

NOTES

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4. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
5. ALL WORK DO BE DONE IN ACCORDANCE WITH AS/NZ 3500.3.2:1998 AND COUNCIL SPECIFICATIONS.
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11. EXISTING STORMWATER DRAINAGE TO BE UTILISED WHERE CONTRACTOR SEE FIT.

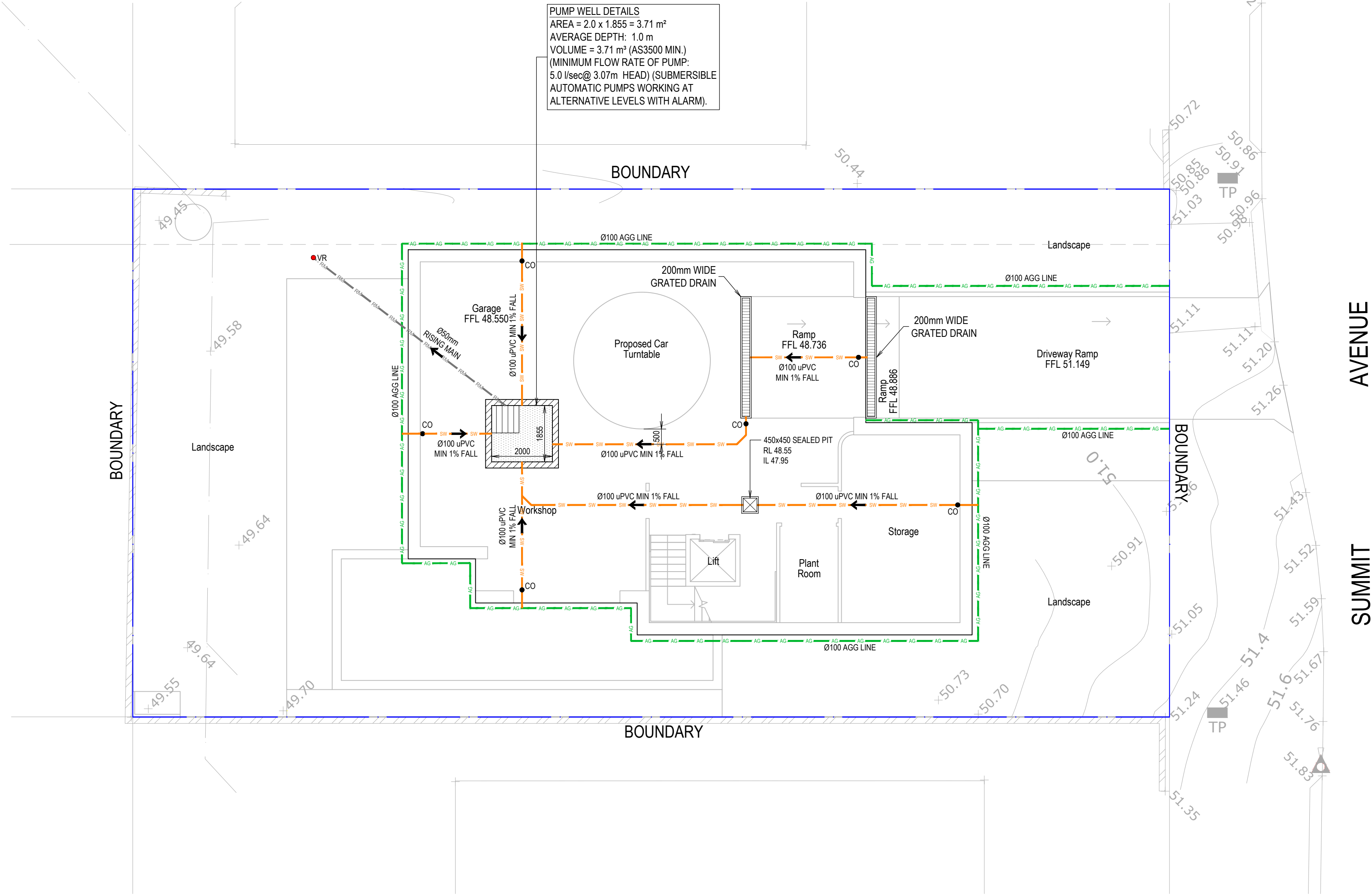
PUMP WELL DETAILS

AREA DRAINING TO SUMP= 39.88 m<sup>2</sup>

SUMP SIZE BASED ON 100 YEAR 2 HR STORM, I = 46.5 mm/hr,  
Q = CIA/3600 = 1 X 46.5 X 39.88/3600 = 0.515 L/sec  
VOLUME REQUIRED = 0.515 X (2X60X60) = 3708.8 L = 3.71 m<sup>3</sup>  
STORAGE PROVIDED 2.0 X 1.855 X 1.0 = 3.71 m<sup>3</sup>


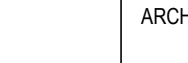
PUMP OUT RATE BASED ON 100YR 5MIN STORM, I = 263 mm/hr  
Q = CIA/3600 = 1X 263 X 39.88/3600 = 2.91 L/sec  
Q = 5.0 L/sec (AS 3500 MIN.)

DUAL KS-08 PUMP OR EQUIVALENT TO BE INSTALLED IN SUMP AND CONNECTED TO CONTROL PANEL WHICH WILL ALLOW FOR THE PUMPS TO OPERATE SIMULTANEOUSLY ON HIGH LEVEL ALARMS AT 5.0 l/sec (PER PUMP) AT 3.07m HEAD



LEGEND

RL	PIT SURFACE LEVEL
IL	INVERT LEVEL
TK	TOP OF KERB
	STORMWATER DRAINAGE PIPE
	DOWNPIPE TO RAINWATER TANK
	Ø100 SUBSOIL PIPE
	RAINWATER TANK OVER FLOW PIPE
	PROPOSED RISING MAIN
	Ø80mm CAST IN-SITU
	EXISTING STORMWATER PIPE
	PROPOSED Ø100 DOWN PIPE
	PROPOSED Ø150 DOWN PIPE
	EXISTING DOWN PIPE
	CLEAN OUT
	DOWN PIPE SPREADERS
	VERTICAL DROP
	VERTICAL RISER
	FLOOR WASTE 65Ø
	GRATED INLET PIT
	200mm WIDE GRATED DRAIN
	BALCONY DRAIN
	PLANTER DRAIN
	ROOF RAINWATER OUTLET
	RAINWATER HEAD
	PROPOSED DOWN PIPE SPREADER
	SWIVEL JOINT
	FLEXIBLE CONNECTOR

ISSUED FOR APPROVAL						P: 9037 0731 E: info@aeconsulting.com.au W: www.aeconsulting.com.au		ARCHITECT MH ARCHITECTS Pty Ltd maggie@mharchitects.net.au www.mharchitects.net.au +61 416113221	CLIENT MICHAEL HRONOPOULOS & VANESSA ROWED	SHEET SUBJECT STORMWATER DRAINAGE PLAN BASEMENT FLOOR LEVEL	PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099			ISSUED FOR APPROVAL				
G	ISSUED FOR APPROVAL	A.E.	A.E.	04.06.25							DATE 06.02.2024	DRAWN A.E.	DESIGNED A.E.		CHECKED A.E.			
F	ISSUED FOR APPROVAL	A.E.	A.E.	08.04.25							SCALE @ A1 1:100				JOB No D24014	DO NOT SCALE DRAWING, USE FIGURED DIMENSIONS ONLY		
E	ISSUED FOR APPROVAL	A.E.	R.G.	19.03.25							AUTHORISED A.E.				DWG No SW10		REV H	
D	ISSUED FOR APPROVAL	A.E.	R.G.	07.11.24							This drawing remains the property of A.E CONSULTING ENGINEERS and must not be reproduced or used without written consent.							
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DESIGN NOTES

- LGA = NORTHERN BEACHES COUNCIL

SITE CLASSIFIED IN REGION 2.

PROPOSED NEW SINGLE DWELLING

LOT SITE AREA = 593.08 m²

IN ACCORDANCE WITH COUNCIL GUIDELINE OSD IS REQUIRED FOR SUBJECT DEVELOPMENT. (WATER MANAGEMENT POLICY 9.3.2)

a) SITE AREA = 593.08 m² x 40% = 237.23 m²

b) POST DEVELOPMENT IMPERVIOUS AREA = 374.40 m²

a < b THEREFORE OSD REQUIRED

% IMPERVIOUS = 374.40/593.08 x100 = 63.1 %.

(WATER MANAGEMENT POLICY, TABLE A8-2):

AREA TAKEN AS 600m² FOR DESIGN PURPOSES

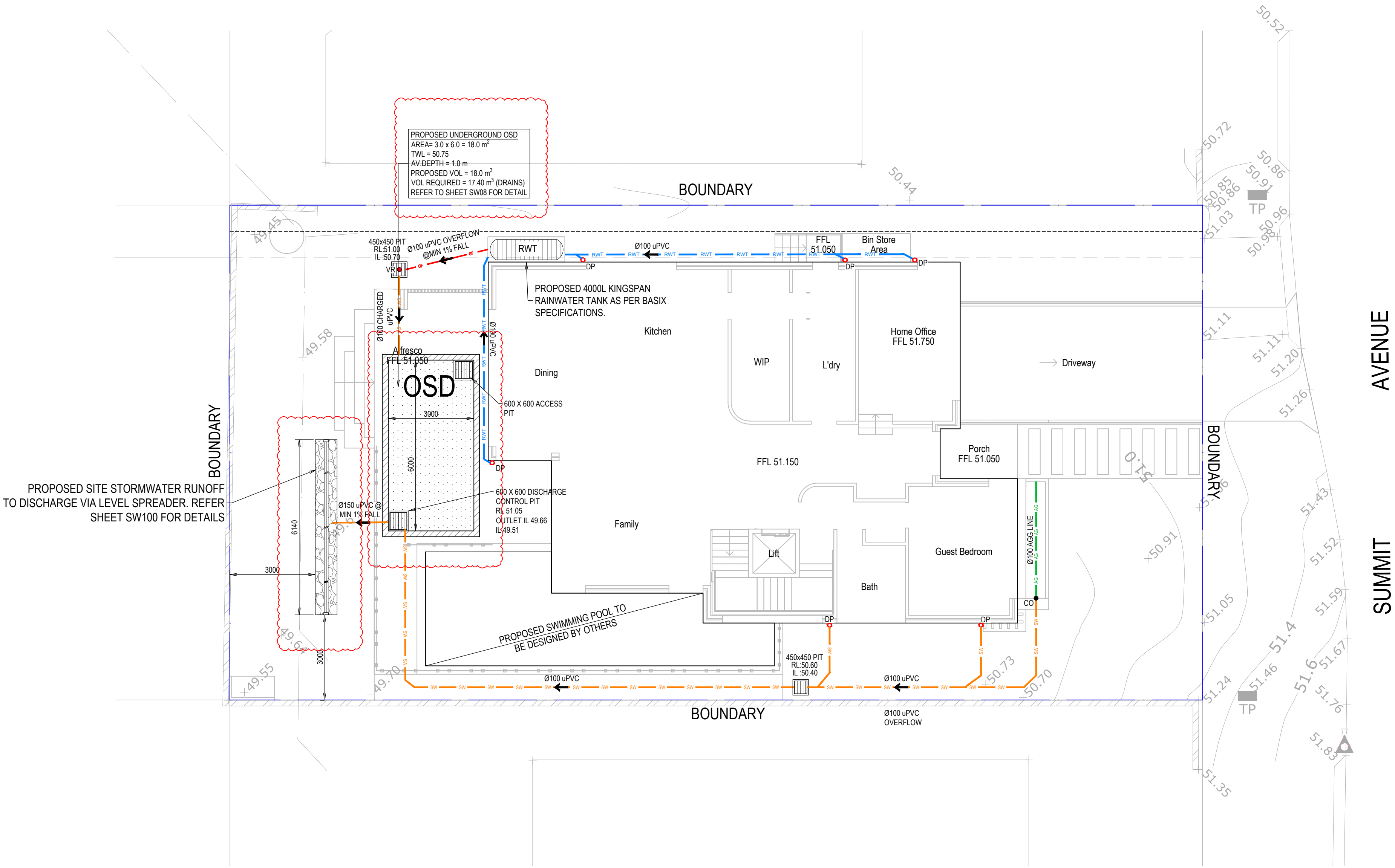
SSR<sub>MIN</sub> = 19.0 m³

PSD<sub>OS</sub> = 18 L/s

PROPOSED 4000L (MIN) RAINWATER TANK TO BE INSTALLED AS PER BASIX SPECIFICATIONS (TANK USED IN DESIGN: KINGSPAN 4000 LITRE SLIMLINE TANK. DIM: 2700 L x 880 W x 2020 H).

LEGEND

RL	PIT SURFACE LEVEL
IL	INVERT LEVEL
TK	TOP OF KERB
	STORMWATER DRAINAGE PIPE
	DOWNPIPE TO RAINWATER TANK
	Ø100 SUBSOIL PIPE
	RAINWATER TANK OVER FLOW PIPE
	PROPOSED RISING MAIN
	Ø80mm CAST IN-SITU
	EXISTING STORMWATER PIPE
	DP
	DP1
	EX-DP
	CO
	DPS
	VD
	VR
	FW
	GRATED INLET PIT
	200mm WIDE GRATED DRAIN
	BD
	PD
	RWO
	RWH
	SP
	SWIVEL JOINT
	FLEXIBLE CONNECTOR



H	ISSUED FOR APPROVAL	A.E.	A.E.	11.08.25
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CLIENT

MICHAEL HRONOPOULOS

& VANESSA ROWED

SHEET SUBJECT

STORMWATER DRAINAGE PLAN

GROUND FLOOR LEVEL

PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099			
DATE	DRAWN	DESIGNED	CHECKED
06.02.2024	A.E.	A.E.	A.E.
SCALE @ A1		JOB No	
1:100		D24014	
AUTHORISED		DWG No	REV
A.E.		SW20	H

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	EXISTING STORMWATER PIPE
	PROPOSED Ø100 DOWN PIPE
	PROPOSED Ø150 DOWN PIPE
	EXISTING DOWN PIPE
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	DOWN PIPE SPREADERS
	VERTICAL DROP
	VERTICAL RISER
	FLOOR WASTE 65Ø
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+61 416113221

CLIENT

**MICHAEL HRONOPOULOS  
& VANESSA ROWED**

SHEET SUBJECT

**STORMWATER DRAINAGE PLAN  
FIRST FLOOR LEVEL**

PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099			
DATE 06.02.2024	DRAWN A.E.	DESIGNED A.E.	CHECKED A.E.
SCALE @ A1 1:100		JOB No D24014	
AUTHORISED A.E.		DWG No SW30	REV H

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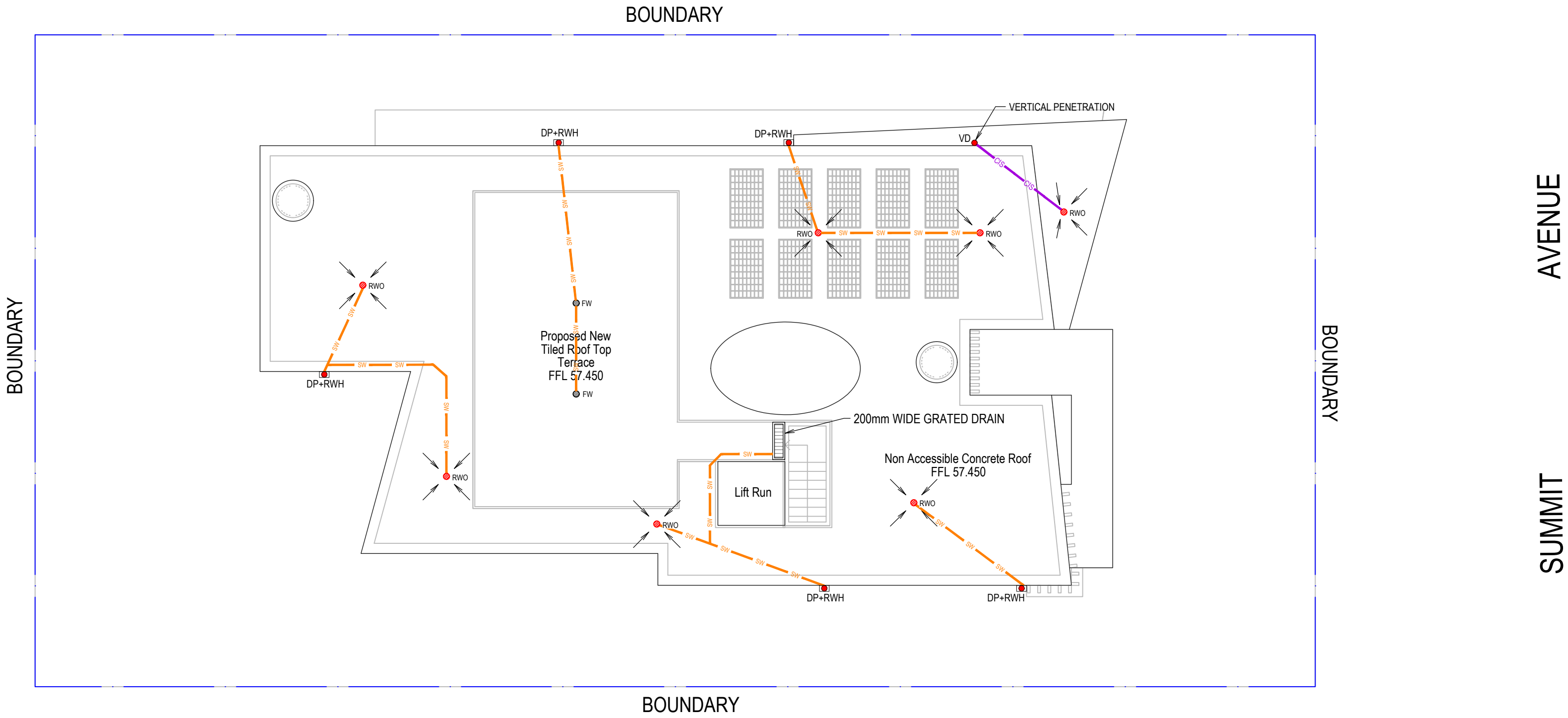
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TK	TOP OF KERB
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	Ø100 SUBSOIL PIPE
	RAINWATER TANK OVER FLOW PIPE
	PROPOSED RISING MAIN
	Ø80mm CAST IN-SITU
	EXISTING STORMWATER PIPE
	PROPOSED Ø100 DOWN PIPE
	PROPOSED Ø150 DOWN PIPE
	EXISTING DOWN PIPE
	CLEAN OUT
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	ROOF RAINWATER OUTLET
	RAINWATER HEAD
	PROPOSED DOWN PIPE SPREADER
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	FLEXIBLE CONNECTOR

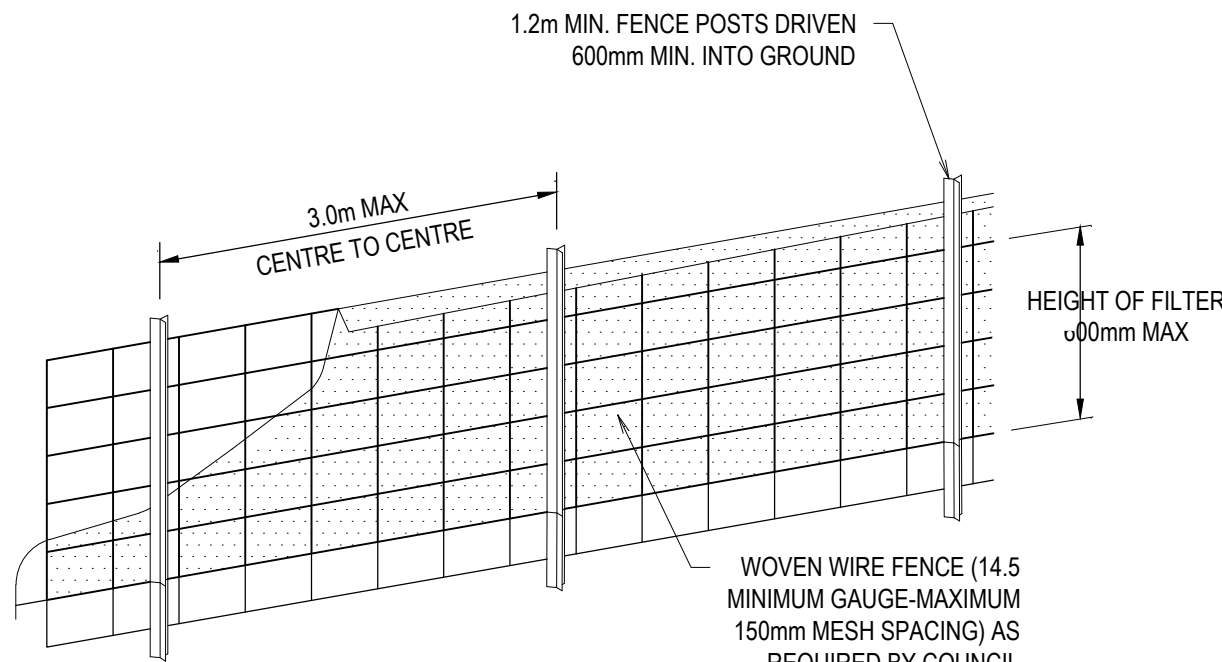


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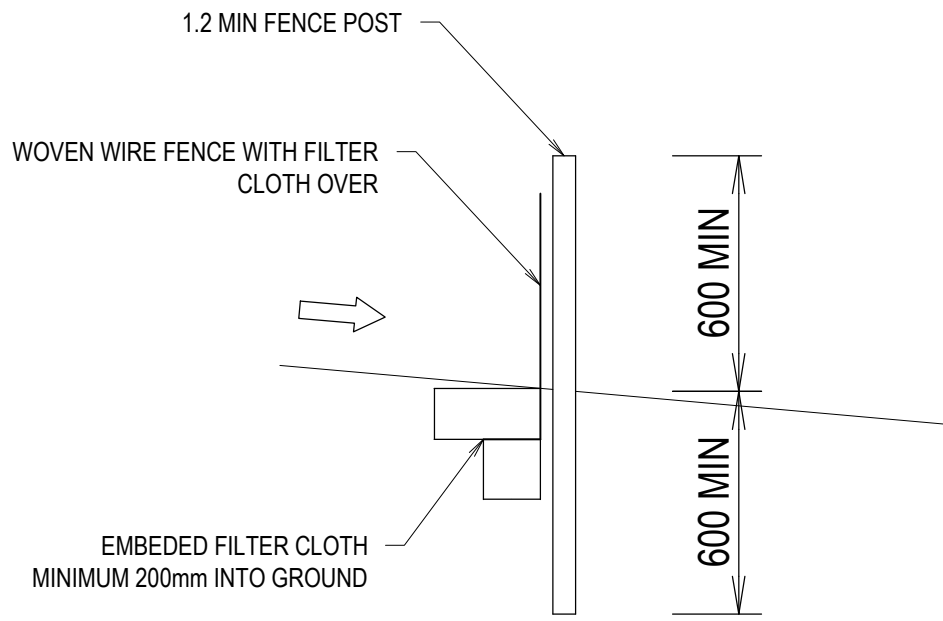
EROSION & SEDIMENT CONTROL PLAN

SCALE: 1:100  
NOTES:

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED AND RELATING TO THE DEVELOPMENT AT THE SUBJECT SITE
2. THE CONTRACTOR MUST ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THIS SPECIFICATION
3. ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMIZING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE LANDS AND WATERWAYS
4. DURING WINDY CONDITIONS, LARGE, UNPROTECTED AREAS SHALL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL
5. FINAL SITE LANDSCAPING SHALL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES
6. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE BY FILTERING THROUGH AN APPROVED STRUCTURE
7. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING HAVE BEEN REHABILITATED
8. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AFTER RAINFALL EVENTS TO ENSURE THEY HAVE OPERATED EFFECTIVELY AND REMAIN IN WORKING CONDITION
9. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITHIN ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY
10. PROVIDE SILT FENCE/HAY BALE BARRIERS TO THE LOW SIDE OF ALL EXPOSED EARTH EXCAVATIONS (TYPICAL)
11. ISOLATE EXISTING STORMWATER PITS WITH HAY BALES TO FILTER ALL INCOMING FLOWS
12. DO NOT STOCK PILE EXCAVATED MATERIAL ON THE ROAD WAY

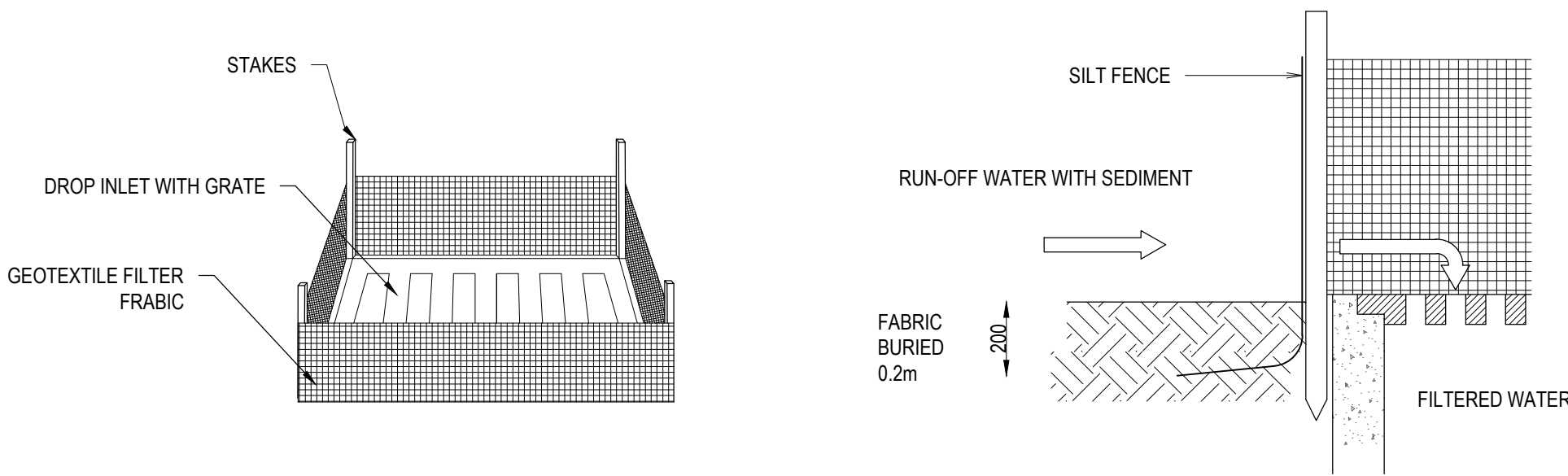


DIAGRAMMATIC VIEW

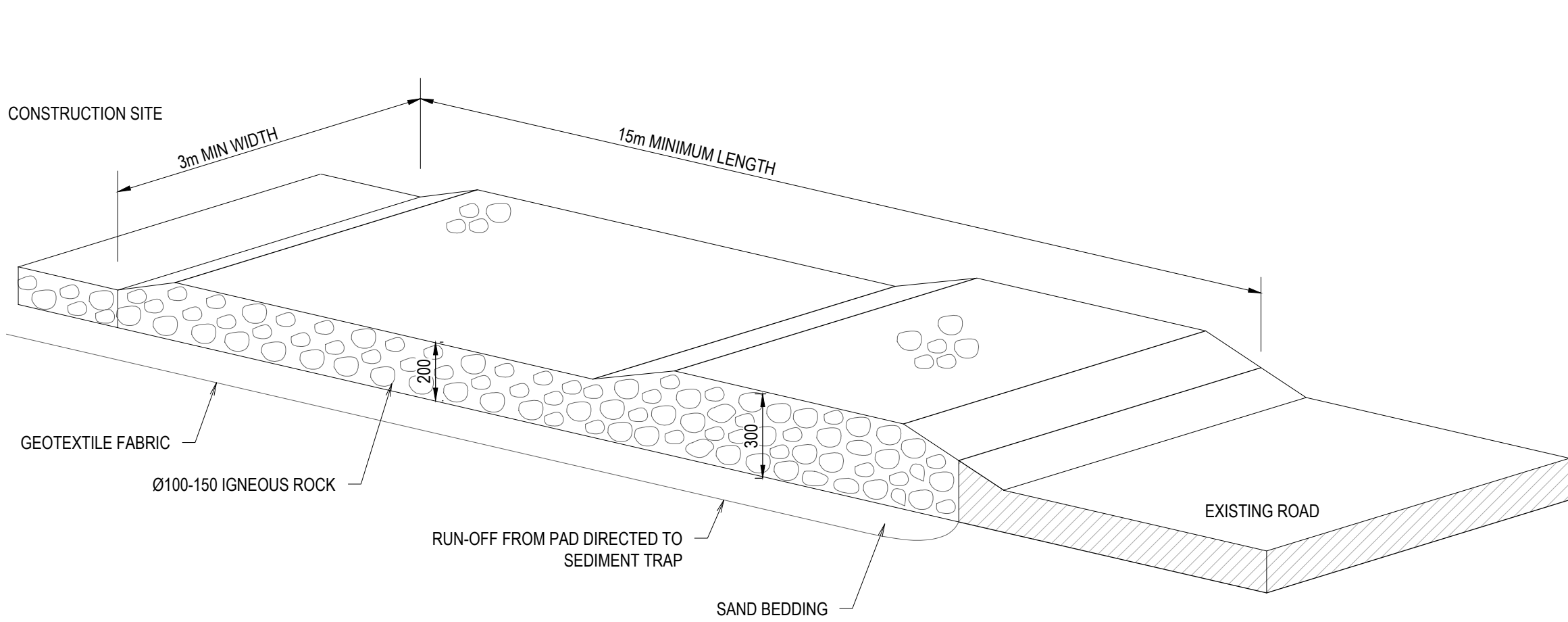


TYPICAL SECTION

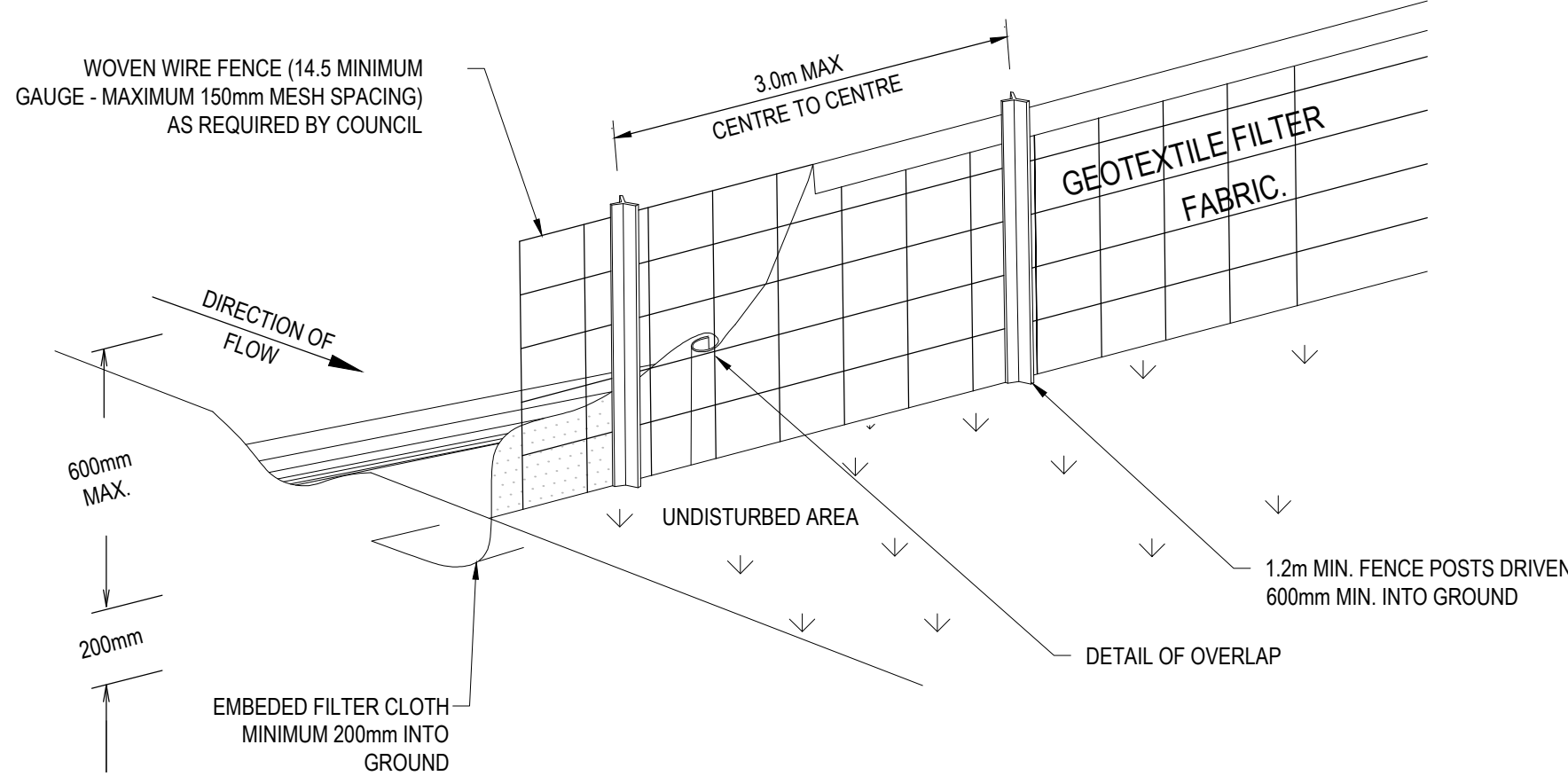
1 SEDIMENT FENCE DETAIL  
NOT TO SCALE



2 SUMP SEDIMENT TRAP DETAIL  
NOT TO SCALE



3 TEMPORARY CONSTRUCTION EXIT  
NOT TO SCALE



4 SEDIMENT FENCE  
NOT TO SCALE

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CLIENT

MICHAEL HRONOPOULOS  
& VANESSA ROWED

SHEET SUBJECT

EROSION & SEDIMENT  
CONTROL DETAILS

PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099

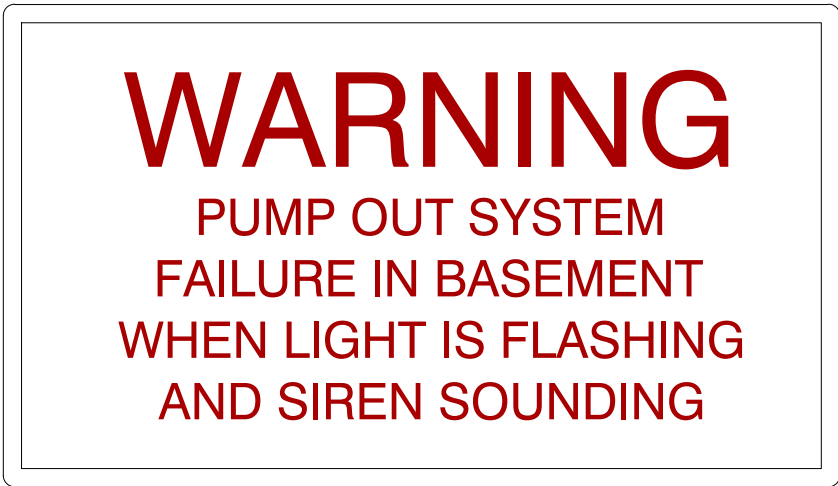
DATE	DRAWN	DESIGNED	CHECKED
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AS SHOWN	D24014		
AUTHORISED	DWG No	REV	
A.E.	SW50	H	

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COLOURS :  
WARNING - RED  
BORDER AND OTHER - BLACK

NOTES:

SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT.

A SUITABLE ALARM SYSTEM POSITIONED AT ENTRANCE OF BASEMENT CARPARK TO PROVIDE A FLOOD WARNING IN CASE OF PUMP FAILURE (TO COUNCILS SPEC).

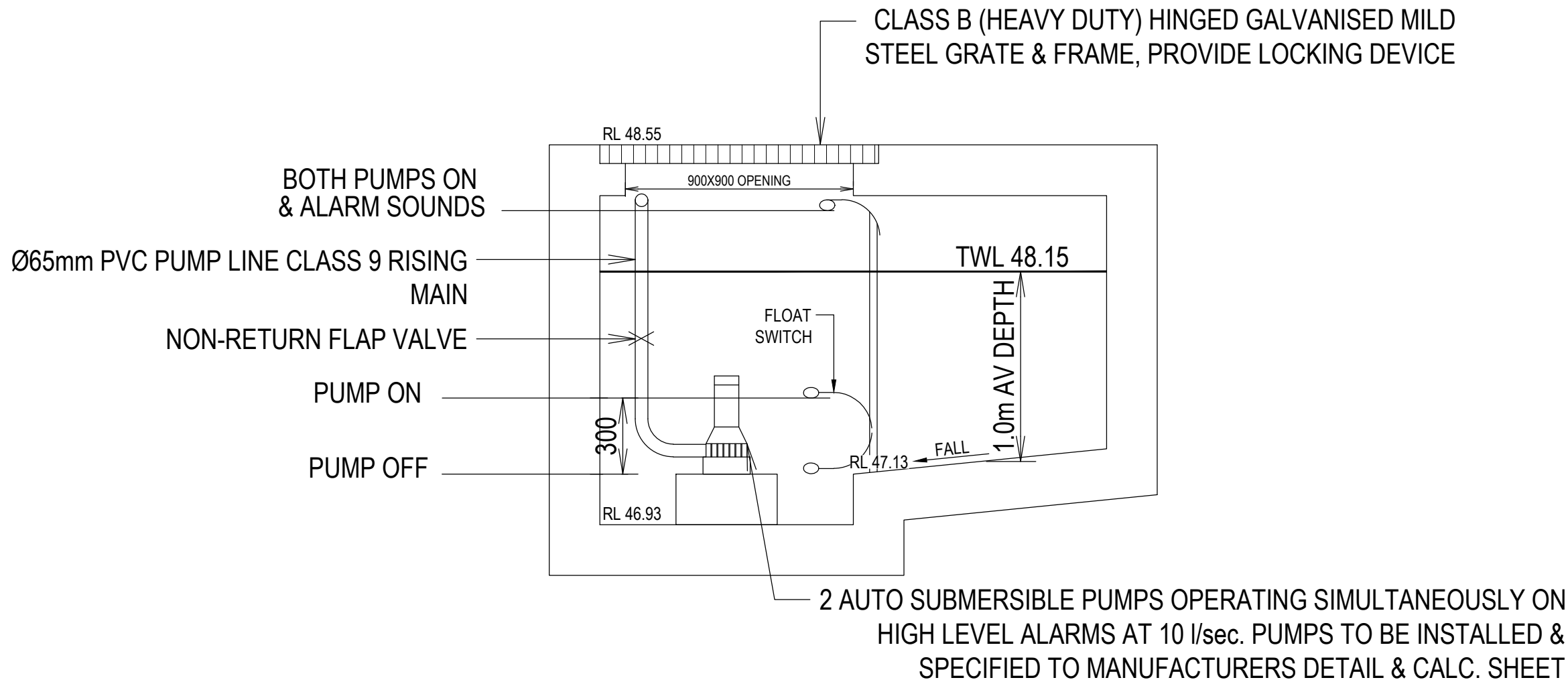
PUMP SPECIFICATIONS: STANDARD PUMP-OUT NOTES

- THE PUMP-OUT SYSTEM IS DESIGNED TO WORK IN THE FOLLOWING MANNER -
- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE EQUAL OPERATION LOAD & PUMP LIFE.
  - A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
  - A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE & DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT.
  - A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING & ACTIVATE THE ALARM.
  - AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT & A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.

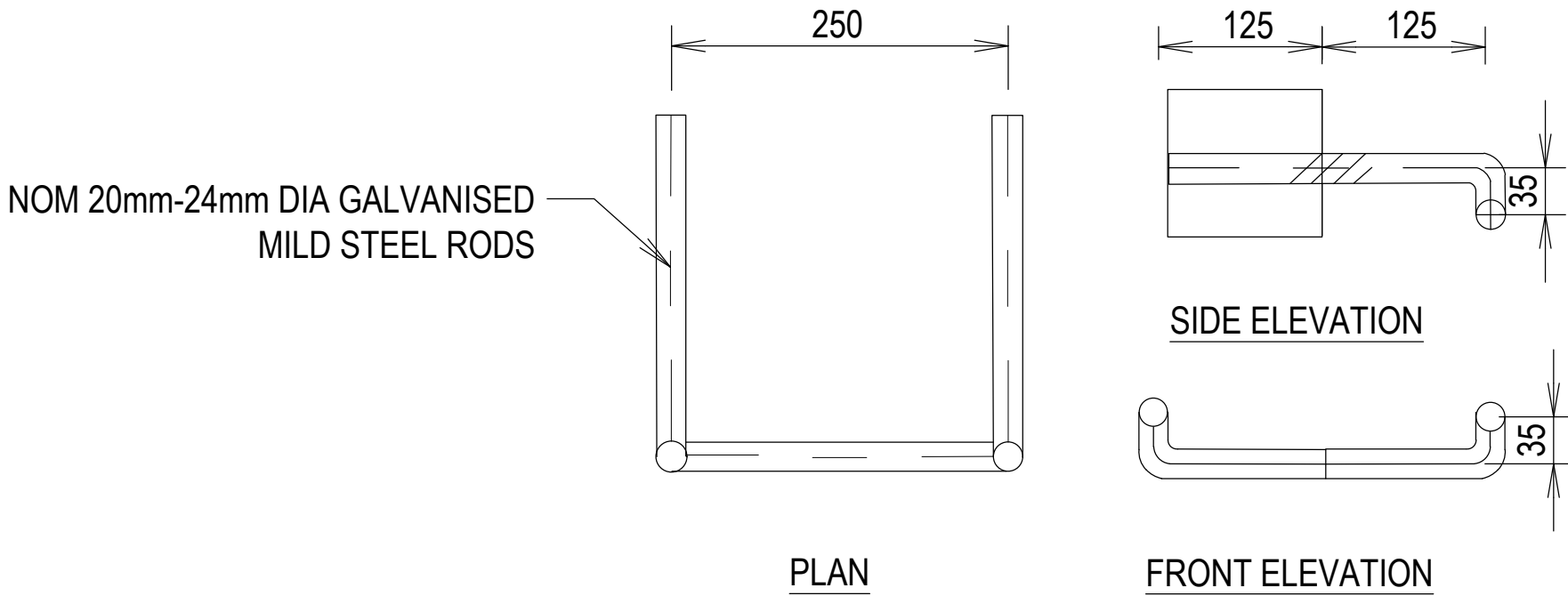


COLOURS:  
"DANGER" AND BACKGROUND WHITE  
ELLIPTICAL AREA RED  
RECTANGLE CONTAINING ELIPSE BLACK  
OTHER LETTERING AND BORDER BLACK

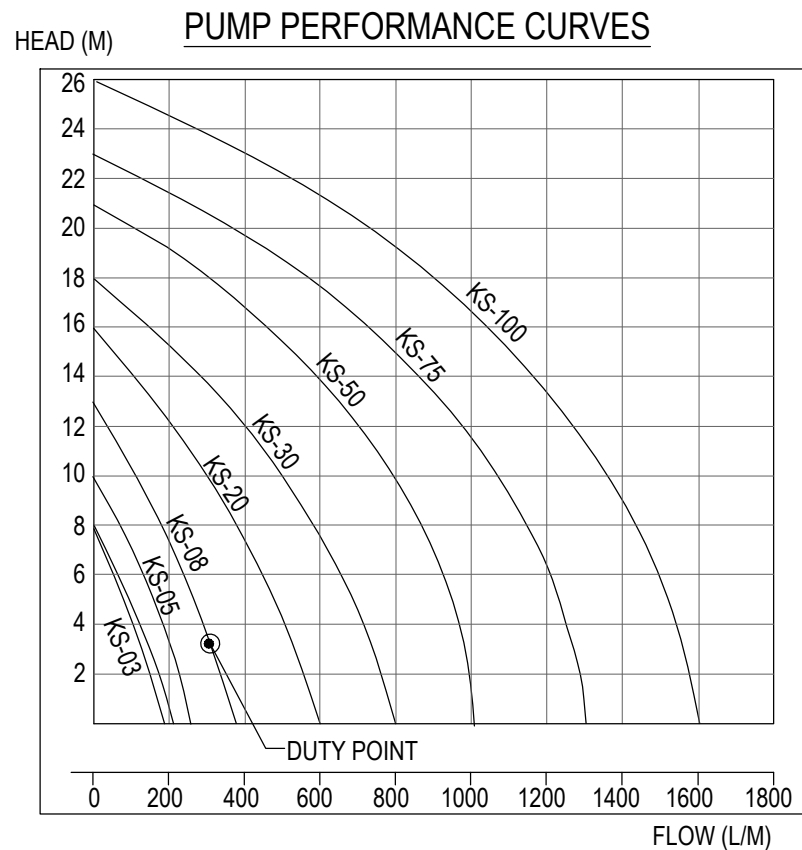
MATERIALS:  
POLYPROPYLENE



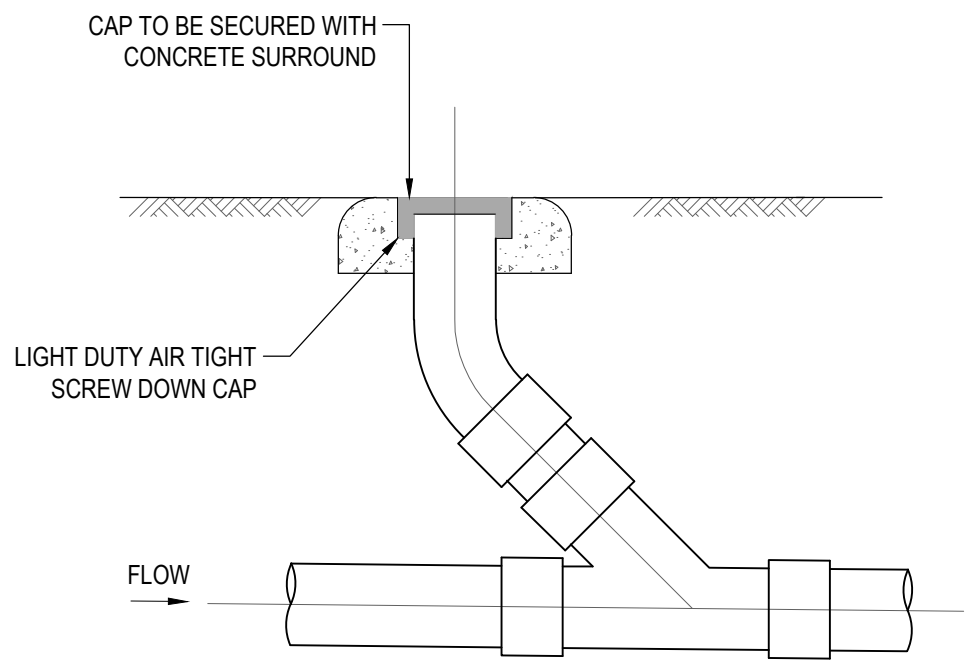
TYPICAL SECTION THROUGH PUMP PIT  
SCALE 1:20  
PUMP WELL VOLUME 3.71 m³



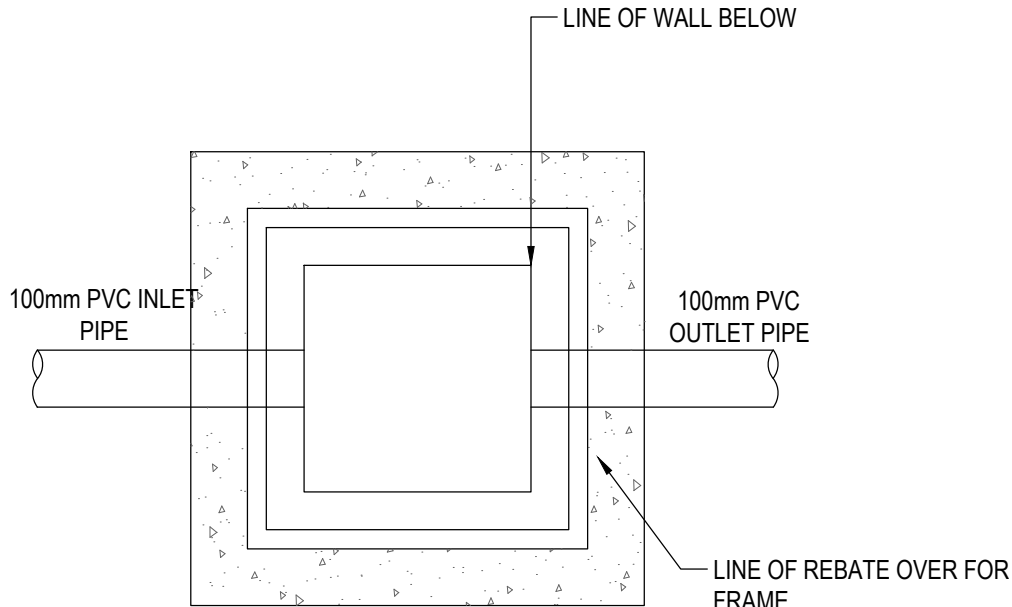
DETAIL  
STEP IRONS 1:5  
NOTE: INSTALL WHERE PITS ARE DEEPER THAN 1000



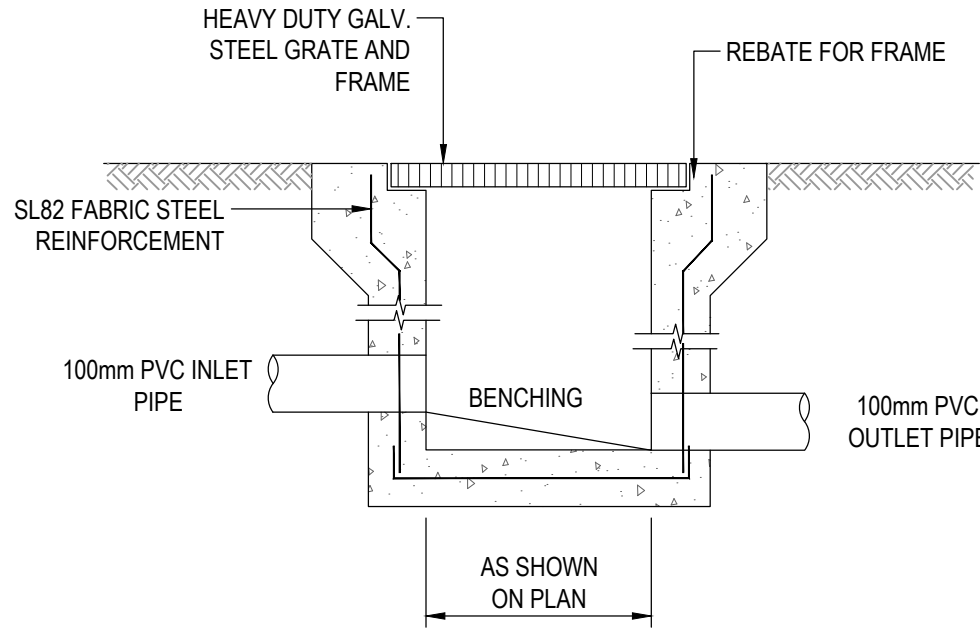
Type	Output		Outlet		Rated Head Capacity		Maximum Head Capacity		Weigh	Dimension		
	HP	kW	mm	Inch	M	LPM	M	LPM		L(mm)	W(mm)	H(mm)
KS-03	1/3	0.25	40	1 1/2"	3	130	8	180	9	188	141	305
KS-04	1/2	0.4	50	2"	5	150	8	220	11	208	140	359
KS-05	1/2	0.4	50	2"	5	160	10	260	14	230	156	375
KS-08	1	0.75	50	2"	6	240	13	380	21	290	180	425
KS-20	2	1.5	80	3"	10	300	16	600	31	278	182	475
KS-30	3	2.2	80	3"	10	500	18	800	42	390	250	450
KS-50	5	3.7	100	4"	10	800	21	1100	48	450	240	530
KS-75	7 1/2	5.6	100	4"	15	800	23	1300	60	550	310	590
KS-100	10	7.5	150	6"	18	900	25	1600	70	550	310	610



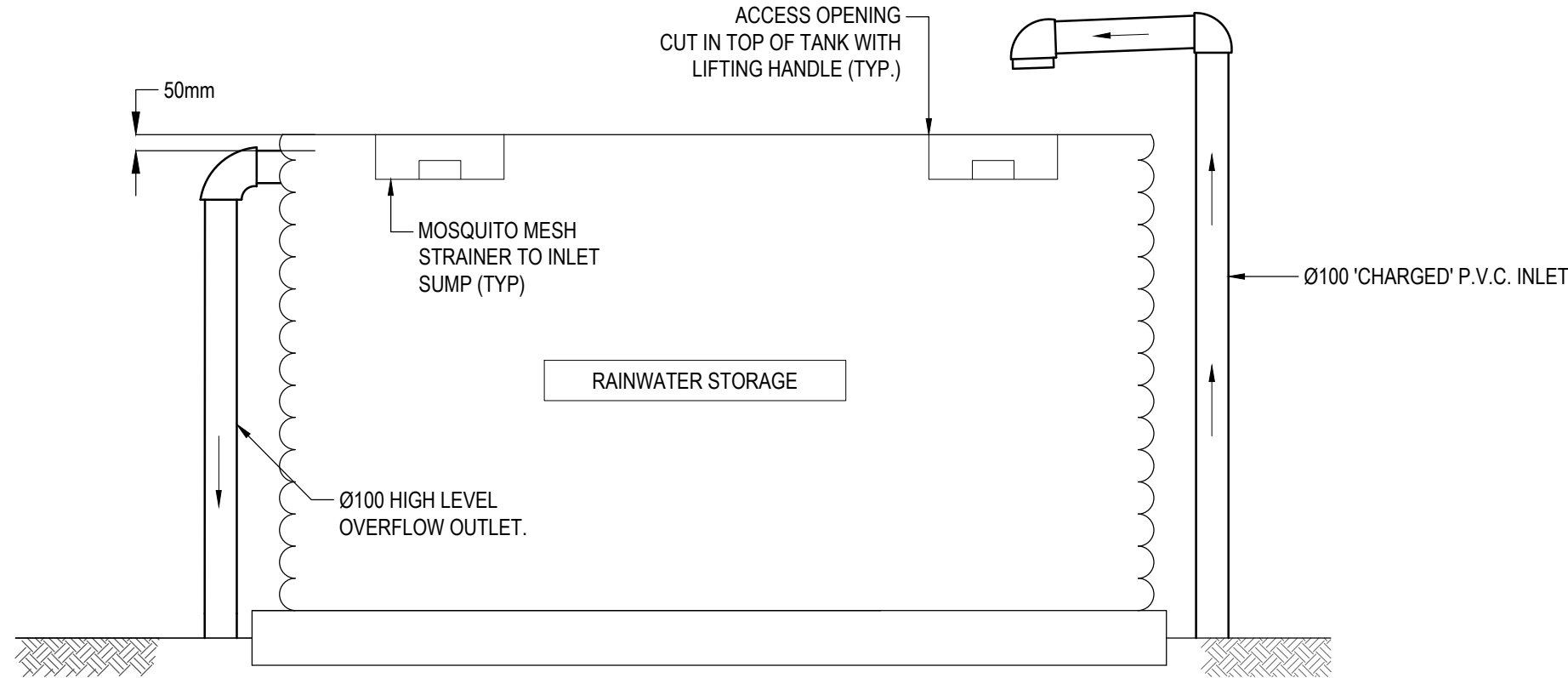
TYPICAL CLEANING EYE DETAIL  
NOT TO SCALE



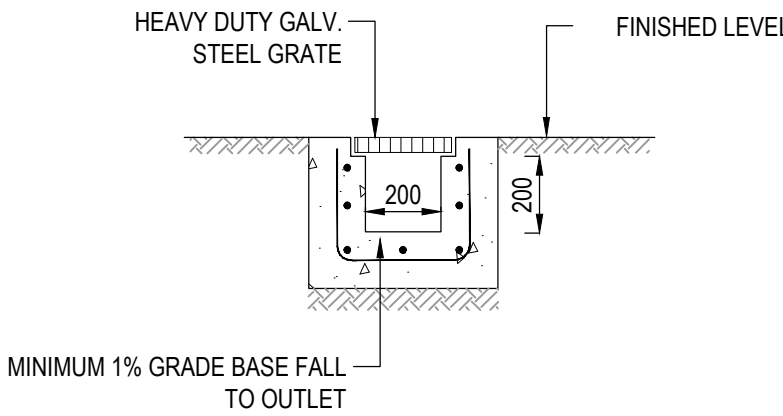
PLAN WITHOUT GRATE



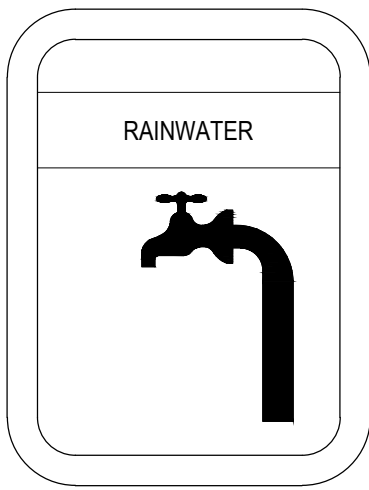
SECTION



TYPICAL RAINWATER TANK DETAIL  
NOT TO SCALE

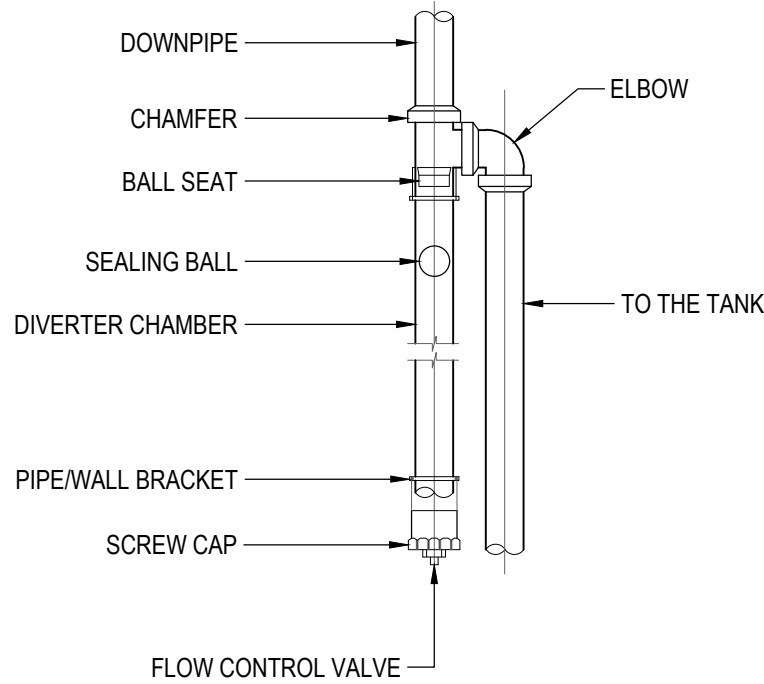


GRADED TRENCH DRAIN DETAIL  
NOT TO SCALE

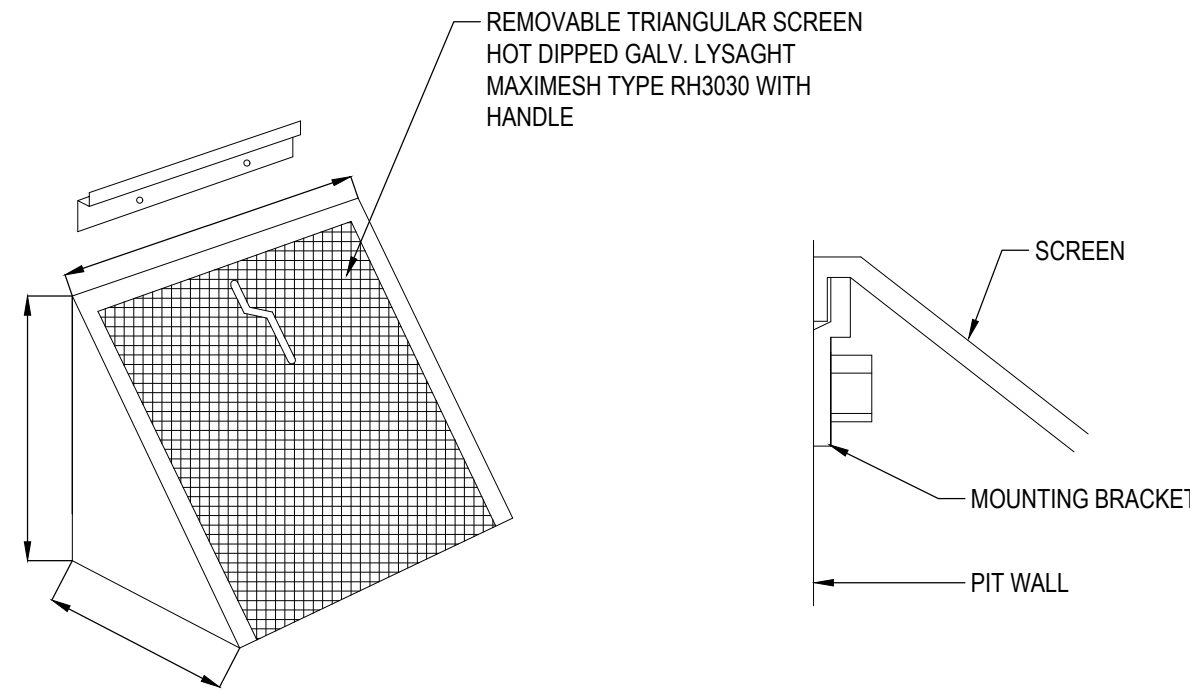


LEGEND:  
BACKGROUND IS YELLOW  
TEXT IS WHITE ON BLACK  
BACKGROUND

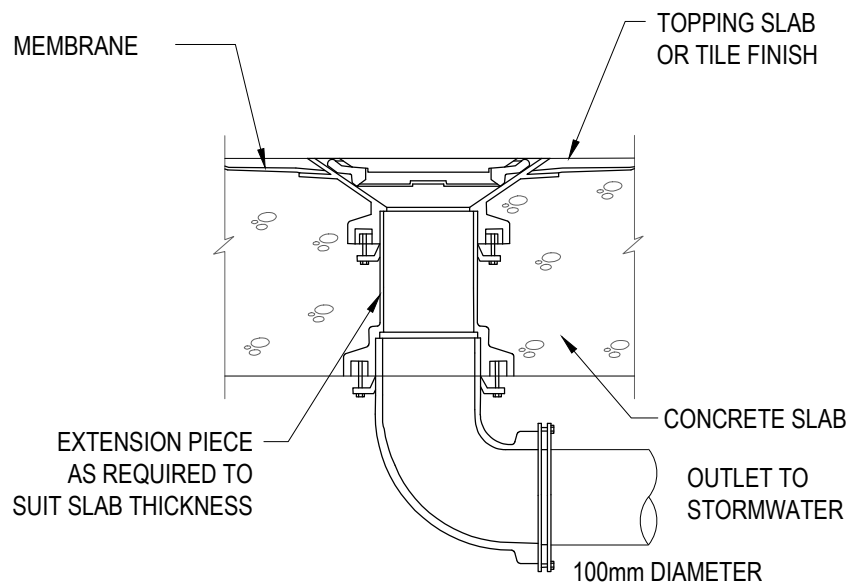
RAINWATER SIGN DETAIL  
NOT TO SCALE



FIRST FLUSH DETAIL  
NOT TO SCALE



MULTI PURPOSE FILTER SCREEN DETAIL  
NOT TO SCALE



FLOOR WASTE OUTLET  
NOT TO SCALE

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D	ISSUED FOR APPROVAL	A.E.	R.G.	07.11.24
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CLIENT

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& VANESSA ROWED

SHEET SUBJECT

STORMWATER SECTIONS & DETAILS  
SHEET 2

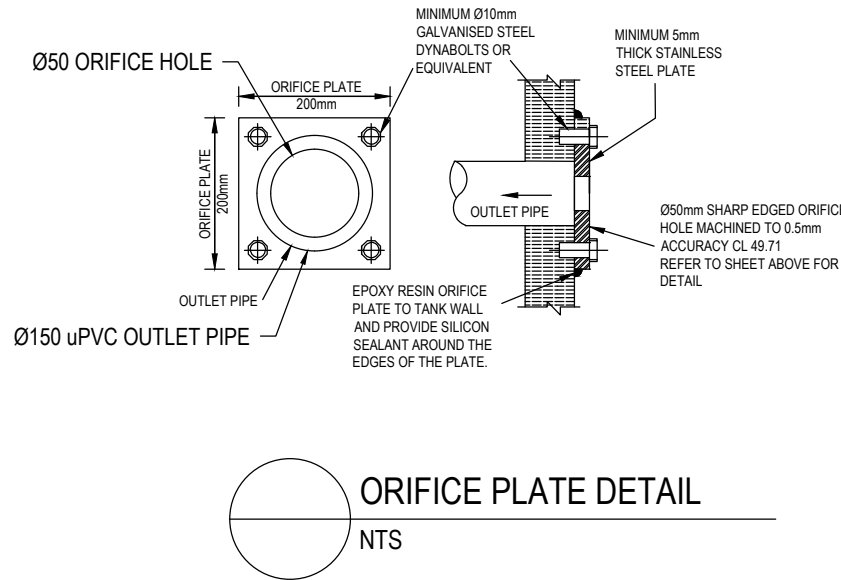
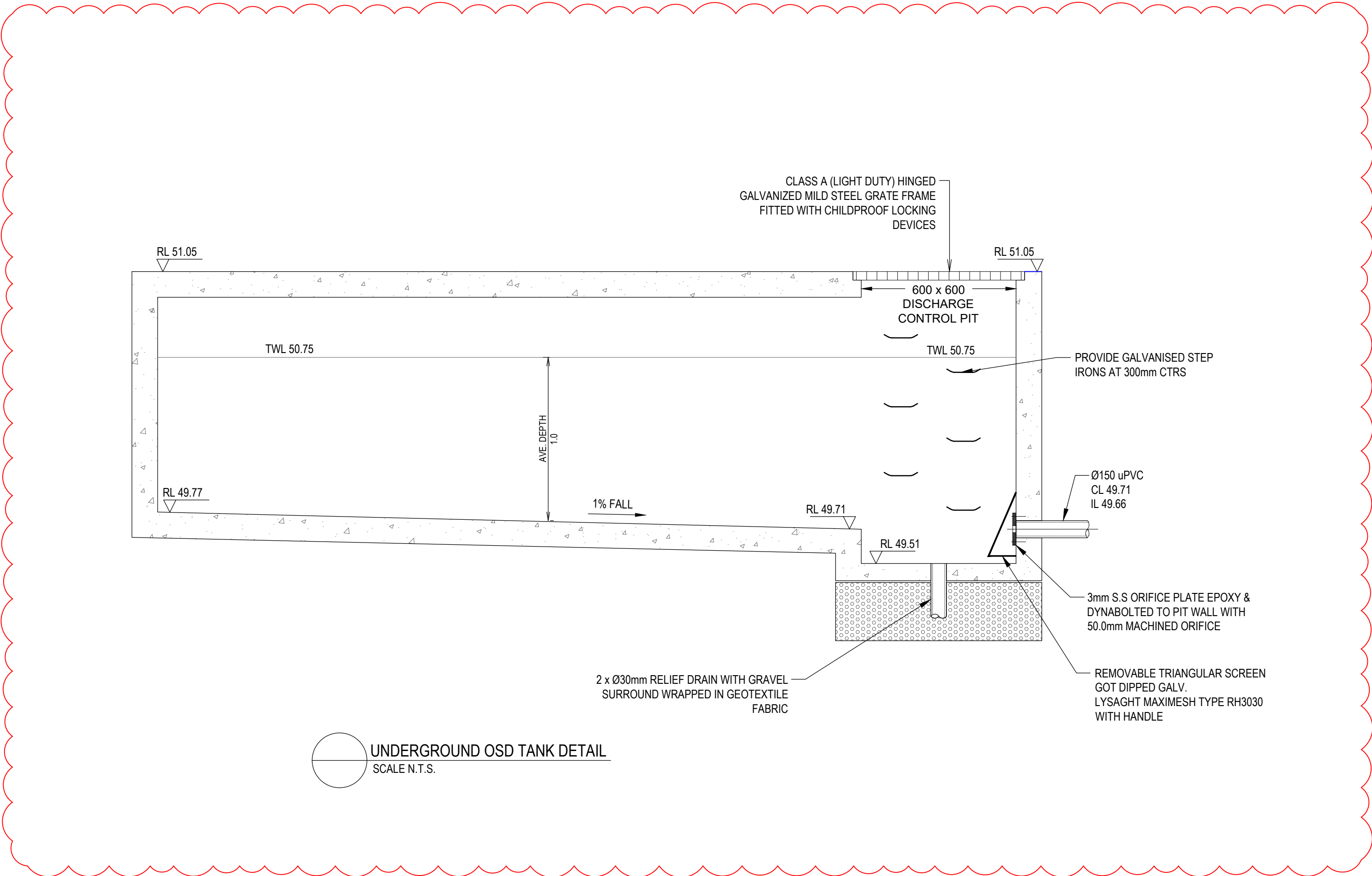
PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099			
DATE 06.02.2024	DRAWN A.E.	DESIGNED A.E.	CHECKED A.E.
SCALE @ A1 N.T.S.	JOB No D24014		
AUTHORISED A.E.	DWG No SW70	REV H	

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CALCULATING ORIFICE DIAMETER		
Q (l/s)=	5	
Q (m^3/s)=	0.005	
Cd=	0.61	
g=	9.81	
h=	1.04	
A (m^2)=	0.001814571	
D (m)=	0.048066451	
D(mm)=	48.1	(min 50mm)

DRAINS SUMMARY TABLE				
STORM DURATION	PRE-DEVELOPMENT 0% IMPERVIOUS	POST DEVELOPMENT	POST DEVELOPMENT - BYPASS	POST DEVELOPMENT - TOTAL
20% AEP	12 L/S	4 L/S	3 L/S	7 L/S
10% AEP	16 L/S	4 L/S	4 L/S	8 L/S
5% AEP	23 L/S	5 L/S	4 L/S	9 L/S
1% AEP	29 L/S	5 L/S	7 L/S	12 L/S



Appendix 9 – Orifice Plate Table (Table 3)

PSD l/s	Depth of tank above centreline of orifice																				
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	
2	55	46	42	39	37	35	34	33	32	31	30	30	29	28	28	28	27	27	26	26	Min. 100 mm diameter outlet pipe
3	67	57	51	48	45	43	41	40	39	38	37	36	36	35	34	34	33	33	32	32	
4	78	65	59	55	52	50	48	46	45	44	43	42	41	40	40	39	38	38	37	37	
5	87	73	66	62	58	56	54	52	50	49	48	47	46	45	44	44	43	42	42	41	
6	95	80	72	67	64	61	59	57	55	54	52	51	50	49	48	48	47	46	46	45	
7	103	87	78	73	69	66	63	61	59	58	57	55	54	53	52	51	51	50	49	49	Min. 150 mm diameter outlet pipe
8	110	93	84	78	74	70	68	65	64	62	60	59	58	57	56	55	54	53	53	52	
9	117	98	89	83	78	75	72	69	67	66	64	63	61	60	59	58	58	57	56	55	
10	123	104	94	87	82	79	76	73	71	69	68	66	65	64	63	62	61	60	59	58	
11	129	109	98	91	86	82	79	77	75	73	71	69	68	67	66	65	64	63	62	61	
12	135	113	102	95	90	86	83	80	78	76	74	72	71	70	69	67	66	65	65	64	Min. 225 mm diameter outlet pipe
13	140	118	107	99	94	90	86	83	81	79	77	75	74	73	71	70	69	68	67	66	
14	146	122	111	103	97	93	90	87	84	82	80	78	77	75	74	73	72	71	70	69	
15	151	127	115	107	101	96	93	90	87	85	83	81	79	78	77	75	74	73	72	71	
16	156	131	118	110	104	99	96	93	90	88	85	84	82	80	79	78	77	76	75	74	
17	160	135	122	113	107	103	99	95	93	90	88	86	85	83	82	80	79	78	77	76	Min. 225 mm diameter outlet pipe
18	165	139	125	117	110	106	102	98	95	93	91	89	87	85	84	83	81	80	79	78	
19	170	143	129	120	113	108	104	101	98	95	93	91	89	88	86	85	84	82	81	80	
20	174	146	132	123	116	111	107	104	100	98	96	94	92	90	88	87	86	85	83	82	
21	178	150	136	126	119	114	110	106	103	100	98	96	94	92	91	89	88	87	85	84	
22	183	154	139	129	122	117	112	109	105	103	100	98	96	94	93	91	90	89	87	86	
23	187	157	142	132	125	119	115	111	108	105	102	100	98	97	95	93	92	91	89	88	
24	191	160	145	135	128	122	117	113	110	107	105	102	100	99	97	95	94	93	91	90	
25	195	164	148	138	130	124	120	116	112	109	107	105	102	101	99	97	96	94	93	92	
26	198	167	151	140	133	127	122	118	115	112	109	107	105	103	101	99	98	96	95	94	Min. 225 mm diameter outlet pipe
27		170	154	143	135	129	124	120	117	114	111	109	107	105	103	101	100	98	97	96	
28		173	156	146	138	132	127	122	119	116	113	111	108	106	105	103	101	100	99	97	
29		176	159	148	140	134	129	125	121	118	115	113	110	108	107	105	103	102	100	99	
30		179	162	151	143	136	131	127	123	120	117	115	112	110	108	107	105	104	102	101	
31		182	165	153	145	138	133	129	125	122	119	116	114	112	110	108	107	105	104	102	Min. 225 mm diameter outlet pipe
32		185	167	156	147	141	135	131	127	124	121	118	116	114	112	110	108	107	105	104	
33		188	170	158	150	143	137	133	129	126	123	120	118	116	114	112	110	109	107	106	
34		191	172	160	152	145	140	135	131	128	125	122	120	117	115	113	112	110	109	107	
35		194	175	163	154	147	142	137	133	129	126	124	121	119	117	115	113	112	110	109	
36		196	177	165	156	149	144	139	135	131	128	125	123	121	119	117	115	113	112	110	Min. 225 mm diameter outlet pipe
37		199	180	167	158	151	146	141	137	133	130	127	125	122	120	118	117	115	113	112	
38		202	182	170	160	153	148	143	139	135	132	129	126	124	122	120	118	116	115	113	
39		204	185	172	163	155	149	145	140	137	133	131	128	126	124	122	120	118	116	115	
40		207	187	174	165	157	151	146	142	138	135	132	130	127	125	123	121	120	118	116	
41		210	189	176	167	159	153	148	144	140	137	134	131	129	127	125	123	121	119	118	

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SHEET SUBJECT

ORIFICE CALCULATION

PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099

DATE 06.02.2024	DRAWN A.E.	DESIGNED A.E.	CHECKED A.E.
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AUTHORISED A.E.		DWG No SW90	REV H

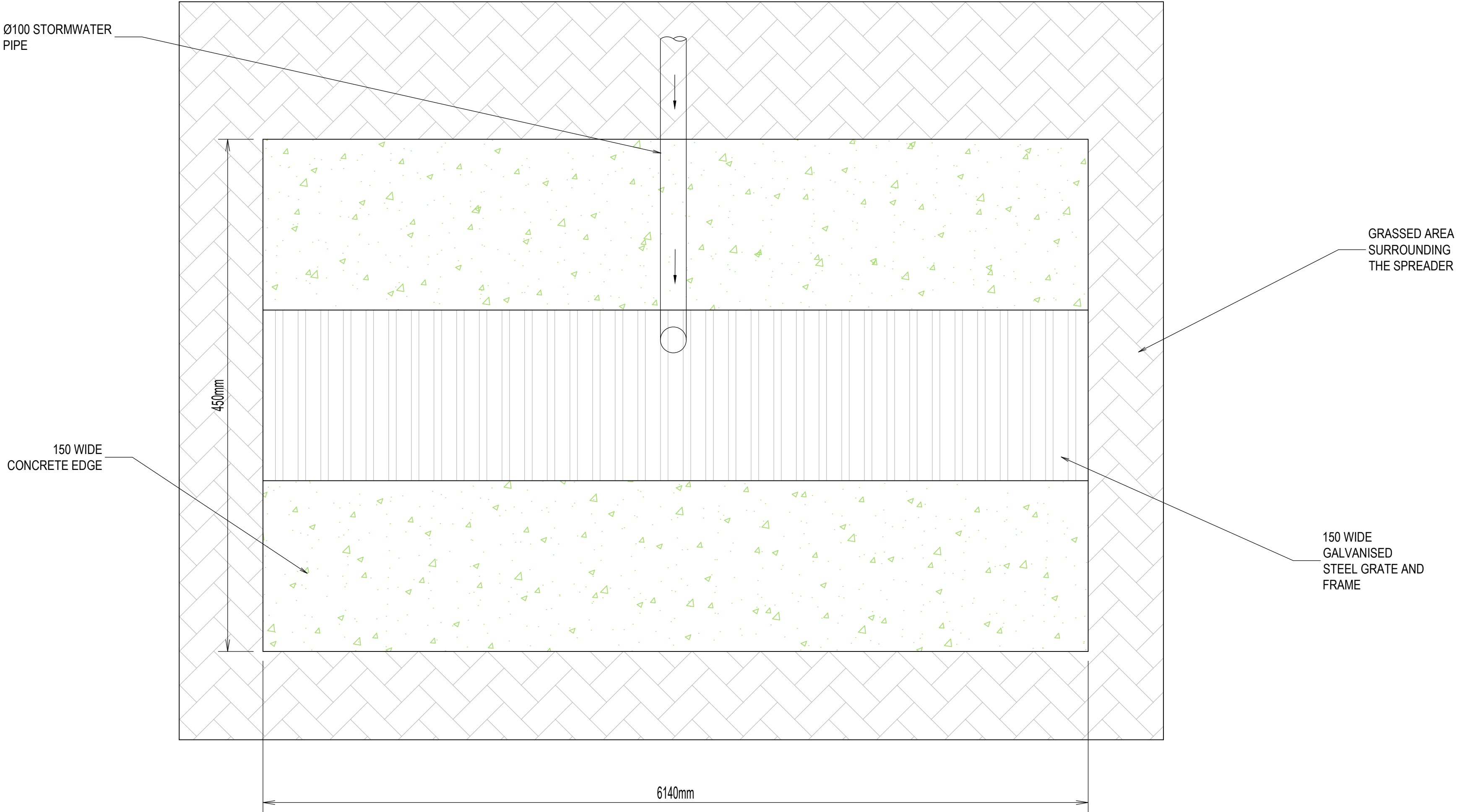
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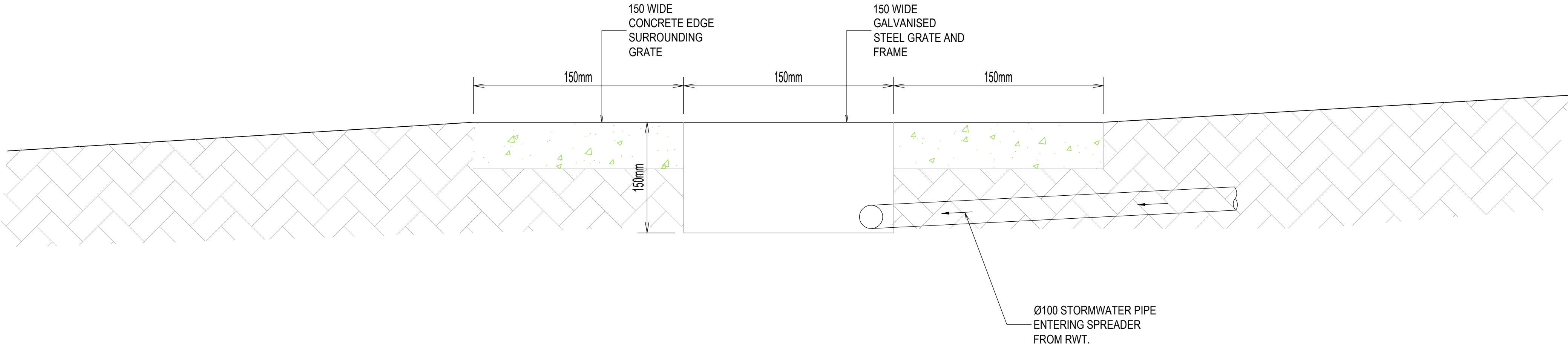
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LEVEL SPREADER (WIDTH CALC)			
Flow (Q)	0.018	m^3/s	(PSD requirement)
Width (B)	?	m	(min B is 4m)
Gravity (g)	9.81	m/s^2	
Velocity (V)	2	m/s	(Max V from Council)
Overflow depth (h)	0.075	m	(Max Vd = 0.4)
H =h x (V^2/2g)			
= 0.01529052			
B =Q/(0.35 x (2g)^0.5 x H^1.5)			
= 6.14075233			



TYPICAL LEVEL SPREADER AERIAL PROFILE  
NTS



TYPICAL LEVEL SPREADER CROSS SECTION PROFILE  
NTS

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LEVEL SPREADER DETAILS SHEET

PROJECT: 6 SUMMIT AVENUE, DEE WHY, NSW 2099

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