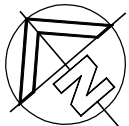


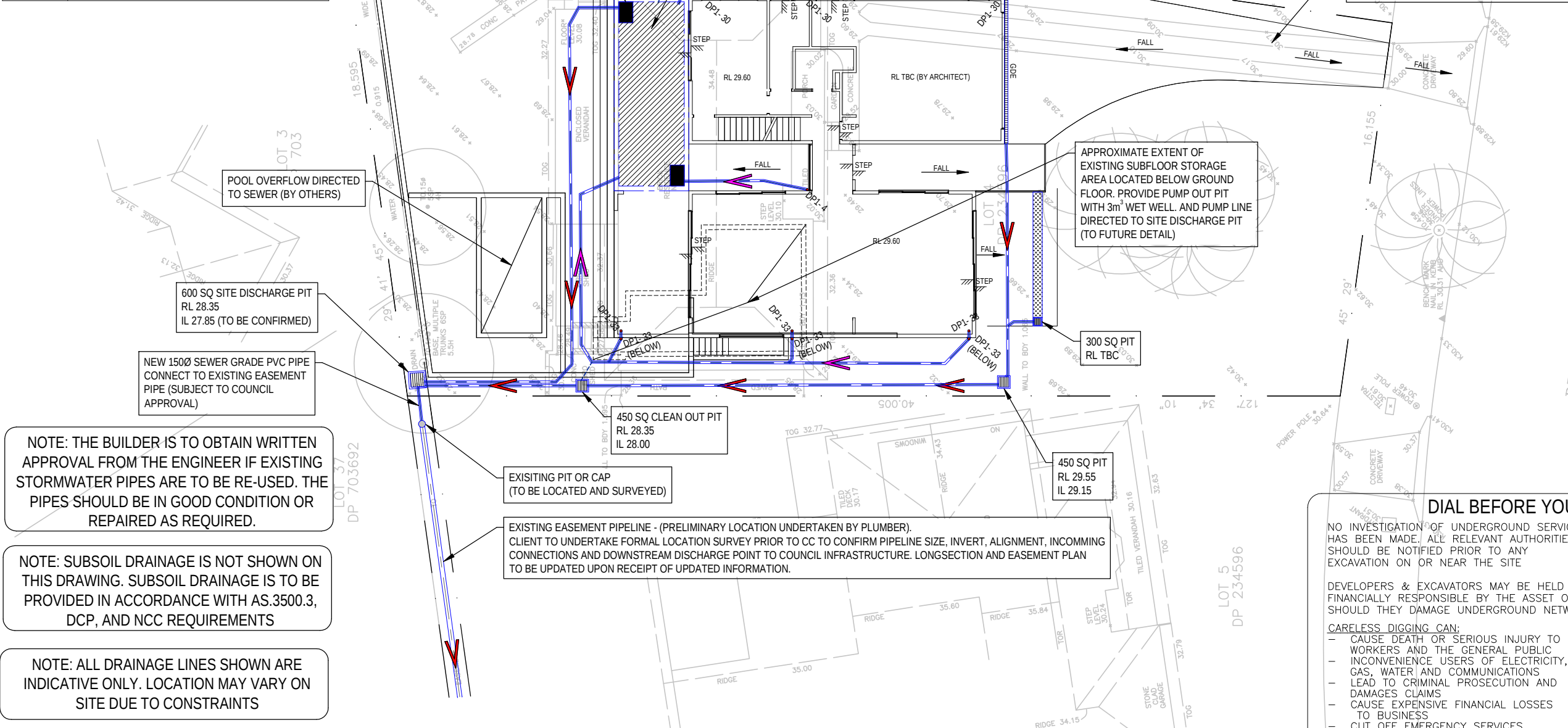
STORMWATER DRAINAGE NOTES:		RAINWATER STORAGE / REUSE NOTES:		SITE INFORMATION SUMMARY	
- ALL PIPES TO BE 100mm Ø uPVC, LAID AT 1% MINIMUM GRADE TO AS1254.2002 U.N.O. - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D BELOW PAVEMENTS. (NO COMPACTION IS REQUIRED BELOW LANDSCAPING). - COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM. BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED. - DOWNPIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT OF WORK. - PROVIDE CLEANING EYES AND LEAF CATCHERS TO ALL DOWNPIPES. - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS. - ALL LEVELS SHOWN ARE TO AHD. - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS. - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC. - ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3-2003 NATIONAL PLUMBING AND DRAINAGE CODE PART 3 - STORMWATER DRAINAGE. - SUBSOIL DRAINS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3500.3 ALONGSIDE WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER. THIS MAY ALSO INVOLVE TRENCHING INTO THE CLAY OR ROCK SUBGRADE TO DIRECT GROUNDWATER AWAY FROM STRUCTURES. - EXISTING ROOF DRAINAGE AND SITE DRAINAGE SYSTEM TO BE CHECKED AND UPGRADED AS REQUIRED. BUILDER TO INSPECT AND UPGRADE DRAINAGE IN ACCORDANCE WITH AS3500.3 IF REQUIRED.		- THE RAINWATER TANK IS TO BE INSTALLED AND USED AS PER BASIX REQUIREMENTS AND SYDNEY WATER AND NSW HEALTH REQUIREMENTS FOR NON DRINKING USE ONLY. - ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS IS TO BE IN ACCORDANCE WITH SYDNEY WATERS 'GUIDE TO INSTALLING A RAINWATER TANK' AVAILABLE AT: WWW.SYDNEYWATER.COM.AU. - PROVIDE DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX - DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANNING AND NATURAL RESOURCES. - IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100 m2 OF ROOF CATCHMENT AREA PRIOR TO ENTERING THE RAINWATER TANK. INDIVIDUAL SITE ANALYSIS IS REQUIRED IN HEAVILY POLLUTED AREAS TO DETERMINE IF LARGER VOLUMES OF FIRST FLUSH RAINWATER ARE TO BE DIVERTED. IF IN DOUBT, CHECK WITH LOCAL HEALTH AUTHORITIES. - SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING. - FIRST FLUSH DEVIDED, OR APPROVED ALTERNATIVE TO BE INSTALLED WITH AND AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS. - BEFORE PURCHASING MATERIALS OR PAINT TO BE USED ON ROOF CATCHMENT AREAS, THE MANUFACTURER'S RECOMMENDATIONS ON LABELS AND BROCHURES FOR RAINWATER TANK SUITABILITY TO BE READ AND ADHERED TO. - BUILDER/PLUMBER TO ENSURE THE INSTALLATION OF THE RAINWATER TANK SYSTEM IS IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND THE RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK - HB 230- 2008. IF IN DOUBT CONTACT ENGINEER. - RAINWATER TANK TO BE WATERPROOFED IN ACCORDANCE WITH HB-230-2008. - ORIFICE PLATE (IF APPLICABLE) TO BE INSTALLED PRIOR TO THE INSTALLATION OF THE ROOF DRAINAGE SYSTEM AND CONNECTION OF THE STORMWATER SYSTEM TO THE OSD TANK.		COUNCIL NORTHERN BEACHES (REGION 1) SITE AREA 787 m² EXISTING IMPERVIOUS AREA 269 m² (34%) PROPOSED IMPERVIOUS AREA 337 m² (43%) REDUCTION 68 m² SINCE THE INCREASE IN IMPERVIOUS AREA EXCEEDS 50 m² , OSD IS REQUIRED FOR THIS DEVELOPMENT. ONSITE DETENTION REQUIREMENTS DRAINS SOFTWARE UTILISING ARR 2019 RESULTS ARE SUMMARISED BELOW BASED ON THE SPECIFIED ONSITE DETENTION VOLUME AND DISCHARGE RATES SPECIFIED. PRE DEV 20% AEP 14 L/s 5% AEP 23 L/s 1% AEP 36 L/s POST DEV 20% AEP 11 L/s (2 l/s from orifice) 5% AEP 18 L/s (2 l/s from orifice) 1% AEP 35 L/s (2 l/s from orifice) OSD STORAGE (REQUIRED) 4.5 m³ (5.52 m³ PROVIDED) OSD DISCHARGE (REQUIRED) 2 l/s	

			Client TIM & ISABEL VAN REES	 APPROVED CONSULTING ENGINEERS	Project 10 DELWOOD CLOSE MONA VALE		Designed CH	04/12/23	
						Architect / Designer	Checked CH	Approved CH	Scale 1 : 200
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24	RAMA ARCHITECTS		Title GENERAL NOTES	Drawing number SW01	Job number 2023108	Revision B	
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23							
	AMENDMENT	DATE							
			PO BOX: 1510, DEE WHY ABN - 90 645 409 801						

LEGEND	
DP1 - xxx ●	DP1 - 100mm Ø DOWNPIPE TO RAINWATER TANK xxx - ROOF CATCHMENT AREA TO DOWNPIPE
SP ●	DENOTES SPREADER PIPE TO ROOF BELOW
FALL →	SURFACE TO FALL IN DIRECTION INDICATED BY ARROW (1% MINIMUM FALL OR TO NCC REQUIREMENTS)
STEP	FLOOR STEP DOWN IN ACCORDANCE WITH NCC REQUIREMENTS (ARCHITECT TO SPECIFY)
▽	GRAVITY LINE PROVIDE 1% (MIN) FALL IN DIRECTION INDICATED, UNO.
▽	CHARGED LINE. PROVIDE 100Ø (MIN) SEWER GRADE PIPE (UNO) WITH BLEED LINE LOCATED AT CHARGED SYSTEM LOW POINT.
GDE	150 (W) CAST INSITU GRATED DRAIN
—	100mm Ø uPVC STORMWATER PIPELINE, UNO
—	EXISTING 100mm Ø uPVC STORMWATER PIPELINE, UNO
—	400 (W) x 50 (D) SWALE TO DIVERT RUNOFF



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NOTE: THE BUILDER IS TO OBTAIN WRITTEN APPROVAL FROM THE ENGINEER IF EXISTING STORMWATER PIPES ARE TO BE RE-USED. THE PIPES SHOULD BE IN GOOD CONDITION OR REPAIRED AS REQUIRED.

NOTE: SUBSOIL DRAINAGE IS NOT SHOWN ON THIS DRAWING. SUBSOIL DRAINAGE IS TO BE PROVIDED IN ACCORDANCE WITH AS.3500.3, DCP, AND NCC REQUIREMENTS

NOTE: ALL DRAINAGE LINES SHOWN ARE INDICATIVE ONLY. LOCATION MAY VARY ON SITE DUE TO CONSTRAINTS

NOTE: ALL EXISTING SURFACE DRAINAGE TO BE RETAINED IS TO BE UPGRADED BY THE BUILDER IN ACCORDANCE WITH AS3500.3

DIAL BEFORE YOU DIG NOTICE

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. – TEL. 1100

www.dialbeforeyoudig.com.au

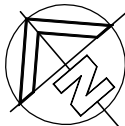
1100
BEFORE YOU DIG

SITE DRAINAGE AND EASEMENT PLAN

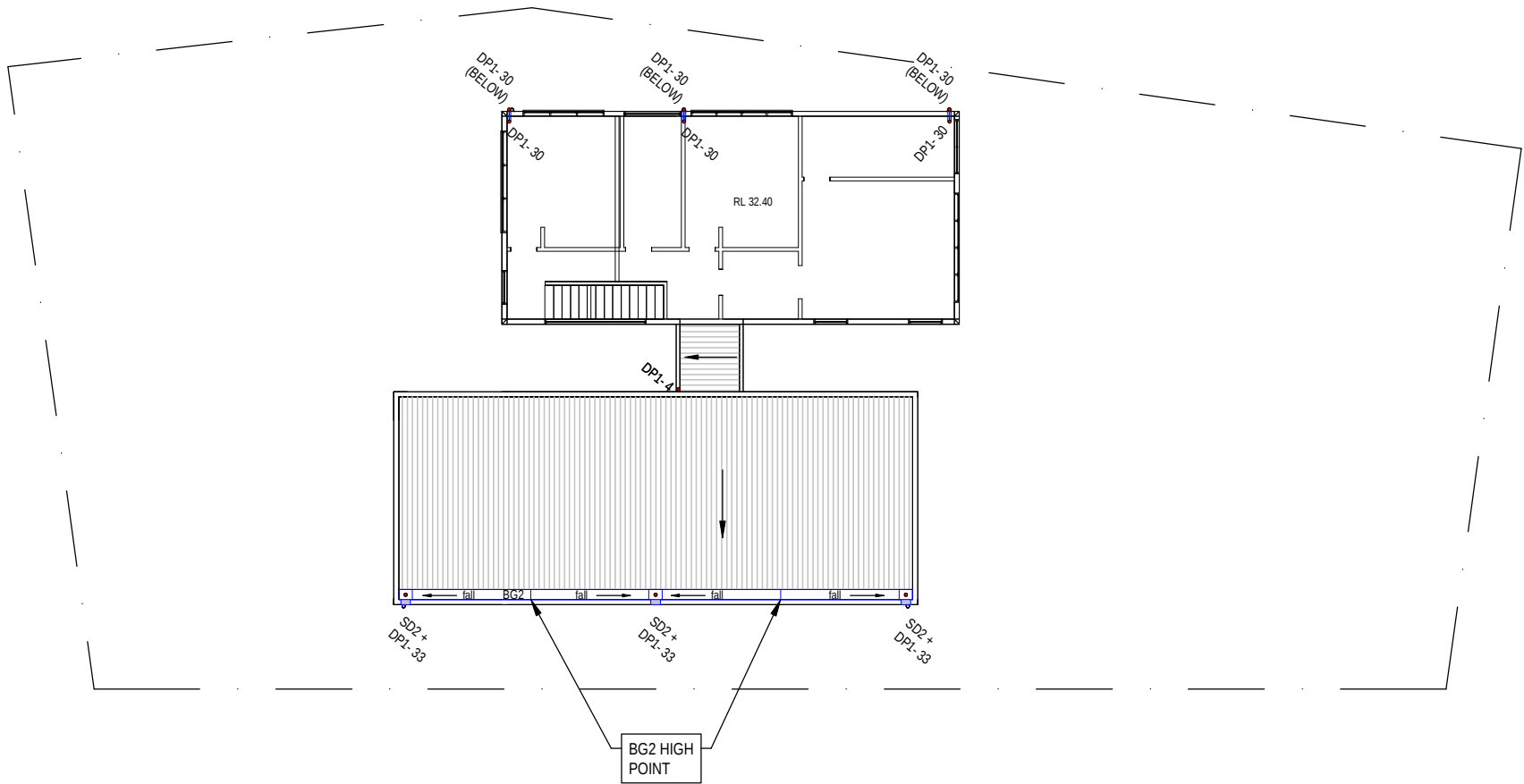
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			Client	TIM & ISABEL VAN REES		Project	10 DELWOOD CLOSE MONA VALE		Designed		04/12/23	
									Checked		Approved	
			Architect / Designer	RAMA ARCHITECTS		SITE DRAINAGE PLAN		Drawing number		Job number		Revision
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24										
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23	PO BOX: 1510, DEE WHY ABN - 90 645 409 801									
	AMENDMENT	DATE										

LEGEND	
BG1	300 (W) x 110 (MIN DEPTH) BOX GUTTER. REFER DETAILS
SD1	300 (W) x 400 (L) x 80 (D) SUMP WITH 300 (W) x 70 (D) OVERFLOW. REFER DETAILS
BG2	300 (W) x 120 (MIN DEPTH) BOX GUTTER. REFER DETAILS
SD2	300 (W) x 400 (L) x 80 (D) SUMP WITH 300 (W) x 70 (D) OVERFLOW. REFER DETAILS
BG3	300 (W) x 100 (MIN DEPTH) BOX GUTTER. REFER DETAILS
SD3	300 (W) x 400 (L) x 80 (D) SUMP WITH 300 (W) x 70 (D) OVERFLOW. REFER DETAILS
DP1 - xxx ●	DP1 - 100mm Ø DOWNPIPE TO RAINWATER TANK xxx - ROOF CATCHMENT AREA TO DOWNPIPE
SP 	DENOTES SPREADER PIPE TO ROOF BELOW
	ARROW INDICATES DIRECTION OF ROOF SLOPE. REFER ARCHITECTURAL PLANS FOR ROOF PITCH
FALL 	SURFACE TO FALL IN DIRECTION INDICATED BY ARROW (1% MINIMUM FALL)
	100mm Ø uPVC STORMWATER PIPELINE, UNO



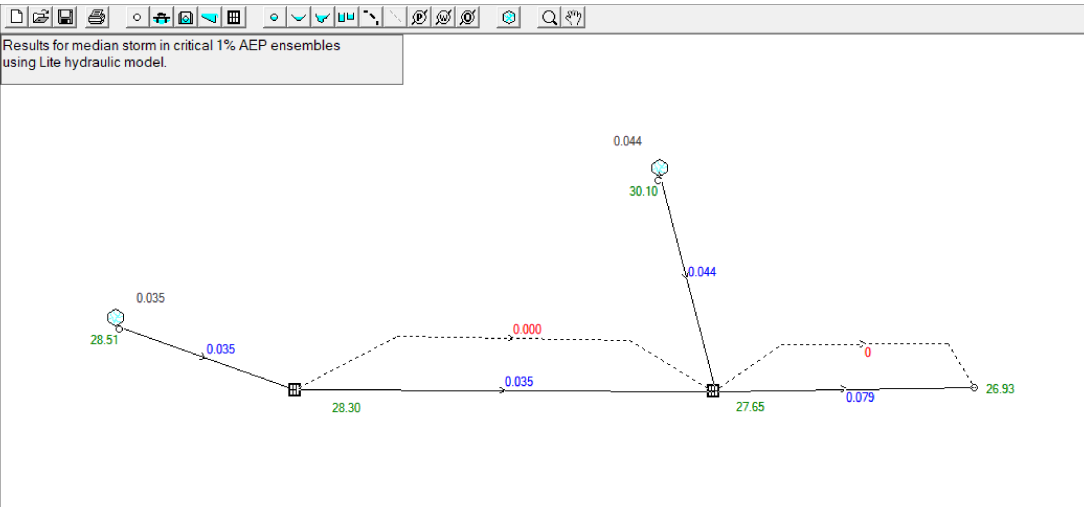
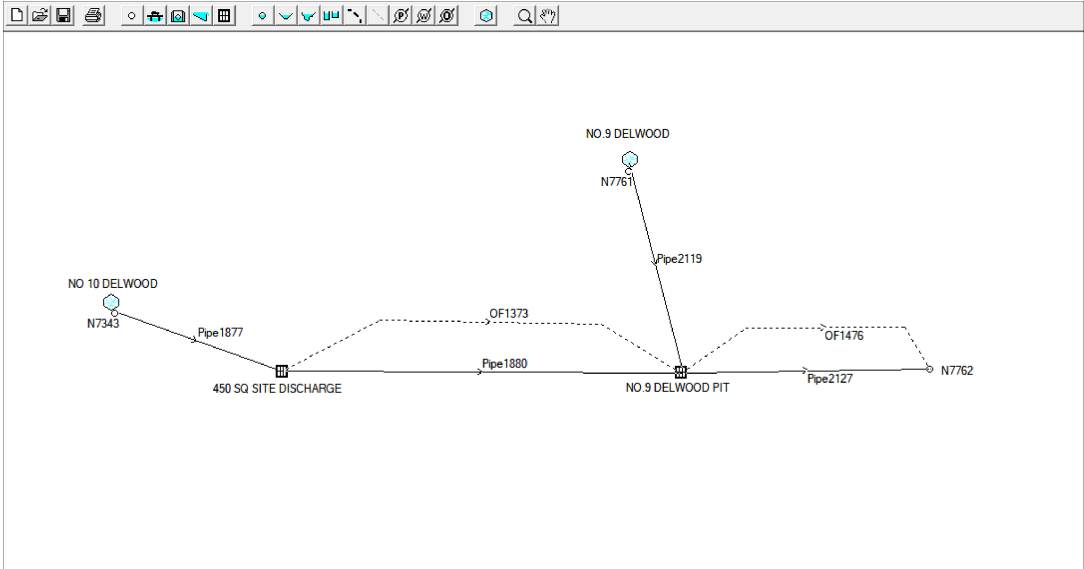
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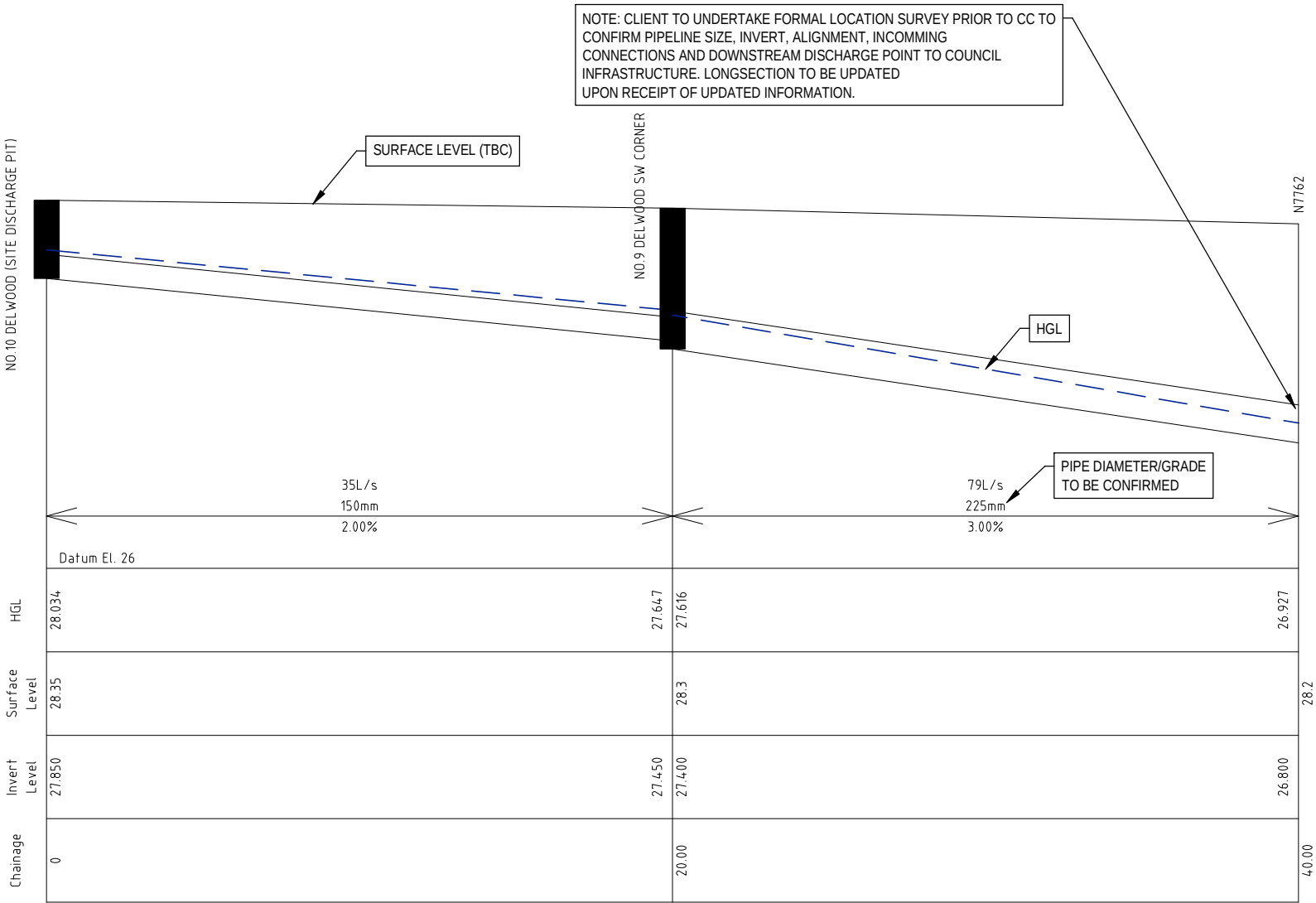
LOWER ROOF - DRAINAGE PLAN

SCALE 1:200

			Client	TIM & ISABEL VAN REES		Project	10 DELWOOD CLOSE MONA VALE		Designed CH	04/12/23	
								Architect / Designer	Checked CH	Approved CH	Scale 1 : 200
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24	RAMA ARCHITECTS	PO BOX: 1510, DEE WHY ABN - 90 645 409 801		APPROVED CONSULTING ENGINEERS	Title	LOWER ROOF DRAINAGE PLAN	Drawing number SW03	Job number 2023108	Revision B
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23									
	AMENDMENT	DATE									

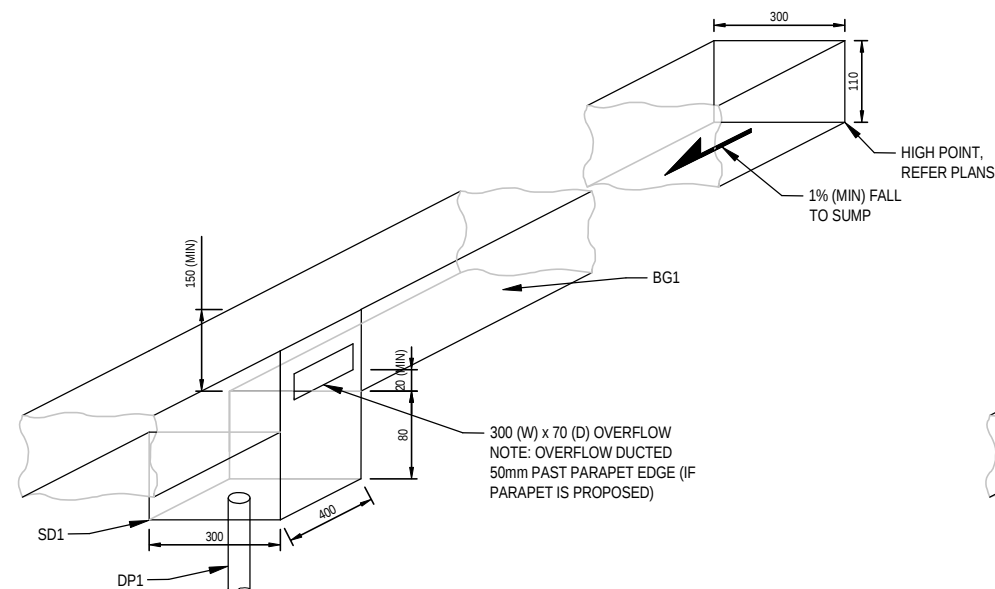


DRAINS RESULTS SCREENSHOT
SCALE = NTS

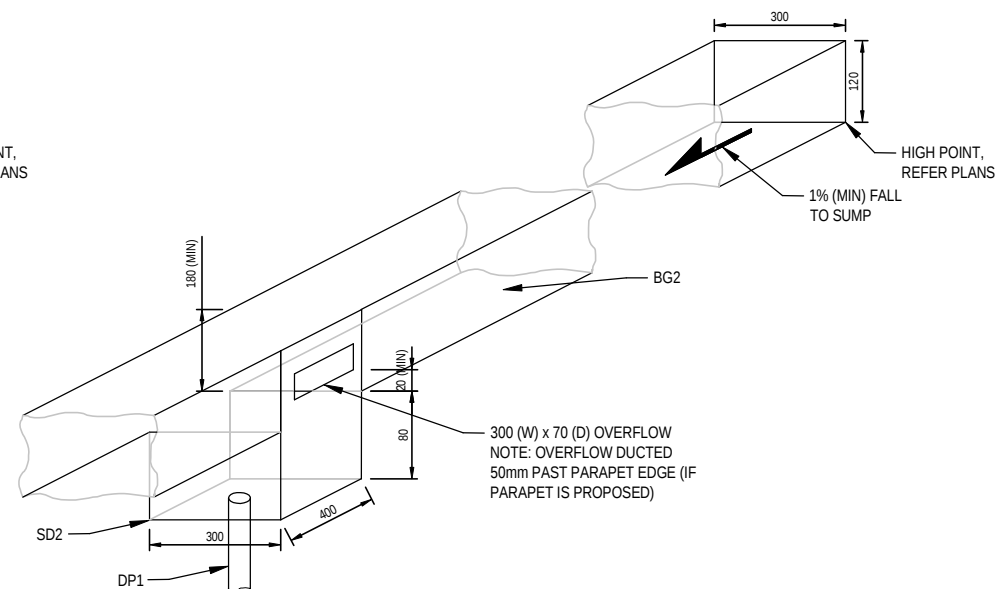


PRELIMINARY LONGSECTION PLAN
NOT TO SCALE

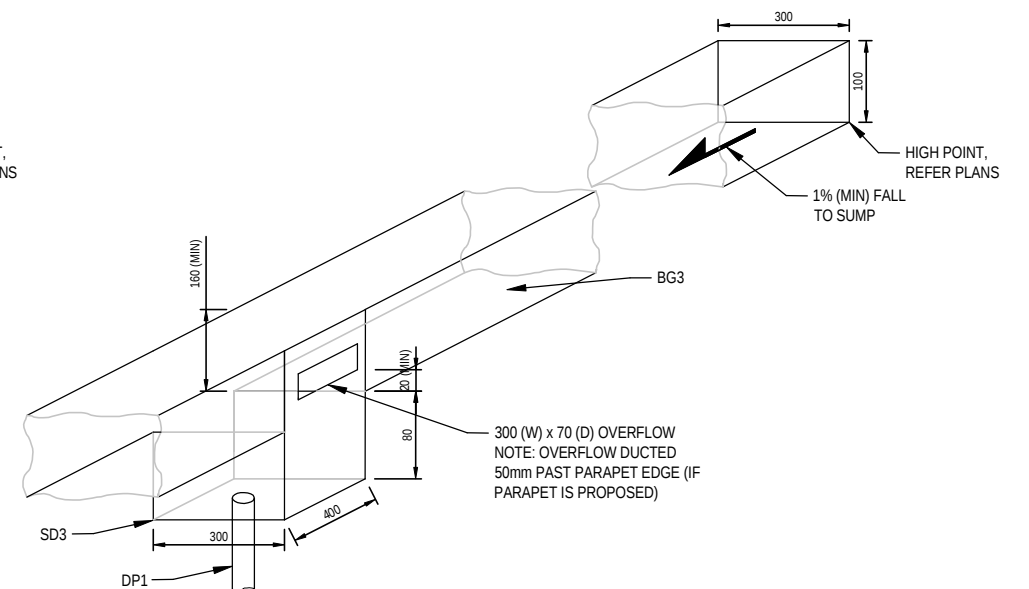
			Client	TIM & ISABEL VAN REES		Project	10 DELWOOD CLOSE MONA VALE		Designed		04/12/23				
									Checked	CH	Approved	CH	Scale	1 : 200	
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24	Architect / Designer	RAMA ARCHITECTS		Title	EASEMENT LONGSECTION		Drawing number	SW05		Job number	2023108	Revision	B
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23													
	AMENDMENT	DATE	PO BOX: 1510, DEE WHY ABN - 90 645 409 801												



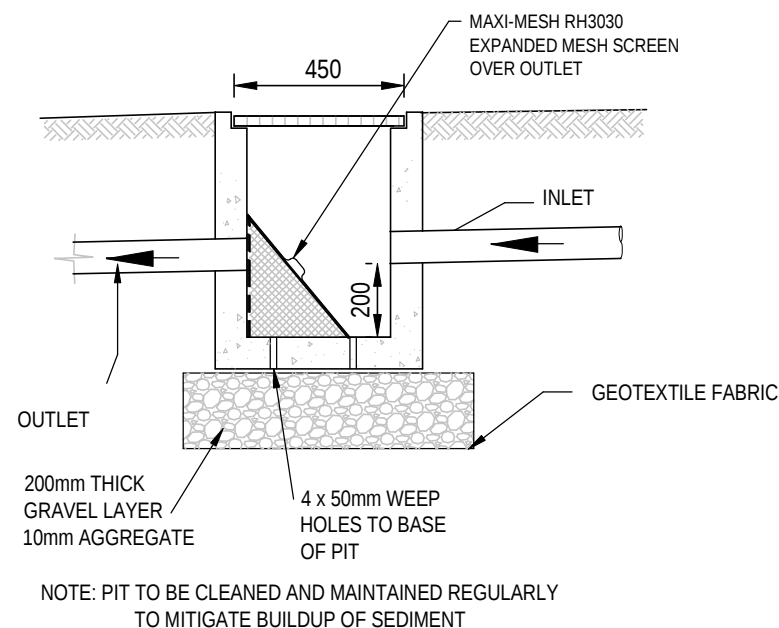
BG1 / SD1 - TYPICAL DETAIL
SCALE = NTS



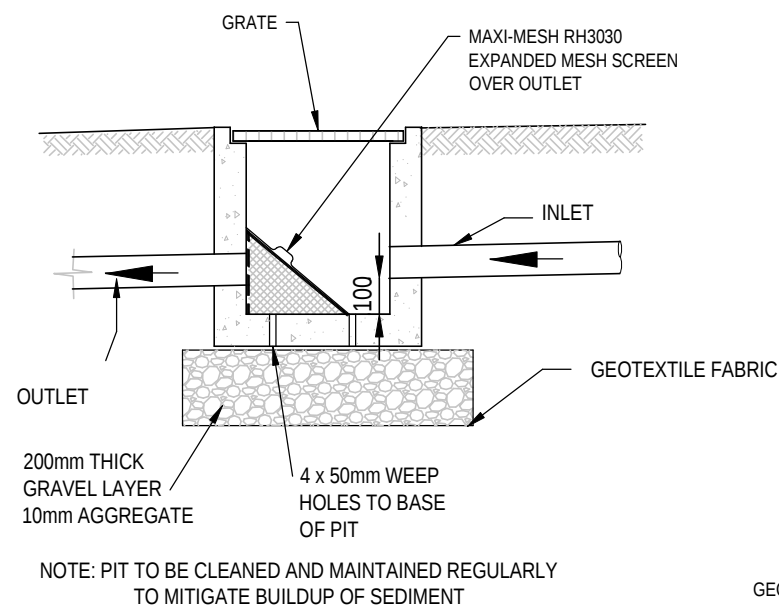
BG2 / SD2 - TYPICAL DETAIL
SCALE = NTS



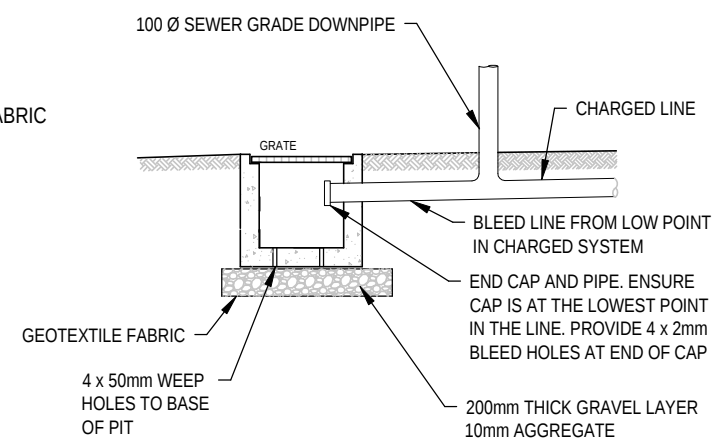
BG3 / SD3 - TYPICAL DETAIL
SCALE = NTS



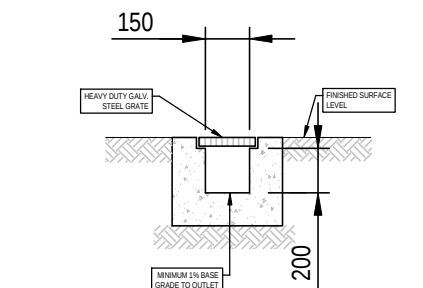
TYPICAL 450 SQ SITE DISCHARGE PIT DETAIL
SCALE = 1:20



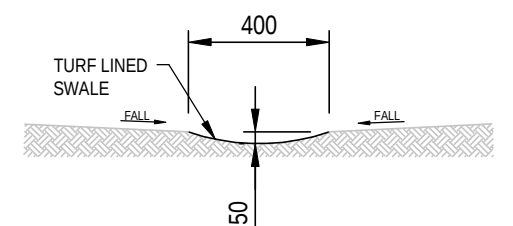
TYPICAL PIT DETAIL
SCALE = 1:20



CLEAN-OUT PIT DETAIL
SCALE = NTS

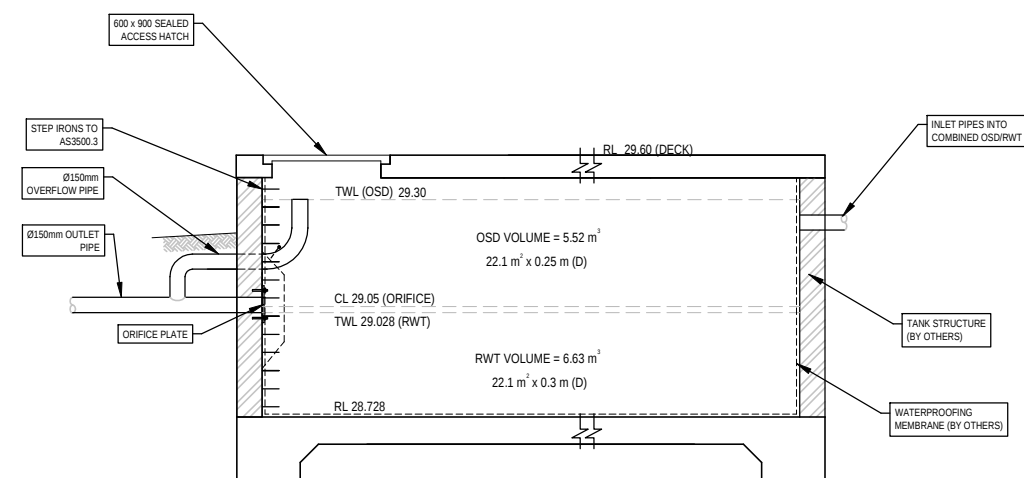
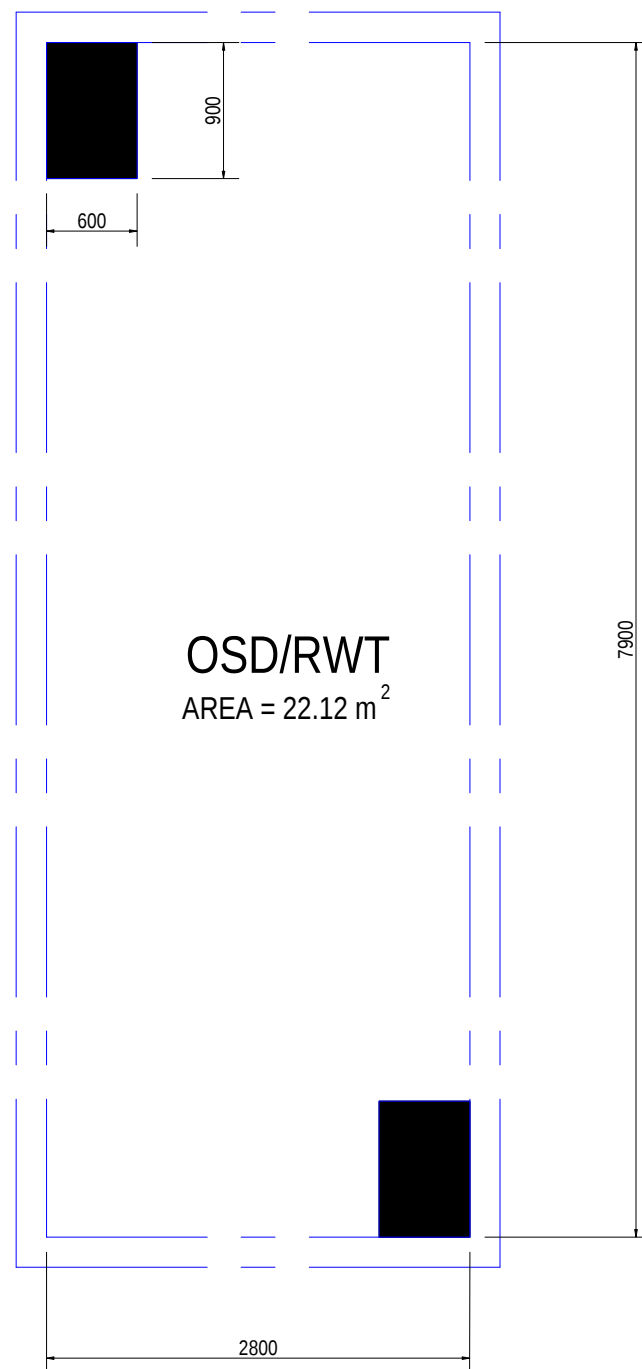


GRADED DRAIN DETAIL (GDE)
SCALE = NTS



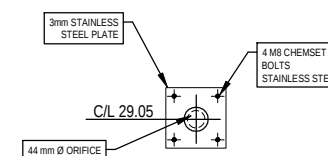
400 WIDE CUT OFF SWALE
SCALE = NTS

			Client	 APPROVED CONSULTING ENGINEERS	Project	10 DELWOOD CLOSE MONA VALE			Designed CH	04/12/23		
			Architect / Designer					Checked CH	Approved CH	Scale 1 : 200		
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24	RAMA ARCHITECTS		Title	DETAILS		Drawing number SW06		Job number 2023108		Revision B
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23										
	AMENDMENT	DATE	PO BOX: 1510, DEE WHY ABN - 90 645 409 801									



COMBINED RAINWATER / ON SITE DETENTION TANK DETAIL

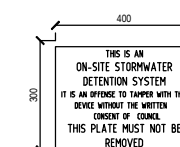
SCALE = NOT TO SCALE



NOTE: ORIFICE PLATE SIZE TO BE
CONFIRMED PRIOR TO CONSTRUCTION

ORIFICE PLATE DETAIL

SCALE = NTS



OSD TANK PLAQUE

SCALE = N.T.S.



LEGEND:
BLACK ON
YELLOW
BACKGROUND

SIGN FOR RWT AND OUTLETS

SCALE = N.T.S.

			Client TIM & ISABEL VAN REES	 APPROVED CONSULTING ENGINEERS	Project 10 DELWOOD CLOSE MONA VALE		Designed CH	04/12/23
						Architect / Designer	Checked CH	Approved CH
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24	RAMA ARCHITECTS PO BOX: 1510, DEE WHY ABN - 90 645 409 801		Title DETAILS	Drawing number SW07	Job number 2023108	Revision B
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23						
	AMENDMENT	DATE						

PROVIDE TWO CENTRIFUGAL DRAINAGE SUMP PUMPS WITH SINGLE-PHASE ELECTRIC MOTOR CAPABLE OF DISCHARGING 5.0 LPS EACH AGAINST A TOTAL HEAD OF (XXXX) WITH 10 STARTS PER HOUR. MAXIMUM. CLASS 1 ZONE 2 CERTIFIED PUMPS FOR HAZARDOUS AREAS ARE REQUIRED SWITCHING SHALL PROVIDE FOR ALTERNATIVE OPERATION OF THE PUMPS, HIGH LEVEL SWITCH ON/OFF, 2ND PUMP, AND A RED LIGHT ALARM PLACED PERMANENTLY IN THE BASEMENT AREA ACTIVATED BY HIGH LEVEL SWITCH ON.

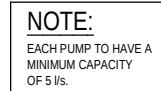
AREA DRAINING TO THE BASEMENT PUMPING = 5 m²
STORAGE MUST BE PROVIDED FOR A BLACKOUT OF AT LEAST 2HRS, THE 10 YEAR ARI STORM RUNOFF IS:

$$\begin{aligned} \text{PC}_5 &= (5.0\text{L/s} \times 0.083\text{hrs} \times 3600\text{s})/1000 \\ &= 1.50 \text{ m}^3 \end{aligned}$$

DESIGN WET WELL STORAGE CAPACITY
 $= V_{10/120} \cdot PC_{30} = 0 \text{ m}^3$
 MINIMUM VOLUME ADOPTED : 3.0 m^3

PUMP OUT SYSTEM FAILURE IN BASEMENT WHEN LIGHT IS FLASHING AND SIREN SOUNDING

1. EACH PUMP TO HAVE A MINIMUM CAPACITY OF 5 L/s.
2. THE PUMPS SHALL OPERATE ALTERNATELY TO RL INDICATED ON DETAILS, WITH BOTH PUMPS OPERATING IN UNISON AT RL INDICATED ON DETAILS, (WITH ALARM) IF THE WATER LEVEL CONTINUES TO RISE ABOVE THE MAXIMUM WATER LEVEL AFTER THE FIRST PUMP HAS COME ON.
3. ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-3:21998, SECTION 9 PUMPED SYSTEMS
4. PUMPS SHALL BE IN DUPLICATE. THE MAXIMUM CAPACITY OF EACH PUMP SHALL BE SELECTED SO THAT THE CAPACITY OF THE SYSTEM RECEIVING THE DISCHARGE IS NOT EXCEEDED. THE PUMP CONTROLS SHALL BE SET UP TO ENABLE ALTERNATE PUMP OPERATION AT EACH START. IN THE EVENT THAT A PUMP FAILS TO OPERATE WHEN THE WATER LEVEL IN THE WET WELL REACHES THE PUMP START, THE OTHER PUMP SHALL BE ACTIVATED AND A VISIBLE ALARM INITIATED. IN THE EVENT THAT BOTH PUMPS FAIL TO OPERATE AN AUDIBLE ALARM SHALL BE INITIATED.
5. PUMPING EQUIPMENT SHALL BE SECURELY FIXED TO THE WET WELL USING CORROSION RESISTANT FIXINGS.
6. PUMPS SHALL BE FITTED WITH A GATE VALVE AND NON-RETURN VALVE OF THE DELIVERY SIDE OF EACH PUMP.
7. PUMPS SHALL HAVE FLANGES OR UNIONS INSTALLED TO FACILITATE REMOVAL.
8. PUMPS SHALL BE CONTROLLED SO AS TO LIMIT THE NUMBER OF STARTS PER HOUR TO WITHIN THE CAPACITY OF THE ELECTRICAL MOTORS AND EQUIPMENT, AND SHALL, AS FAR AS PRACTICABLE, EMPTY THE CONTENTS OF THE WET WELL AT EACH OPERATION.
9. THE REQUIRED PUMPING RATE SHALL BE CALCULATED BASED ON AN ASSESSMENT OF THE EXPECTED INFLOW AND, WHERE APPROPRIATE, THE ALLOWABLE DISCHARGE RATE.
10. NO ADDITIONAL SURFACE RUNOFF IS TO BE DIRECTED TO THE PUMP OUT PIT.



SCALE = 1 : 20

			Client TIM & ISABEL VAN REES Architect / Designer RAMA ARCHITECTS PO BOX: 1510, DEE WHY ABN - 90 645 409 801	 APPROVED CONSULTING ENGINEERS	Project	10 DELWOOD CLOSE MONA VALE			Designed CH	04/12/23	
								Checked CH	Approved CH	Scale 1 : 200	
B	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION - DRAINAGE UPDATED	08/02/24					Title	DETAILS	Drawing number SW08	Job number 2023108	Revision B
A	PLANS FOR DA SUBMISSION - NOT FOR CONSTRUCTION	04/12/23									
	AMENDMENT	DATE									