

LEGEND:

- PROPERTY BOUNDARY
- [Pattern] NEW CONCRETE PAVEMENT
- PROPOSED STORMWATER PIPES
- (1/1) PROPOSED SW STRUCTURE
- CS STORMWATER PROPERTY CONNECTION STUB DN100
- PROPOSED RETAINING WALLS.
- [1000] RETAINING WALL HEIGHTS
- W--- PROPOSED WATER MAIN
- S--- PROPOSED SEWER
- SW--- EXISTING STORMWATER PIPE
- S--- EXISTING SEWER
- E--- EXIST OH ELECTRICAL

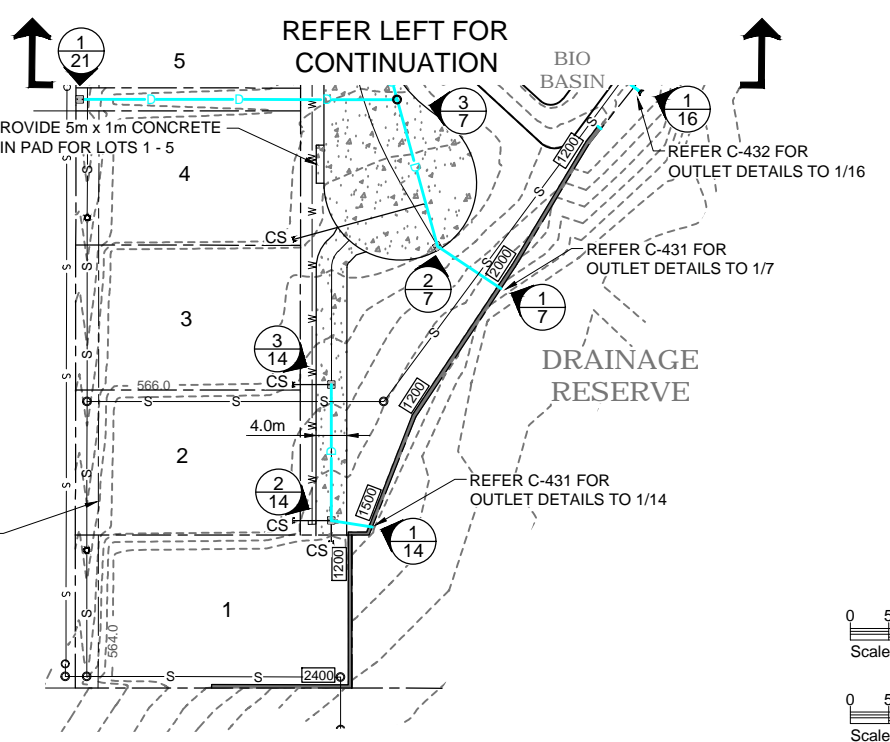
NOTES:

1. TO BE READ IN CONJUNCTION WITH ALL STORMWATER DRAINAGE LAYOUT PLANS, NOTES & DETAILS.
2. NOTE THAT THE DEPTH OF PAVEMENT SHOWN IS PROVISIONAL WITH THE FINAL DEPTH TO BE DETERMINED AFTER THE CONTRACTOR SUBMITS RESULTS FROM SOAKED CBR TESTING PRIOR TO PROOF ROLLING THE SUB-GRADE MATERIAL.
3. TYPICALLY ALL NEW ROADWORKS SHALL BE MATCHED SMOOTHLY WITH THE EXISTING ROAD NETWORK STRUCTURE.
4. CONTRACTOR SHALL CHECK & CONFIRM ALL DIMENSIONS, LEVELS & SERVICE CONDUIT LOCATIONS ON SITE PRIOR TO CONSTRUCTION.
5. REFER TO STRUCTURAL ENGINEERS DWGS FOR RETAINING WALL DETAILS.

CONTOUR NOTE:
INTERVALS BETWEEN CONTOURS - 0.50m
CONTOURS ARE DESIGN SURFACE LEVELS

EXISTING SERVICES NOTES:

1. THE CONTRACTOR IS TO CONFIRM THE LOCATION OF ALL SERVICES PRIOR TO COMMENCING ANY CONSTRUCTION WORKS OR ORDERING ANY MATERIALS.
2. THE CONTRACTOR IS TO CONTACT DIAL BEFORE YOU DIG ON 1100 PRIOR TO COMMENCING ANY CONSTRUCTION WORKS.
3. WHILE ALL DUE CARE HAS BEEN TAKEN IN CONFIRMING THE LOCATION OF EXISTING SERVICES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THESE SERVICE LOCATIONS. IN SOME INSTANCES SERVICE MAY BE OMITTED FROM THESE DRAWINGS.
4. ALL COUNCIL SERVICES TO BE LOCATED BY THE LOCAL AUTHORITY.
5. A REPRESENTATIVE FOR EACH SERVICE PROVIDER TO BE PRESENT ON SITE WHEN WORKING WITHIN 3.0m OF EACH SERVICE.
6. THE CONTRACTOR IS TO CONFIRM THE LOCATION, OF ALL DRAINAGE CONNECTION POINTS PRIOR TO COMMENCING ANY CONSTRUCTION WORKS OR ORDERING ANY MATERIALS.
7. SHOULD INVERT LEVELS OF ANY DRAINAGE CONNECTION POINTS DIFFER TO THAT INDICATED ON THE DRAWINGS, THEN THE SUPERVISING ENGINEER SHALL BE NOTIFIED IMMEDIATELY.



GULLY PIT STORMSACKS
INSTALL SPEL STORMSACKS (OR SIMILAR APPROVED) TO GULLY INLET PITS 4/7, 5/7, 6/7, 3/8, 4/8, 5/8, 6/8, 3/9, 2/14 & 3/14.

0 5 10 15 20 25m
Scale 1:500 - A1

0 5 10 15 20 25m
Scale 1:1000 - A3

REVISIONS	DATE	DWN	CHK	APP
D	10/12/22	APM		
C	12/08/22	APM		
B	24/05/22	APM		
A	23/11/21	APM		

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Client
TUNNEY INVESTMENTS

Project
**PROPOSED RESIDENTIAL SUBDIVISION
STAGE 2 - INTERNAL CIVIL WORKS
SOUTH STREET
GLENVALE**

Title
ROADWORKS & DRAINAGE LAYOUT PLAN

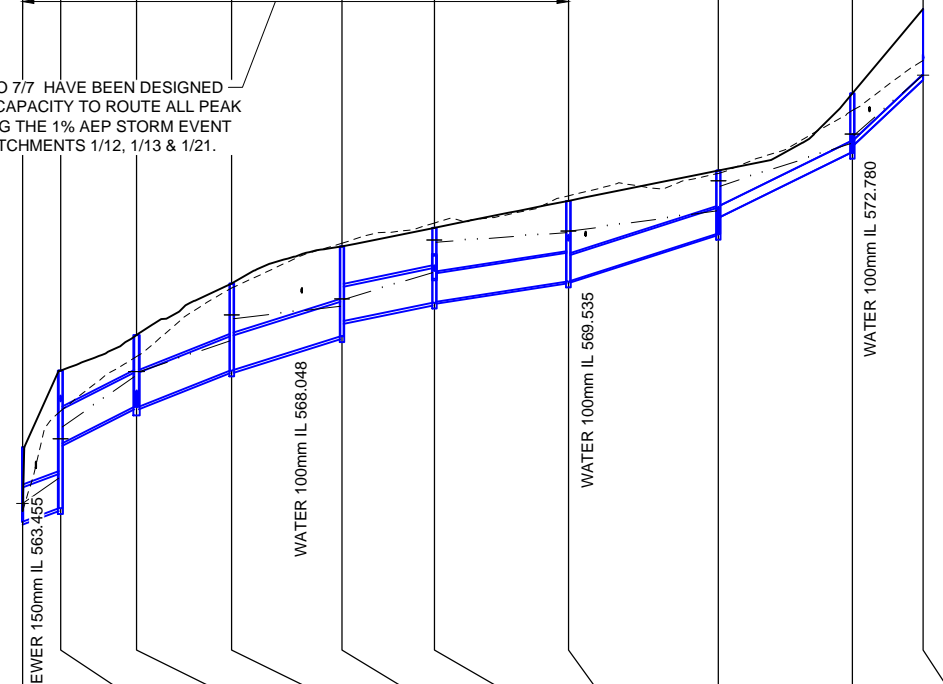
Drawn: **APM**
Designed: **APM**

Approved (R.P.E.Q.) **7961**
AVRIL MARION BENNETT

Job No. **304**
Date **OCT'2021**
Drawing No. **C-100**
Revision **D**

STRUCTURE NAME	1/7	2/7	3/7	4/7	5/7	6/7	7/7	8/7	9/7	10/7
STRUCTURE DESCRIPTION	HEADWALL	GRATED INLET PIT 900x600 H.D. GRATE	MANHOLE 1350mm DIA	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE REFER STRUCTURE DETAILS	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	GRATED INLET PIT 900x600 L.D. GRATE	PIPE END

SW PIPES BETWEEN 1/7 TO 7/7 HAVE BEEN DESIGNED TO INCLUDE SUFFICIENT CAPACITY TO ROUTE ALL PEAK FLOWS UP TO & INCLUDING THE 1% AEP STORM EVENT FROM THE UPSTREAM CATCHMENTS 1/12, 1/13 & 1/21.



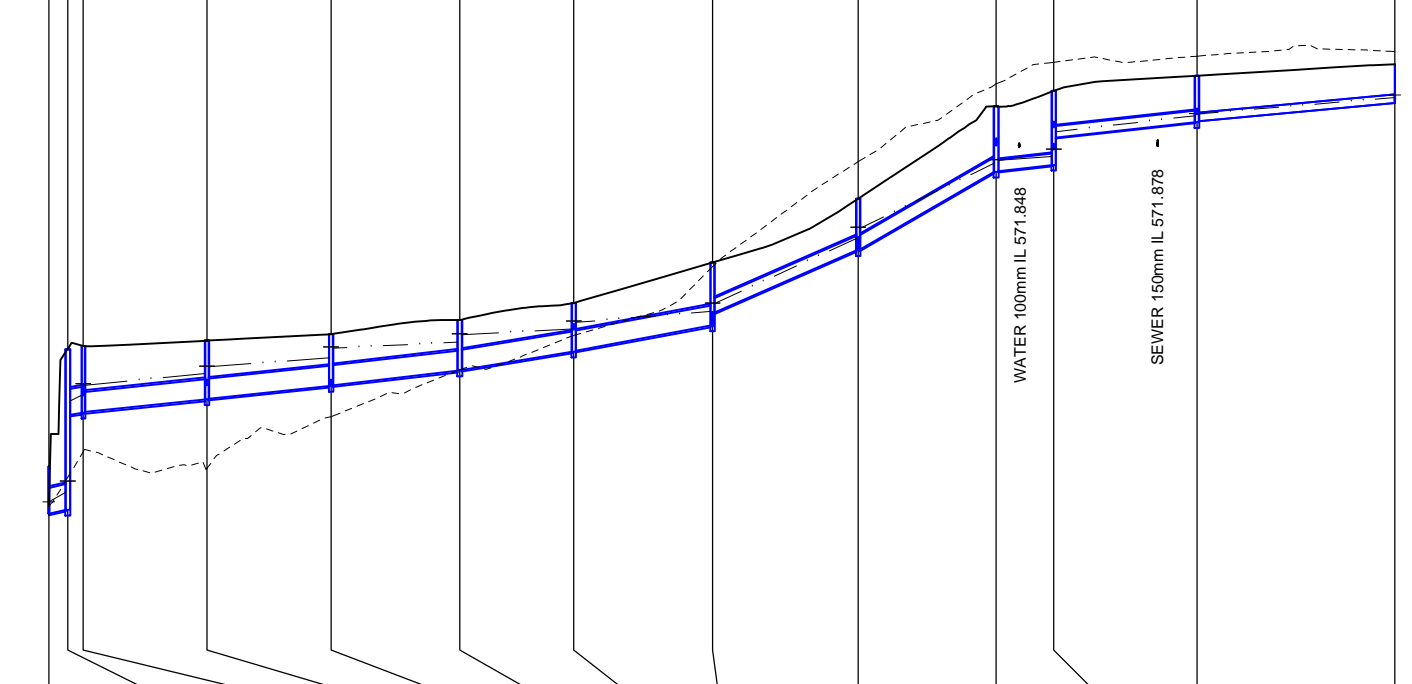
PIPE SIZE (mm)	900	900	900	900	900	750	675	300	150	
PIPE CLASS	2	2	2	2	2	2	2	PVC	PVC	
PIPE GRADE (%)	3.51%	4.80%	3.80%	3.05%	1.99%	1.51%	3.14%	4.78%	9.20%	
PIPE SLOPE (1 in X)	28.5	20.8	26.3	32.8	50.3	66.2	31.9	20.9	10.9	
FULL PIPE VELOCITY (m/s)	2.94	2.90	2.85	2.86	2.87	2.15	2.56	1.40	1.12	
PART FULL VELOCITY (m/s)	5.47	6.12	5.59	5.15	4.36	3.34	4.37	3.33	2.84	
PIPE FLOW (cumecs)	1.873	1.844	1.814	1.821	1.828	0.948	0.916	0.099	0.020	
PIPE CAPACITY AT GRADE (cumecs)	3.395	3.967	3.531	3.163	2.552	1.369	1.489	0.250	0.055	
DATUM RL	552.0									

WSE IN STRUCTURE	562.527	562.527	564.218	565.982	567.459	567.874	569.419	570.964	572.191	573.729
HGL IN PIPE	562.527	563.193	564.531	565.843	567.359	567.884	569.358	569.612	571.938	572.157
DEPTH OF INVERT BELOW FSL	1.950	3.605	1.905	1.877	2.279	2.350	1.957	2.113	1.556	1.860
INVERT LEVEL	562.050	562.400	564.100	565.055	566.020	567.800	567.800	568.330	571.900	573.800
FINISHED (& EXISTING) SURFACE LEVEL	564.000 (562.331)	566.005 (564.948)	566.931 (566.373)	568.279 (568.163)	569.250 (569.334)	569.737 (569.860)	570.443 (570.575)	571.233 (571.160)	572.250 (572.804)	573.460 (574.109)
CHAINAGE	0.000	9.961	19.899	29.860	34.734	28.843	83.577	24.167	107.744	35.069

LINE

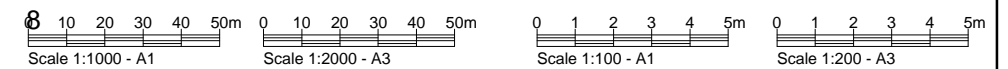
7

STRUCTURE NAME	1/8	2/8	3/8	4/8	5/8	6/8	7/8	8/8	9/8	10/8	11/8	12/8	13/8
STRUCTURE DESCRIPTION	HEADWALL	MANHOLE 1050mm DIA	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE REFER STRUCTURE DETAILS	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRATED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	MANHOLE 1050mm DIA	GRATED INLET PIT 900x600 H.D. GRATE	GRATED INLET PIT 900x600 H.D. GRATE	PIPE END



PIPE SIZE (mm)	675	675	525	525	525	525	525	375	375	300	300	225	
PIPE CLASS	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	
PIPE GRADE (%)	2.09%	1.25%	1.02%	1.02%	1.13%	1.61%	1.82%	4.28%	5.62%	1.06%	1.07%	0.93%	
PIPE SLOPE (1 in X)	47.9	79.9	98.1	98.4	88.6	62.2	55.0	23.4	17.8	94.1	93.6	107.8	
FULL PIPE VELOCITY (m/s)	1.46	1.46	1.95	1.71	1.37	1.40	1.38	1.62	0.85	1.19	0.67	0.77	
PART FULL VELOCITY (m/s)	3.26	2.70	2.29	2.25	2.25	2.58	2.70	3.27	3.04	1.58	1.40	1.18	
PIPE FLOW (cumecs)	0.522	0.523	0.422	0.370	0.298	0.303	0.299	0.179	0.094	0.084	0.047	0.030	
PIPE CAPACITY AT GRADE (cumecs)	1.214	0.941	0.434	0.434	0.457	0.546	0.580	0.363	0.416	0.100	0.100	0.043	
DATUM RL	552.0												

WSE IN STRUCTURE	562.569	562.569	563.113	565.660	566.120	566.626	566.967	567.300	567.773	569.751	571.522	571.796	572.720	573.206
HGL IN PIPE	562.569	562.824	565.210	565.618	565.930	566.099	566.339	566.587	566.748	566.942	567.090	567.263	567.550	567.755
DEPTH OF INVERT BELOW FSL	1.240	4.201	1.716	1.744	1.536	1.516	1.353	1.333	1.323	1.272	1.252	1.311	1.351	1.009
INVERT LEVEL	562.260	562.364	564.850	564.920	565.250	565.270	565.600	565.620	566.000	566.020	566.500	566.520	567.180	567.520
FINISHED (& EXISTING) SURFACE LEVEL	563.500 (562.453)	566.566 (563.215)	567.113 (564.850)	568.644 (563.877)	567.786 (563.450)	566.798 (563.450)	566.953 (564.798)	567.323 (566.024)	567.772 (566.922)	568.831 (568.722)	570.501 (571.465)	572.916 (573.500)	573.317 (574.063)	573.714 (574.225)
CHAINAGE	0.000	5.000	3.996	8.996	32.387	41.383	32.461	73.844	33.656	107.500	29.845	137.345	36.288	173.633



REVISIONS	DATE	DWN	CHK	APP
D	10/12/22	APM		
C	12/08/22	APM		
B	24/05/22	APM		
A	23/11/21	APM		

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Client
TUNNEY INVESTMENTS

Project
**PROPOSED RESIDENTIAL SUBDIVISION
STAGE 2 - INTERNAL CIVIL WORKS
SOUTH STREET
GLENVALE**

Title
**STORMWATER LONG SECTIONS
39% AEP
SHEET 1**

Drawn: **APM**
Designed: **APM**

Approved (R.P.E.Q.) **7961**
AVRIL MARION BENNETT

Job No. **304**
Date **OCT'2021**
Drawing No. **C-410**
Revision **D**

STRUCTURE NAME	2/9	4/7
STRUCTURE DESCRIPTION	MANHOLE 1050mm DIA	GRADED INLET PIT 900x600 H.D. GRATE

PIPE SIZE (mm)	225
PIPE CLASS	PVC
PIPE GRADE (%)	5.37%
PIPE SLOPE (1 in X)	18.6
FULL PIPE VELOCITY (m/s)	1.58
PART FULL VELOCITY (m/s)	2.74
PIPE FLOW (cumecs)	0.063
PIPE CAPACITY AT GRADE (cumecs)	0.104
DATUM RL	550.0

WSE IN STRUCTURE	564.964	565.139	566.674
HGL IN PIPE	564.964	565.111	566.203
DEPTH OF INVERT BELOW FSL	2.113	2.093	2.279
INVERT LEVEL	564.532	564.552	566.000
FINISHED (& EXISTING) SURFACE LEVEL	566.645 (566.498)	566.279 (568.163)	566.645 (563.877)
CHAINAGE	0.000	26.953	26.953

LINE 7a

1/9	2/9	3/9	3/8
HEADWALL	MANHOLE 1050mm DIA	GRADED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRADED INLET PIT 900x600 H.D. GRATE

525	450	450
PVC	PVC	PVC
0.52%	0.52%	0.48%
194.0	193.5	210.3
1.54	1.71	1.60
1.54	1.71	1.60
0.334	0.272	0.255
0.309	0.205	0.197
549.0		

564.892	564.892	564.892	564.892
564.500	564.500	564.500	564.500
566.154	566.154	566.154	566.154
566.645	564.532	564.552	566.645
566.498	564.552	564.552	566.498
567.870	564.640	564.660	567.870
567.243	564.660	564.660	567.243
566.645	564.900	564.900	566.645
563.877	563.877	563.877	563.877
0.000	6.209	6.209	17.028
			23.236
			50.463
			73.700

9

8/8	1/10	2/10	3/10	4/10
GRADED INLET PIT 900x600 H.D. GRATE	GRADED INLET PIT 900x600 H.D. GRATE	GRADED INLET PIT 900x600 H.D. GRATE	GRADED INLET PIT 900x600 H.D. GRATE	PIPE END

300	300	300	225
PVC	PVC	PVC	PVC
2.57%	1.00%	0.68%	0.71%
38.9	100.0	147.2	140.8
1.79	1.40	0.85	0.52
2.45	1.56	1.24	0.97
0.127	0.099	0.060	0.021
0.155	0.097	0.080	0.038
552.0			

567.550	567.773	567.550	567.773	567.550	567.773
567.200	567.200	567.200	567.200	567.200	567.200
568.722	568.722	568.722	568.722	568.722	568.722
569.520	568.200	568.200	568.200	569.520	568.200
569.164	568.220	568.220	568.220	569.164	568.220
569.782	568.600	568.600	568.600	569.782	568.600
569.964	568.620	568.620	568.620	569.964	568.620
570.040	568.950	568.950	568.950	570.040	568.950
569.751	568.970	568.970	568.970	569.751	568.970
570.212	569.200	569.200	569.200	570.212	569.200
568.302	568.302	568.302	568.302	568.302	568.302
0.000	38.908	38.908	38.908	0.000	38.908

10

8/7	1/12
GRADED INLET PIT 900x600 H.D. GRATE	GRADED INLET PIT 900x600 H.D. GRATE

525	2
PVC	2
3.63%	27.5
3.81	4.32
0.824	0.820
555.0	

570.175	570.984
570.827	570.827
571.233	569.580
571.160	569.600
572.361	570.900
572.725	572.140
0.000	35.779
	35.779

12

6/7	1/13
GRADED INLET PIT 900x600 H.D. GRATE	PIPE END

1200x600	2
PVC	2
3.09%	32.3
1.20	3.74
0.861	3.332
553.0	

568.566	569.419
568.407	569.358
569.860	568.407
569.963	569.616
570.953	569.616
569.737	567.780
569.860	568.407
570.953	569.616
570.953	569.616
0.000	39.084
	39.084

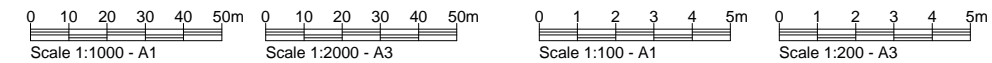
13

1/14	2/14	3/14
HEADWALL	GRADED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE	GRADED INLET PIT FITTED WITH SPEL STORMSACK 900x600 H.D. GRATE

225	150
PVC	PVC
2.20%	4.62%
45.6	21.7
1.06	0.80
1.77	1.79
0.042	0.014
0.067	0.033
547.0	

562.561	562.561	562.561
562.431	562.431	562.431
563.300	562.431	562.431
562.563	562.431	562.431
564.115	562.550	562.722
563.448	563.123	563.192
565.137	563.942	564.053
564.929	563.942	564.140
0.000	5.421	5.421
	5.421	5.421
	17.761	17.761
	23.182	23.182

14



D	FURTHER ADVICE RESPONSE	10/12/22	APM		
C	OP WORKS INFO REQUEST RESPONSE	12/08/22	APM		
B	OP WORKS INFO REQUEST RESPONSE	24/05/22	APM		
A	FOR APPROVAL	23/11/21	APM		
	REVISIONS	DATE	DWN	CHK	APP

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Client
TUNNEY INVESTMENTS

Project
**PROPOSED RESIDENTIAL SUBDIVISION
STAGE 2 - INTERNAL CIVIL WORKS
SOUTH STREET
GLENVALE**

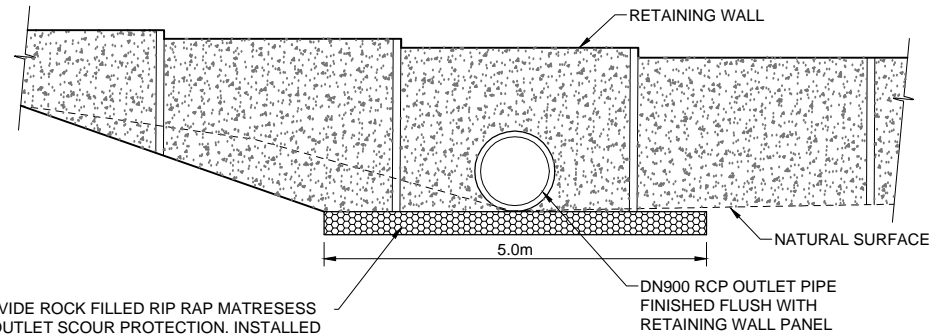
Title
**STORMWATER LONG SECTIONS
39% AEP
SHEET 2**

Drawn: **APM**
Designed: **APM**

Approved (R.P.E.Q.) **7961**
AVRIL MARION BENNETT

Job No. **304**
Date **OCT'2021**
Drawing No. **C-411**
Revision **D**

CONTOUR NOTE:
 INTERVALS BETWEEN CONTOURS - 0.25m
 CONTOURS ARE DESIGN SURFACE LEVELS



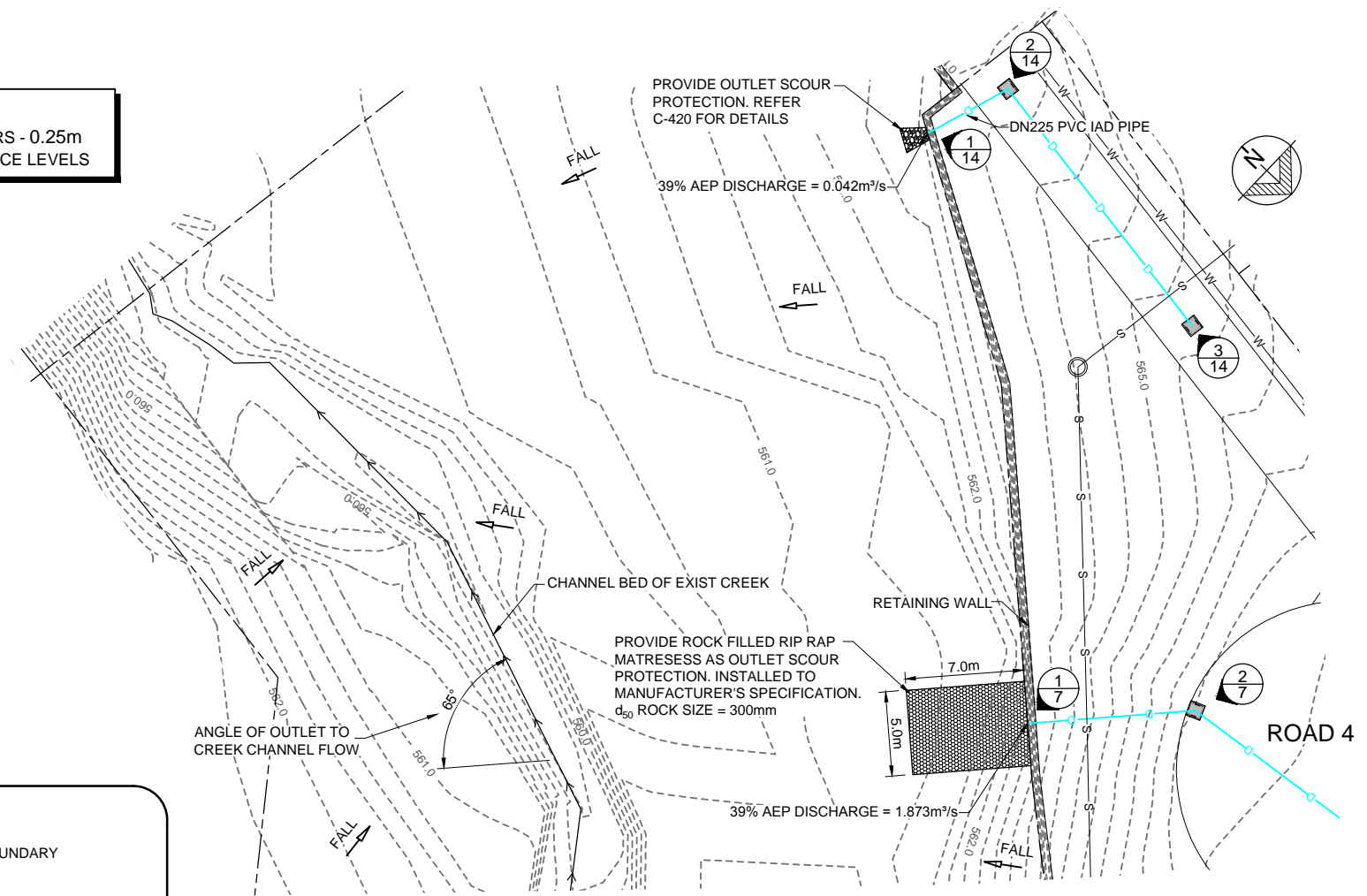
PROVIDE ROCK FILLED RIP RAP MATRESSESS AS OUTLET SCOUR PROTECTION. INSTALLED TO MANUFACTURER'S SPECIFICATION.
 d_{50} ROCK SIZE = 300mm

SW LINE 7 OUTLET ELEVATION

SCALE 1:50

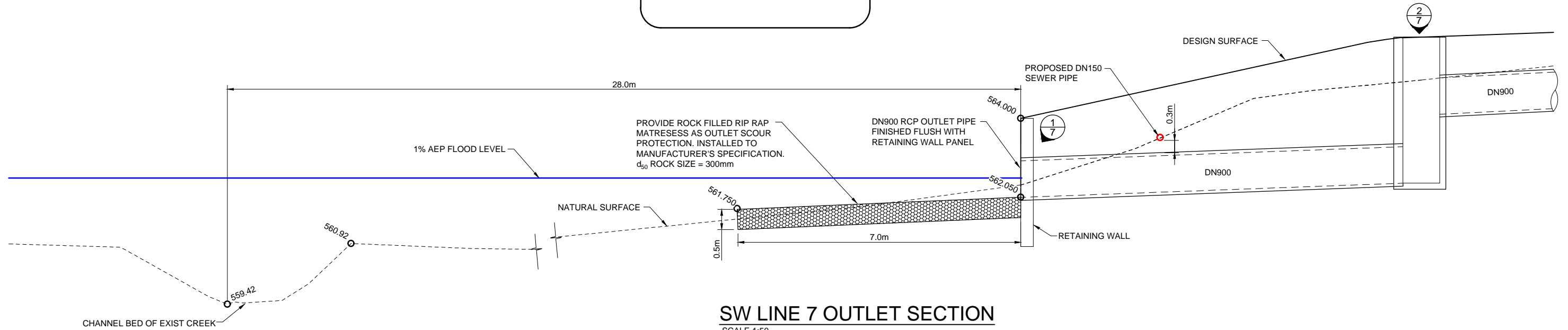
LEGEND:

- PROPERTY BOUNDARY
- PROPOSED STORMWATER PIPES
- 1
7
 PROPOSED SW STRUCTURE
- 561.750
 SURFACE LEVEL
- S— PROPOSED SEWER
- W— PROPOSED WATER



SW LINE 7 OUTLET PLAN

SCALE 1:200



SW LINE 7 OUTLET SECTION

SCALE 1:50

REVISIONS	DATE	DWN	CHK	APP
D FURTHER ADVICE RESPONSE	10/12/22	APM		
C OP WORKS INFO REQUEST RESPONSE	12/08/22	APM		
B OP WORKS INFO REQUEST RESPONSE	24/05/22	APM		
A FOR APPROVAL	23/11/21	APM		

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Client
TUNNEY INVESTMENTS

Project
**PROPOSED RESIDENTIAL SUBDIVISION
 STAGE 2 - INTERNAL CIVIL WORKS
 SOUTH STREET
 GLENVALE**

Title
STORMWATER LINE 7 OUTLET DETAILS

Drawn: **APM**

Designed: **APM**

Approved (R.P.E.Q.) **7961**

AVRIL MARION BENNETT

Job No. **304**

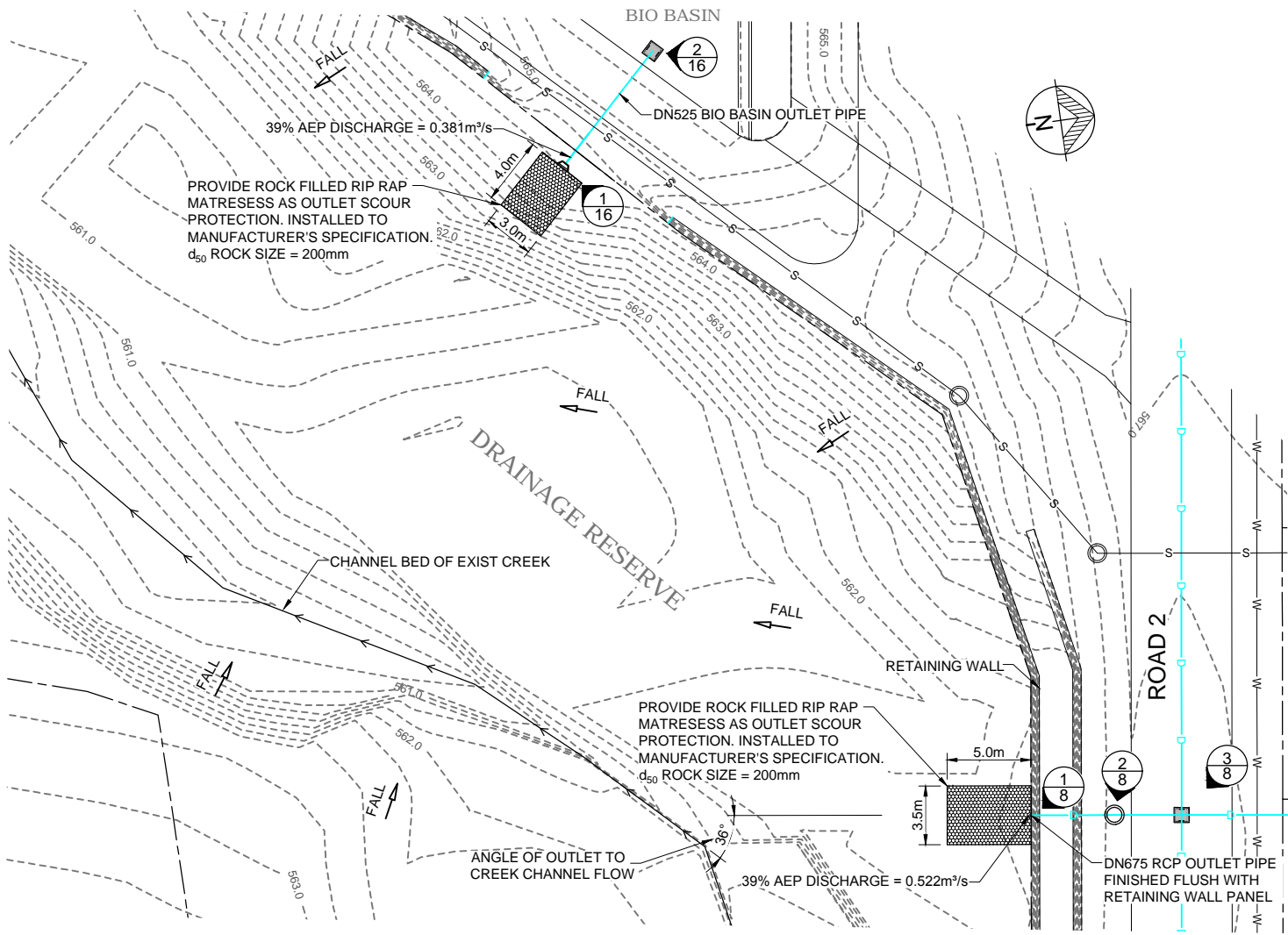
Date **OCT'2021**

Drawing No. **C-431** Revision **D**

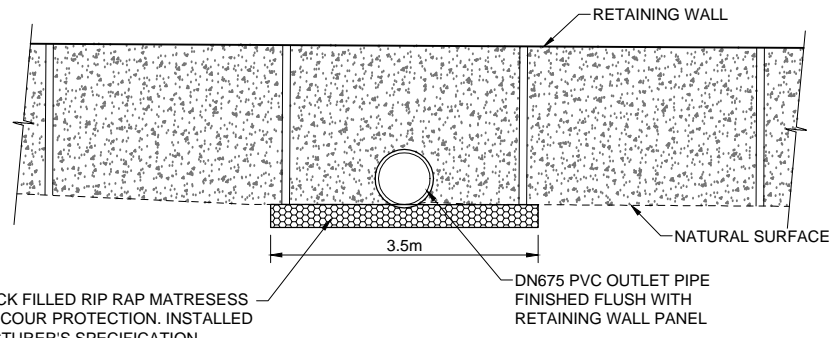
LEGEND:

- PROPERTY BOUNDARY
- PROPOSED STORMWATER PIPES
- ⊙ PROPOSED SW STRUCTURE
- SURFACE LEVEL
- S— PROPOSED SEWER

CONTOUR NOTE:
 INTERVALS BETWEEN CONTOURS - 0.25m
 CONTOURS ARE DESIGN SURFACE LEVELS

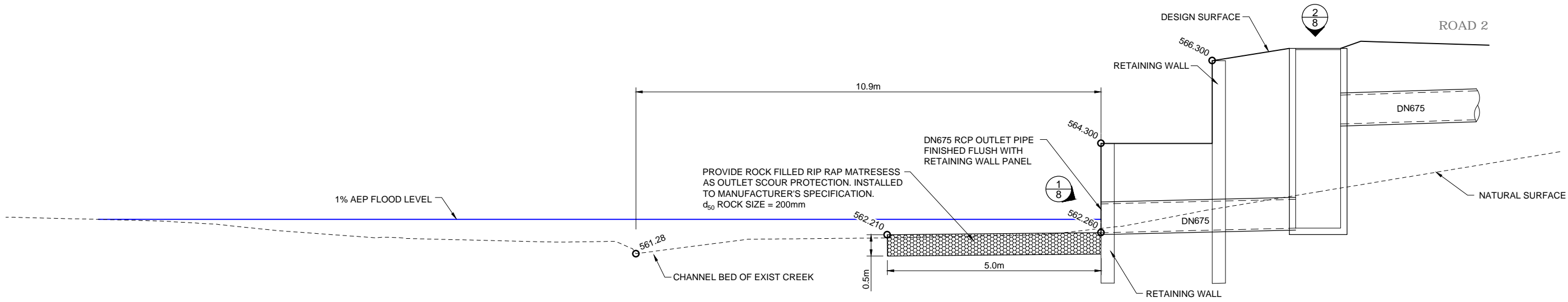


SW LINE 8 OUTLET PLAN
 SCALE 1:200



PROVIDE ROCK FILLED RIP RAP MATRESSES AS OUTLET SCOUR PROTECTION. INSTALLED TO MANUFACTURER'S SPECIFICATION. d₅₀ ROCK SIZE = 200mm

SW LINE 8 OUTLET ELEVATION
 SCALE 1:50



SW LINE 8 OUTLET SECTION
 SCALE 1:50

D	FURTHER ADVICE RESPONSE	10/12/22	APM		
C	OP WORKS INFO REQUEST RESPONSE	12/08/22	APM		
B	OP WORKS INFO REQUEST RESPONSE	24/05/22	APM		
A	FOR APPROVAL	23/11/21	APM		
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Project
**PROPOSED RESIDENTIAL SUBDIVISION
 STAGE 2 - INTERNAL CIVIL WORKS
 SOUTH STREET
 GLENVALE**

Title
STORMWATER LINE 8 OUTLET DETAILS

Drawn: **APM**
 Designed: **APM**

Approved (R.P.E.Q.) **7961**
 AVRIL MARION BENNETT

Job No. **304**
 Date **OCT'2021**
 Drawing No. **C-432**
 Revision **D**