

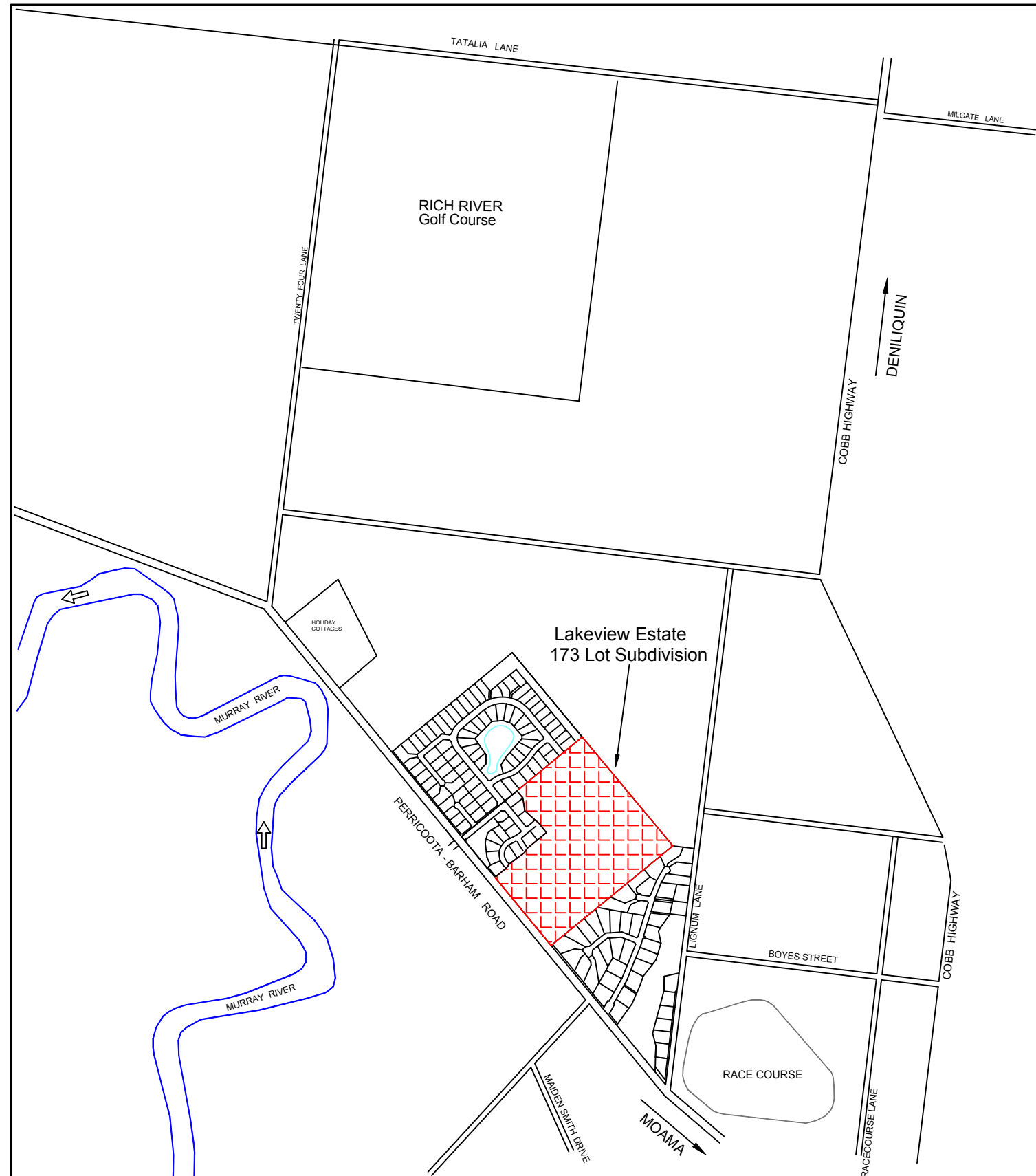


ORIGINAL DRAWINGS
(These are the originals only if this text is RED)

Villawood Properties Pty Ltd

Lakeview Estate - Stage 10

Drawing file: 19099 Face.dwg	LTO Ref: -	Council Ref: DA 173/11	Ref: 19099	Version 1
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LOCALITY PLAN - MOAMA

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1	Amend Lot Numbers	16/3/2020
0	Draft	20/8/2019
Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
Mar 2020	Mar 2020
Approved	

Notes/Legend

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NOT TO SCALE
All lengths are in metres
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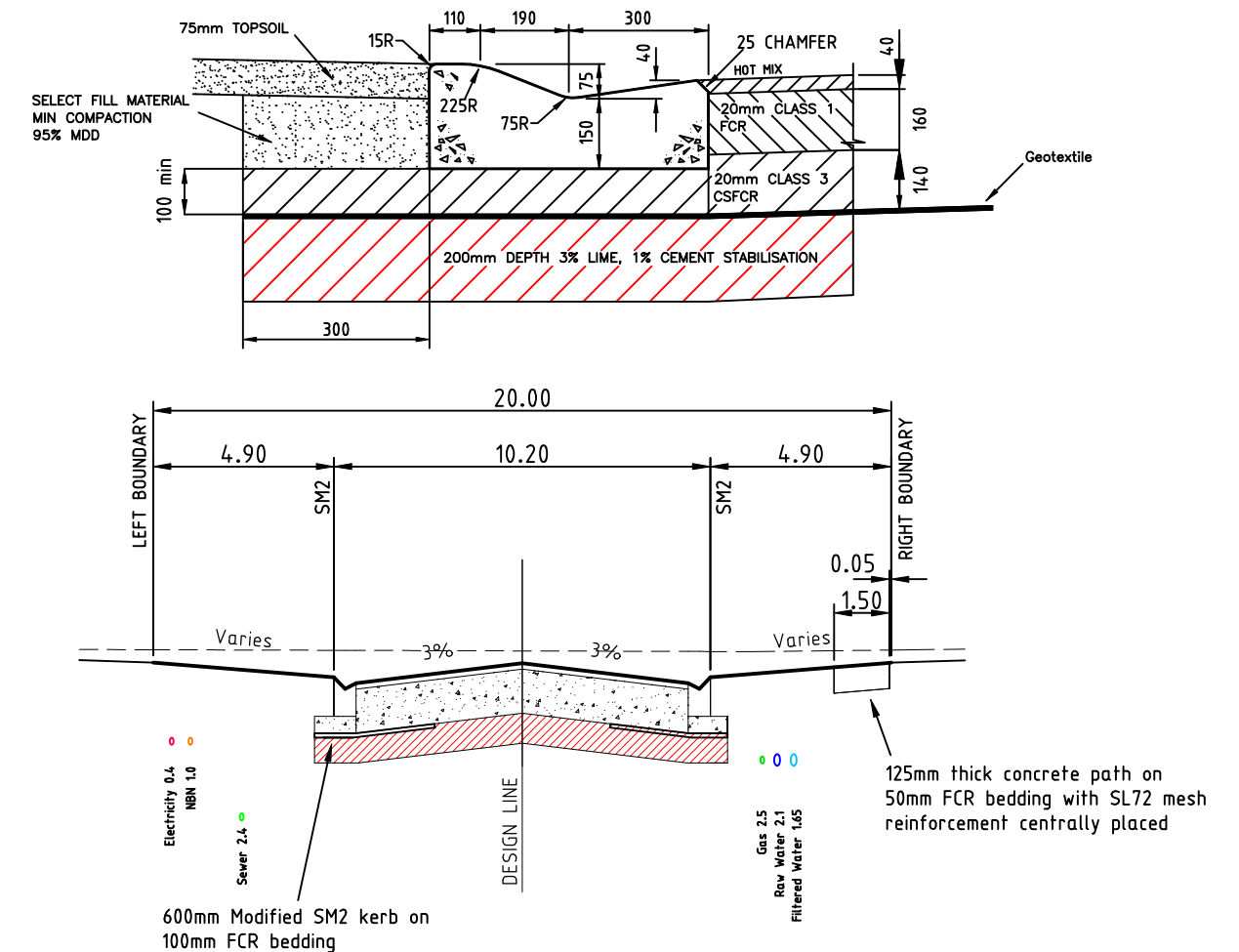
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Murray River Council - Moama					
Villawood Properties Pty Ltd					
Lakeview Estate - Stage 10					
Index & Locality Plan					
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General Notes

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 195 to 208.
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 18.7, 18.9, 18.10, 33.1, 40.1 and 40.2
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 of at least 100mm 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, unless approved.
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 copy 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



Typical Cross Section - Hermitage Drive CH57.55-233.55

Pavement Composition & Notes

1. PAVEMENT COMPOSITION: HERMITAGE 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.

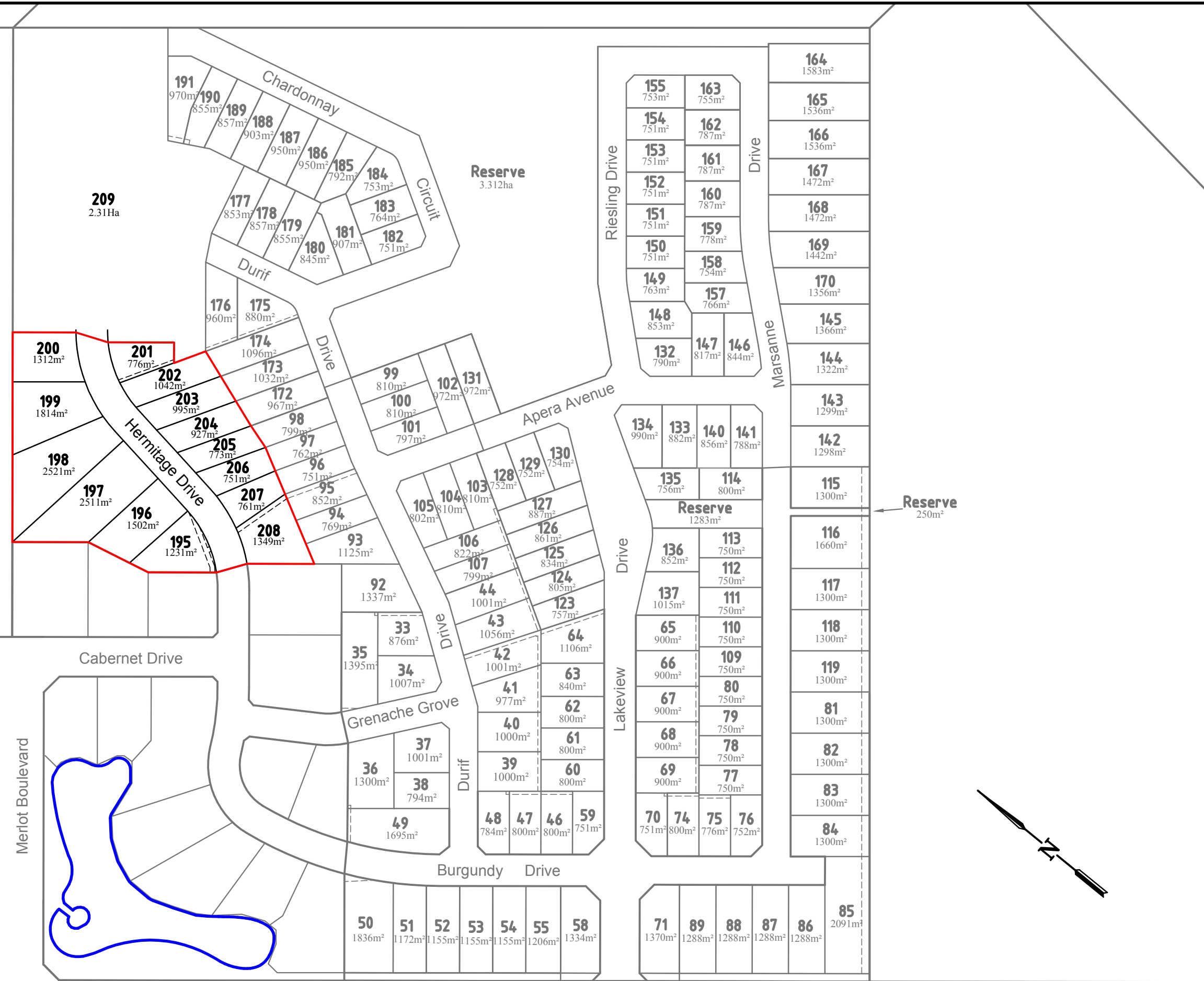
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5			R. Dawborn	N. Bowe	
4			Mar 2020	Mar 2020	
3			Approved		
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1	Amend Lot Numbers	16/3/2020			
0	Draft	20/8/2019			
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Murray River Council - Moama	
Villawood Properties Pty Ltd	
Lakeview Estate - Stage 10	
General Notes, Kerb Detail & Typical Section	
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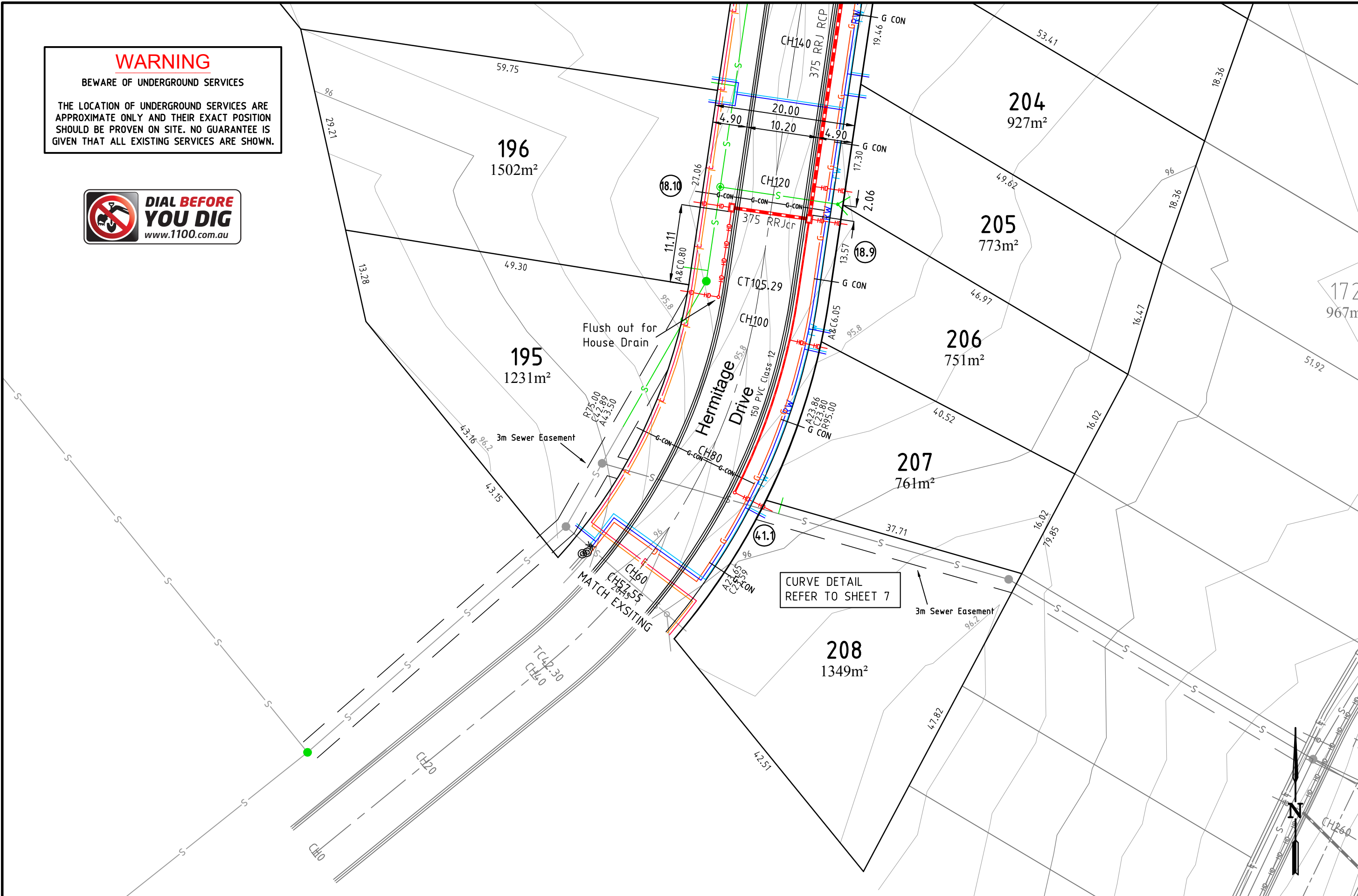
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Murray River Council - Moama					
Villawood Properties Pty Ltd					
Lakeview Estate - Stage 10					
Overall Layout Plan					
Council Ref:	Our Ref:	Version	Sheet		
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WARNING
 BEWARE OF UNDERGROUND SERVICES
 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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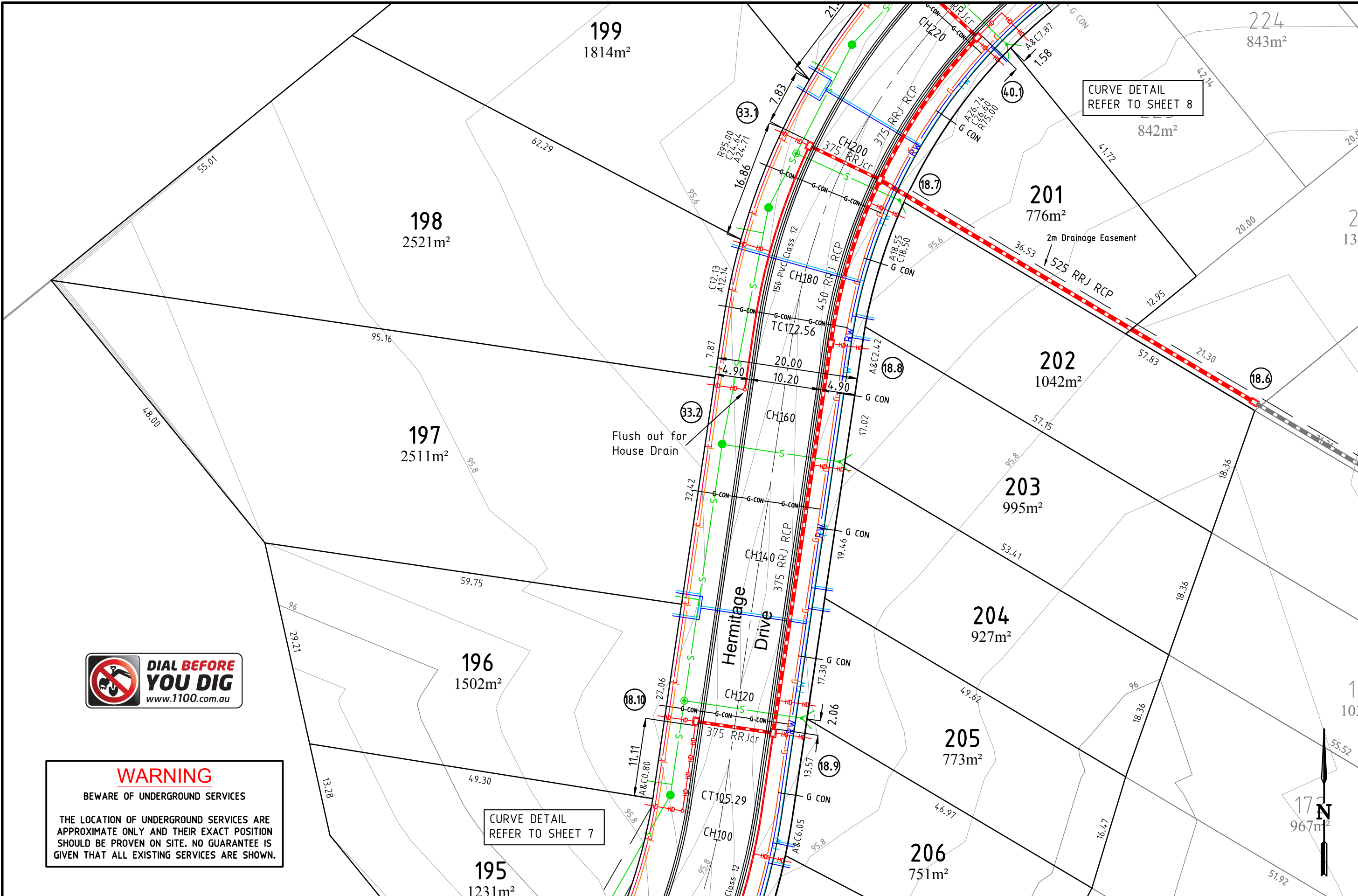
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Murray River Council - Moama
Villawood Properties Pty Ltd
 Lakeview Estate - Stage 10
Layout Plan

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CURVE DETAIL
REFER TO SHEET 7

CURVE DETAIL
REFER TO SHEET 8

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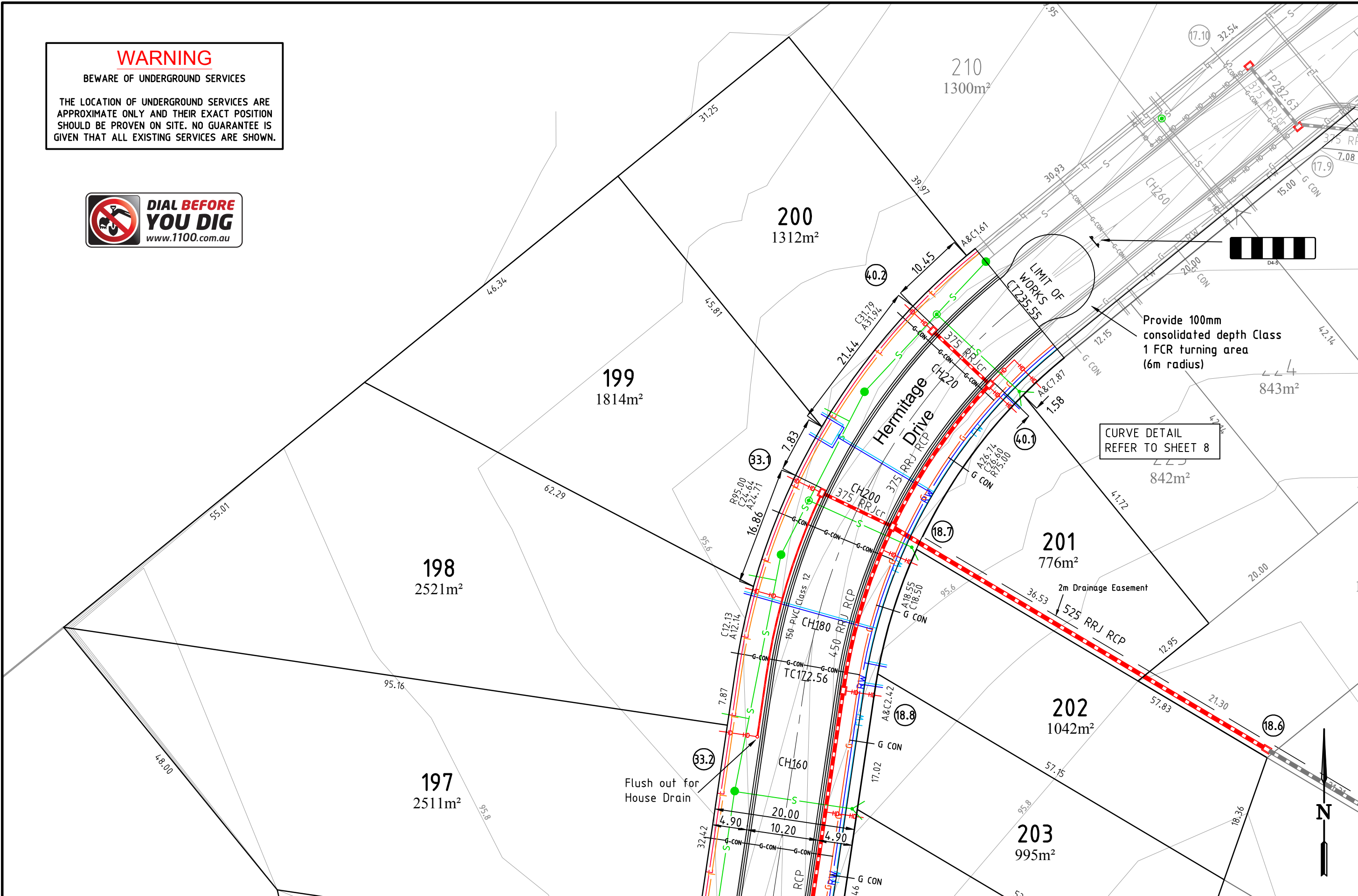
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Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Layout Plan 2

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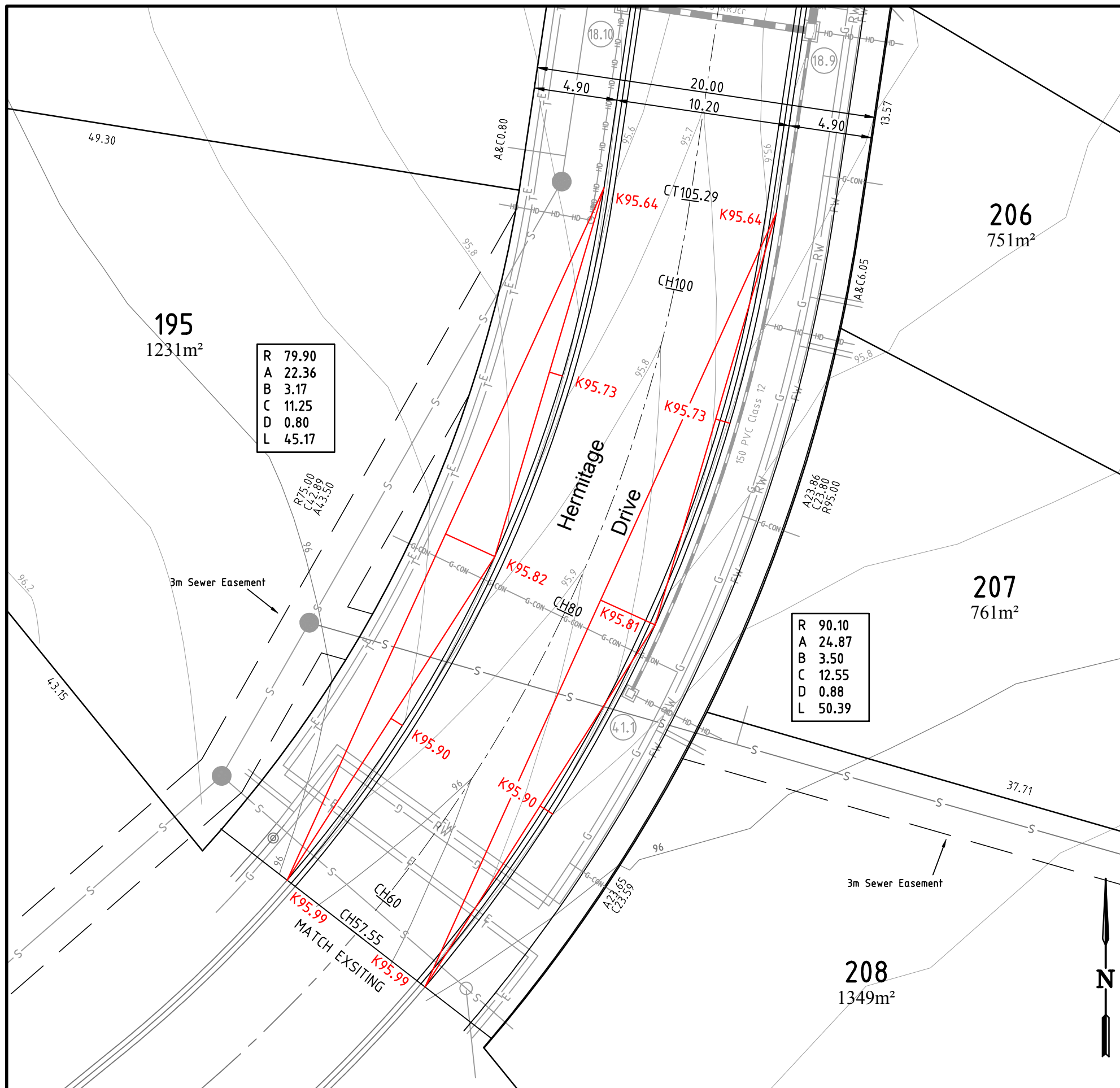
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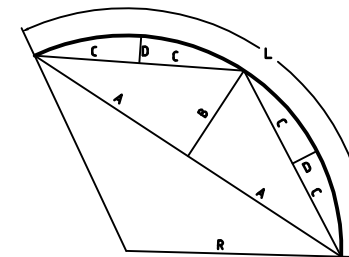
Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Layout Plan 3

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R	79.90
A	22.36
B	3.17
C	11.25
D	0.80
L	45.17

R	90.10
A	24.87
B	3.50
C	12.55
D	0.88
L	50.39



Curve Setout Detail



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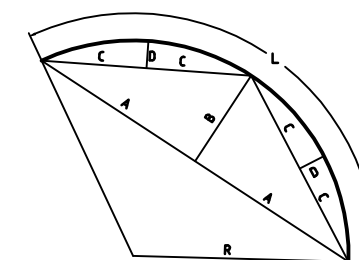
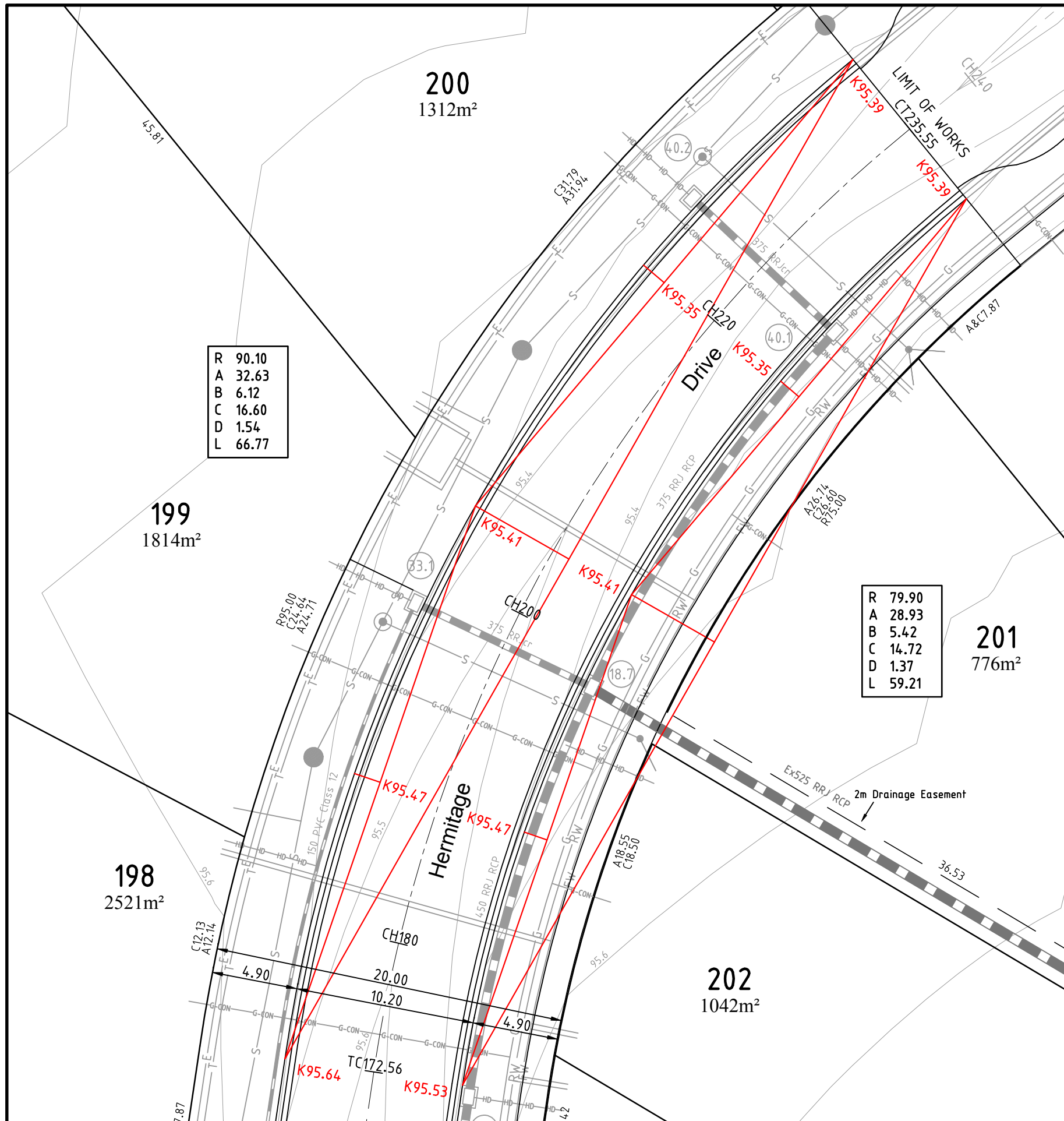
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Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Curve Detail

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Curve Setout Detail



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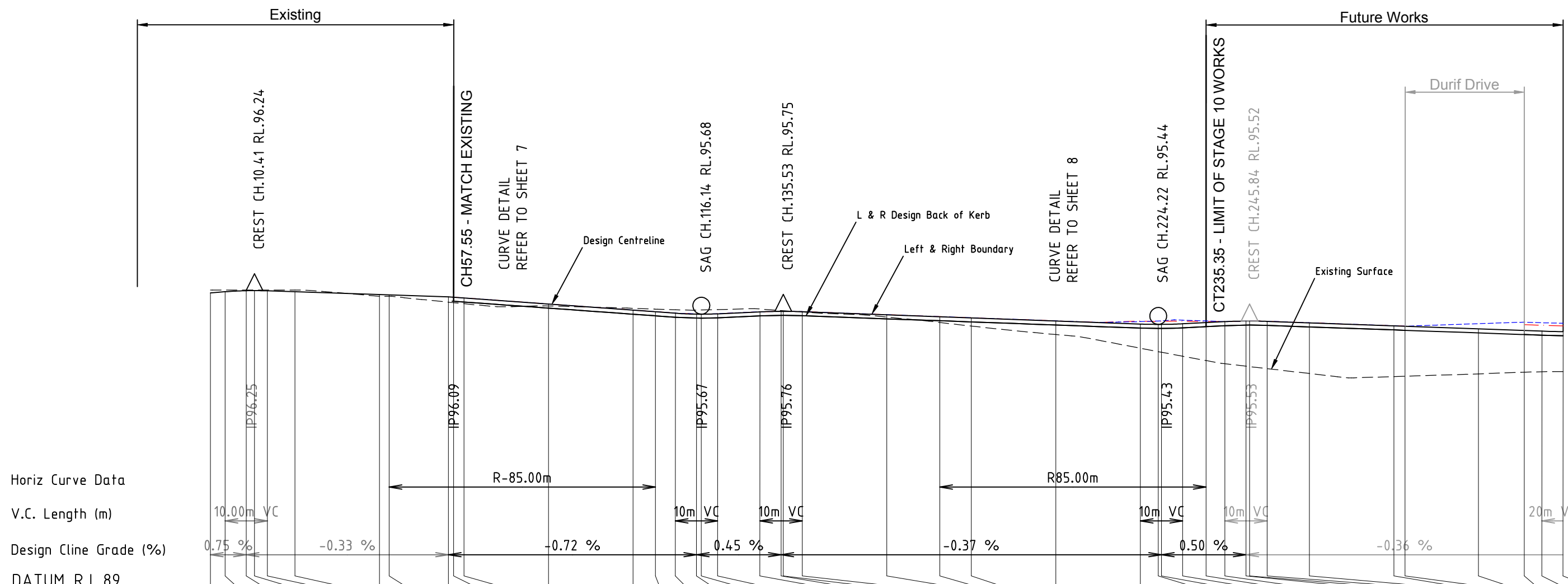
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Murray River Council - Moama				
Villawood Properties Pty Ltd				
Lakeview Estate - Stage 10				
Curve Detail 2				
Council Ref:	Our Ref:	Version	Sheet	
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Chainage	0.00	3.48	8.48	10.41	13.48	20.00	40.00	42.30	56.31	57.55	60.00	80.00	100.00	105.29	110.00	115.00	116.14	120.00	130.00	135.00	135.53	140.00	160.00	172.56	180.00	200.00	220.00	224.22	225.00	230.00	235.55	240.00	245.00	245.84	250.00	260.00	280.00	282.63	300.00	310.83	315.00	320.00						
Design Surface	96.19	96.21	96.24	96.24	96.23	96.21	96.14	96.14	96.09	96.08	96.06	95.92	95.78	95.74	95.70	95.68	95.68	95.69	95.74	95.75	95.75	95.75	95.74	95.67	95.62	95.59	95.52	95.45	95.44	95.44	95.45	95.48	95.50	95.52	95.52	95.52	95.51	95.48	95.41	95.30	95.28	95.27						
Centreline Levels																																																
Left Design Level Back of Kerb										95.99	95.97	95.82	95.68	95.64	95.61	95.59	95.59	95.60	95.64	95.65	95.65	95.65	95.65	95.57	95.53	95.50	95.43	95.35	95.35	95.35	95.35	95.36	95.39	95.41	95.41	95.42	95.42	95.42	95.42	95.38	95.31	95.30	95.24	95.20	95.19	95.17		
Right Design Level Back of Kerb										95.99	95.97	95.82	95.68	95.64	95.61	95.59	95.59	95.60	95.64	95.65	95.65	95.65	95.65	95.57	95.53	95.50	95.43	95.35	95.35	95.35	95.35	95.36	95.39	95.41	95.41	95.42	95.42	95.42	95.42	95.38	95.31	95.30	95.24	95.20	95.19	95.17		
Design Surface Left Building Line										96.08	96.07	95.92	95.78	95.74	95.71	95.69	95.69	95.69	95.74	95.75	95.75	95.75	95.74	95.67	95.62	95.60	95.52	95.51	95.52	95.53	95.54	95.54	95.52	95.51	95.51	95.51	95.51	95.52	95.52	95.52	95.48	95.41	95.40	95.46	95.43	95.42	95.41	
Design Surface Right Building Line										96.08	96.07	95.92	95.78	95.74	95.71	95.69	95.69	95.69	95.74	95.75	95.75	95.75	95.74	95.67	95.62	95.60	95.52	95.52	95.51	95.51	95.51	95.51	95.51	95.51	95.51	95.51	95.51	95.51	95.52	95.52	95.52	95.48	95.41	95.40	95.43	95.42	95.41	
Existing Surface	96.25	96.25	96.25	96.25	96.25	96.25	96.10	96.10	95.97	95.95	95.93	95.88	95.82	95.80	95.79	95.78	95.78	95.79	95.80	95.77	95.77	95.73	95.61	95.49	95.40	95.20	94.88	94.80	94.78	94.69	94.59	94.51	94.51	94.45	94.44	94.44	94.40	94.28	94.21	94.22	94.27	94.31	94.32	94.33				

Scales Hor 1 : 1000
Ver 1 : 100

LONGITUDINAL SECTION - HERMITAGE DRIVE

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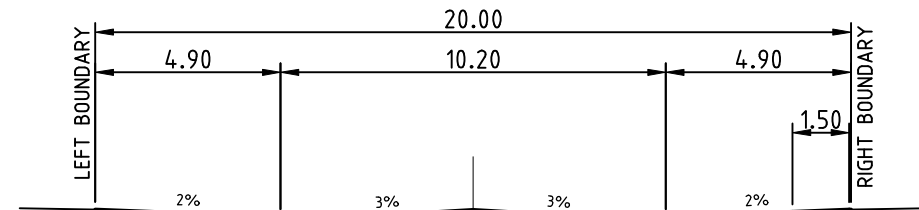
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Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Hermitage Drive Longitudinal Section

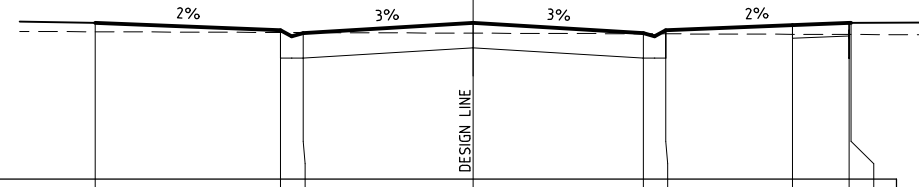
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Datum 94

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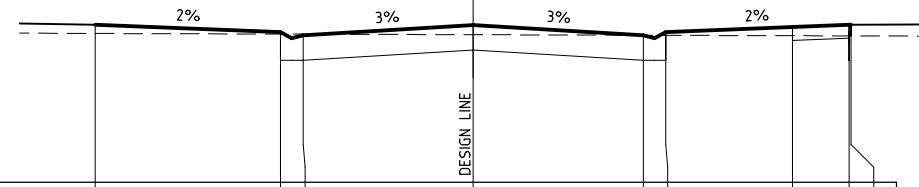
CH 80



Datum 94

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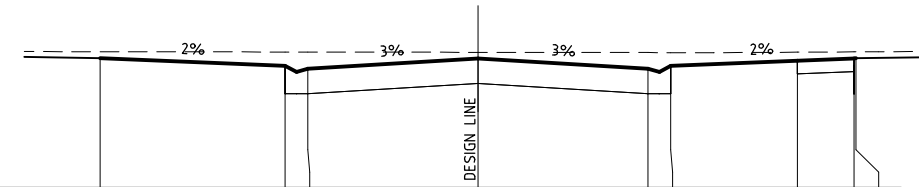
CH 60



Datum 94

Design Level	96.084	95.986	95.946	96.081	95.946	95.986	96.053	96.083	96.084
Existing Surface	95.969	95.961	95.96	95.953	95.946	95.945	95.939	95.937	95.937
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

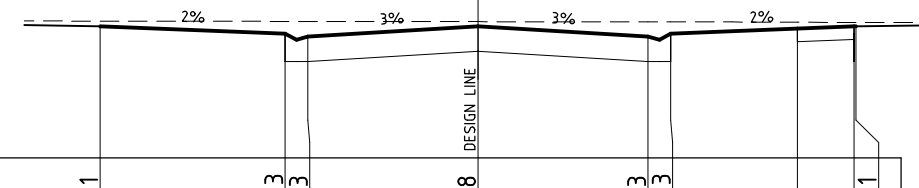
CH 57.55 - MATCH EXISTING



Datum 94

Design Level	95.707	95.609	95.569	95.704	95.609	95.609	95.676	95.706	95.707
Existing Surface	95.795	95.791	95.791	95.787	95.783	95.783	95.788	95.793	95.793
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

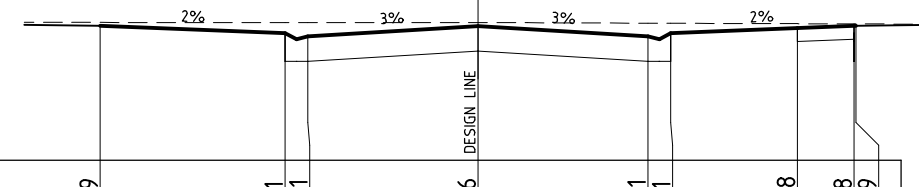
CH 110



Datum 94

Design Level	95.741	95.643	95.603	95.738	95.603	95.643	95.71	95.74	95.741
Existing Surface	95.808	95.804	95.804	95.8	95.798	95.798	95.793	95.79	95.79
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

CT 105.294



Datum 94

Design Level	95.779	95.681	95.641	95.776	95.641	95.681	95.748	95.778	95.779
Existing Surface	95.824	95.823	95.822	95.821	95.815	95.813	95.807	95.805	95.804
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

CH 100

6		
5		
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1	Amend Lot Numbers	16/3/2020
0	Draft	20/8/2019
Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
Mar 2020	Mar 2020
Approved	

Notes/Legend

TERRACO
Civil Engineers
Project Managers
Development Consultants

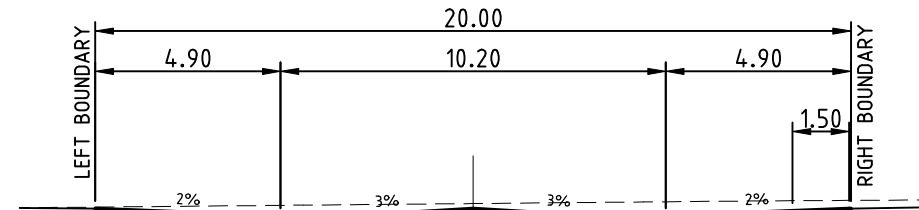
Terraco P/L
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Ph: 03 5442 5799
Fax: 03 5441 5506
E: info@terraco.com.au

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: 19099 Hermitage.dwg
LTO Ref: -
Council Ref: DA 173/11
Our Ref: 19099
Version: 1
Sheet: 10 of 24

Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Hermitage Drive Cross Sections



Datum 94

Design Level	95.739	95.641	95.601	95.736	95.601	95.708	95.738	95.739
Existing Surface	95.757	95.78	95.783	95.804	95.825	95.842	95.846	95.846
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 130



Datum 94

Design Level	95.67	95.572	95.532	95.667	95.532	95.639	95.669	95.67
Existing Surface	95.523	95.567	95.573	95.614	95.655	95.661	95.692	95.705
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 160



Datum 94

Design Level	95.694	95.596	95.556	95.691	95.556	95.663	95.693	95.694
Existing Surface	95.767	95.776	95.777	95.79	95.803	95.815	95.819	95.819
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 120



Datum 94

Design Level	95.743	95.645	95.605	95.74	95.605	95.712	95.742	95.743
Existing Surface	95.688	95.711	95.713	95.734	95.755	95.774	95.781	95.781
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 140



Datum 94

Design Level	95.685	95.587	95.547	95.682	95.547	95.654	95.684	95.685
Existing Surface	95.778	95.774	95.773	95.78	95.793	95.805	95.809	95.809
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 116.139 - SAG



Datum 94

Design Level	95.752	95.654	95.614	95.749	95.614	95.721	95.751	95.752
Existing Surface	95.719	95.742	95.745	95.766	95.787	95.805	95.812	95.812
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95

CH 135.532 - CREST

6			Designed	Checked	Notes/Legend
5			R. Dawborn	N. Bowe	
4			Mar 2020	Mar 2020	
3			Approved		
2					
1	Amend Lot Numbers	16/3/2020			
0	Draft	20/8/2019			
Ver	Revision Description	Date			

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Civil Engineers
Project Managers
Development Consultants

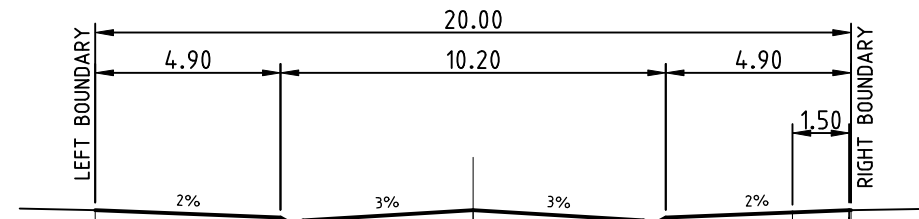
Terraco P/L
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Scale (m)
H 1:200 0 2 4
V 1:100 0 1 2

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

Drawing file: 19099 Hermitage.dwg
LTO Ref: -
Council Ref: DA 173/11
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Version: 1
Sheet: 11 of 24

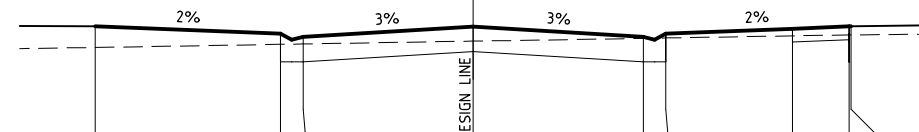
Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Hermitage Drive Cross Sections 2



Datum 93

Design Level	95.524	95.426	95.386	95.521	95.493	95.523	95.524
Existing Surface	95.137	95.164	95.167	95.201	95.246	95.293	95.293
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45

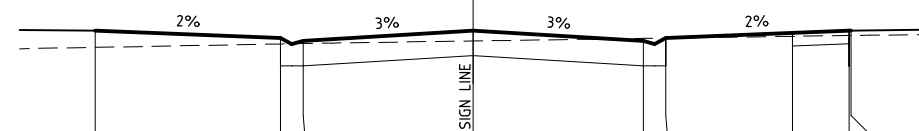
CH 200



Datum 94

Design Level	95.597	95.499	95.459	95.594	95.566	95.596	95.597
Existing Surface	95.319	95.359	95.364	95.401	95.439	95.483	95.483
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45

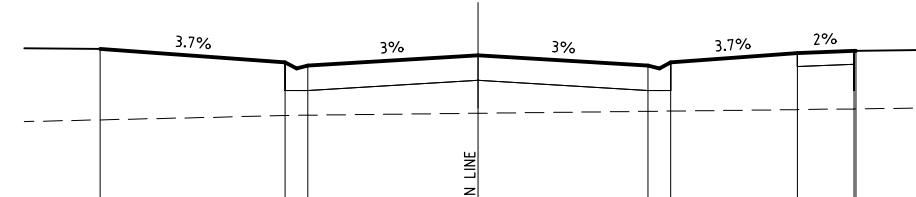
CH 180



Datum 94

Design Level	95.624	95.526	95.486	95.621	95.593	95.623	95.624
Existing Surface	95.402	95.447	95.452	95.487	95.519	95.559	95.559
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45

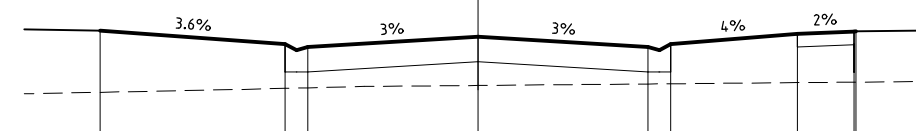
TC 172.559



Datum 93

Design Level	95.54	95.36	95.32	95.455	95.32	95.36	95.483	95.513	95.515
Existing Surface	94.601	94.659	94.662	94.688	94.714	94.717	94.737	94.745	94.746
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

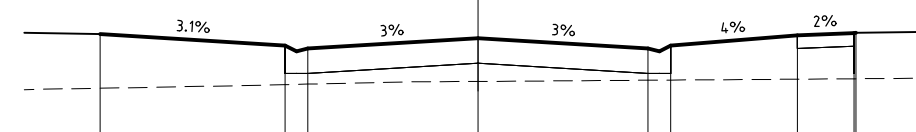
CH 230



Datum 93

Design Level	95.521	95.346	95.306	95.441	95.306	95.346	95.48	95.51	95.512
Existing Surface	94.707	94.759	94.766	94.797	94.817	94.819	94.834	94.841	94.841
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

CH 224.221 - SAG



Datum 93

Design Level	95.506	95.353	95.313	95.448	95.313	95.353	95.487	95.517	95.519
Existing Surface	94.787	94.835	94.841	94.877	94.893	94.895	94.907	94.912	94.912
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

CH 220

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1	Amend Lot Numbers	16/3/2020
0	Draft	20/8/2019
Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
Mar 2020	Mar 2020
Approved	

Notes/Legend

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Project Managers
Development Consultants

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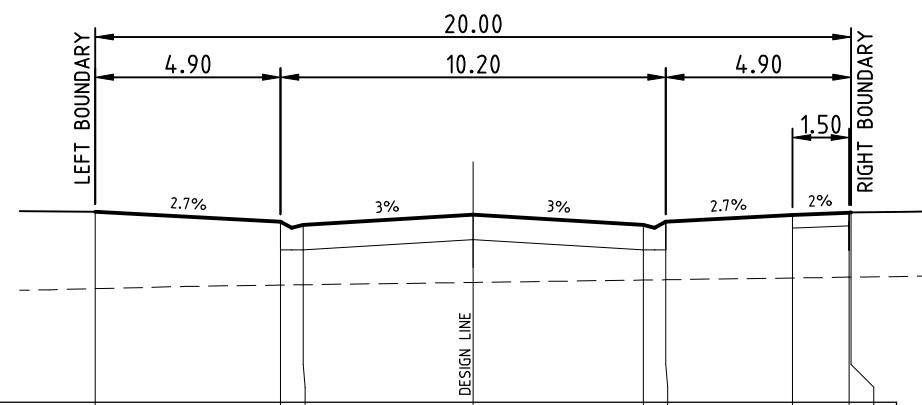
Scale (m)
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V 1:100 0 1 2

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

Drawing file: 19099 Hermitage.dwg
LTO Ref: -

Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Hermitage Drive Cross Sections 3

Council Ref:	Our Ref:	Version	Sheet
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Datum 93

Design Level	95.522	95.388	95.348	95.483	95.348	95.388	95.48	95.51	95.511
Existing Surface	94.504	94.551	94.555	94.586	94.617	94.621	94.645	94.655	94.655
Offset	-10	-5.1	-4.5	0	4.5	5.1	8.45	9.95	10

CT 235.554 - LIMIT OF WORKS

6			Designed	Checked
5			R. Dawborn	N. Bowe
4			Mar 2020	Mar 2020
3			Approved	
2				
1	Amend Lot Numbers	16/3/2020		
0	Draft	20/8/2019		
Ver	Revision Description	Date		

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

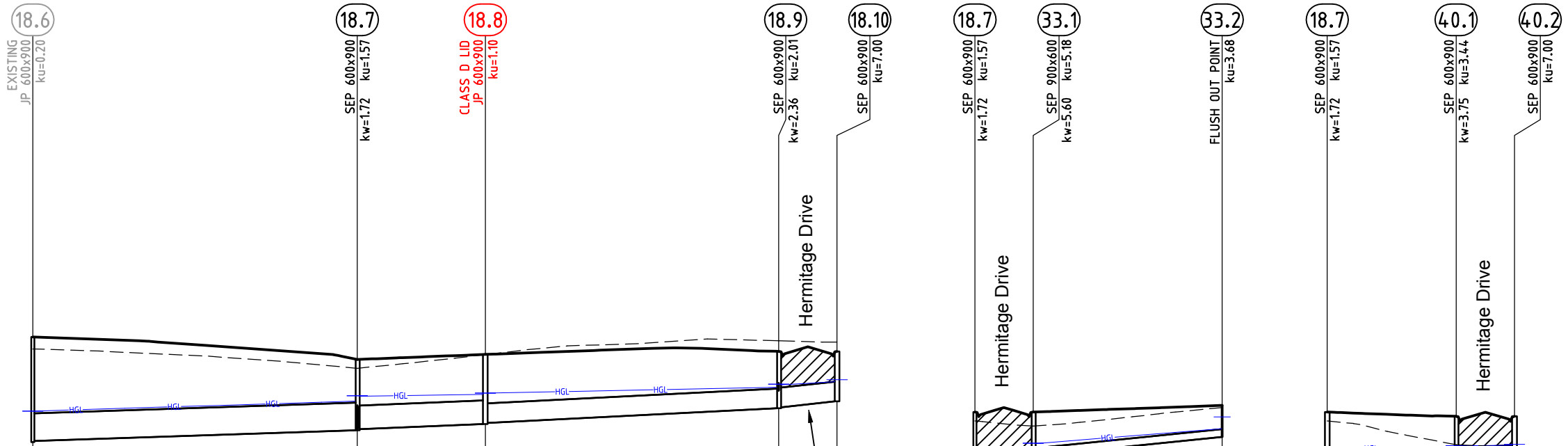
All lengths are in metres
and all levels are to Australian Height Datum
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Drawing file: 19099 Hermitage.dwg
LTO Ref: -

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Hermitage Drive Cross Sections 4

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	19099	1	13 of 24



Design Flow (L/s) 237
 Pipe Capacity (L/s) 248
 Actual Velocity (m/s) 1.31
 Full pipe vel (m/s) 1.09

Pipe Size (mm) 525
 (Type) RCP RRJ
 Pipe Grade (1 in) 300
 (%) 0.333

Datum R.L. 86.0

	18.6	18.7	18.8	18.9	18.10	18.7	33.1	33.2	18.7	40.1	40.2
Invert	93.871 93.891	94.097 94.117 94.12	94.215 94.235	94.514 94.534	94.645	94.097 94.100	94.322 94.368	94.968	94.097 94.200	94.363 94.383	94.439
Depth to Inv. From FSL	2.00 1.98	1.34 1.32	1.32 1.30	1.08 1.06	0.95	1.34 1.34	1.12 0.84	0.60	1.34 1.24	1.00 0.98	0.92
H.G.L. Levels	94.45 94.46	94.65 94.74	94.78 94.80	94.91 94.96	95.02	94.65 94.74	94.76 94.84	95.12	94.65 94.74	94.76 94.80	94.81
Finished Surface	95.87	95.44	95.54	95.60	95.60	95.44	95.44	95.57	95.44	95.36	95.36
Existing Surface	95.64	95.27	95.53	95.80	95.77	95.27	95.18	95.53	95.27	94.82	94.75
Pipe length & Chainage	184.60	61.74	246.34 247.87 24.36	270.70	16.39 287.09 55.82	53.15 323.85 326.52 11.10	337.62	0.00 11.10 11.10 12.85 35.94	47.04	0.00 24.52 24.52 11.10 35.62	

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1	Amend Lot Numbers	16/3/2020
0	Draft	20/8/2019
Ver	Revision Description	Date

Designed	R. Dawborn	Checked	N. Bowe
	Mar 2020		Mar 2020
Approved			

Notes/Legend

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 Project Managers
 Development Consultants

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

All lengths are in metres
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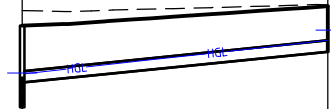
Drawing file: 19099 Drains.dwg
 LTO Ref: -

Murray River Council - Moama
Villawood Properties Pty Ltd
 Lakeview Estate - Stage 10
Drainage Longitudinal Sections

Council Ref:	Our Ref:	Version	Sheet
DA 173/11	19099	1	14 of 24

18.9
SEP 600x900
kw=2.36 ku=2.01

41.1
FLUSH OUT POINT
ku=5.23



Design Flow (L/s) 13
Pipe Capacity (L/s) 22
Actual Velocity (m/s) 1.29
Full pipe vel (m/s) 0.71

Pipe Size (mm) 150
(Type) PVC SN8
Pipe Grade (1 in) 100
(%) 1.000

Datum R.L. 87.0

Invert	94.514	94.846	95.250
Depth to Inv. From FSL	1.08	0.75	0.60
H.G.L. Levels	94.91	94.96	95.40
Finished Surface	95.60		95.85
Existing Surface	95.80		95.87
Pipe length & Chainage	0.00	40.42	40.42

6		
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R. Dawborn	N. Bowe
Mar 2020	Mar 2020
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
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Drawing file:	LTO Ref:
19099 Drains.dwg	-

Murray River Council - Moama

Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Drainage Longitudinal Sections 2

Council Ref:	Our Ref:	Version	Sheet
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PIT SCHEDULE

Pit Name	TYPE	EASTING	NORTHING	INTERNAL WD	INTERNAL LEN	INLET DIA	OUTLET DIA	INV LEV	OUTLET INV LEV	PIT SETOUT RL	DEPTH	REMARKS
41.1	Flush Out Point	296161.956	6003258.907	0.000		0.000			150	95.250 95.852	0.602	
40.2	Side Entry Pit	296193.379	6003403.897	0.600		0.900			375	94.439 95.362	0.923	Bullnose Converted Side Entry Grate
40.1	Side Entry Pit	296201.467	6003396.295	0.600		0.900	375	94.383	375	94.363 95.364	1.000	Bullnose Converted Side Entry Grate
33.2	Flush Out Point	296168.489	6003346.353	0.000		0.000			150	94.968 95.568	0.600	
33.1	Side Entry Pit	296177.658	6003380.921	0.600		0.900	150	94.608	375	94.322 95.443	1.121	Bullnose Converted Side Entry Grate
18.10	Side Entry Pit	296161.540	6003299.299	0.600		0.900			375	94.645 95.596	0.951	Bullnose Converted Side Entry Grate
18.9	Side Entry Pit	296172.521	6003297.677	0.600		0.900	375	94.534	375	94.514 95.596	1.082	Bullnose Converted Side Entry Grate
18.9	Side Entry Pit	296172.521	6003297.677	0.600		0.900	150	94.846				
18.8	Junction Pit	296180.676	6003352.898	0.600		0.900	375	94.235	450	94.215 95.538	1.323	
18.7	Side Entry Pit	296187.673	6003376.136	0.600		0.900	450	94.117	525	94.097 95.442	1.345	Bullnose Converted Side Entry Grate
18.7	Side Entry Pit	296187.673	6003376.136	0.600		0.900	375	94.100				
18.7	Side Entry Pit	296187.673	6003376.136	0.600		0.900	375	94.200				
18.6	Junction Pit	296240.749	6003344.598	0.600		0.900	525	93.891	525	93.871 95.869	1.997	Match Existing

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				
5		R. Dawborn	N. Bowe	Villawood Properties Pty Ltd									
4		Mar 2020	Mar 2020	Lakeview Estate - Stage 10									
3		Approved		Pit Schedule									
2													
1	Amend Lot Numbers	16/3/2020											
0	Draft	20/8/2019											
Ver	Revision Description	Date					Drawing file:	LTO Ref:	Council Ref:	Our Ref:	Version	Sheet	
							19099 Drains.dwg	-	DA 173/11	19099	1	16 of 24	

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. Grade of pipe to be shown on CCTV.

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:

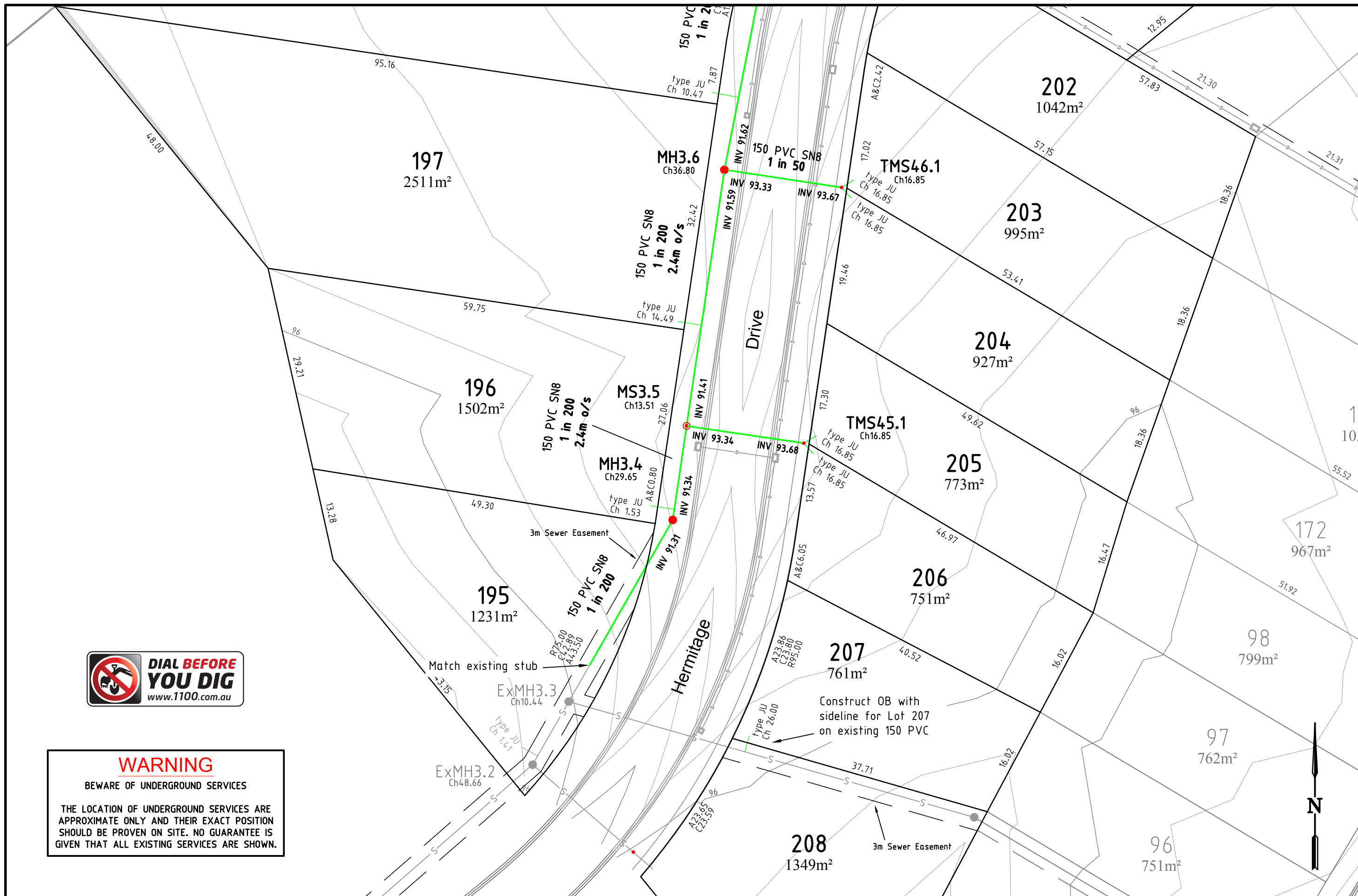
- a) Minimum bedding sand under pipe - 75mm
- b) Minimum sand backfill above pipe - 100mm
- c) Minimum sand backfill either side of pipe - 100mm

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 Mar 2020	Checked N. Bowe Mar 2020	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 10 Sewer Notes</p>				
5			Approved										
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1	Amend Lot Numbers	16/3/2020											
0	Draft	20/8/2019											
Ver	Revision Description	Date						Drawing file: 19099 Sewer.dwg	LTO Ref: -	Council Ref: DA 173/11	Our Ref: 19099	Version 1	Sheet 17 of 24



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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1	Amend Lot Numbers	16/3/2020
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Designed	Checked
R. Dawborn	N. Bowe
Mar 2020	Mar 2020
Approved	

Notes/Legend

PLEASE NOTE THAT CONTOURS SHOWN ON PLAN INDICATE THE APPROXIMATE FINISHED SURFACE. CONTOUR INTERVAL 0.1m

MH SHOWN IN RED HAVE CLASS D LID

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 Project Managers
 Development Consultants

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 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

Scale (m)

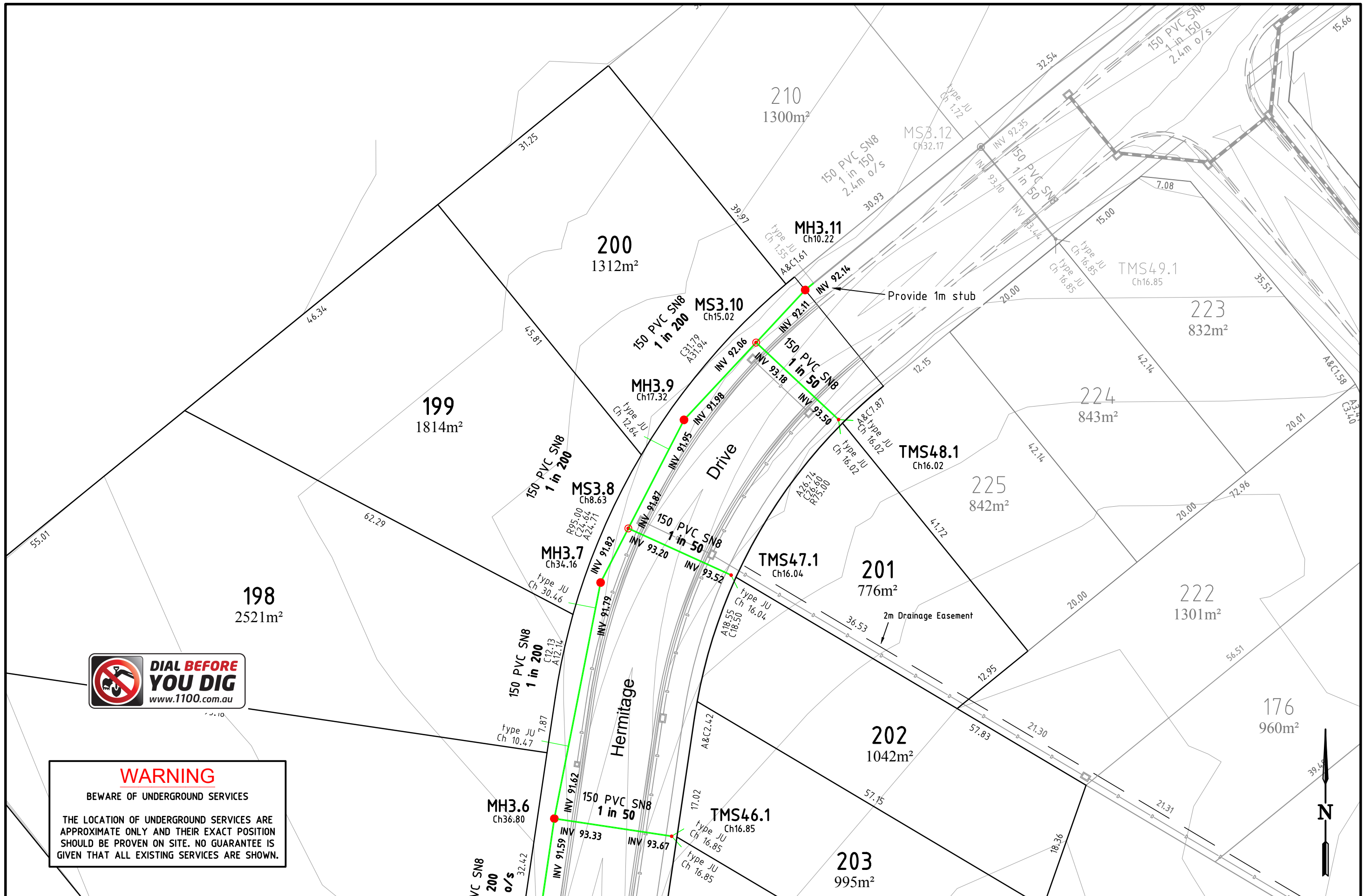
All lengths are in metres and all levels are to Australian Height Datum (Original Sheet Size is A3)

Drawing file:	LTO Ref:
19099 Sewer.dwg	-

Murray River Council - Moama

Villawood Properties Pty Ltd
 Lakeview Estate - Stage 10
 Sewer Layout Plan

Council Ref:	Our Ref:	Version	Sheet
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6		
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1	Amend Lot Numbers	16/3/2020
0	Draft	20/8/2019
Ver	Revision Description	Date

Designed	Checked
R. Dawborn	N. Bowe
Mar 2020	Mar 2020
Approved	

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

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 Civil Engineers
 Project Managers
 Development Consultants

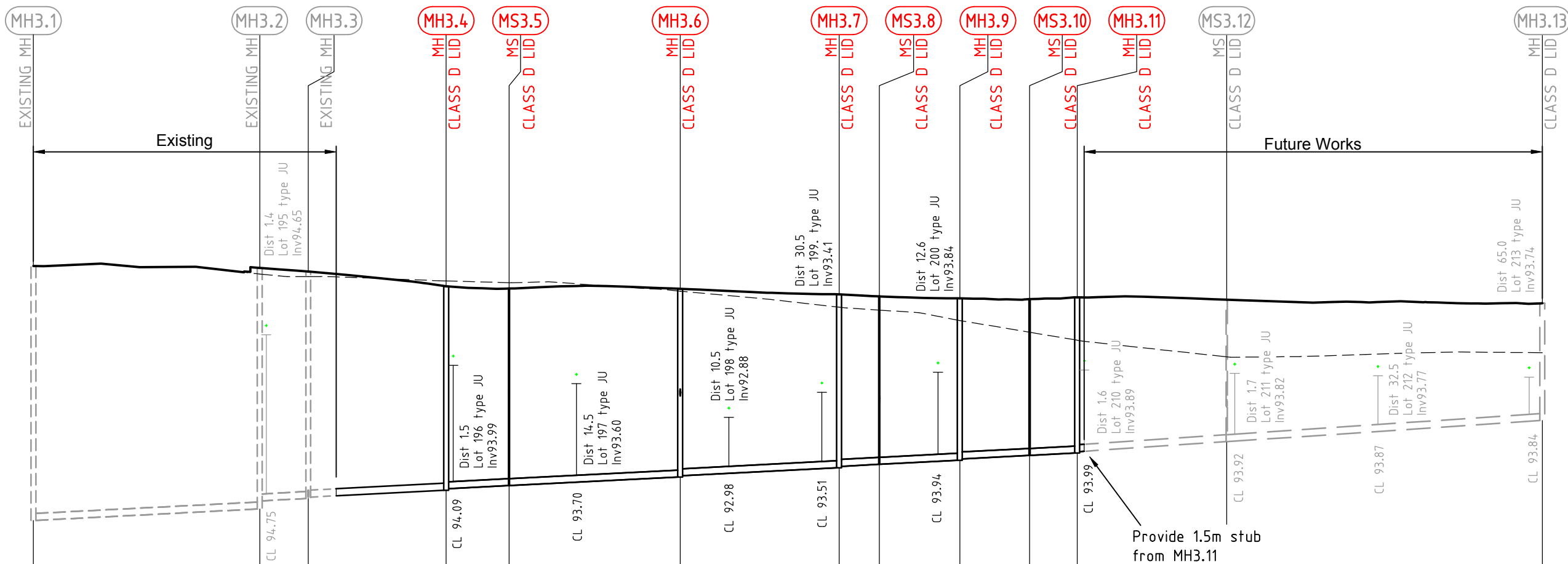
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Murray River Council - Moama
 Villawood Properties Pty Ltd
 Lakeview Estate - Stage 10
 Sewer Layout Plan 2

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Pipe Size (mm) Type	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8	150 PVC SN8												
Pipe Grade (1 in) (%)	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	200 0.500%	150 0.667%	150 0.667%												
Datum R.L.	84.0																								
Invert	90.663	90.663	90.906	91.081	91.133	91.163	91.311	91.341	91.409	91.409	91.593	91.623	91.794	91.824	91.867	91.867	91.954	91.984	92.059	92.059	92.110	92.140	92.354	92.354	92.806
Depth to Invert From FSL	5.46	5.46	5.18	5.00	4.87	4.84	4.38	4.35	4.23	4.23	4.05	4.02	3.73	3.70	3.61	3.61	3.48	3.45	3.36	3.36	3.35	3.32	3.05	3.05	2.52
Finished Surface	96.126		96.085		96.007		95.693		95.643		95.638		95.519		95.474		95.432		95.415		95.456		95.404		95.328
Existing Surface	96.126		95.954		95.900		95.806		95.768		95.587		95.241		95.180		94.957		94.705		94.533		94.175		94.265
Chainage	0.00	48.66	48.66	10.44	59.10	29.65	88.75	13.51	102.26	36.80	139.06	34.16	173.22	8.63	181.86	17.32	199.18	15.02	214.20	10.22	224.41	32.17	256.58	67.83	324.41

6			Designed	Checked
5			R. Dawborn	N. Bowe
4			Mar 2020	Mar 2020
3			Approved	
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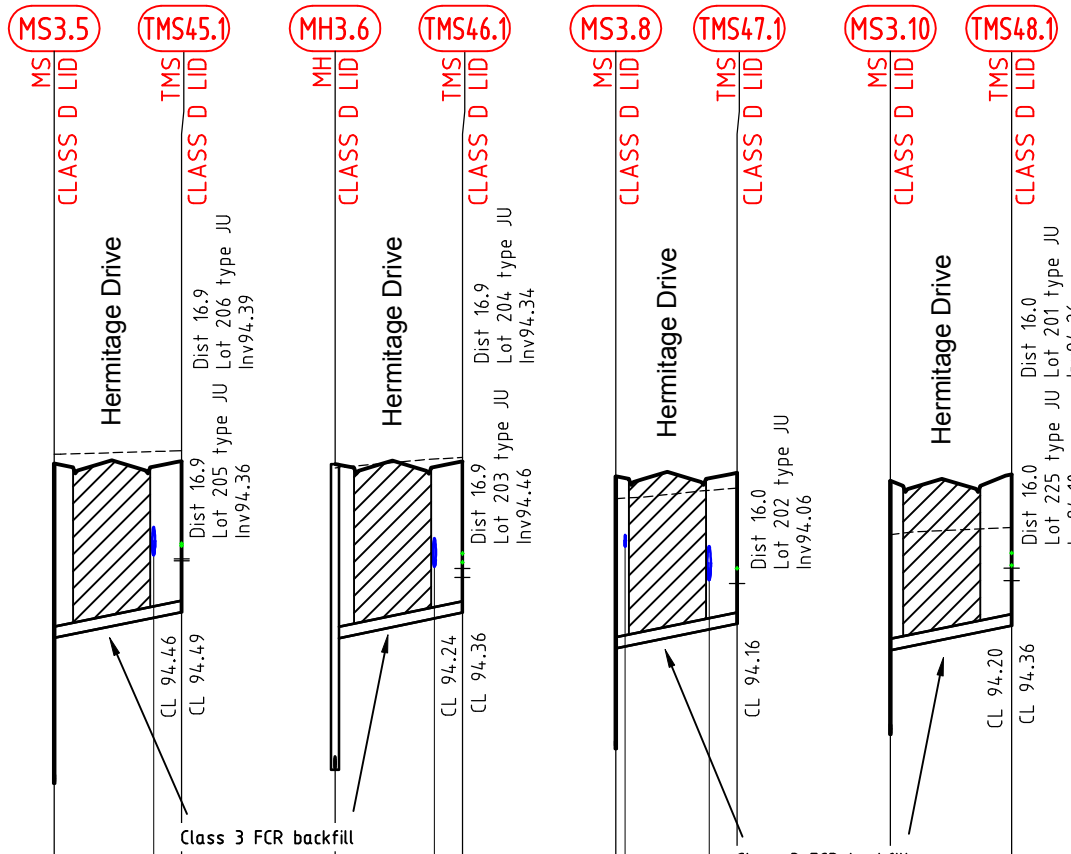
Scale (m)
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V 1:100 0 1 2

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Murray River Council - Moama
Villawood Properties Pty Ltd
Lakeview Estate - Stage 10
Sewer Longitudinal Sections

Council Ref: DA 173/11
Our Ref: 19099
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Pipe Size (mm) — 150
 Type — PVC SN8
 Pipe Grade (1 in) — 50.0
 (%) — 2.000%

Datum R.L. — 84.0

Invert	91.409	93.340	93.60	93.677
Depth to Invert From FSL	4.23	2.30	2.00	2.00
Finished Surface	95.643		95.676	
Existing Surface	95.768		95.814	
Chainage	0.00	16.85	13.15	16.85

Invert	91.593	93.335	93.60	93.672
Depth to Invert From FSL	4.05	2.30	2.00	2.00
Finished Surface	95.638		95.672	
Existing Surface	95.587		95.727	
Chainage	0.00	16.85	13.15	16.85

Invert	91.867	93.201	93.22	93.45	93.522
Depth to Invert From FSL	3.61	2.27	2.00	2.00	2.00
Finished Surface	95.474		95.522		
Existing Surface	95.180		95.319		
Chainage	0.00	16.04	12.34	16.04	

Invert	92.059	93.179	93.499
Depth to Invert From FSL	3.36	2.24	2.00
Finished Surface	95.415		95.499
Existing Surface	94.705		94.797
Chainage	0.00	16.02	16.02

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Murray River Council - Moama
 Villawood Properties Pty Ltd
 Lakeview Estate - Stage 10
 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.

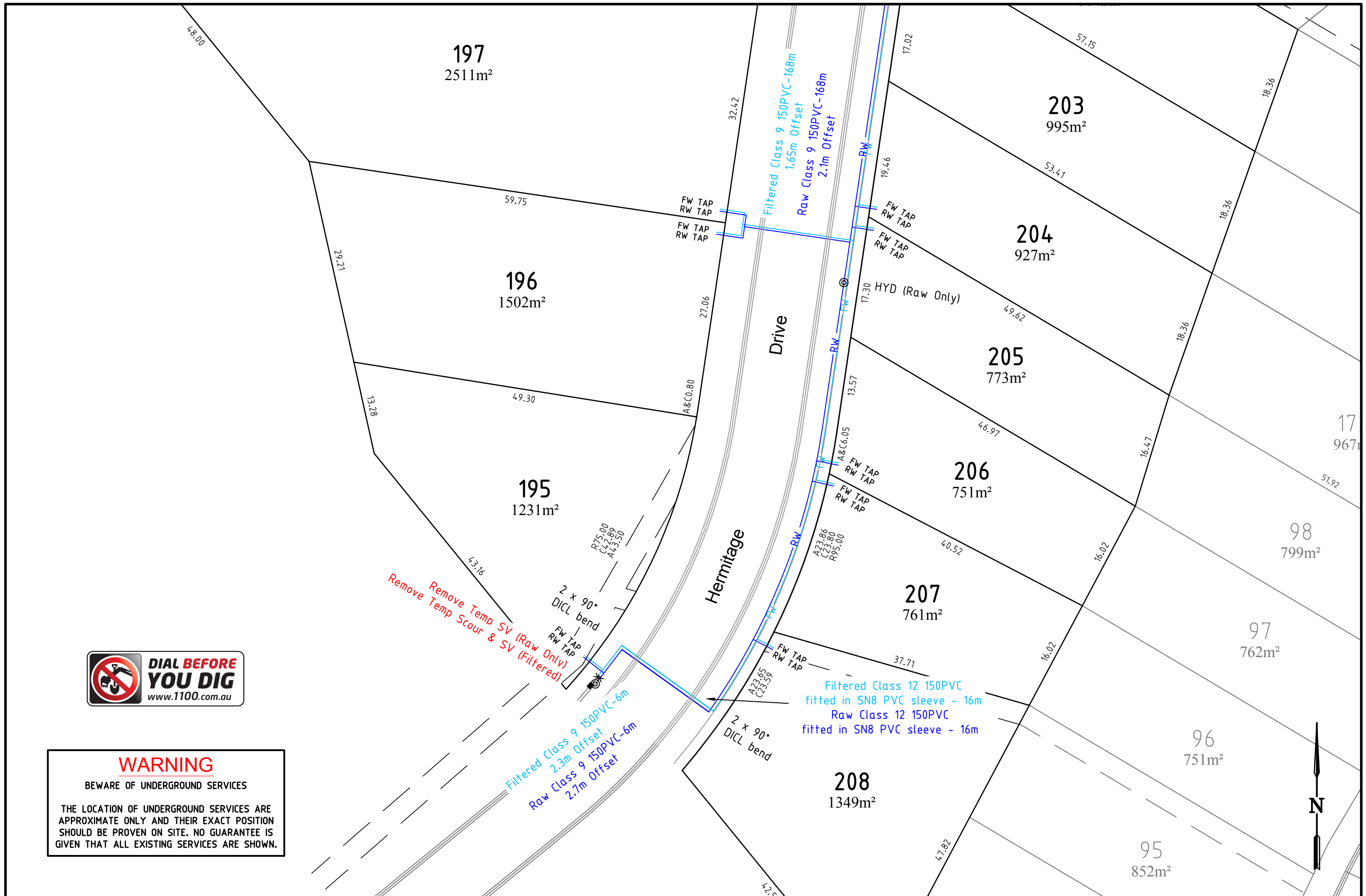
TOTAL WORK

SIZE	TYPE	CLASS	LENGTH (m)
150mm	PVC-M	9	348
150mm	PVC-M	12	32

Street	Back of Kerb	Filt. Water	Raw Water	Gas	Power	NBN	Sewer
Hermitage Drive	4.9	2.4W - 1.65 E	2.7W - 2.1E	3.1W - 2.5E	0.5 W	0.9 W	2.4 W

Service Offsets

6			Designed R. Dawborn Mar 2020	Checked N. Bowe Mar 2020	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>	Murray River Council - Moama				
5			Approved		Villawood Properties Pty Ltd Lakeview Estate - Stage 10								
4					Water Notes								
3					Drawing file:				LTO Ref:	Council Ref:	Our Ref:	Version	Sheet
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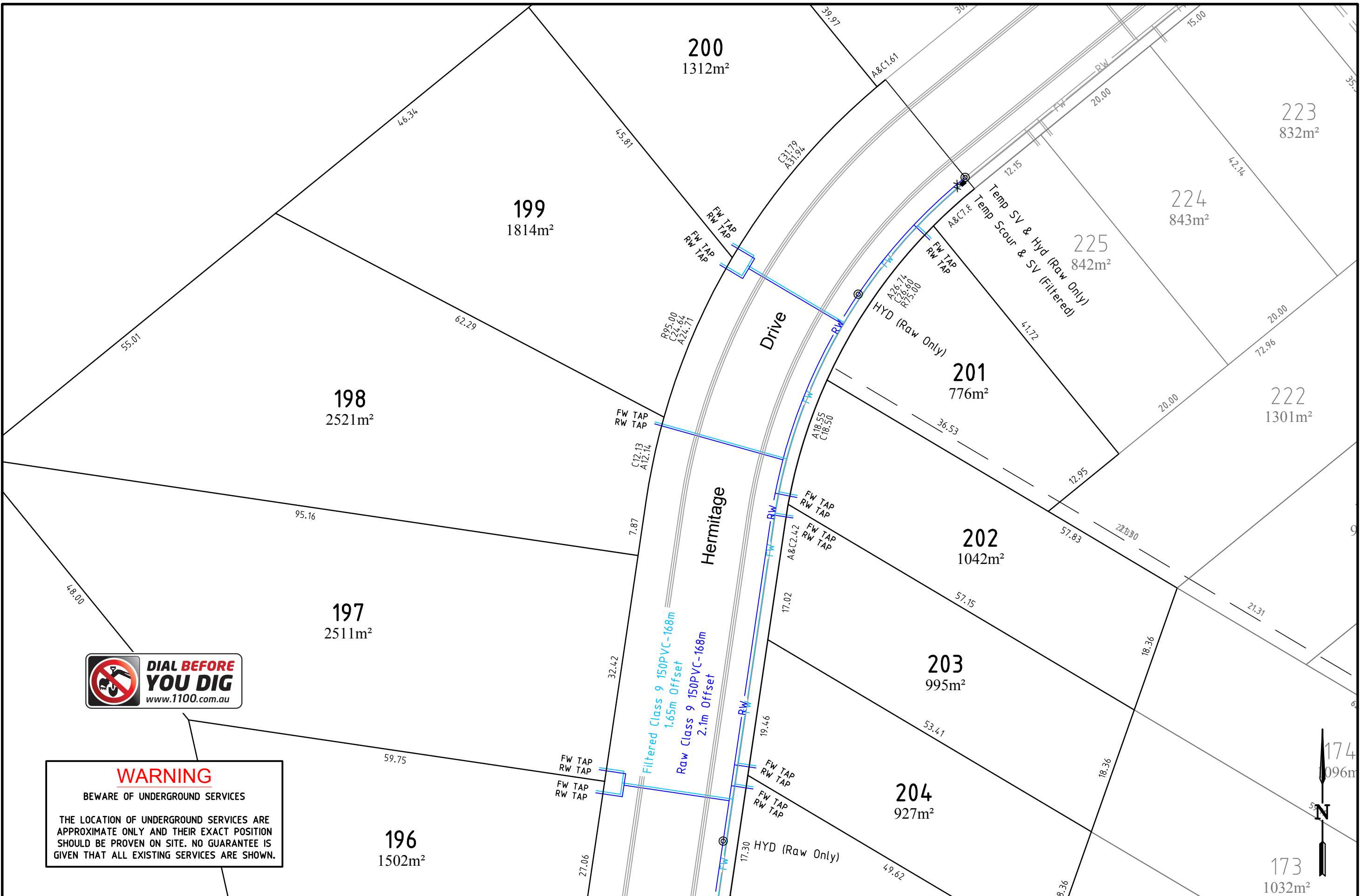
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Villawood Properties Pty Ltd
Lakeview Estate - Stage 10

Water Plan

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 Water Plan 2

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