DRAINAGE DESIGN FOR
PROPOSED MEDIUM DENSITY DEVELOPMENT
(LOT 21, DP : 131127)
73 RADNOR RD BARGO

NOTES

PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR SHALL

1)PRODUCE REGISTRATION/ PERMITS FOR ALL PLANT TO BE USED ON THE ROAD RESERVE INC FOOTPATH
2) PRODUCE INSURANCES REQUIRED AS DEVELOPMENT CONSENT CONDITIONS.
3) HAVE SITE MEETING WITH COUNCILS DEVELOPMENT SECTION.
4) INSTALL SEDIMENT AND EROSION CONTROL DEVICES, AND OBTAIN A COPY OF "URBAN EROSION AND SEDIMENT CONTROL - FIELD GUIDE" AS PUBLISHED BY CALM.
5) BE AWARE OF THE FOLLOWING
* THESE NOTES DO NOT REPLACE THE NEED TO READ COUNCILS CONSTRUCTION SPECIFICATION.
* THE NEED FOR THE PROVISION OF A WORK-AS-EXECUTED PLAN AND SUPERVISION BY THE THE PERSON DOING THE WORK-AS-EXECUTED PLAN.
* TAKE SPECIAL NOTE OF THE ROLL KERB AND GUTTER PROFILE AND THE SPECIAL ROOF WATER OUTLET.
* ONLY PLASTIC GUIDEPOSTS ARE TO BE USED, OF A TYPE APPROVED BY THE ENGINEER.
* ERRORS AND OVERSIGHTS ON PLANS ARE TO BE RECTIFIED AT THE ENGINEERS DISCRETION.
* TEST RESULTS ARE TO BE SENT TO COUNCIL'S SUPERVISING ENGINEER IMMEDIATLY.
* PROPOSED VARIATIONS TO THE PLANS ARE TO BE REFERED BACK TO COUNCIL FOR APPROVAL.
*THE CONTRACTOR SHOULD BE AWARE THAT IF HE PROVIDES THE MAINTAINANCE BOND ON BEHALF OF THE DEVELOPER, THEN IF THIS IS THE ONLY BOND HELD, IT WILL BE USED TO GUARANTEE PERFORMANCE OF ALL WORK REQUIRED FOR THE DEVELOPMENT, REGARDLESS OF WHO WAS RESPONSIBLE FOR CARRYING OUT THE WORK .

GENERAL NOTES

1) ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL SPEC AND TO THE SATISFACTION OF THE ENGINEER.

2) ATTENTION IS DRAWN TO COUNCIL "TREE PRESERVATION ORDER" UNDER WHICH NO TREES ARE TO BE REMOVED OTHER THAN THOSE AFFECTED BY ROAD, LANDFILL (OR CUT) OR DRAINAGE WORKS. COUNCILS SUPERVISING ENGINEER WILL DETERMINE WHETHER TREES ARE DEEMED TO BE AFFECTED BY THIS CLAUSE.

3) INSPECTION AND APPROVAL OF THE WORKS IS REQUIRED BY THE ENGINEER AT THE FOLLOWING STAGES
* WHEN DRAINAGE LINES HAVE BEEN LAID, JOINTED AND BEDDED PRIOR TO BACKFILLING
* WHEN ROADWORKS HAVE BEEN EXCAVATED TO SUBGRADE LEVEL PRIOR TO PLACEMENT OF PAVEMENT MATERIAL. (SEE TESTING)
*WHEN PART (AS SPECIFIED BY COUNCILS SUPERVISING ENGINEER) OF THE PAVEMENT DEPTH HAS BEEN INSTALLED. (SEE TESTING)
*AT COMPLETION OF KERB AND GUTTER SUBGRADE. (SEE TESTING)
* AT COMPLETION OF PAVEMENT SHAPING AND CONSOLIDATION PRIOR TO PRIMING. (SEE TESTING)
* AT SEALING (NOTE 24 HOURS REQUIRED BETWEEN PRIMING AND SEALING
* AT COMPLETION OF ALL WORK
NOTE : A MIN 24 HOURS NOTICE IS REQUIRED FOR ALL INSPECTIONS.

4) PAVEMENT TESTING TO BE CARRIED OUT AT THE FOLLOWING STAGES
* SUBGRADE - DENSITY AND ROLLER TESTS.
* AT INTERMEDIATE LEVELS(IF REQUIRED BY COUNCILS SUPERVISING ENGINEER) - DENSITY AND ROLLER TEST.
* AT KERB AND GUTTER SUBGRADE - ROLLER TEST.
* AT FINISHED PAVEMENT LEVEL : DENSITY , ROLLER AND BENKLEMAN BEAM TESTS.

NOTES CONTINUED

PAVEMENT TESTING NOTES:
1. THE ROLLER TEST WILL BE CARRIED OUT BY COUNCILS SUPERVISING ENGINEER, USING A THREE POINT ROLLER (ALSO DISCRIBED AS A STEAM-ROLLER)
2. DENSITY TEST, BEAM TESTS AND CBR TESTS ARE TO BE CARRIED OUT BY A COUNCIL APPROVED NATA REGISTERED LABORATORY (BEAM TESTS ARE ABLE TO BE CARRIED OUT BY COUNCIL - CONTACT MAY BE MADE WITH COUNCILS PAVEMENTS ENGINEER FOR A QUOTE).
3. TEST RESULTS ARE TO BE SENT IMMEDIATELY TO THE COUNCILS SUPERVISING ENGINEER.
4. "STANDARD" COMPACTION TESTING TO BE USED.
5. A THREE POINT ROLLER (ALSO DISCRIBED AS A STEAM-ROLLER), IN ACCORDANCE WITH COUNCILS CONSTRUCTION SPECIFICATION , IS TO BE USED ON ALL BUT THE NARROWEST SHOULDERS, FOR ROLLER TESTING.

5. SERVICES SHOWN ON THE PLAN ARE APPROX ONLY AND HAVE BEEN LOCATED FROM SITE INVESTIGATION AND THE RELEVANT AUTHORITY. ALL SERVICES ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.

6. ANY ADJUSTMENT TO PUBLIC UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR/DEVELOPER.

7. PUBLIC UTILITY SERVICES (WATER, GAS, ELECTRICITY, TELEPHONE, ETC.) REQUIRE TO BE INSTALLED IN CONJUNCTION WITH THE WORK , ARE TO BE INSTALLED PRIOR TO THE LAYING OF ANY ROAD PAVEMENT MATERIAL, AS ARE CONDUITS FOR BOTH PUBLIC UTILITIES AND INDIVIDUAL ALLOTMENT SERVICES.

8) A SMOOTH JUNCTION IS TO BE PROVIDED WITH EXISTING WORK.

9) UNSUITABLE MATERIAL IS TO BE REMOVED FROM ROADS AND LOTS PRIOR TO FILLING.

10) STRIP AND STOCKPILE TOPSOIL FROM ROADWAYS AND SITE REGRADING AREAS AND RE-SPREAD ON FOOTPATHS, BATTERS AND FILL AREAS TO A MAXIMUM DEPTH OF 300MM WITH A MINIMUM DEPTH OF 100MM.

11) DURING CONSTRUCTION NOTIFY THIS OFFICE IF ANY QUERIES ARISE - NEVER ASSUME.

12) LIMIT OF CONSTRUCTION AS SHOWN ON PLANS.

13) ALL PAVEMENTS TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL CONSTRUCTION SPECIFICATION.

14) ALL DISTURBED AREAS ARE TO BE SPRAY SEEDED/TURFS.

STORMWATER DRAINAGE NOTES

1) ALL STORMWATER PIPES 375MM DIA AND GREATER TO BE RUBBER RING JOINTED CLASS "2" OR HIGHER CLASS AS NOTED. FOR SMALLER PIPES, UPVC (SOLVENT WELD - WITH SOME RESTRICTIONS) OR VCP (RRJ) MAY BE USED.

2) TRENCH WIDTH MIN = OUTSIDE DIA OF COLLAR + 200MM.

3) PIPES IN FILL GROUND ARE TO BE PLACED AFTER COMPLETION AND APPROVAL OF FILLING.

EROSION CONTROL DEVICES

1) PROVIDE KERB INLET SEDIMENT TRAPS AT ALL RM10 TYPE PITS. TO RM 23 OF COUNCIL SPEC.

A 'WORK AS EXECUTED PLAN' IS TO BE COMPLETED BY A PROFESSIONAL ENGINEER OR REGISTERED SURVEYOR & PROVIDED TO COUNCIL BEFORE THE FINAL INSPECTION FOR THE CERTIFICATE OF PRACTICAL COMPLETION.

THE CONTRACTOR SHALL CONTACT THE COUNCIL IN WRITING A MINIMUM OF 7 DAYS PRIOR TO COMMENCING WORK AND APPLY FOR A 138 CONSENT (SECTION 138 OF THE ROADS ACT FOR APPROVAL TO WORK ON A PUBLIC ROAD) AND INCLUDE COPIES OF CURRENT PUBLIC LIABILITY INSURANCE FOR A VALUE OF $20,000,000 AND PAYMENT OF THE CURRENT FEE. REFERENCES FOR PREVIOUS WORK EXPERIENCE MAY BE REQUESTED BY COUNCIL

AMEND	DATE	DESCRIPTION	DRAWN

GENERAL NOTES:
- DO NOT SCALE
- GRADES INDICATIVE ONLY, LEVELS TO TAKE PRECEDENCE OVER GRADES.
- LEVELS MAY VARY WITH FINAL DETAIL DESIGN.
- ALL DIMENSIONS ARE IN MM UNLESS SHOWN OTHERWISE.
- THE BUILDER IS TO CHECK ALL DIMENSIONS ON SITE PRIOR TO COMMENCING WORK.
- ALL WORK IS TO BE IN ACCORDANCE WITH AUSTRALIAN CODES AND COUNCIL REGULATIONS.

IE Aust
David Turner
MIEAust CPEng
Chartered Professional Engineer
Membership No. 275717
The Institution of Engineers, Australia

CERTIFICATION.

DESIGNED IN ACCORDANCE WITH RELEVANT AUST CODES

D. TURNER.B.E.(MIEA) CPENG

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SHOPS 1 & 2, 16 MITCHELL ST CAMDEN 2570
PH (02) 4647 4014
engineer@dmceng.com.au

PROJECT:- DRAINAGE DESIGN FOR PROPOSED MEDIUM DENSITY DEVELOPMENT

CLIENT:- DANIEL CARPENTER

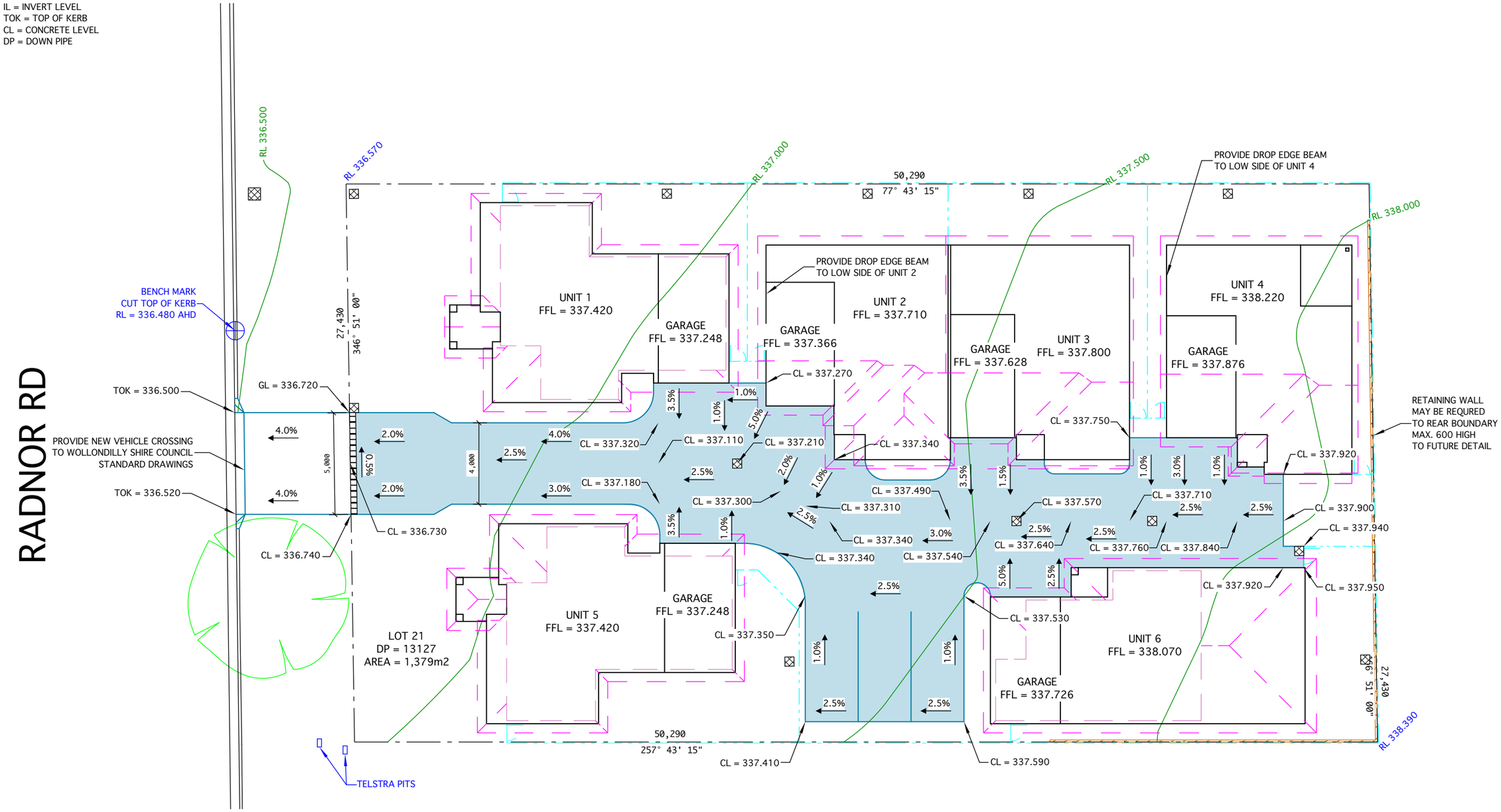
ADDRESS:- 73 RADNOR RD BARGO

DRAWN AMR
CHECKED DLT
DATE 27/5/19
SCALE AS SHOWN
SHEET D1

DWG No 190016 DRAINAGE

8:53 AM 6/17/19

KEY:
GL = GRATE LEVEL
IL = INVERT LEVEL
TOK = TOP OF KERB
CL = CONCRETE LEVEL
DP = DOWN PIPE



DRIVEWAY PLAN

SCALE
AT A1 - 1:100
AT A3 - 1:200

SCALE 0m 1m 2m 3m 4m 5m

N W E S

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BARGO

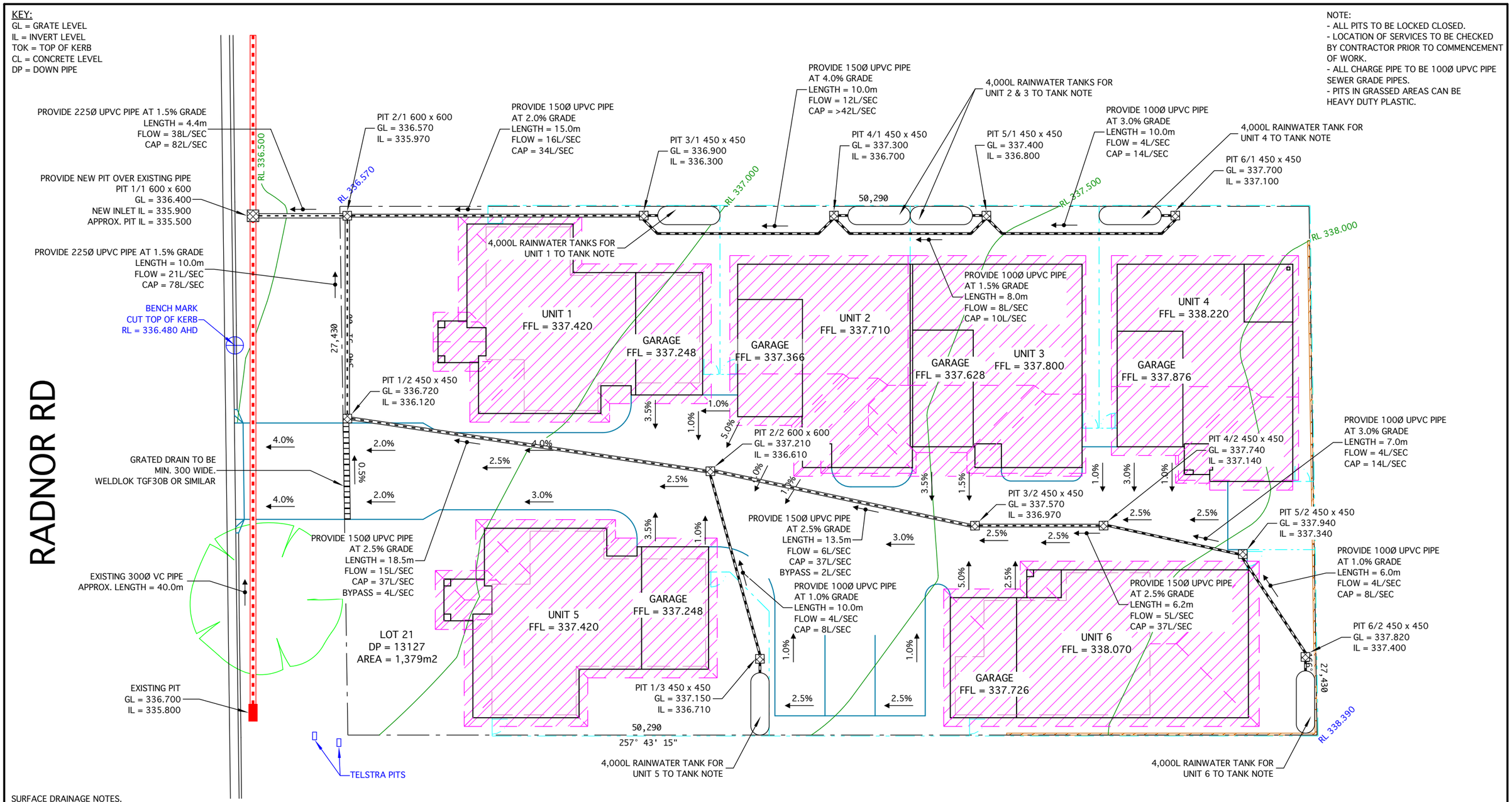
DRAWN AMR
CHECKED DLT
DATE 27/5/19
SCALE AS SHOWN
SHEET D2

DWG No
190016
DRAINAGE

8:53 AM 6/17/19

KEY:
GL = GRATE LEVEL
IL = INVERT LEVEL
TOK = TOP OF KERB
CL = CONCRETE LEVEL
DP = DOWN PIPE

NOTE:
- ALL PITS TO BE LOCKED CLOSED.
- LOCATION OF SERVICES TO BE CHECKED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
- ALL CHARGE PIPE TO BE 100Ø UPVC PIPE SEWER GRADE PIPES.
- PITS IN GRASSED AREAS CAN BE HEAVY DUTY PLASTIC.



SURFACE DRAINAGE NOTES.
THE POSSIBILITY OF SURFACE WATER ENTERING LIVING AREAS IN CLASS 1 BUILDINGS MAY BE REDUCED BY THE FOLLOWING MEASURES. THE MINIMUM HEIGHT OF THE SLAB ABOVE FINISH GROUND, LANDSCAPING OR PAVING LEVEL SHALL BE 150MM, EXCEPT IN THE FOLLOW CASES:
a) IN SANDY, WELL-DRAINING AREA THE MINIMUM HEIGHT SHALL BE 100MM.
b) WHERE ADJOINING PAVED AREAS SLOPE AWAY FROM THE BUILDING THESE HEIGHTS CAN BE REDUCED TO 50MM.
c) THESE HEIGHTS MAY BE FURTHER REDUCED LOCALLY AT ENTRANCES THAT ARE SHIELDED FROM THE WEATHER.

DRAINAGE PLAN

SCALE
AT A1 - 1:100
AT A3 - 1:200

SCALE 1m 3m 5m / 0m 2m 4m

N W E S

TANK NOTE:
PROVIDE 4,000L ABOVE GROUND RAINWATER TANK FOR EACH UNIT AS SHOWN
ALL DOWN PIPES FROM EACH UNIT TO DISCHARGE INTO RAINWATER TANKS TO TYPICAL DETAILS ON SHEET D4

	PRE & POST TABLE				
	5 YR FLOW RATE (l/s)	10 YR FLOW RATE (l/s)	20 YR FLOW RATE (l/s)	50 YR FLOW RATE (l/s)	100 YR FLOW RATE (l/s)
PRE DEVELOPMENT	30	41	52	63	74
POST DEVELOPMENT WITH OSD	33	40	49	60	69
Post Development Peak Discharge Reduction Percentage	-10.0%	2.5%	6.1%	5.0%	7.2%

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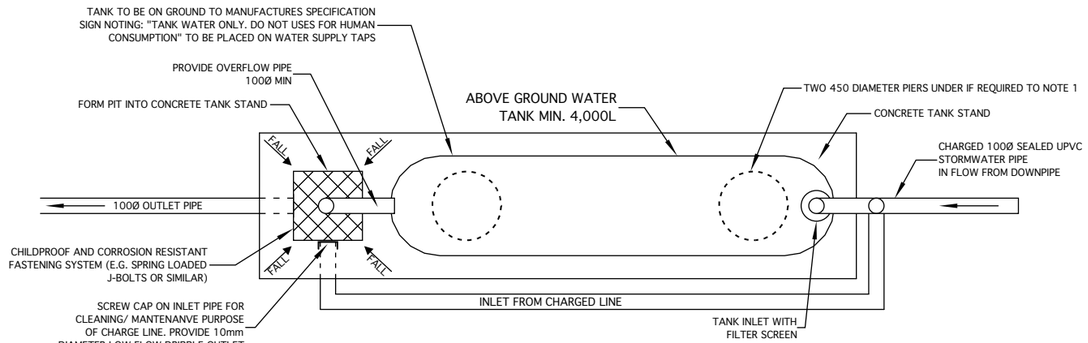
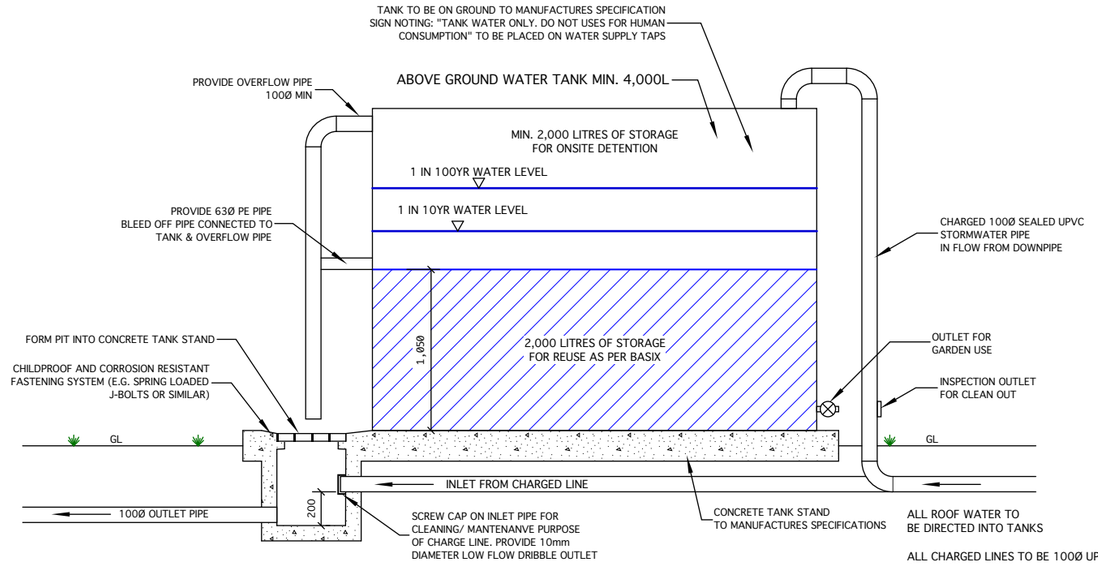


TYPICAL TANK PLAN DETAIL

SCALE AT A1 - 1:20
AT A3 - 1:40



ALL CHARGED LINES TO BE 100Ø UPVC SEWER GRADE PIPES.

100Ø CLEANOUT PIPE CONNECTED FROM LOW POINT OF DOWNPIPES TO DISHCHARGE INTO PIT

TYPICAL TANK SECTION DETAIL

SCALE AT A1 - 1:20
AT A3 - 1:40

NOTE 1:
FOR LOCATIONS WHERE CONCRETE TANK SLABS ARE TO BE POSITIONED ADJACENT TO RETAINING WALLS ON THE FILL SIDE BUILDER SHALL ENSURE THAT A MINIMUM TWO 450 DIAMETER PIERS BE INSTALLED TO A MINIMUM 300mm BELOW THE BOTTOM OF THE RETAINED WALL HEIGHT.

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SHEET D4
DWG No 190016 DRAINAGE

8:53 AM 6/17/19

MINOR CALCULATIONS - 10 YEAR STORM

ILSAX CALCULATION SUMMARY SHEET

DRAINS results prepared from Version 2019.03

			Entire Catchment Area	
Soil Type	3	Paved	0.123 ha	(44.7%)
		Supplementary	0 ha	(0%)
AMC	3	Grassed	0.152 ha	(55.2%)
		Total Area	0.275 ha	

LOCATION AND LAND-USE					**TIME AND RUNOFF**						**INLET DESIGN**											**PIPE SYSTEM DESIGN**									**PIT RESULTS**					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Design AEP	**Pit Name**	**Sub-Catchment Area** (ha)	**Land-Use**	**Percent-age**	**Constant Flow Time** (minutes)	**Length** (m)	**Kinematic Wave or Friends Formula Parameters Slope** (%)	**Roughness** n	**Total Time tc** (minutes)	**Peak Sub-Catchment Flowrate** (m^3/s) *worst storm	**Origin of Approach Flows**	**Flowrate** (m^3/s)	**Overflows Approaching Pit Flow Width** (m)	**Depth x Velocity** (m^2/s)	**Inlet Family**	**Inlet Size**	**Total Approach Flow** (m^3/s)	**Bypass Flow** (m^3/s)	**Overflow Leaving Pit Flow Width** (m)	**Depth x Velocity** (m^2/s)	**Peak Flow in Pipe** (m^3/s)	**Reach Length** (m)	**Pipe Slope** (m)	**Pipe Diameter** (mm)	**U/S Pipe Invert Level** (m)	**D/S Pipe Invert Level** (m)	**U/S HGL in Pipe** (m)	**D/S HGL in Pipe** (m)	**Pipe Flow Velocity** (m/s)	**Pressure Change Coeff.** Ku	**Water Surface Elevation** (m)	**Surface Level** (m)	**Free-board** (m)	**Pit Name**	**Remarks**
10%	**DP 1**		Paved												Downpipe	Downpipe	0				0.003	1	1	100	336.31	336.3	336.435	336.432	0.4	5.5	336.48	342.2	5.72	**DP 1**	
			Supp.																																
			Grassed																																
10%	**Pit 3/1**	0.0025	Paved	0	0				0	0.001	Tank 1	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.016	15	2.2	150	336.3	335.97	336.415	336.155	1.06	1	336.43	336.9	0.47	**Pit 3/1**	
			Supp.	0	0						Pit 4/1	0	0	0																					
			Grassed	100	5				5																										
10%	**Pit 2/1**	0.007	Paved	0	0				0	0.002	Pit 3/1	0	0	0	Surface Inlet Pits - Grass	600 Square Pit	0.002	0	0	0	0.038	4.4	1.59	225	335.97	335.9	336.129	336.022	1.63	1.2	336.16	336.57	0.41	**Pit 2/1**	
			Supp.	0	0						Pit 1/2	0	0	0																					
			Grassed	100	5				5																										
10%	**Pit 1/1**		Paved												Surface Inlet Pits - Grass	600 Square Pit	0				0.038	5	1	300	335.5	335.45	335.65	335.581	1.28	5.9	335.73	336.4	0.67	**Pit 1/1**	
			Supp.																																
			Grassed																																
10%	**DP 2**		Paved												Downpipe	Downpipe	0				0.003	1	1	100	336.71	336.7	336.776	336.774	0.52	5.9	336.81	342.5	5.69	**DP 2**	
			Supp.																																
			Grassed																																
10%	**Pit 4/1**	0.003	Paved	0	0				0	0.001	Tank 2	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.012	10	4	150	336.7	336.3	336.774	336.432	1.34	0.1	336.77	337.3	0.53	**Pit 4/1**	
			Supp.	0	0						Pit 5/1	0	0	0																					
			Grassed	100	5				5																										
10%	**DP 3**		Paved												Downpipe	Downpipe	0				0.003	1	1	100	336.81	336.8	336.99	336.988	0.34	4.5	337.02	342.6	5.58	**DP 3**	
			Supp.																																
			Grassed																																
10%	**Pit 5/1**	0.0035	Paved	0	0				0	0.001	Tank 3	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.008	8	1.25	100	336.8	336.7	336.907	336.789	1.04	1.8	336.99	337.4	0.41	**Pit 5/1**	
			Supp.	0	0						Pit 6/1	0	0	0																					
			Grassed	100	5				5																										
10%	**DP 4**		Paved												Downpipe	Downpipe	0				0.003	1	1	100	337.11	337.1	337.167	337.16	0.68	5.9	337.21	343	5.79	**DP 4**	
			Supp.																																
			Grassed																																
10%	**Pit 6/1**	0.004	Paved	0	0				0	0.001	Tank 4	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.004	10	3	100	337.1	336.8	337.16	336.988	0.83	0.4	337.16	337.7	0.54	**Pit 6/1**	
			Supp.	0	0																														
			Grassed	100	5				5																										
10%	**DP 6**		Paved												Downpipe	Downpipe	0				0.004	1	1	100	337.18	337.17	337.263	337.259	0.53	5.9	337.32	342.8	5.48	**DP 6**	
			Supp.																																
			Grassed																																
10%	**Pit 4/2**	0.0015	Paved	0	0				0	0	Tank 6	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0	0	0	0	0.004	20	1	100	337.17	336.97	337.235	337.077	0.74	1.8	337.26	337.77	0.51	**Pit 4/2**	
			Supp.	0	0																														
			Grassed	100	5				5																										
10%	**Pit 3/2**	0.01	Paved	85	5				5	0.004	Pit 4/2	0	0	0	Surface Inlet Pits - Paved	450 Square Pit	0.004	0.002	0.65	0.01	0.006	13.5	2.67	150	336.97	336.61	337.041	336.746	0.73	5.9	337.08	337.57	0.49	**Pit 3/2**	
			Supp.	0	0																														
			Grassed	15	5				5																										
10%	**Pit 2/2**	0.017	Paved	90	5				5	0.006	Pit 3/2	0.002	0.65	0.01	Surface Inlet Pits - Paved	600 Square Pit	0.008	0.004	0.65	0.01	0.015	18.5	2.65	150	336.61	336.12	336.721	336.256	1.02	4.8	336.75	337.21	0.46	**Pit 2/2**	
			Supp.	0	0																														
			Grassed	10	5				5																										
10%	**Pit 1/2**	0.011	Paved	95	5				5	0.004	Pit 2/2	0.004	0.65	0.01	Grated Drain	0.3m wide x 5m long	0.008	0	0	0	0.021	10	1.5	225	336.12	335.97	336.242	336.155	0.89	1.5	336.26	336.72	0.46	**Pit 1/2**	
			Supp.	0	0																														
			Grassed	5	5				5																										
10%	**DP 5**		Paved												Downpipe	Downpipe	0				0.003	1	1	100	336.72	336.71	336.804	336.801	0.47	5.9	336.85	342.2	5.35	**DP 5**	
			Supp.																																
			Grassed																																
10%	**Pit 1/3**	0.002	Paved	0	0				0	0.001	Tank 5	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.004	10	1	100	336.71	336.61	336.787	336.746	0.58	1.7	336.8	337.15	0.35	**Pit 1/3**	
			Supp.	0	0																														
			Grassed	100	5				5																										
10%	**Tank 1**	0.012	Paved	100	5				5	0.005							0.005	0	0	0	0.003	1	5	63	337.95	337.9	338.01	337.96	1.24					**Tank 1**	
			Supp.	0	0																														
			Grassed	0	0				0																										
10%	**Tank 2**	0.01	Paved	100	5				5	0.004							0.004	0	0	0	0.003	1	5	63	338.35	338.3	338.407	338.346	1.27					**Tank 2**	
			Supp.	0	0																														
			Grassed	0	0				0																										
10%	**Tank 3**	0.01	Paved	100	5				5	0.004							0.004	0	0	0	0.003	1	5	63	338.45	338.4	338.507	338.446	1.27					**Tank 3**	
			Supp.	0	0																														
			Grassed	0	0				0																										
10%	**Tank 4**	0.011	Paved	100	5				5	0.004							0.004	0	0	0	0.003	1	5	63	338.75	338.7	338.81	338.758	1.15					**Tank 4**	
			Supp.	0	0																														
			Grassed	0	0				0																										
10%	**Tank 6**	0.0135	Paved	100	5				5	0.005							0.005	0	0	0	0.004	1	5	63	338.82	338.77	338.88	338.83	1.37					**Tank 6**	
			Supp.	0	0																														
			Grassed	0	0				0																										
10%	**Tank 5**	0.012	Paved	100	5				5	0.005							0.005	0	0	0	0.003	1	5	63	338.2	338.15	338.26	338.21	1.24					**Tank 5**	
			Supp.	0	0																														
			Grassed	0	0				0																										

AMEND	DATE	DESCRIPTION	DRAWN

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CERTIFICATION.

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PROJECT:- DRAINAGE DESIGN FOR PROPOSED MEDIUM DENSITY DEVELOPMENT

CLIENT:- DANIEL CARPENTER

ADDRESS:- 73 RADNOR RD BARGO

DRAWN AMR
CHECKED DLT
DATE 27/5/19
SCALE AS SHOWN
SHEET D5

DWG No 190016 DRAINAGE

8:53 AM 6/17/19

MAJOR CALCULATIONS - 100 YEAR STORM

ILSAX CALCULATION SUMMARY SHEET

DRAINS results prepared from Version 2019.03

			Entire Catchment Area	
Soil Type	3	Paved	0.123 ha	(44.7%)
		Supplementary	0 ha	(0%)
AMC	3	Grassed	0.152 ha	(55.2%)
		Total Area	0.275 ha	

LOCATION AND LAND-USE					TIME AND RUNOFF						INLET DESIGN										PIPE SYSTEM DESIGN									PIT RESULTS					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Design AEP	Pit Name	Sub-Catchment Area (ha)	Land-Use	Percent-age	Constant Flow Time (minutes)	Length (m)	Kinematic Wave or Friends Formula Parameters Slope (%)	Roughness n	Total Time tc (minutes)	Peak Sub-Catchment Flowrate (m^3/s) *worst storm	Origin of Approach Flows	Flowrate (m^3/s)	Overflows Approaching Pit Flow Width (m)	Depth x Velocity (m^2/s)	Inlet Family	Inlet Size	Total Approach Flow (m^3/s)	Bypass Flow (m^3/s)	Overflow Leaving Pit Flow Width (m)	Depth x Velocity (m^2/s)	Peak Flow in Pipe (m^3/s)	Reach Length (m)	Pipe Slope (m)	Pipe Diameter (mm)	U/S Pipe Invert Level (m)	D/S Pipe Invert Level (m)	U/S HGL in Pipe (m)	D/S HGL in Pipe (m)	Pipe Flow Velocity (m/s)	Pressure Change Coeff. Ku	Water Surface Elevation (m)	Surface Level (m)	Free-board (m)	Pit Name	Remarks
1%	DP 1		Paved												Downpipe	Downpipe	0				0.006	1	1	100	336.31	336.3	336.679	336.672	0.65	5.5	336.79	342.2	5.41	DP 1	
			Supp.																																
			Grassed																																
1%	Pit 3/1	0.0025	Paved	0	0				0	0.001	Tank 1	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.026	15	2.2	150	336.3	335.97	336.568	336.246	1.4	1	336.67	336.9	0.23	Pit 3/1	
			Supp.	0	0				5		Pit 4/1	0	0	0																					
			Grassed	100	5																														
1%	Pit 2/1	0.007	Paved	0	0				0	0.004	Pit 3/1	0	0	0	Surface Inlet Pits - Grass	600 Square Pit	0.004	0.001	0.14	0	0.064	4.4	1.59	225	335.97	335.9	336.174	336.074	1.8	1.2	336.25	336.57	0.32	Pit 2/1	
			Supp.	0	0				5		Pit 1/2	0	0	0																					
			Grassed	100	5																														
1%	Pit 1/1		Paved												Surface Inlet Pits - Grass	600 Square Pit	0				0.064	5	1	300	335.5	335.45	335.695	335.628	1.46	5.9	335.9	336.4	0.5	Pit 1/1	
			Supp.																																
			Grassed																																
1%	DP 2		Paved												Downpipe	Downpipe	0				0.005	1	1	100	336.71	336.7	336.814	336.808	0.55	5.9	336.9	342.5	5.6	DP 2	
			Supp.																																
			Grassed																																
1%	Pit 4/1	0.003	Paved	0	0				0	0.002	Tank 2	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.002	0	0	0	0.019	10	4	150	336.7	336.3	336.808	336.672	1.39	0.1	336.81	337.3	0.49	Pit 4/1	
			Supp.	0	0				5		Pit 5/1	0	0	0																					
			Grassed	100	5																														
1%	DP 3		Paved												Downpipe	Downpipe	0				0.005	1	1	100	336.81	336.8	337.363	337.358	0.55	4.5	337.43	342.6	5.17	DP 3	
			Supp.																																
			Grassed																																
1%	Pit 5/1	0.0035	Paved	0	0				0	0.002	Tank 3	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.002	0	0	0	0.013	8	1.25	100	336.8	336.7	337.151	336.808	1.52	1.8	337.36	337.4	0.04	Pit 5/1	
			Supp.	0	0				5		Pit 6/1	0	0	0																					
			Grassed	100	5																														
1%	DP 4		Paved												Downpipe	Downpipe	0				0.005	1	1	100	337.11	337.1	337.492	337.486	0.6	5.9	337.59	343	5.41	DP 4	
			Supp.																																
			Grassed																																
1%	Pit 6/1	0.004	Paved	0	0				0	0.002	Tank 4	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.002	0	0	0	0.007	10	3	100	337.1	336.8	337.472	337.358	0.79	0.4	337.49	337.7	0.21	Pit 6/1	
			Supp.	0	0				5																										
			Grassed	100	5																														
1%	DP 6		Paved												Downpipe	Downpipe	0				0.006	1	1	100	337.18	337.17	337.396	337.387	0.71	5.9	337.55	342.8	5.25	DP 6	
			Supp.																																
			Grassed																																
1%	Pit 4/2	0.0015	Paved	0	0				0	0.001	Tank 6	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.007	20	1	100	337.17	336.97	337.33	337.106	0.78	1.8	337.39	337.77	0.38	Pit 4/2	
			Supp.	0	0				5																										
			Grassed	100	5																														
1%	Pit 3/2	0.01	Paved	85	5				5	0.006	Pit 4/2	0	0	0	Surface Inlet Pits - Paved	450 Square Pit	0.006	0.004	1.08	0.02	0.009	13.5	2.67	150	336.97	336.61	337.056	336.845	0.83	5.9	337.11	337.57	0.46	Pit 3/2	
			Supp.	0	0				5																										
			Grassed	15	5																														
1%	Pit 2/2	0.017	Paved	90	5				5	0.011	Pit 3/2	0.004	1.08	0.02	Surface Inlet Pits - Paved	600 Square Pit	0.015	0.01	1.08	0.02	0.02	18.5	2.65	150	336.61	336.12	336.738	336.329	1.2	4.8	336.85	337.21	0.36	Pit 2/2	
			Supp.	0	0				5																										
			Grassed	10	5																														
1%	Pit 1/2	0.011	Paved	95	5				5	0.007	Pit 2/2	0.01	1.08	0.02	Grated Drain	0.3m wide x 5m long	0.017	0	0	0	0.035	10	1.5	225	336.12	335.97	336.289	336.246	1.03	1.5	336.33	336.72	0.39	Pit 1/2	
			Supp.	0	0				5																										
			Grassed	5	5																														
1%	DP 5		Paved												Downpipe	Downpipe	0				0.006	1	1	100	336.72	336.71	337.002	336.994	0.65	5.9	337.12	342.2	5.08	DP 5	
			Supp.																																
			Grassed																																
1%	Pit 1/3	0.002	Paved	0	0				0	0.001	Tank 5	0	0	0	Surface Inlet Pits - Grass	450 Square Pit	0.001	0	0	0	0.006	10	1	100	336.71	336.61	336.946	336.845	0.75	1.7	336.99	337.15	0.16	Pit 1/3	
			Supp.	0	0				5																										
			Grassed	100	5																														
1%	Tank 1	0.012	Paved	100	5				5	0.008							0.008	0	0	0	0.006	1	5	63	337.95	337.9	338.01	337.96	1.98					Tank 1	
			Supp.	0	0				0																										
			Grassed	0	0																														
1%	Tank 2	0.01	Paved	100	5				5	0.007							0.007	0	0	0	0.005	1	5	63	338.35	338.3	338.41	338.36	1.69					Tank 2	
			Supp.	0	0				0																										
			Grassed	0	0																														
1%	Tank 3	0.01	Paved	100	5				5	0.007							0.007	0	0	0	0.005	1	5	63	338.45	338.4	338.51	338.46	1.69					Tank 3	
			Supp.	0	0				0																										
			Grassed	0	0																														
1%	Tank 4	0.011	Paved	100	5				5	0.007							0.007	0	0	0	0.005	1	5	63	338.75	338.7	338.81	338.76	1.84					Tank 4	
			Supp.	0	0				0																										
			Grassed	0	0																														
1%	Tank 6	0.0135	Paved	100	5				5	0.009							0.009	0	0	0	0.006	1	5	63	338.82	338.77	338.88	338.83	2.18					Tank 6	
			Supp.	0	0				0																										
			Grassed	0	0																														
1%	Tank 5	0.012	Paved	100	5				5	0.008							0.008	0	0	0	0.006	1	5	63	338.2	338.15	338.26	338.21	1.97					Tank 5	
			Supp.	0	0				0																										
			Grassed	0	0																														

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