete surround.
7. The level of all existing outfall sewers must be checked by the contractor prior to work commencing.
8. The contractor must adhere to the code of practise as "Excavation Work Code of Practice" under section 274 of the Work Health and Safety Act 2011. All workers on this site must have a current WH&S General Induction for Construction Work in NSW Certificate (White Card).
9. The contractor is not permitted to break into an existing live pipeline, enter a live manhole, or remove the cover of an existing live manhole unless given permission by the Supervising Engineer.
10. All properties are to be fully reinstated to the satisfaction of the Supervising Engineer.
11. All new sewers must be pressure tested. Where the contractor does not have a Quality Assurance system in place, all pipes must be inspected by the Supervising Engineer.
12. Confined Space Entry must be in accordance with Work Health and Safety requirements. Contractor must not enter a Confined Space until all required information has been submitted to Terraco.
13. All hatched areas on longitudinal sections indicate 20mm Class 3 FCR backfill.
14. All future stub end to be capped.
15. All sewer pipes are to be inspected by CCTV after installation, with a Hard and Electronic copy to be provided to the Murray River Council.

Asset Recording Requirements

The contractor must record all construction details including invert levels and locations of manholes, sewer ends and oblique branches, and testing details, using appropriate "line sheets".

The information is to be provided to the supervising engineer in a suitable form to enable detailed "as constructed" plans to be produced. Line sheets are available from Terraco, or the contractor may use their own if approved by Terraco prior to works commencing. The information is to be provided within 1 week of the completion of the works. Claims for payment for construction may be delayed until the line sheets have been received by the supervising engineer.

The following standard backfill requirements apply to all trenching works.

For PVC pipes:

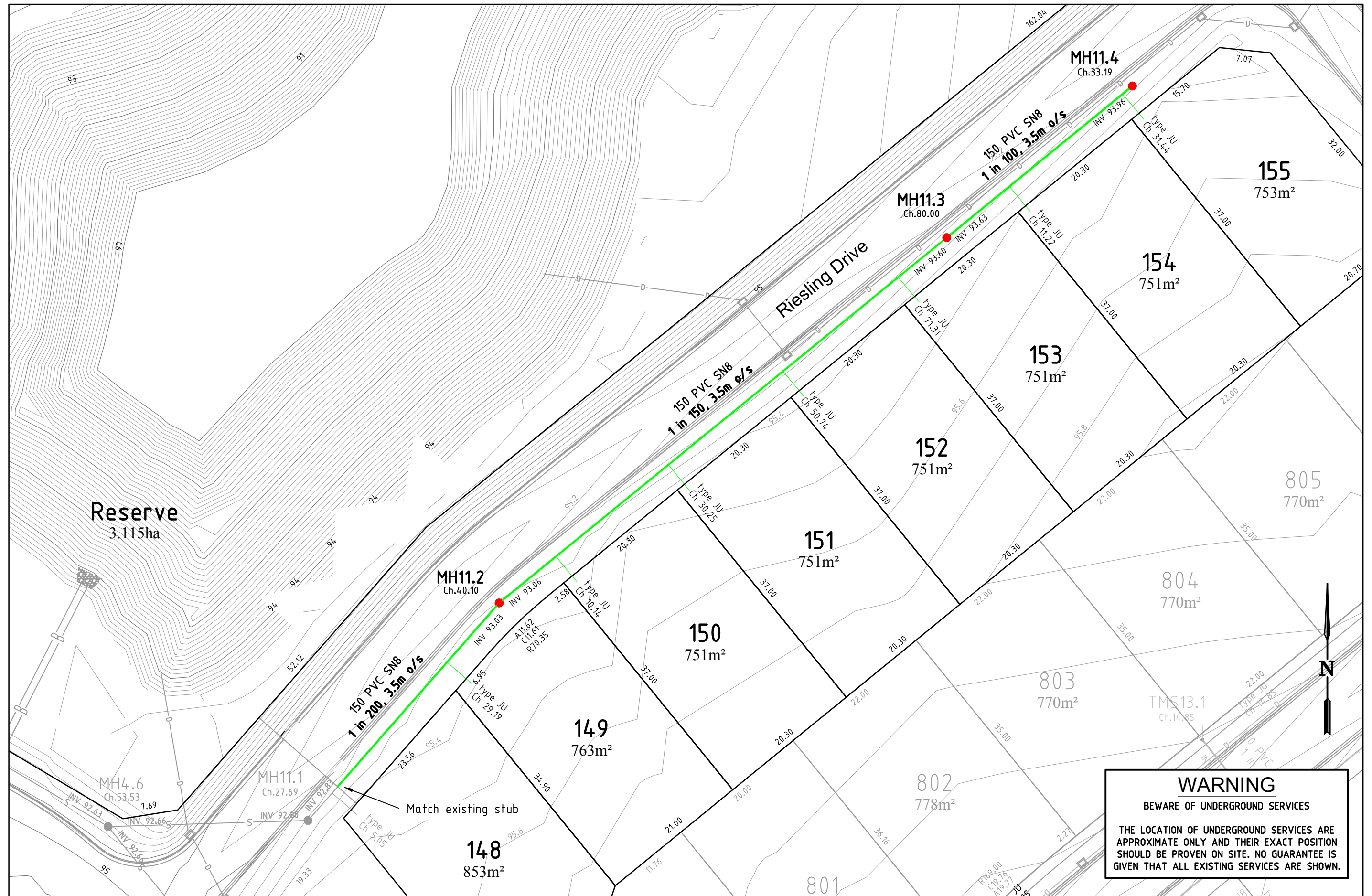
- a) Minimum bedding sand under pipe - 75mm
- b) Minimum sand backfill above pipe - 100mm
- c) Minimum sand backfill either side of pipe - 100mm

For concrete pipes:

- a) Minimum bedding sand under pipe - 75mm
- b) Minimum sand backfill to string line.
- c) Minimum sand backfill either side of pipe - 100mm

Select backfill to 100mm above the pipe. Should the excavated material be unsuitable, sand backfill to be provided a minimum 100mm above the pipe.

6			Designed R. Dawborn May 2018	Checked N. Bowe May 2018	Notes/Legend	 <p>TERRACO Civil Engineers Project Managers Development Consultants</p>	<p>Terraco P/L ABN 12 681 695 776 Corner Jewell Court & Rowena Street Bendigo Vic 3550 Ph: 03 5442 5799 Fax: 03 5441 5506 E: info@terraco.com.au</p>	<p>No Scale</p> <p>All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A3)</p>	<p>Murray River Council - Moama Villawood Properties Pty Ltd Lakeview Estate - Stage 7 Sewer Notes</p>			
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1	Original Issue	10/5/2018										
0	Draft	20/11/2017										
Ver	Revision Description	Date			Drawing file: 17127 Sewer.dwg	LTO Ref: -	Council Ref: DA 173/11	Our Ref: 17127	Version 1	Sheet 24 of 32		



WARNING
 BEWARE OF UNDERGROUND SERVICES
 THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

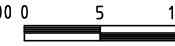
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Approved	

Notes/Legend
 PLEASE NOTE THAT CONTOURS SHOWN ON PLAN INDICATE THE APPROXIMATE FINISHED SURFACE. CONTOUR INTERVAL 0.1m
 MH's SHOWN IN RED HAVE CLASS D LIDS

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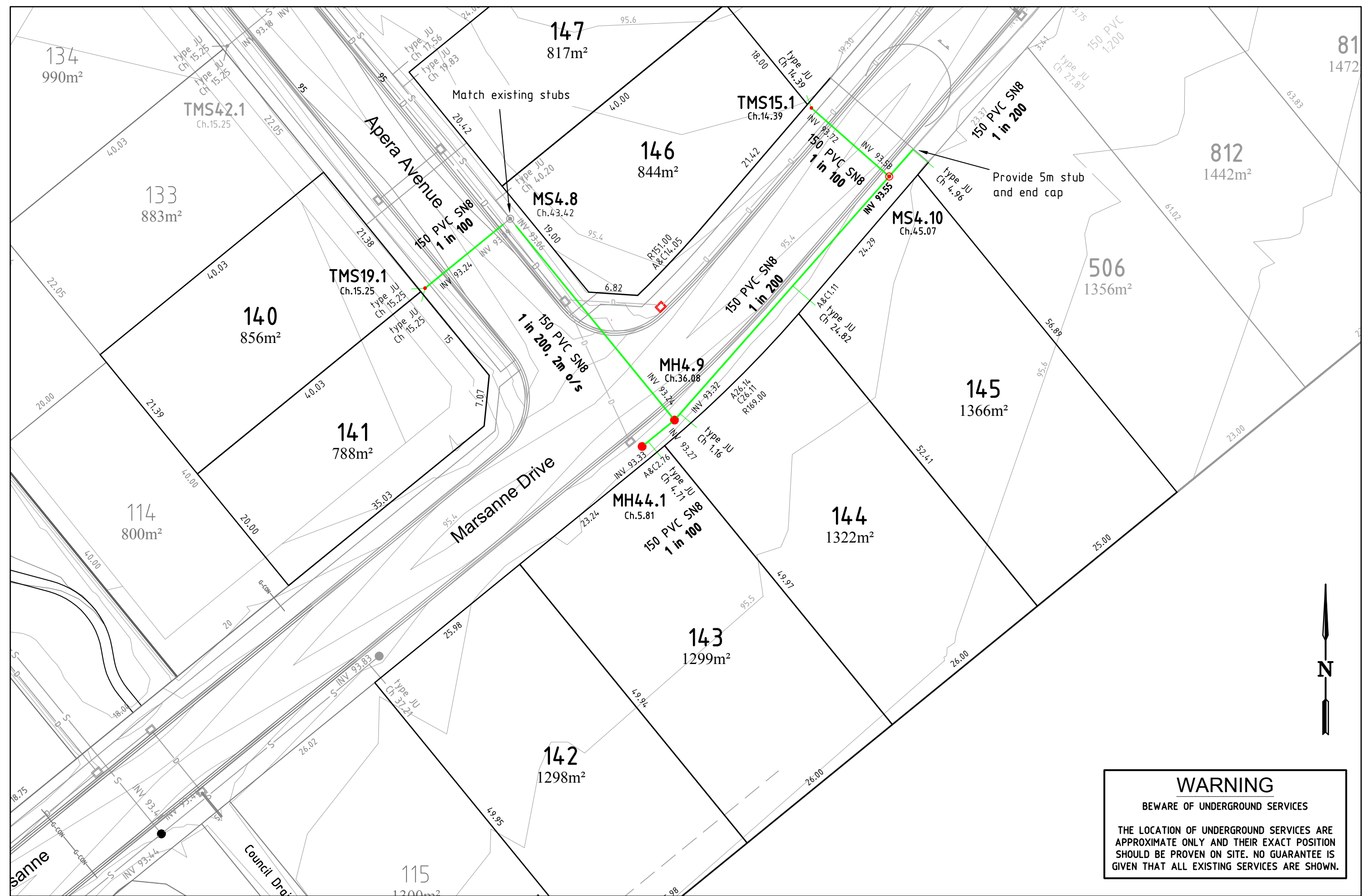
Terraco P/L
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Drawing file:	LTO Ref:
17127 Sewer.dwg	-

Murray River Council - Moama
Villawood Properties Pty Ltd
 Lakeview Estate - Stage 7
 Sewer Layout Plan

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	25 of 32



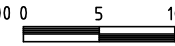
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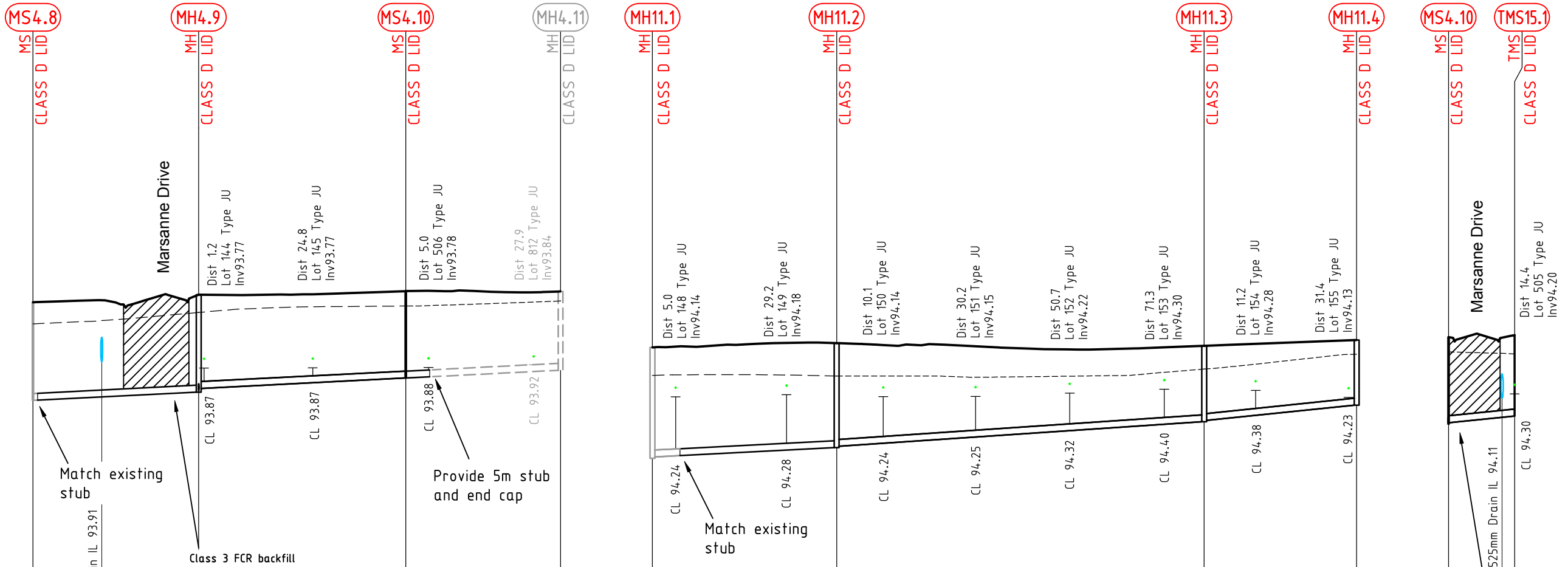
Terraco P/L
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Drawing file:	LTO Ref:
17127 Sewer.dwg	-

Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Sewer Layout Plan 2

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	17127	1	26 of 32



Pipe Size (mm)	150	150	150	
Type	PVC SN8	PVC SN8	PVC SN8	
Pipe Grade (1 in) (%)	200 0.500%	200 0.500%	200 0.500%	
Datum R.L.	84.0			
Invert	93.062 93.062 93.14	93.242 93.322	93.547 93.547	93.716 93.746
Depth to Invert From FSL	2.13 2.13	2.12 2.04	1.89 1.89	1.72 1.69
Finished Surface	95.196	95.362	95.439	95.432
Existing Surface	94.726	94.974	95.115	95.224
Chainage	355.73 14.96 370.70 36.08	391.81 45.07	436.89 33.71	470.59

Pipe Size (mm)	150	150	150	150	150	
Type	PVC SN8	PVC SN8	PVC SN8	PVC SN8	PVC SN8	
Pipe Grade (1 in) (%)	200 0.500%	200 0.500%	150 0.667%	150 0.667%	100 1.000%	
Datum R.L.	85.0					
Invert	92.831 92.831	93.032 93.062	93.595 93.625	93.595 93.625	93.957	
Depth to Invert From FSL	2.41 2.38	2.27 2.24	1.65 1.62	1.65 1.62	1.42	
Finished Surface	95.214	95.305	95.249	95.249	95.376	
Existing Surface	94.602	94.593	94.742	94.742	95.064	
Chainage	27.69 40.10	67.80	80.00	147.80 33.19	180.99	

Pipe Size (mm)	150	150	
Type	PVC SN8	PVC SN8	
Pipe Grade (1 in) (%)	100 1.000%	100 1.000%	
Datum R.L.	85.0		
Invert	93.547 93.577 93.69	93.721	
Depth to Invert From FSL	1.89 1.86	1.76	
Finished Surface	95.439	95.482	
Existing Surface	95.115	95.070	
Chainage	0.00 14.99 11.66	14.39	

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Bendigo Vic 3550
Ph: 03 5442 5799
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Scale (m)
H 1:1000 0 10 20
V 1:100 0 1 2

All lengths are in metres
and all levels are to Australian Height Datum
(Original Sheet Size is A3)

Drawing file:	LTO Ref:
17127 Sewer.dwg	-

Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Sewer Longitudinal Sections

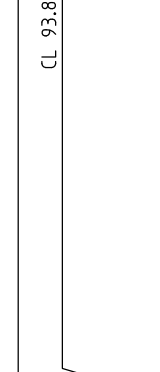
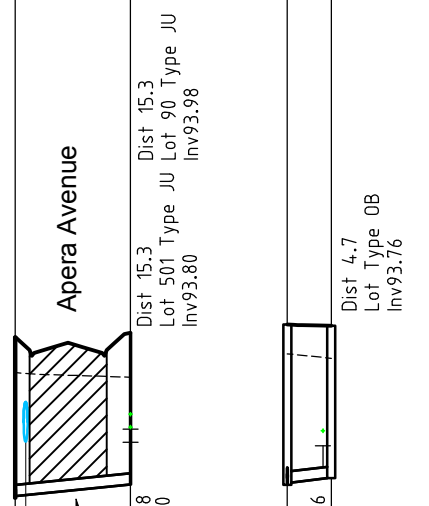
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MS4.8
MS
CLASS D LID

TMS19.1
TMS
CLASS D LID

MH4.9
MH
CLASS D LID

MH4.1
MH
CLASS D LID



Pipe Size (mm)	150	150
Type	PVC SN8	PVC SN8
Pipe Grade (1 in) (%)	100.0 1.000%	100.0 1.000%
Datum R.L.	85.0	85.0
Invert	93.062 93.092 93.10	93.242 93.272 93.330
Depth to Invert From FSL	2.13 2.10	2.12 2.09 2.01
Finished Surface	95.196	95.253 95.344
Existing Surface	94.726	94.665 94.915
Chainage	0.00 1.37 15.25	0.00 5.81 5.81

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1	Original Issue	10/5/2018
0	Draft	20/11/2017
Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
May 2018	May 2018
Approved	

Notes/Legend

TERRACO
Civil Engineers
Project Managers
Development Consultants

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Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 7
Sewer Longitudinal Sections 2

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WATER MAIN NOTES

1. Water Main offset to be 1.65m (Filtered) and 2.10m (Raw) unless shown otherwise.
2. All works are to be carried out in accordance with the current standard's of Murray River Council.
3. Contract is in accordance with AS2124-1992.
4. The Contractor must locate all services prior to works commencing.
5. All water service road crossings to be 32mm PN8 poly (if two properties being connected) or 25mm PN8 poly (if single property connected). Each service to be sleeved in 50mm Class 12 uPVC.
6. The Contractor must supply all assemblies, cast iron covers, surrounds and indicator posts for stop valves (SV) and hydrants (HYD).
7. All water mains to be RRJ PVC-M Series 1 Class 9 except under road pavement where Series 1 Class 12 is to be used.
8. Water tappings (Treated and Raw) including tapping saddles and 20mm dia. copper service connections, meter stop tap (treated) and ball valve quick action (raw) to be provided 1.0m within each lot. Tapping saddles are to be gunmetal style only. See Standard Drawing.
9. Water meter stop taps are to be installed on filtered water connections.
10. Ball valves quick action are to be installed on raw water connections
11. All stop valves are to be Anti Clockwise Closing (ACC).
12. All services to be installed to provide minimum cover to finished surface.
13. All trenches crossing pavement areas or beneath kerb or footpath are to be backfilled with 3% cement stabilised class 3 crushed rock.
14. All road crossings for services to be backfilled with 3% stabilised FCR.

Asset Recording Requirements

The contractor must record all construction details including offsets of mains and locations of fittings such as valves, tees fire plugs etc, and testing details, using appropriate "line sheets".

The information is to be provided to the supervising engineer in a suitable form to enable detailed "as constructed" plans to be produced. Line sheets are available from Terraco, or the contractor may use their own if approved by Terraco prior to works commencing.

The information is to be provided within 1 week of the completion of the works. Claims for payment for construction may be delayed until the line sheets have been received by the supervising engineer.

The following standard backfill requirements apply to all trenching works.

For PVC pipes:

- a) Minimum bedding sand under pipe - 75mm
- b) Minimum sand backfill above pipe - 100mm
- c) Minimum sand backfill either side of pipe - 100mm

For concrete pipes:

- a) Minimum bedding sand under pipe - 75mm
- b) Minimum sand backfill to string line.
- c) Minimum sand backfill either side of pipe - 100mm

Select backfill to 100mm above the pipe. Should the excavated material be unsuitable, sand backfill to be provided a minimum 100mm above the pipe.

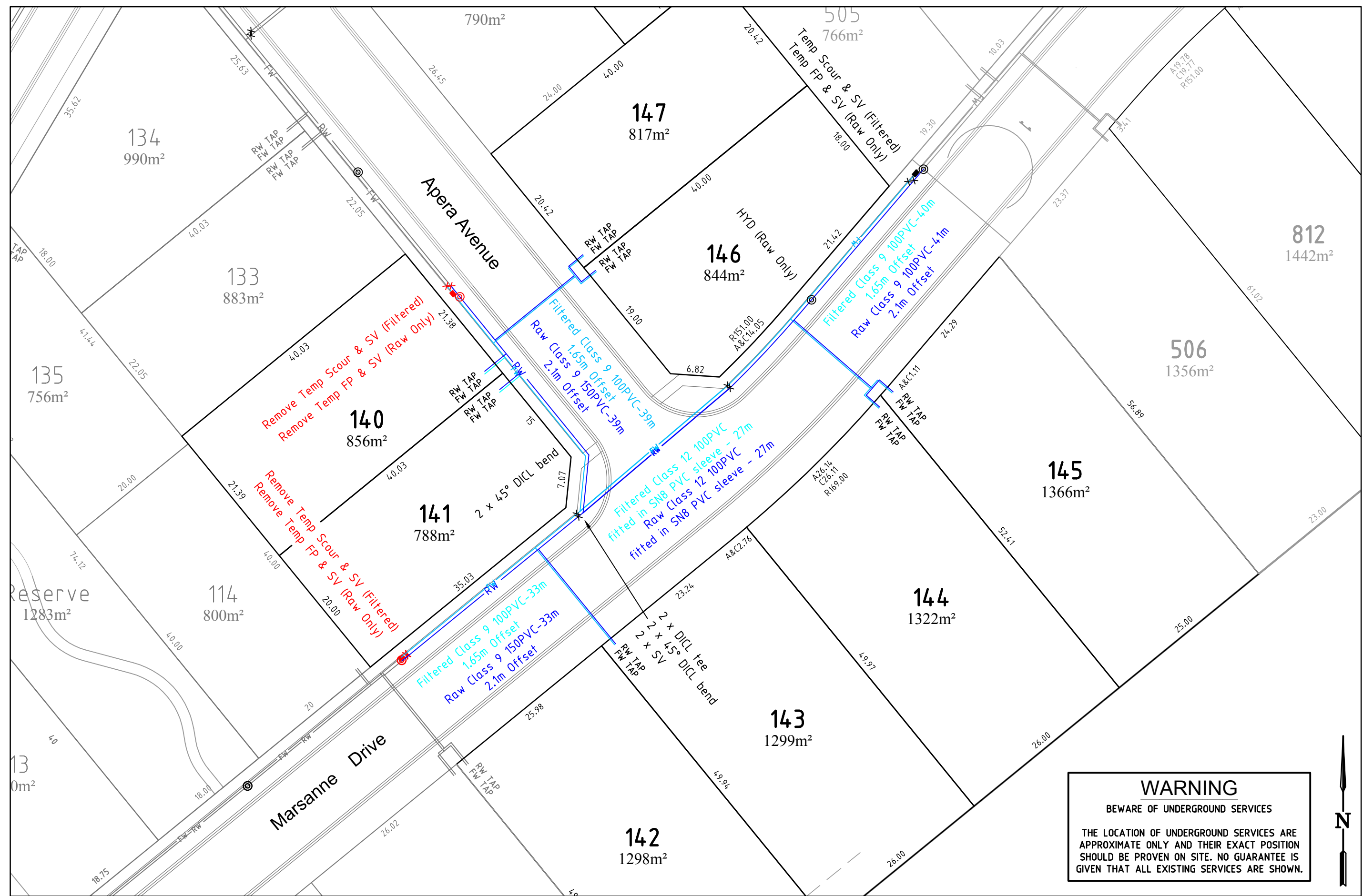
TOTAL WORK

SIZE	TYPE	CLASS	LENGTH (m)
150mm	PVC-M	9	200
150mm	PVC-M	12	15
100mm	PVC-M	9	442
100mm	PVC-M	12	69

Street	Back of Kerb	Filt. Water	Raw Water	Gas	Power	NBN	Sewer
Riesling Drive	5.30	1.65 E	2.10 E	2.50 E	0.40-1.0 E	1.30 E	3.50 E
Apera Avenue	3.90	1.65 S	2.10 S	2.50 S	0.40-1.0 N	1.30 N	2.00 N
Marsanne Drive	3.90	1.65 N	2.10 N	2.50 N	0.40-1.0 S	1.30 S	Varies

Service Offsets

6			Designed R. Dawborn May 2018	Checked N. Bowe May 2018	Notes/Legend	 TERRACO Civil Engineers Project Managers Development Consultants	Terraco P/L ABN 12 681 695 776 Corner Jewell Court & Rowena Street Bendigo Vic 3550 Ph: 03 5442 5799 Fax: 03 5441 5506 E: info@terraco.com.au	No Scale All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A3)	Murray River Council - Moama			
5			Approved		Villawood Properties Pty Ltd							
4			Lakeview Estate - Stage 7									
3			Water Notes									
2			Drawing file:	LTO Ref:	Council Ref:				Our Ref:	Version	Sheet	
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WARNING
 BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.



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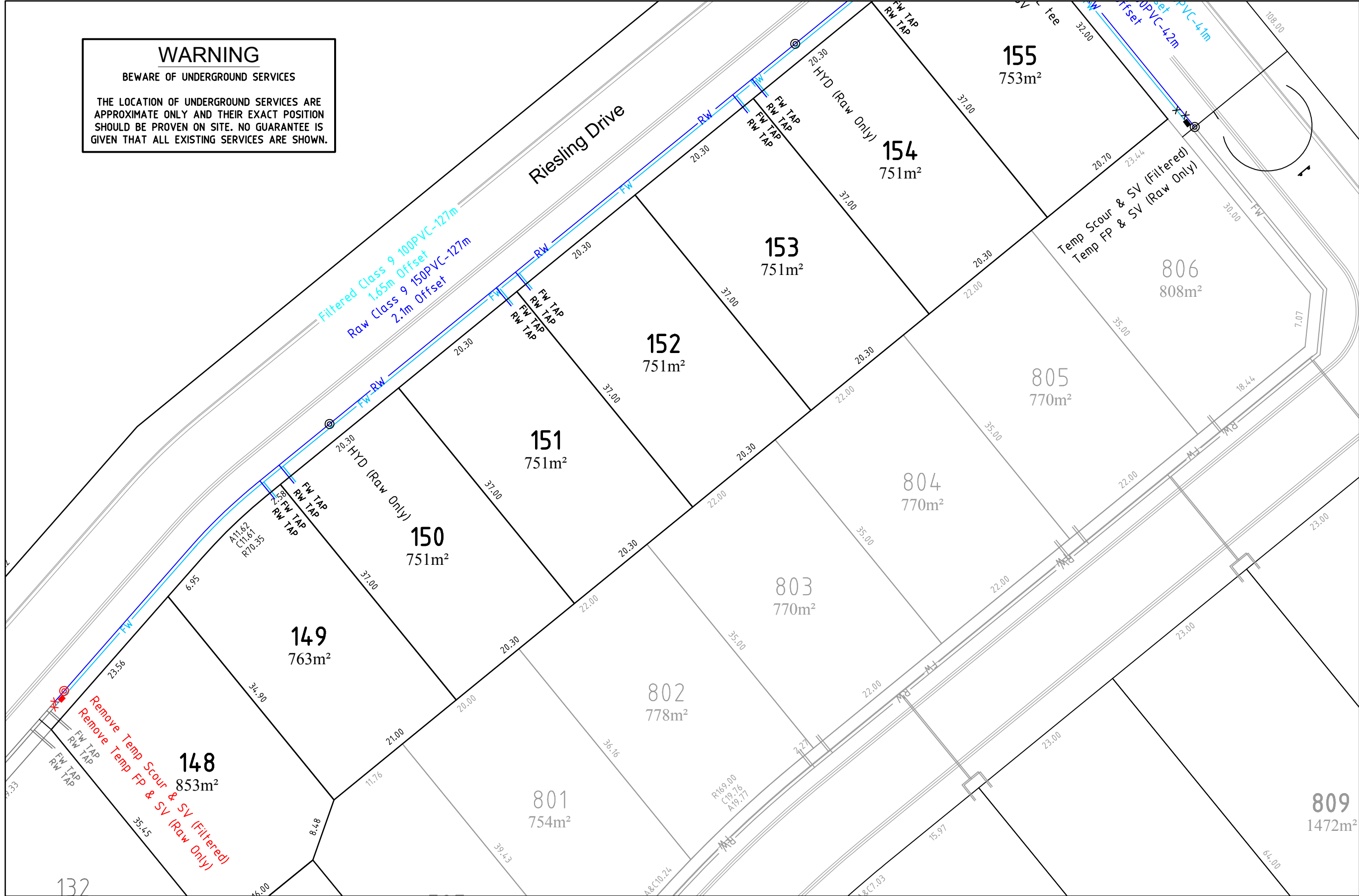
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Drawing file:	LTO Ref:
17127 Water.dwg	-

Murray River Council - Moama				
Villawood Properties Pty Ltd				
Lakeview Estate - Stage 7				
Water Plan				
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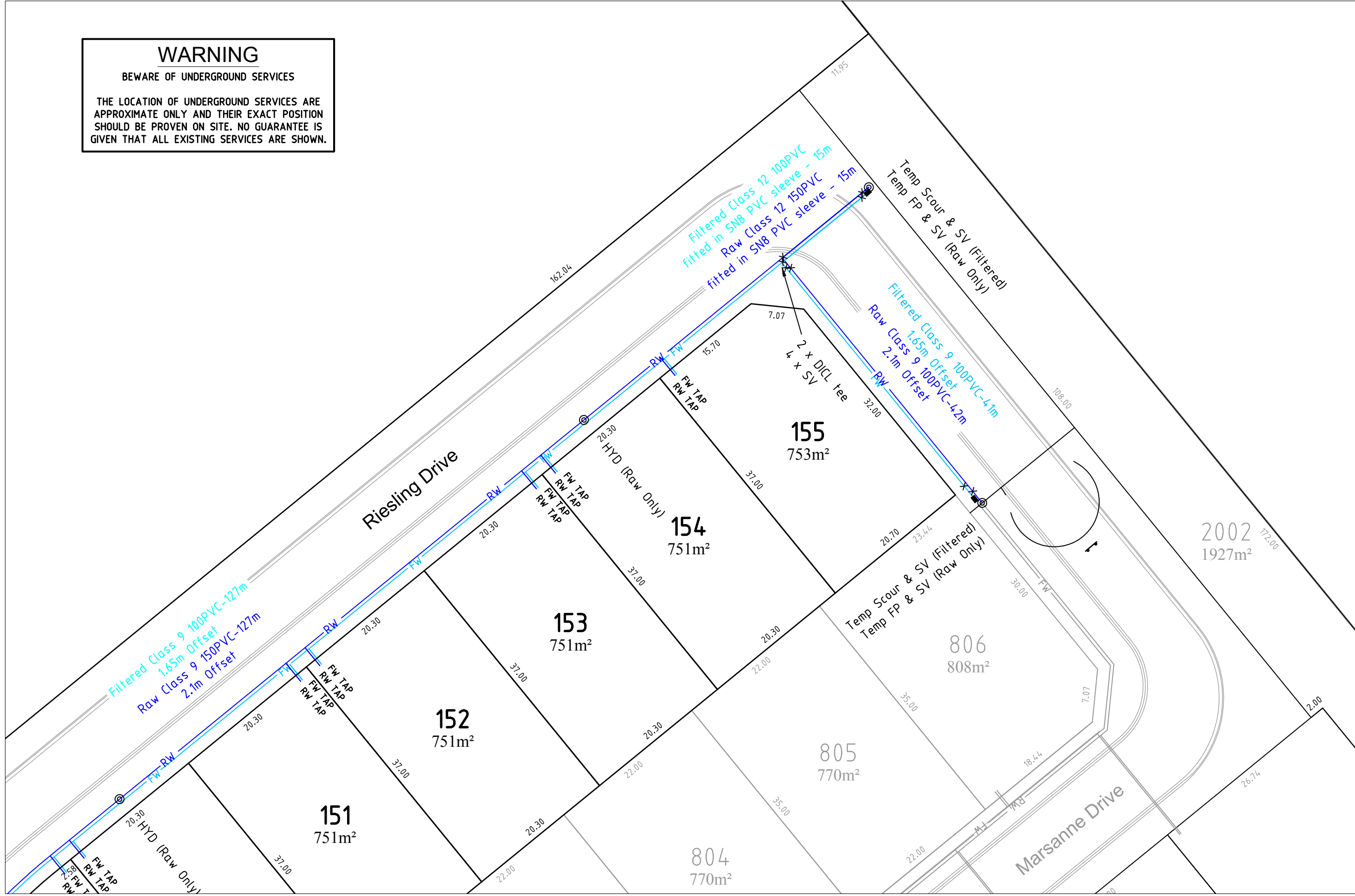
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Murray River Council - Moama					
Villawood Properties Pty Ltd					
Lakeview Estate - Stage 7					
Water Plan 2					
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Villawood Properties Pty Ltd					
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Water Plan 3					
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