

51 KALANG ROAD, ELANORA HEIGHTS

PROPOSED SHOP TOP HOUSING DEVELOPMENT

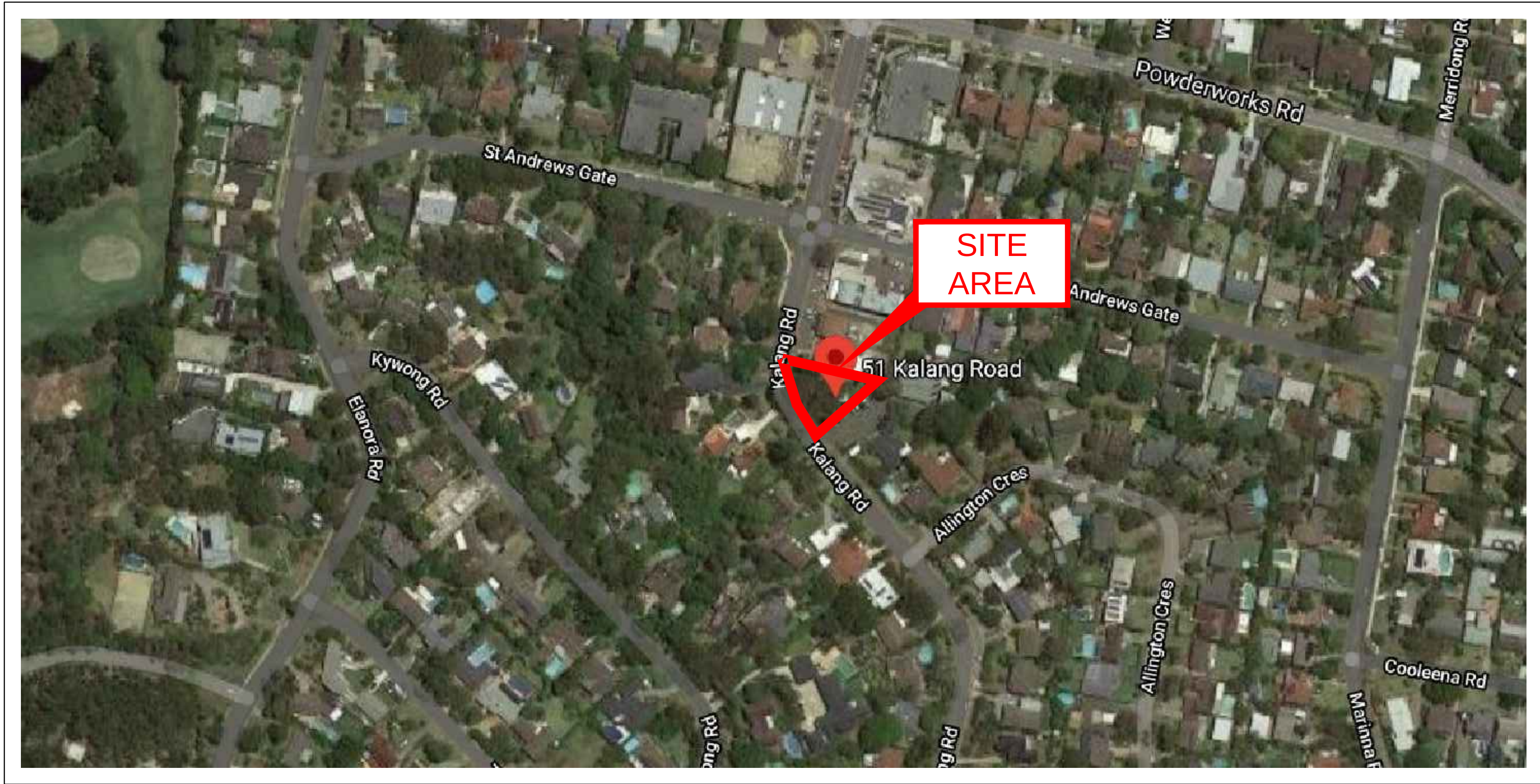
STORMWATER CONCEPT PLANS

LEGEND

	PROPOSED STORMWATER DRAINAGE PIPE
	Ø100 STORMWATER DRAINAGE PIPE CAST IN SLAB
	Ø65 STORMWATER DRAINAGE PIPE CAST IN SLAB
	RWT DOWNPIPE TO RAINWATER TANK
	DP DOWNPIPE
	VD VERTICAL DROP
	PG PLANTER GRATE Ø150
	FG FLOOR GRATE Ø150
	FG FLOOR GRATE 300x300 (PROVIDE MINIMUM 30mm FALL TO FG)
	RWO RAINWATER OUTLET Ø260 SPS (PROVIDE MINIMUM 50mm FALL TO RWO)
	SURFACE FLOW ARROWS
	RL 47.00 DESIGN SURFACE LEVEL
	NS 26.45 EXISTING SURFACE LEVEL
	IL 47.00 INVERT LEVEL OF PIPE JUNCTION
	TD AC CONDENSER TUNDISH
	Ø50mm PVC CAST IN SLAB
	Ø65mm EMERGENCY OVERFLOW SPITTERS/PIPES
	S EXISTING SEWER MAIN (FROM RECORDS)
	G EXISTING GAS (FROM RECORDS)
	T EXISTING TELSTRA (FROM RECORDS)
	TREES TO BE RETAINED
	TREES TO BE REMOVED

PIPES NOTE:

Ø65 PVC @ MIN 1.0%
Ø90 PVC @ MIN 1.0%
Ø100 PVC @ MIN 1.0%
Ø150 PVC @ MIN 1.0%
Ø225 PVC @ MIN 0.5%
Ø300 PVC @ MIN 0.4%
UNLESS NOTED OTHERWISE



LOCALITY PLAN

N.T.S

DRAWING INDEX

Drawing No.	DESCRIPTION
000	COVER SHEET PLAN, LEGEND & NOTES
101	STORMWATER CONCEPT PLAN BASEMENT LEVEL SHEET 1 OF 2
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103	STORMWATER CONCEPT PLAN GROUND LEVEL
104	CATCHMENT PLAN
105	MAINTENANCE SCHEDULE, OSD DETAILS & CALCULATION SHEET
106	WSUD DETAILS SHEET
107	SEDIMENT & EROSION CONTROL PLAN & DETAILS
108	MISCELLANEOUS DETAILS SHEET

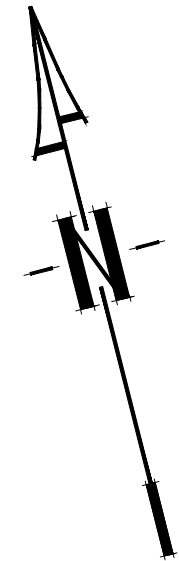
GENERAL NOTES

- ALL THE CLEANING EYES (OR INSPECTION EYES) FOR THE UNDERGROUND PIPES HAVE TO BE TAKEN UP TO THE FINISHED GROUND LEVEL FOR EASY IDENTIFICATION AND MAINTENANCE PURPOSES
- ALL LEVELS SHALL RELATE TO THE ESTABLISHED BENCH MARK.
- THE BUILDER SHALL ENSURE THAT THE STORMWATER ENGINEERS DRAWINGS CORRESPOND TO THE ARCHITECTURAL, STRUCTURAL AND LANDSCAPING DRAWINGS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS
- ALL MULCHING TO BE USED WITHIN THE AREA DESIGNATED AS ONS-SITE DETENTION STORAGE SHALL BE OF A NON-FLOATABLE MATERIAL SUCH AS DECORATIVE RIVER GRAVEL. PINE BARK MULCHING SHALL NOT BE USED WITHIN THE DETENTION STORAGE AREA.
- ALL RETAINING WALLS SHALL BE CONSTRUCTED COMPLETELY WITHIN THE PROPERTY BOUNDARY LIMITS TO DETAILS PREPARED BY THE STRUCTURAL ENGINEER. WALLS FORMING THE ON-SITE DETENTION SYSTEM SHALL BE OF MASONARY/BRICK CONSTRUCTION AND WATER TIGHT.
- ALL SUB-SOIL DRAINAGE SHALL BE A MINIMUM OF 65MM DIA AND SHALL BE PROVIDED WITH A FILTER SOCK. THE SUBSOIL DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS TO BE PROVIDED BY THE LANDSCAPE ARCHITECT.
- PRIOR TO COMMENCING ANY WORKS, THE BUILDER SHALL ENSURE THAT THE INVERT LEVELS OF WHERE THE SITE STORMWATER SYSTEM CONNECTS INTO THE COUNCILS KERB/DRAINAGE SYSTEM MATCHED THE DESIGN LEVELS. ANY DISCREPANCIES SHALL BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
- ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
- EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY.
- IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
- ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
- ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450 PLASTIC.
- PITS LESS THAN 450 DEEP MAY BE BRICK, PRECAST OR CONCRETE.
- ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
- ALL EXTERNAL SLABS TO BE WATERPROOFED.
- ALL GRATES TO HAVE CHILD PROOF LOCKS.
- ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
- ALL DP'S TO HAVE LEAF GUARDS.
- ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
- ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
- COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
- ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
- REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.
- ALL WALLS FORMING THE DETENTION BASINS SHALL BE CONSTRUCTED WHOLLY WITHIN THE PROPERTY BOUNDARIES OF THE SITE BEING DEVELOPED.
- OSD WARNING SIGN AND SAFETY FENCING SHALL BE PROVIDED TO ABOVE GROUND OSD STORAGE AREA IN ACCORDANCE WITH COUNCIL'S REQUIREMENTS.
- ENSURE THAT NON FLOATABLE MULCH IS USED IN DETENTION BASINS, ie, USE DECORATIVE ROCK MULCH OR EQUIVALENT.
- THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER CONSULTATION FROM OUR OFFICE ONLY. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE CONTRACTOR'S EXPENSES
- ALL PIPES IN BALCONIES TO BE Ø65 uPVC IN CONCRETE SLAB. CONTRACTOR TO PROVIDE A BREAK / OPEN VOID IN RAIL / BALLUSTRADE FOR STORMWATER EMERGENCY OVERFLOW. ALL ENCLOSED AREAS / PLANTER BOXES TO BE FITTED WITH FLOOR WASTES & DRAINED TO OSD. DOWNPIPES TO BE CHECKED BY ARCHITECT & PLUMBER PRIOR TO CONSTRUCTION.

NOT FOR CONSTRUCTION

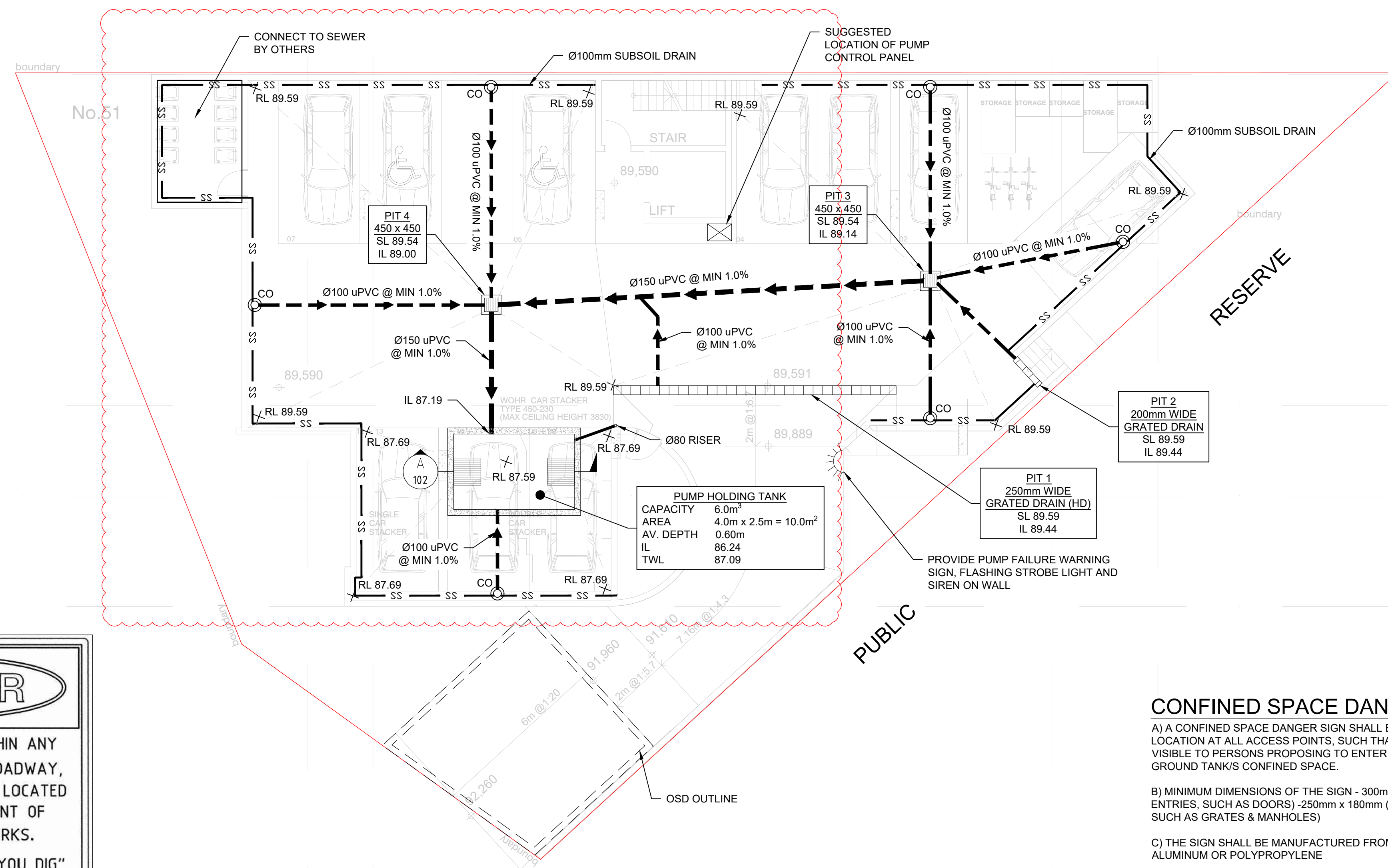
					Architect Fortey + Grant Architecture Suite 3/Level 1, 1141 Botany Lane Mascot NSW 2020 mob: 0401 822 223 email: james@fgarch.com.au	Council Northern Beaches Council	Scale	Certification By:  Anthony Hasham	 AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941 LEVEL 4, 47/50 CHURCH STREET NORTH PARAHAMPTA NSW 2150 PH: (02) 9763 1500 FX: (02) 9763 1515 EMAIL: INFO@ACEENG.COM.AU	Project 51 KALANG ROAD, ELANORA HEIGHTS PROPOSED SHOP TOP HOUSING DEVELOPMENT STORMWATER CONCEPT PLAN DEVELOPMENT APPLICATION	Drawing Title COVER SHEET PLAN, LEGEND & NOTES				
A	ISSUE FOR DEVELOPMENT APPLICATION	06/10/2020	MD	EH	OC							Scale N.T.S.	Project No. 200870	Dwg. No. 000	Issue A

	PROPOSED STORMWATER
	SURFACE FLOW ARROWS
	SUBSOIL DRAINAGE
	CLEANING EYE (OR INSPECTION EYE)
	PROPOSED STORAGE AREA
	FINISHED SURFACE LEVEL
	GRATED DRAIN
	FLOOR GRATE



THE PUMP OUT SYSTEM SHALL BE DESIGN TO BE OPERATED IN THE FOLLOWING MANNER:

- 1 - THE PUMP SHALL BE PROGRAMMED TO WORK ALTERNATELY TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
- 2 - A FLOAT SHALL BE PROVIDED TO ENSURE OF 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 AT THE MINIMUM WATER LEVEL. THE SAME FLOAT SHALL BE SET TO TURN ONE OF THE PUMPS ON UPON THE WATER LEVEL IN THE TANK RISING TO APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL. THE PUMP SHALL OPERATE UNTIL THE TANK IS DRAINED TO THE MINIMUM WATER LEVEL.
- 3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
- 4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGHT AND 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.
- 5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.



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

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

COLOURS:
"WARNING" = RED
BORDER AND OTHER LETTERING = BLACK

WHEN EXCAVATING WITHIN ANY
SITE, FOOTPATH AND ROADWAY,
ALL SERVICES SHALL BE LOCATED
PRIOR TO COMMENCEMENT OF
THE EXCAVATION WORKS.

CONTACT "DIAL BEFORE YOU DIG"
ON PHONE No. 1100 OR GO TO THE
WEB SITE

"www.1100.com.au"

A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) -250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

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

**CONFINED SPACE
NO ENTRY WITHOUT
CONFINED SPACE
TRAINING**

NOT FOR CONSTRUCTION

							Architect Fortey + Grant Architecture
B	ISSUE FOR DEVELOPMENT APPLICATION	05/03/2021	DBF	EH	OC	Suite 3/Level 1, 1141 Botany Lane	
A	ISSUE FOR DEVELOPMENT APPLICATION	06/10/2020	MD	EH	OC	Mascot NSW 2020	
Issue	Description	Date	Designed	Engineer	Checked	mob: 0401 822 223 email: james@fgarch.com.au	

Council

Northern Beaches
Council

Scale

0 2 4 6

SCALE 1:100 @ A1

Certification By: 

Anthony Hasham



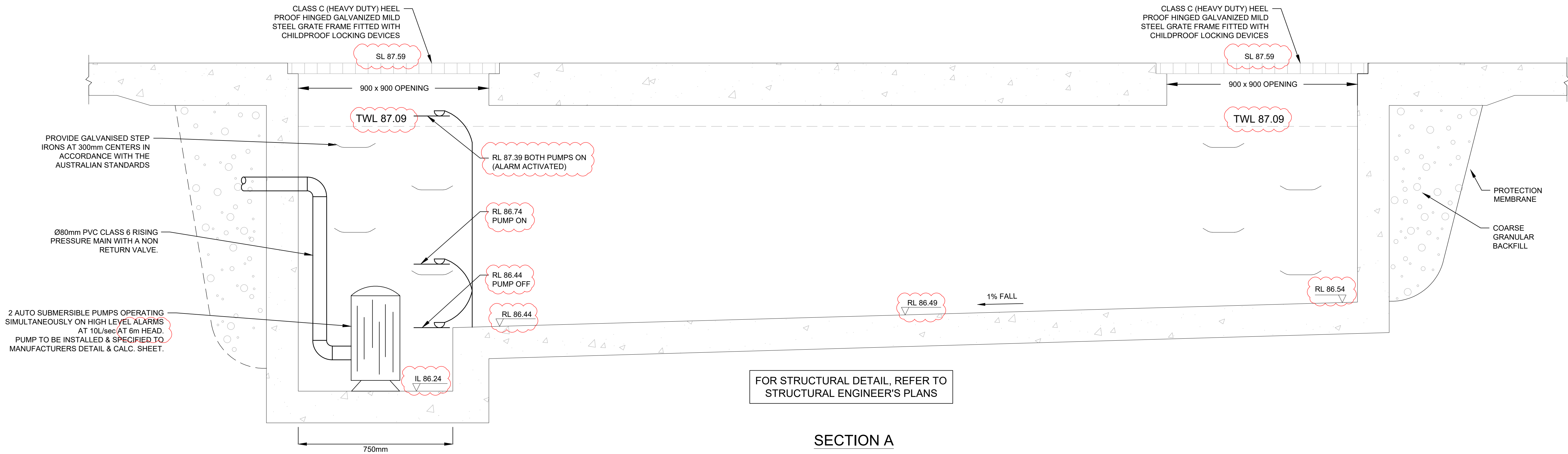
**AUSTRALIAN
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ENGINEERS.**

**A U S T R A L I A N
C O N S U L T I N G
E N G I N E E R S .**

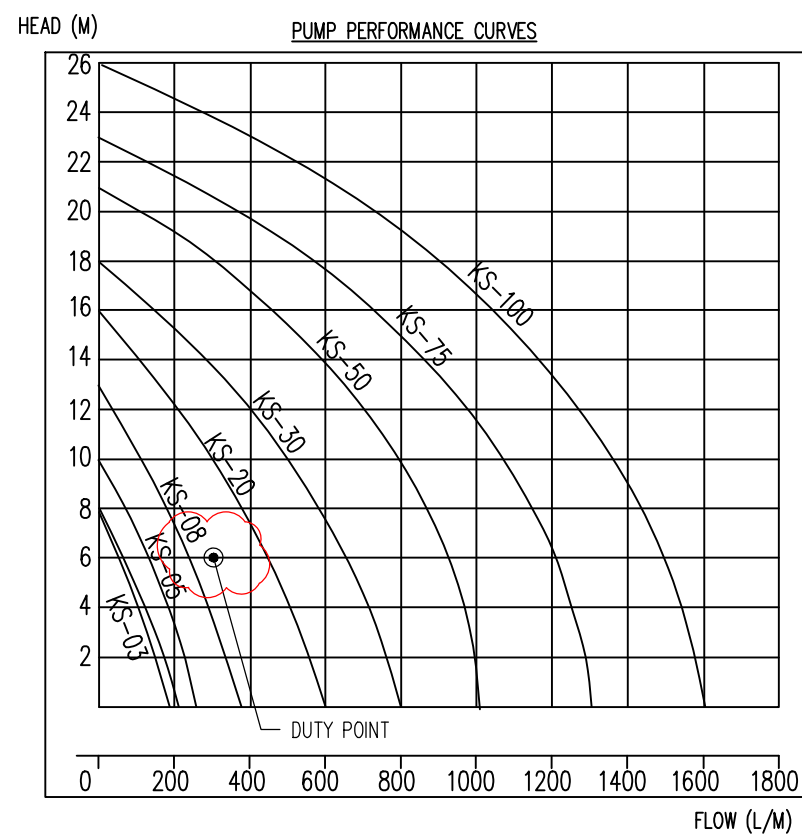
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Project 51 KALANG ROAD, ELANORA HEIGHTS
PROPOSED SHOP TOP
HOUSING DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title			
STORMWATER CONCEPT PLAN BASEMENT LEVEL SHEET 1 OF 2			
Scale	A1	Project No.	Dwg. No.
1:100		200870	101
			Issue
			B



SECTION A
STORMWATER PUMP-OUT SUMP
N.T.S.



PUMP STORAGE VOLUME CALCULATION

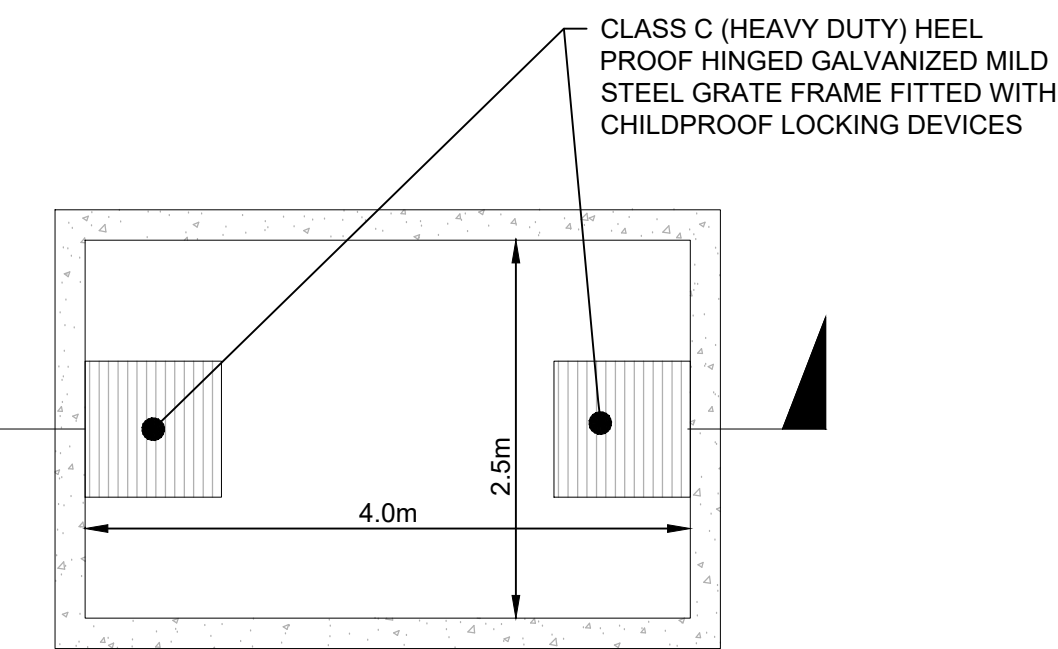
AREA DRAINING TO SUMP= 39.60m²

SUMP SIZE BASED ON 100 YEAR 2 HR STORM, I= 62.0 mm/hr,
Q=CIA/3600= 1X 62.0 X 39.60/3600 = 0.682L/sec
VOLUME REQUIRED = 0.682X(2x60x60) = 4910L = 4.91m³
STORAGE PROVIDED 4.0X2.5X0.6= 6.0m³

PUMP OUT RATE BASED ON 100YR 5MIN STORM, I=266 mm/hr
(MIN RATE REQUIRED AS PER AS3500.3 IS 10 L/sec)
Q=CIA/3600= 1X 266X 39.60/3600 = 2.93 L/sec

DUAL KS-20 PUMP OR EQUIVALENT TO BE INSTALLED IN SUMP
AND CONNECTED TO CONTROL PANEL WHICH WILL ALLOW
FOR THE PUMP TO OPERATE SIMULTANEOUSLY ON HIGH
LEVEL WITH ALARM AT 10 L/sec AT 6m HEAD

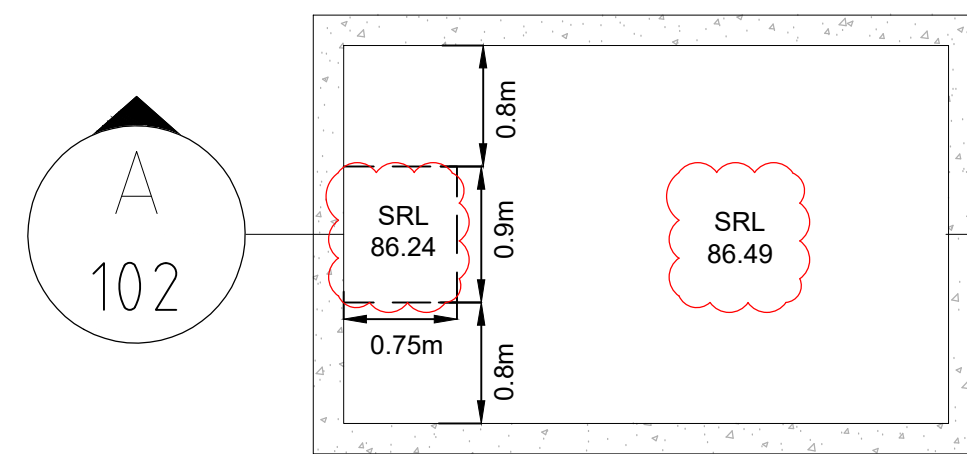
Type	Output		Outlet		Rated		Maximum		Weigh	Dimension		
	HP	kW	mm	Inch	M	LPM	M	LPM		L(mm)	W(mm)	H(mm)
KS-03	1/3	0.25	40	1 1/2"	3	130	8	180	9	188	141	305
KS-04	1/2	0.4	50	2"	5	150	8	220	11	208	140	359
KS-05	1/2	0.4	50	2"	5	160	10	260	14	230	156	375
KS-08	1	0.75	50	2"	6	240	13	380	21	290	180	425
KS-20	2	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



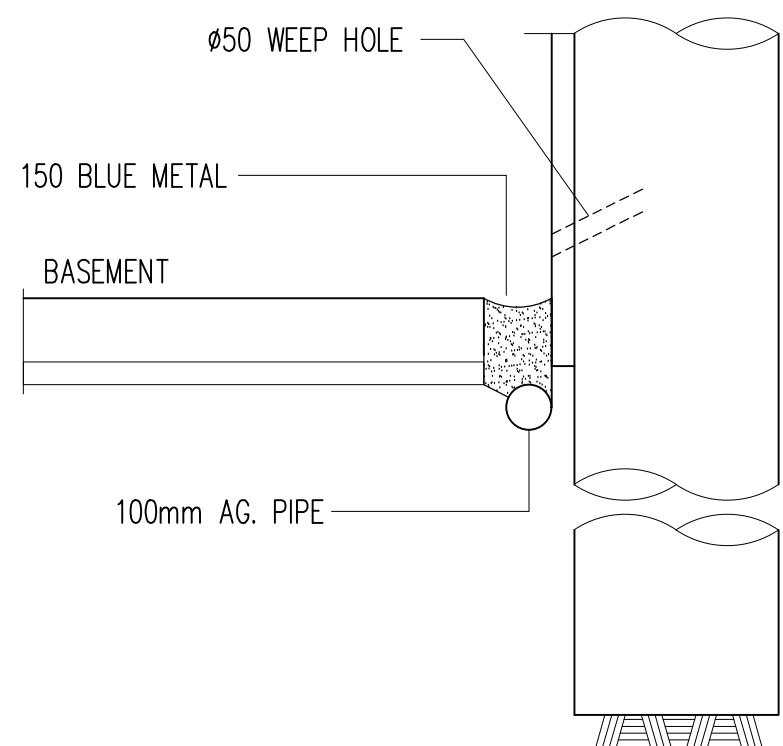
NOTE:

- FOR ALL THE STRUCTURAL DETAILS, REFER TO STRUCTURAL ENGINEER'S PLAN.
- ALL THE AG LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT SUMP.

PUMP-OUT SUMP DETAIL
PLAN VIEW
SCALE 1:50



PUMP-OUT SUMP DETAIL
SRL
SCALE 1:50



TYPICAL SUBSOIL DRAIN DETAILS
N.T.S.

NOT FOR CONSTRUCTION

NOTE:
REFER ARCHITECTURAL DRAWINGS FOR FINAL SET-OUT LEVELS.

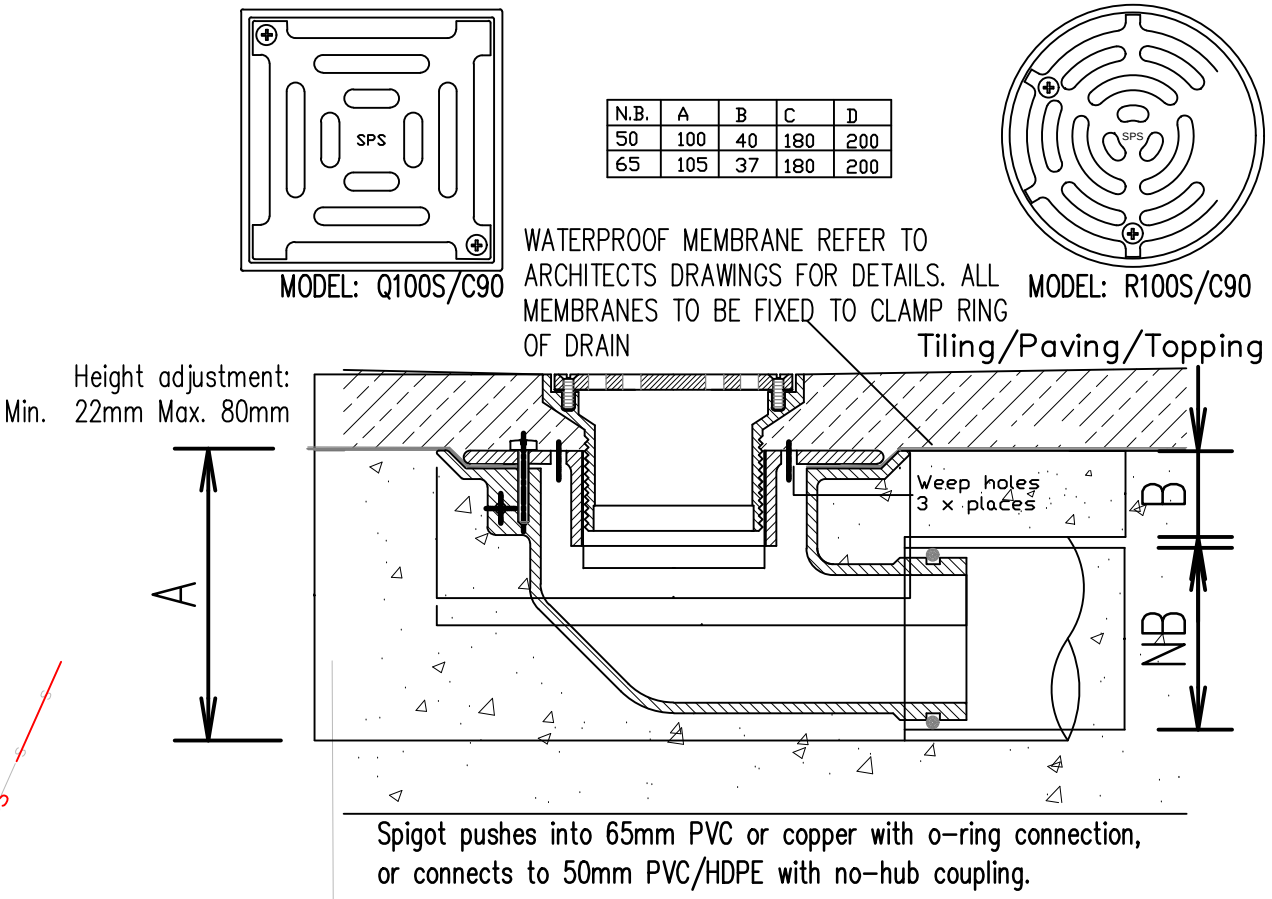
NOTE:
ALL LINEAR GRATED DRAINS TO BE MIN. 100mm DEEP.

NOTE:
IT IS CONTRACTOR'S RESPONSIBILITY TO ENSURE MINIMUM 30 TO 40mm OF PONDING IS ACHIEVED OVER THE FLOOR WASTES BY GRADING CATCHMENTS' SURFACES AT MINIMUM 0.5% FALL FOR PAVED SURFACES AND MINIMUM 1% FALL FOR OTHER SURFACES.

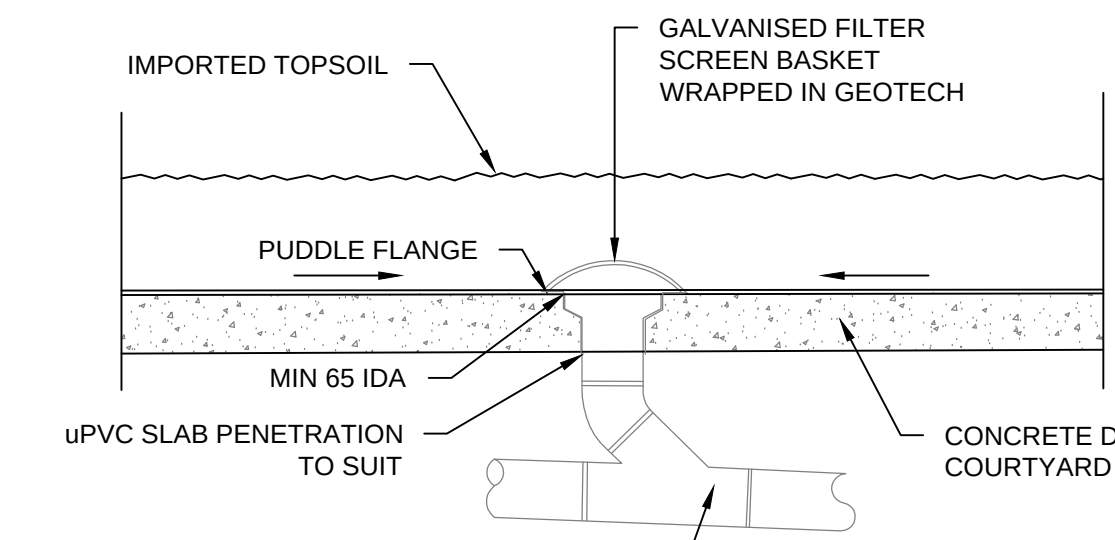
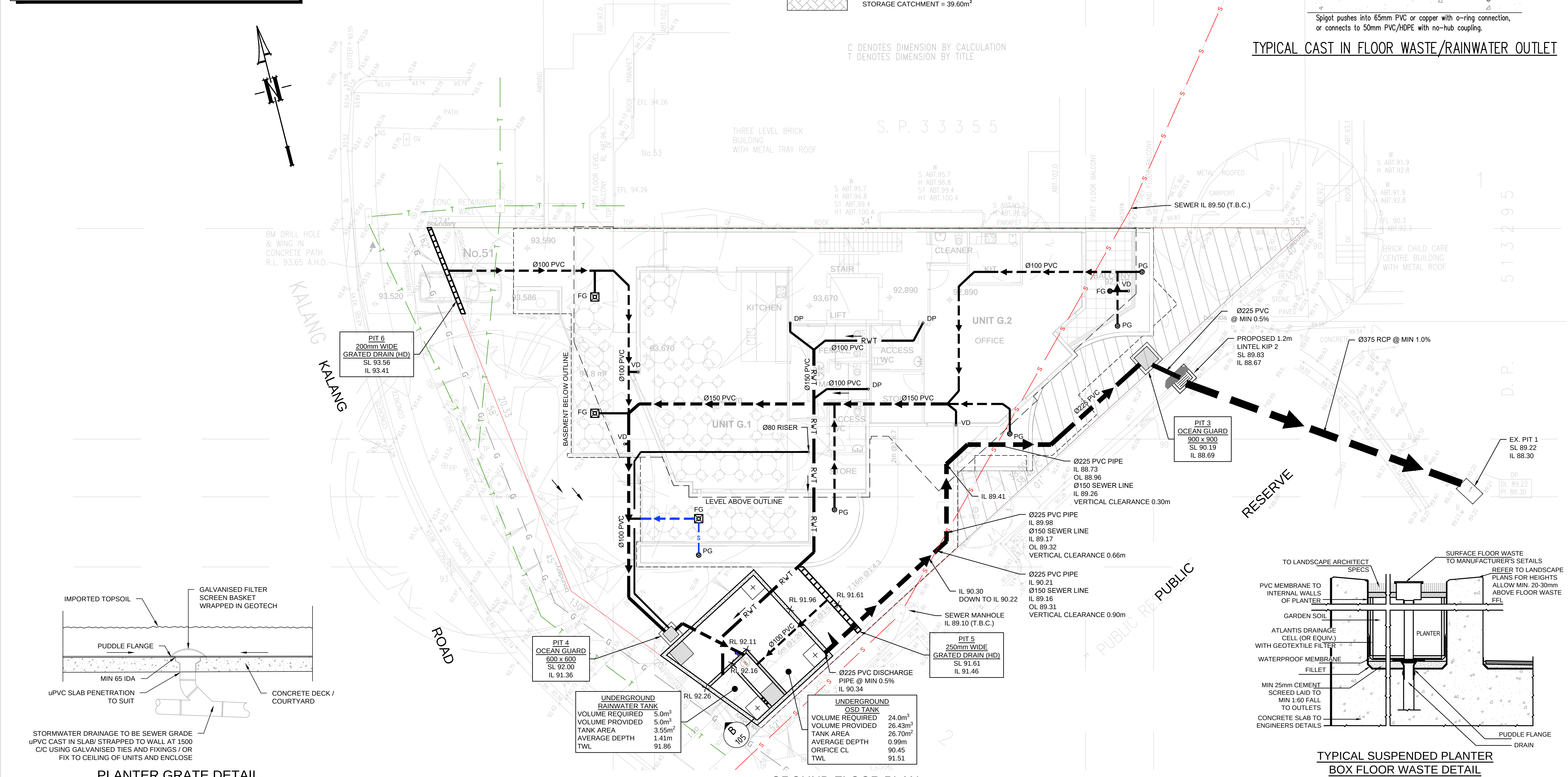
NOTES:
1- CONTRACTOR IS TO PROVIDE OVERFLOW OUTLETS & EMERGENCY OVERFLOW SPITTERS TO ALL ENTRAPPED AREAS.
2- DP/VD ARE Ø100mm PIPES U.N.O.
3- DP/VD ARE Ø65mm PIPES FOR SMALL CATCHMENTS.
4- ALL TRANSFERRING PIPES AREA SUSPENDED U.N.O.
5- BALCONIES PIPES ARE Ø65mm CAST IN SLAB.

HATCHED AREA DENOTES CATCHMENT AREA TO BYPASS OSD = 60.0m²

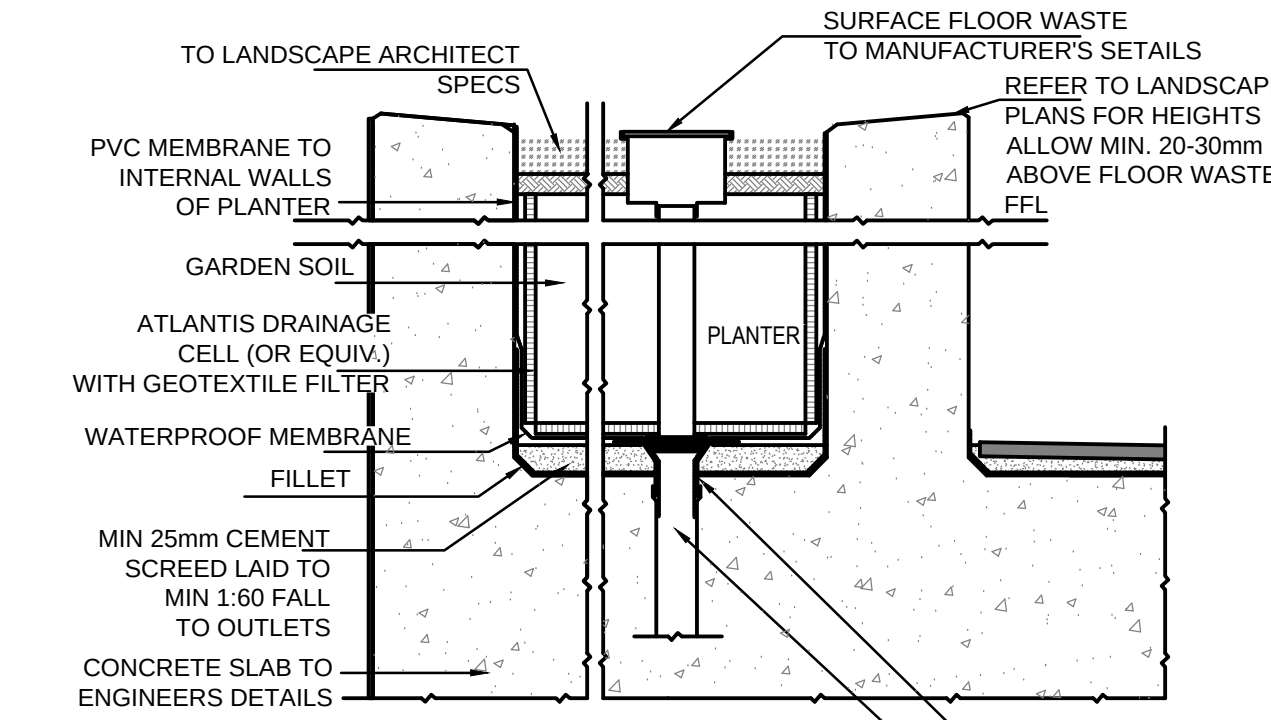
HATCHED AREA DENOTES PUMP STORAGE CATCHMENT = 39.60m²



TYPICAL CAST IN FLOOR WASTE/RAINWATER OUTLET



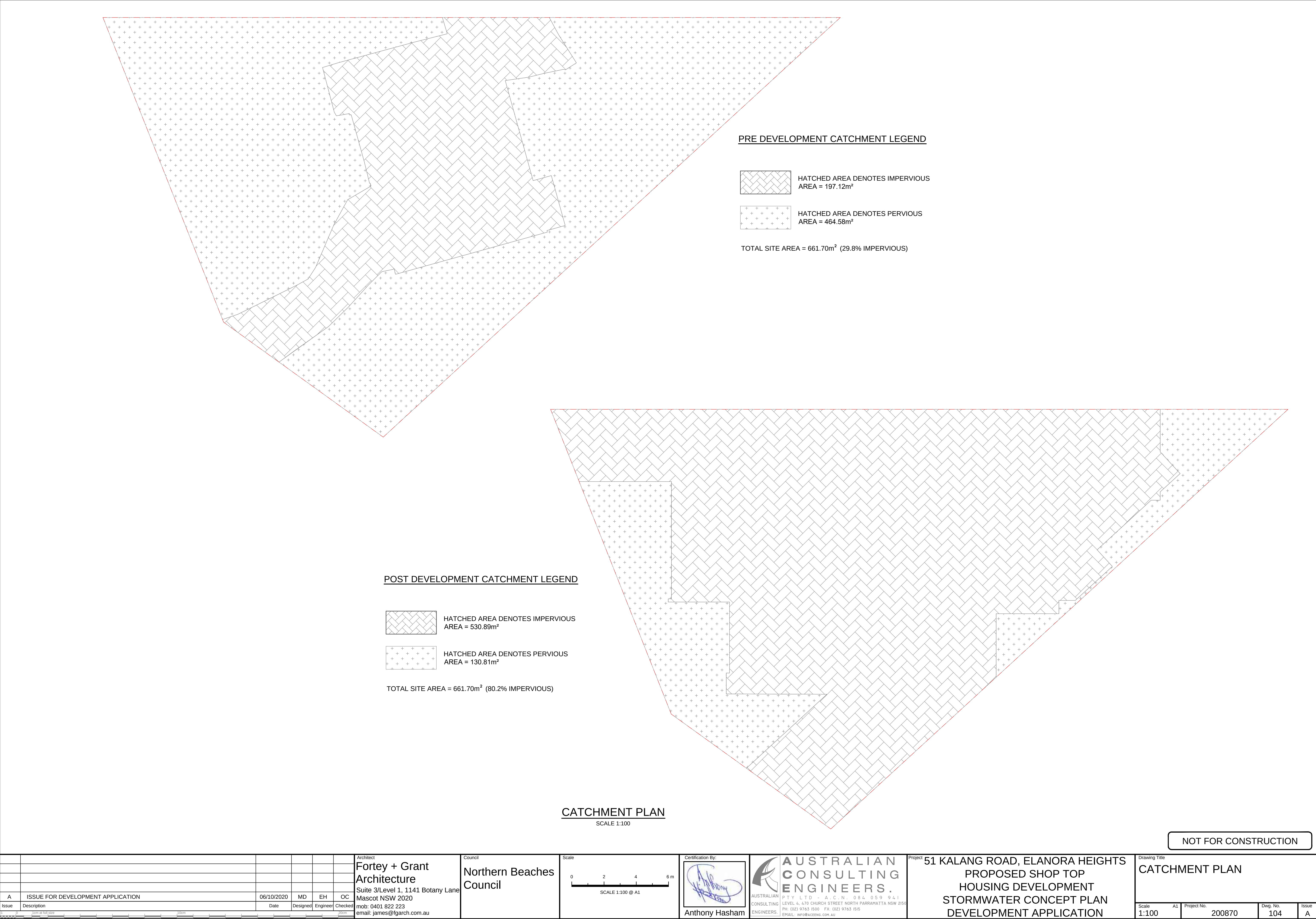
PLANTER GRATE DETAIL
N.T.S.

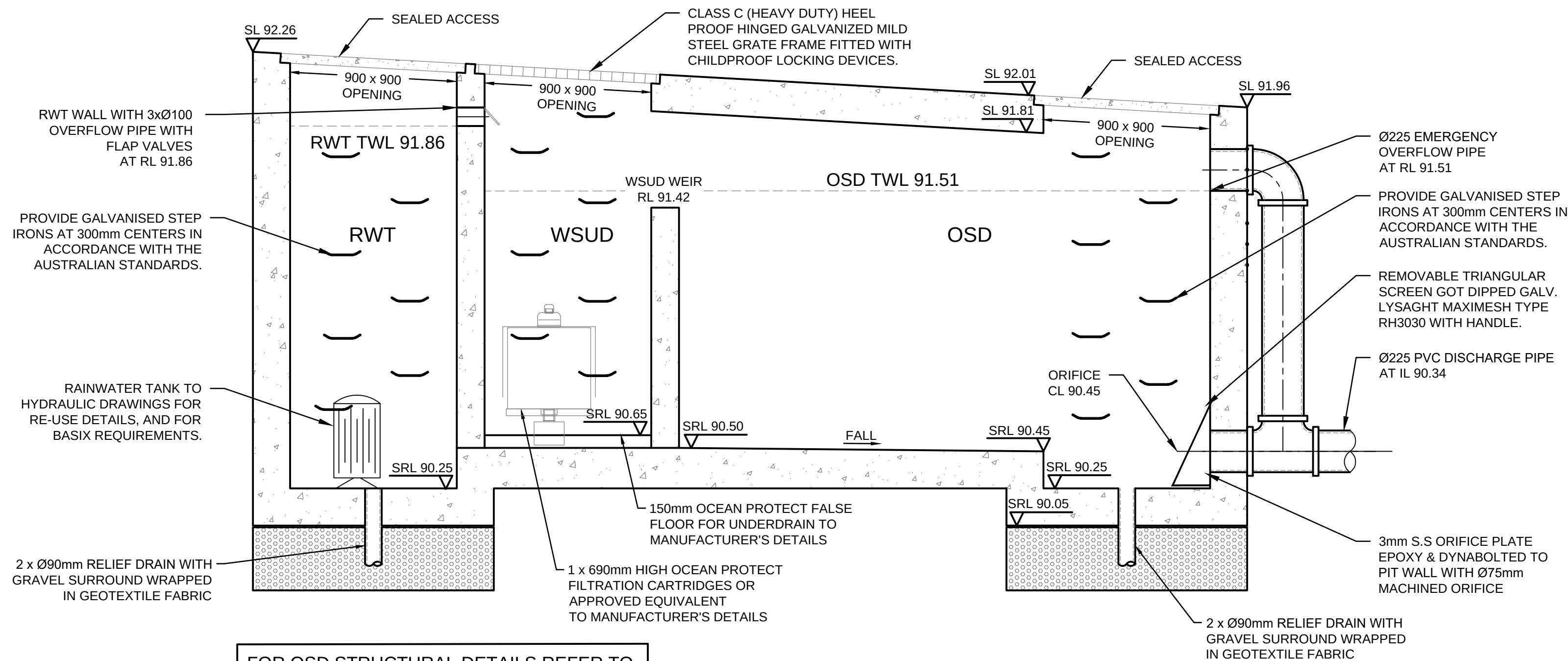


TYPICAL SUSPENDED PLANTER BOX FLOOR WASTE DETAIL
N.T.S.

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					Architect Fortey + Grant Architecture Suite 3/Level 1, 1141 Botany Lane Mascot NSW 2020 mob: 0401 822 223 email: james@fgarch.com.au		Council Northern Beaches Council		Scale 0 2 4 6 m SCALE 1:100 @ A1		Certification By: Anthony Hasham		 AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941 PH: (02) 9763 1500 FX: (02) 9763 1515 EMAIL: info@aceeng.com.au		Project 51 KALANG ROAD, ELANORA HEIGHTS PROPOSED SHOP TOP HOUSING DEVELOPMENT STORMWATER CONCEPT PLAN DEVELOPMENT APPLICATION		Drawing Title STORMWATER CONCEPT PLAN GROUND LEVEL	
A ISSUE FOR DEVELOPMENT APPLICATION					06/10/2020 MD EH OC													
Issue Description					Date Designed Engineer Checked													
1:100					20mm													
																	Scale As Shown	
																	Project No. 200870	
																	Dwg. No. 103	
																	Issue A	





FOR OSD STRUCTURAL DETAILS REFER TO STRUCTURAL ENGINEER'S DETAILS.

UNDERGROUND RWT, OSD & WSUD TANK DETAILS
SECTION B
N.T.S.

OSD CALCULATIONS:

AS PER PITTWATER 21 DCP CLAUSE B5.7,
MINIMUM OSD VOLUME REQUIRED = 24.0m³ &
PSD = 12.0L/s
FOR ADDITIONAL HARD (IMPERVIOUS)
SURFACE AREA > 300-400 m²
REFER SHEET 104 FOR CATCHMENT PLAN DETAILS.

ADDITIONAL HARD (IMPERVIOUS) SURFACE AREA
= 530.89m² (PRE) - 197.12m² (POST)
= 333.77m² < 400m²

ORIFICE CALCULATIONS:

$$Q = C \times A \times (2 \times g \times h)^{0.5}$$

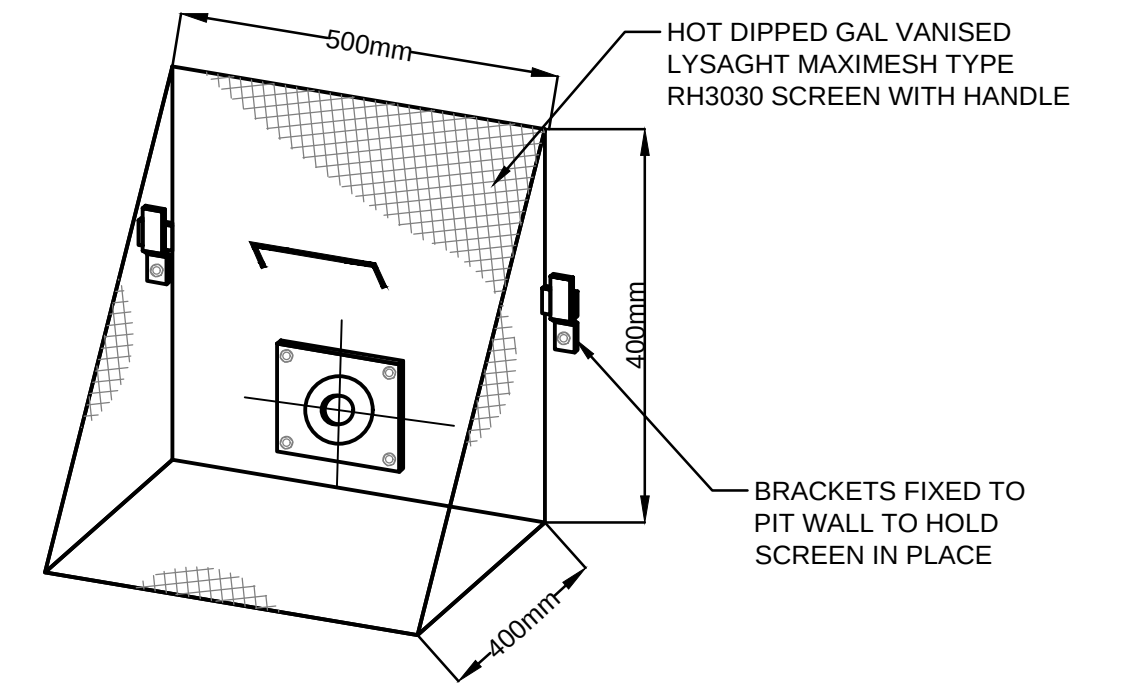
$$\begin{aligned} \text{SO: } A &= Q / (C \times \text{sqrt}(2 \times g \times h)) \\ &= 0.0120 / (0.6 \times \text{sqrt}(2 \times 9.81 \times 1.06)) \\ &= 0.00438\text{m}^2 \end{aligned}$$

THEREFORE:

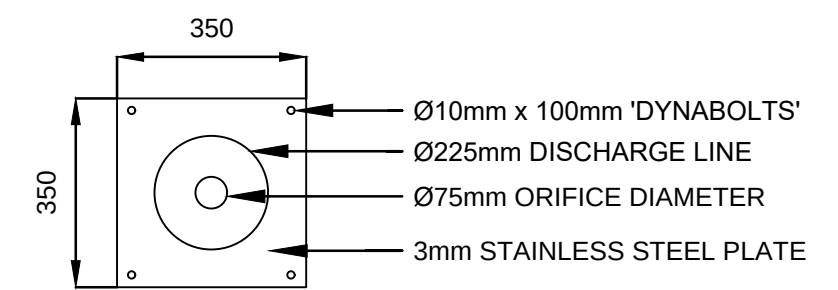
$$\begin{aligned} d &= \text{sqrt}(4 \times A / \pi) \\ &= \text{sqrt}(4 \times 0.00438 / 3.14159) \\ &= 75.0\text{mm} \end{aligned}$$

NOTE:

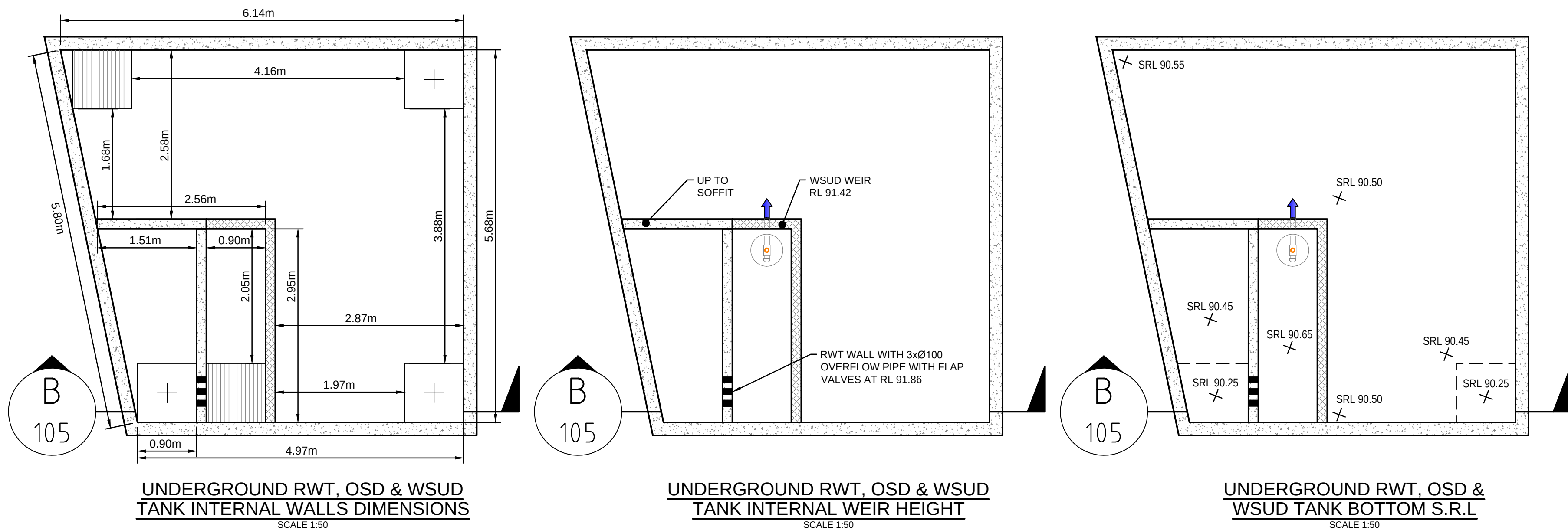
ALL ACCESS COVERS TO THE OSD TANK
TO BE FITTED WITH NON CORROSIVE,
CHILDPROOF LOCKING DEVICES.



TRASH SCREEN DETAIL
N.T.S.



ORIFICE PLATE DETAIL
N.T.S.



UNDERGROUND RWT, OSD & WSUD TANK INTERNAL WALLS DIMENSIONS
SCALE 1:50

UNDERGROUND RWT, OSD & WSUD TANK INTERNAL WEIR HEIGHT
SCALE 1:50

UNDERGROUND RWT, OSD & WSUD TANK BOTTOM S.R.L
SCALE 1:50

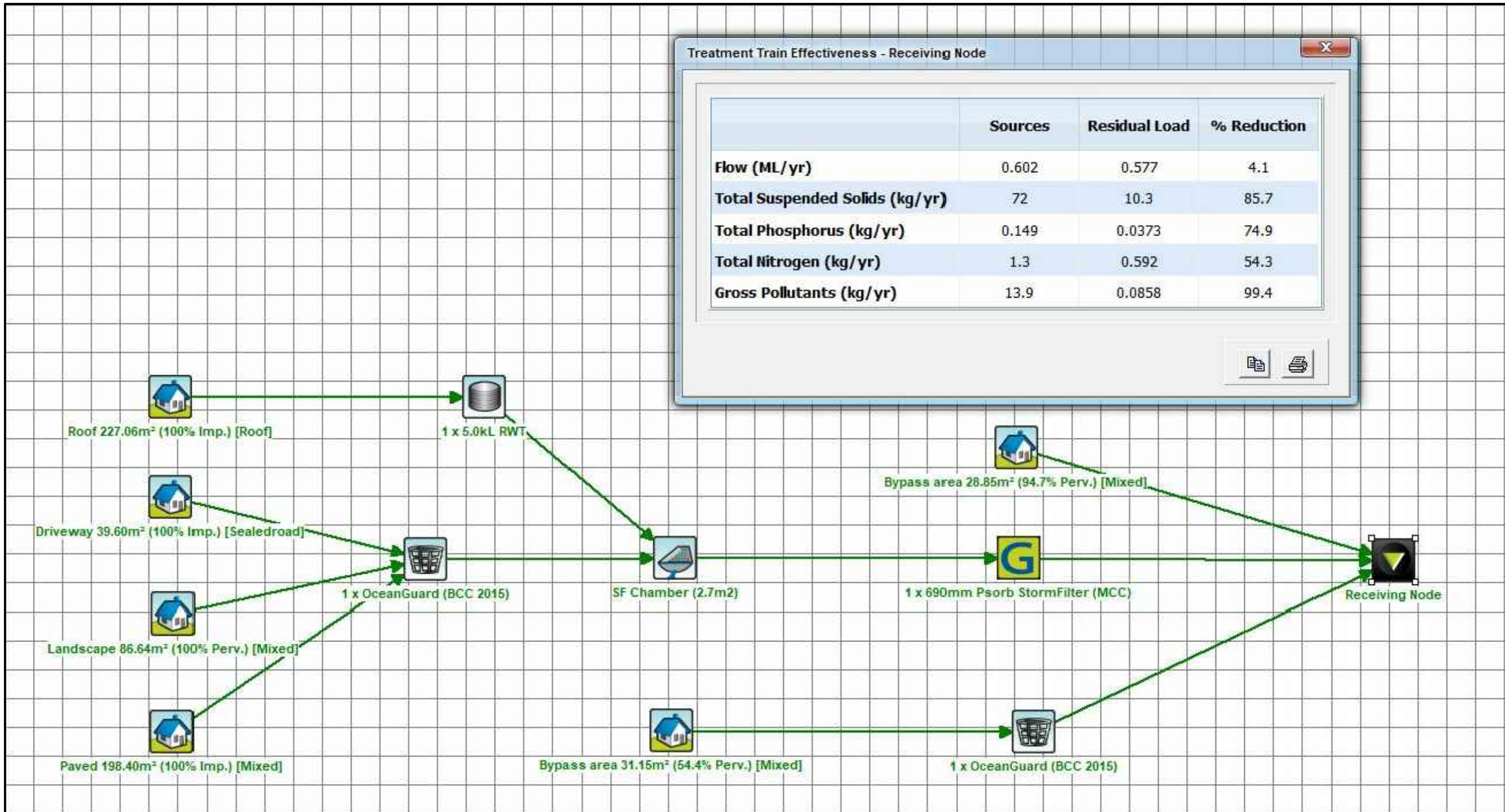
Stormwater Drainage System Maintenance Schedule			
ACE200870			
Maintenance Action	Frequency	Responsibility	Procedure
General			
Inspect roof drainage system of building and remove any debris/sludge	Six Monthly	Strata/Maintenance Contractor	Remove any leaves or debris and sludge from gutters of building and flush downpipes of building to remove any blockages. Pits downstream of downpipes to be cleaned of flushed debris.
Inspect pits and trench drains on site and remove debris/litter/sludge	Monthly or following Rain Period	Strata/Maintenance Contractor	Remove grate. Remove any debris/litter/sludge from within pits.
Inspect site for litter and floatable debris and remove	Fortnightly	Strata/Maintenance Contractor	Remove litter from site and sweep all driveway and pathways in order to remove leaves or sediments that may enter into the drainage system.
Basement Pump out			
Inspect and clean flap valve,	Six Monthly	Strata/Maintenance Contractor	Remove grate and check flap valve and pipe for blockages and clean. Check hinges for rust and test operation by moving flap to full extent.
Check hinge operation.	Annually	Strata/Maintenance Contractor	Inspect hinge and check its operation.
Check attachment of flap valve to wall pit.	Annually	Strata/Maintenance Contractor	Remove grate and ensure valve fixings are secure.
Check flap valve seal.	Six Monthly	Strata/Maintenance Contractor	Remove grate and fill pit with water, ensure flap seals against side of pit with minimal leakage.
Inspect walls for cracking or spalling.	Annually	Strata/Maintenance Contractor	Remove grate to inspect internal walls, remove vegetation to inspect external wall, repair as required.
Inspect sump and clean.	Six Monthly	Strata/Maintenance Contractor	Remove grate and clean sediment/sludge from sump.
Inspect grate for damage or blockage.	Six Monthly	Strata/Maintenance Contractor	Check both sides of grate for corrosion (particularly welds and corners); also check for damage and blockages.
Inspect outlet pipe and remove blockages	Six Monthly	Strata/Maintenance Contractor	Remove grate and flush outlet pipe to ensure it drains freely. Check for debris on upstream side of return line.
Outlets			
Inspect & remove any blockage of orifices	Six monthly	Strata/Maintenance Contractor	Remove grate & screen to inspect orifice. See plan for location of outlets.
Check attachment of orifice plates to wall of chamber and/or pit (gaps less than 5 mm)	Annually	Strata/Maintenance Contractor	Remove grate and screen. Ensure plates are mounted securely, tighten fixings if required. Seal gaps as required.
Check orifice diameters are correct and retain sharp edges	Five yearly	Strata/Maintenance Contractor	Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged.
Inspect screen and clean	Six monthly	Strata/Maintenance Contractor	Remove grate(s) and screens if required to clean them.
Check attachment of screens to wall of chamber or pit	Annually	Strata/Maintenance Contractor	Remove grate(s) and screen(s). Ensure screen fixings are secure. Repair as required.
Check screen(s) for corrosion	Annually	Strata/Maintenance Contractor	Remove grate(s) and examine screen(s) for rust or corrosion, especially at corners or welds.
Inspect walls (internal and external, if appropriate) for cracks or spalling	Annually	Strata/Maintenance Contractor	Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect outlet sumps & remove any sediment/sludge	Six monthly	Strata/Maintenance Contractor	Remove grate(s) and screen(s). Remove sediment/sludge build-up and check orifices are clear.
Inspect grate(s) for damage or blockage	Six monthly	Strata/Maintenance Contractor	Check both sides of a grate for corrosion, (especially corners and welds) damage or blockage.
Inspect outlet pipe & remove any blockage	Six monthly	Strata/Maintenance Contractor	Remove grate(s) and screen(s). Ventilate underground storage if present. Check orifices and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream side of return line.
Check step irons for corrosion	Annually	Strata/Maintenance Contractor	Remove grate. Examine step irons and repair any corrosion or damage
Check fixing of step irons is secure	Six monthly	Strata/Maintenance Contractor	Remove grate(s) and ensure fixings are secure prior to placing weight on step iron.
Storage			
Inspect storage & remove any sediment/sludge in pit	Six monthly	Strata/Maintenance Contractor	Remove grate(s) and screen(s). Remove sediment/sludge build-up.
Inspect internal walls of storage (and external, if appropriate) for cracks or spalling	Annually	Strata/Maintenance Contractor	Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect & remove any debris/litter/mulch etc blocking grates	Six monthly	Strata/Maintenance Contractor	Remove blockages from grate(s) and check if storage is blocked.
Inspect areas draining to the storage(s) & remove debris/mulch/litter etc likely to block screens/grates	Six monthly	Strata/Maintenance Contractor	Remove debris and floatable material likely to be carried to grates.
Compare storage volume to volume approved. (Rectify if loss > 5%)	Annually	Strata/Maintenance Contractor	Compare actual storage available with Work-as Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost. Council to be notified of the proposal.
Inspect storages for subsidence near pits	Annually	Strata/Maintenance Contractor	Check along drainage lines and at pits for subsidence likely to indicate leakages.

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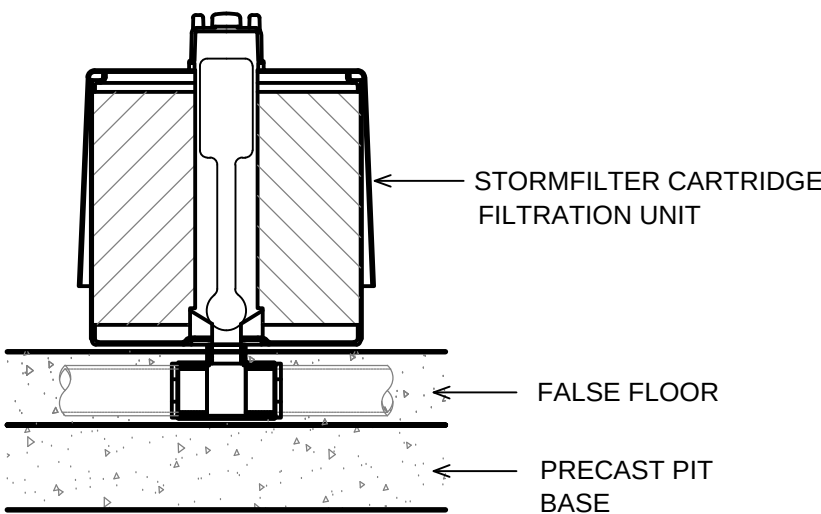
				Architect Fortey + Grant Architecture Suite 3/Level 1, 1141 Botany Lane Mascot NSW 2020 mob: 0401 822 223 email: james@fgarch.com.au				Council Northern Beaches Council				Scale  SCALE 1:50 @ A1				Certification By:  Anthony Hasham				 AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941 LEVEL 4, 470 CHURCH STREET NORTH PARRAMATTA NSW 2150 PH: (02) 9763 1500 - FX: (02) 9763 1515 EMAIL: INFO@ACEENG.COM.AU				Project 51 KALANG ROAD, ELANORA HEIGHTS PROPOSED SHOP TOP HOUSING DEVELOPMENT STORMWATER CONCEPT PLAN DEVELOPMENT APPLICATION				Drawing Title MAINTENANCE SCHEDULE, OSD DETAILS AND CALCULATION SHEET			
A				ISSUE FOR DEVELOPMENT APPLICATION				06/10/2020				MD				EH				OC											
Issue		Description		Date		Designed		Engineer		Checked																					
A		Issue for development application		06/10/2020		MD		EH		OC																					

Filtration Unit Maintenance Schedule

Facility Component Requiring Maintenance	Maintenance Activity	When Maintenance Activity Is Required	Expected Facility Performance After Maintaining	INSPECTION/MINOR MAINTENANCE (TIMES/YEAR)	MAJOR MAINTENANCE (TIMES/YEAR)
StormFilter® Cartridges and Containment Structure	Trash and Debris Removal	Floatable objects or other trash is present in the filter. Remove to avoid hindrance of filtration and eliminate unsightly debris and trash.	Permanent removal from storm system.	2 (and after major storms)	1 (except in case of a spill)
	Cartridge Replacement and Sediment Removal	1. Media has been contaminated by high levels of pollutants, such as after a spill.	1. New media is able to effectively treat stormwater.	-	-
Drainage System Piping	Flushing With Water	Drainage system is obstructed by debris or sediment.	Outflow is not restricted.	-	-



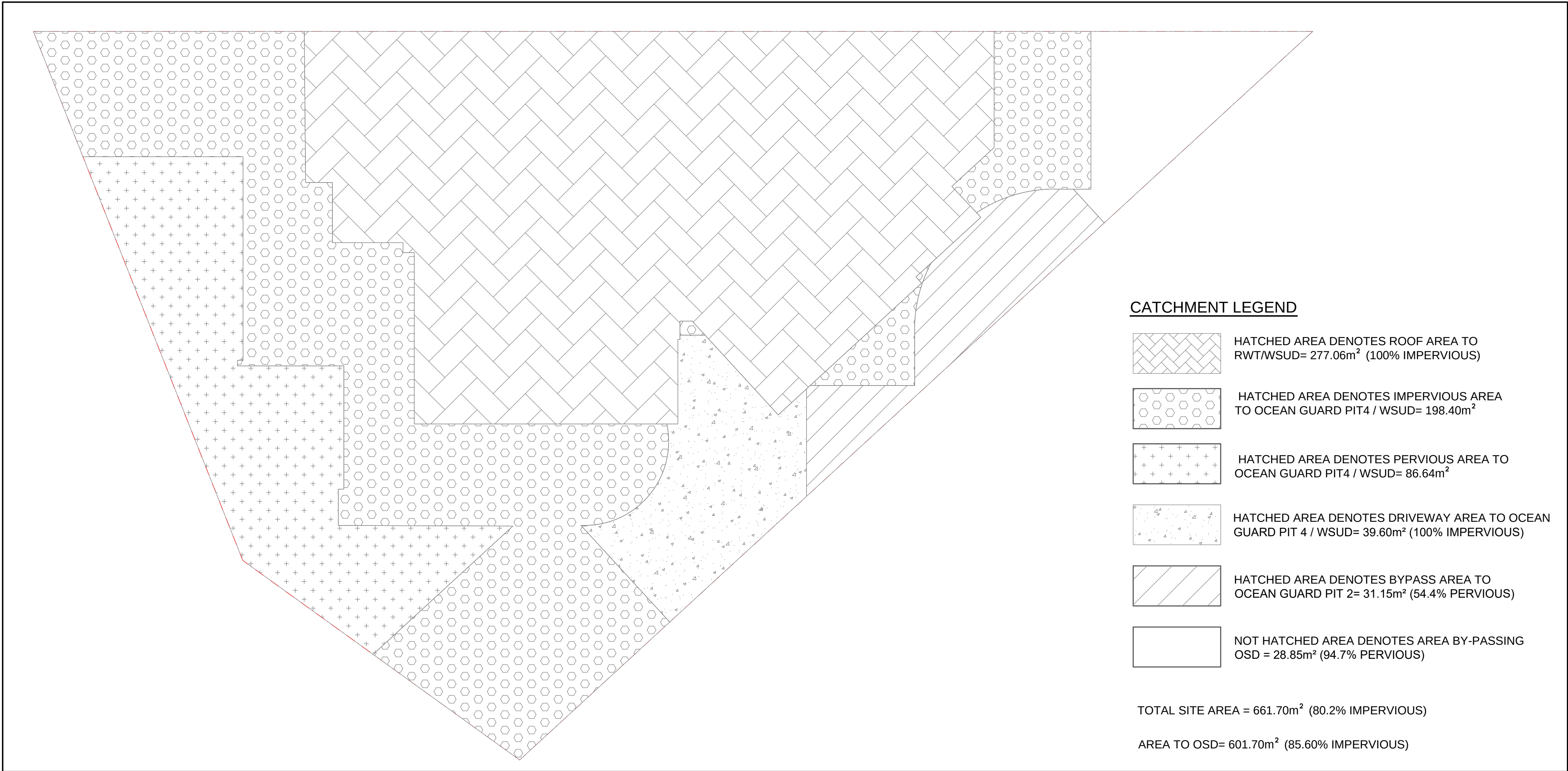
WSUD MUSIC RESULTS
N.T.S.



STORMFILTER CARTRIDGE
DETAIL

GENERAL NOTES

1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3600.
4. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTRROADS T44 LOAD RATING WITH 0.2m FILL MAXIMUM.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. STORMFILTER BY STORMWATER360:
SYDNEY (AU) PHONE: (02) 9525 5833.
BRISBANE (AU) PHONE: (07) 3272 1872.



CATCHMENT PLAN
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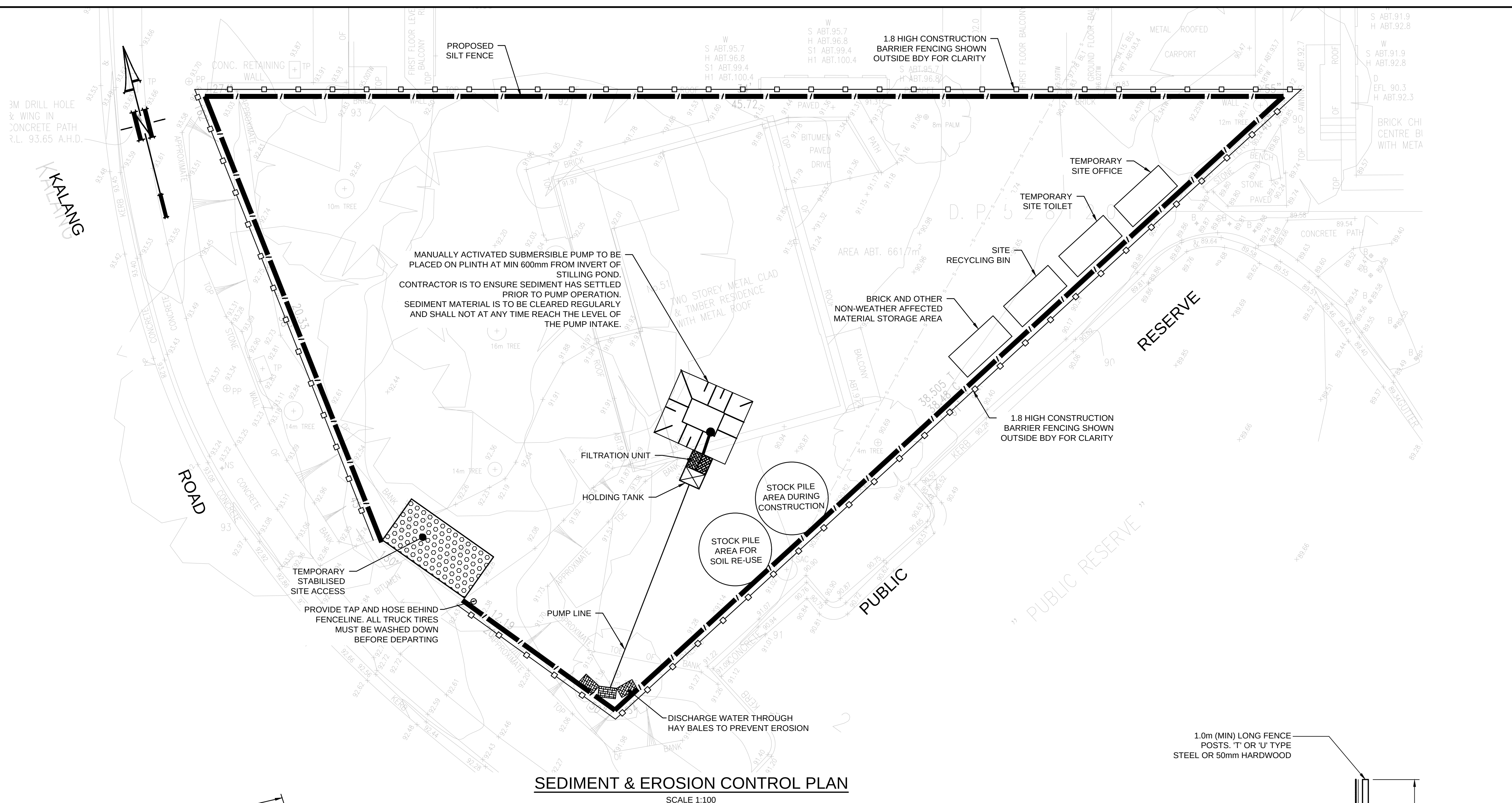
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 26.45
 X EL: 26.45
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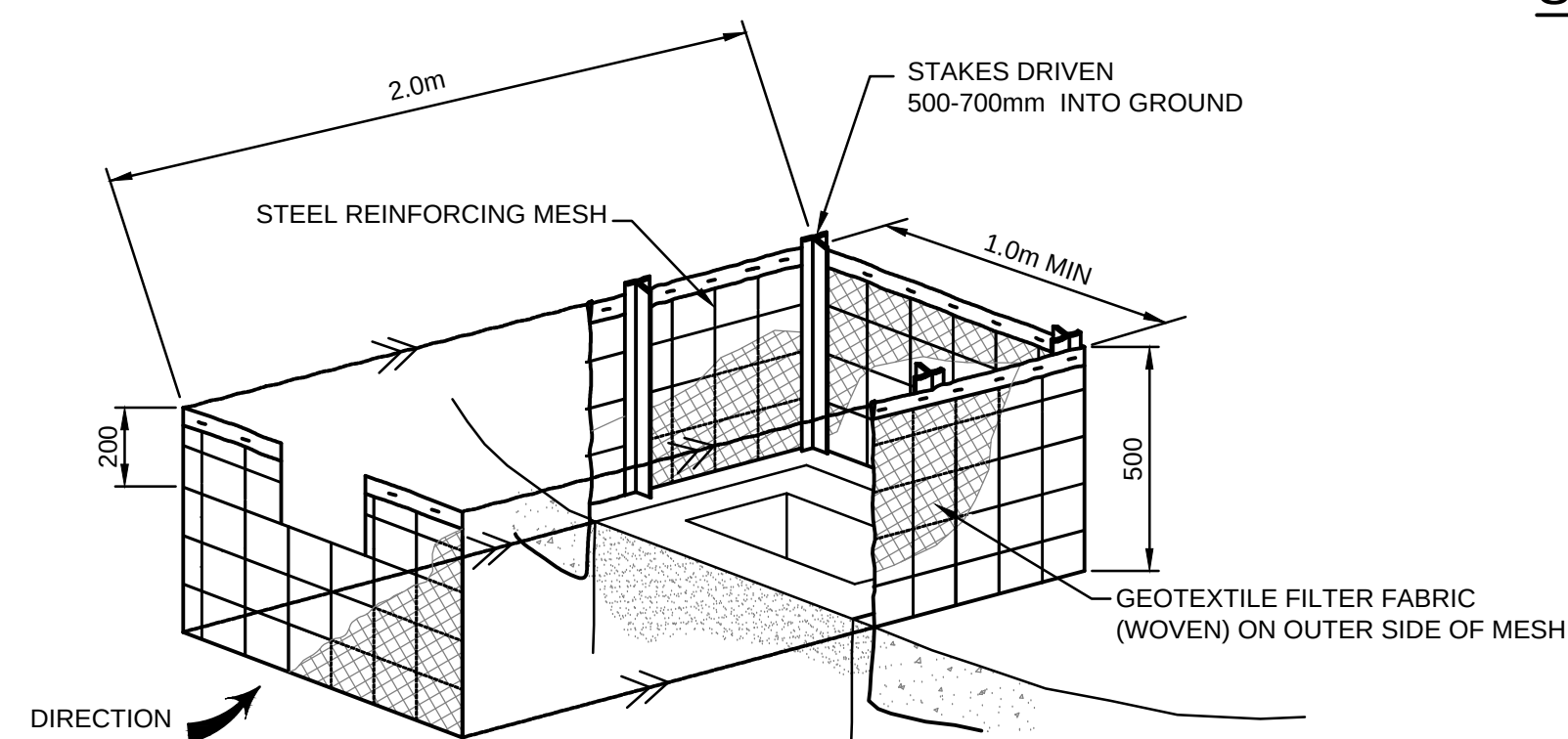
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EXISTING SURFACE LEVEL
 EARTHWORKS LEVEL
 DESIGN SURFACE LEVEL
 SILT FENCE
 STABILISED SITE ACCESS
 1.8 HIGH CONSTRUCTION BARRIER FENCING
 TREES TO BE RETAINED
 TREES TO BE REMOVED
 INLET PROTECTION

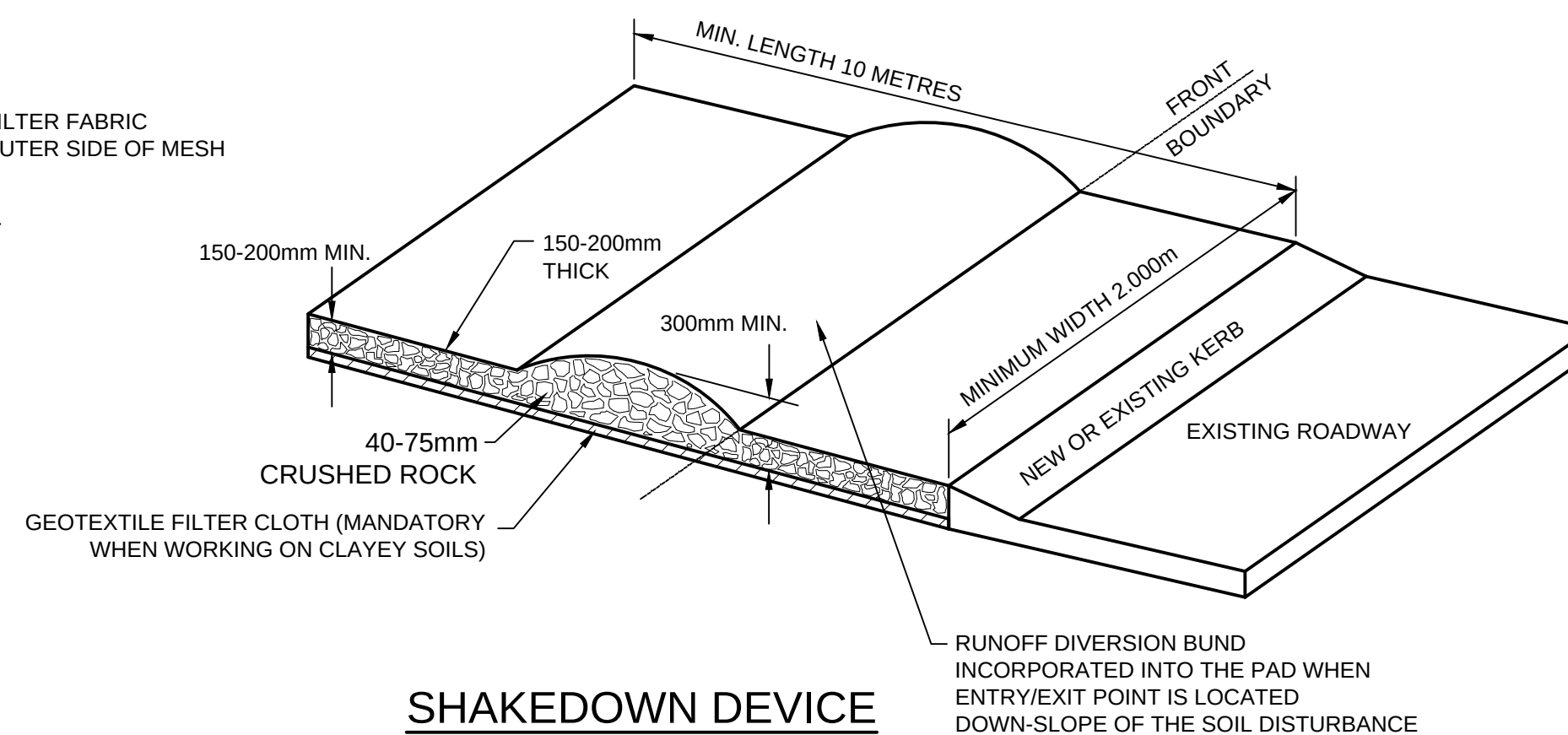
1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CLEARING OR EARTHWORKS AND MAINTAINED UNTIL THE WORKS ARE COMPLETED AND NO LONGER POSE AN EROSION HAZARD, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
2. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO IDENTIFY AND MARK TREES WHICH ARE TO BE PRESERVED. NOTWITHSTANDING THE ABOVE, THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO MINIMISE DISTURBANCE TO EXISTING VEGETATION AND GROUND COVER OUTSIDE THE MINIMUM AREAS REQUIRED TO COMPLETE THE WORKS AND SHALL BE RESPONSIBLE FOR RECTIFICATION, AT ITS OWN COST, OF ANY DISTURBANCE BEYOND THOSE AREAS.
3. PROVIDE GULLY GRATE INLET SEDIMENT TRAPS AT ALL GULLY PITS.
4. PROVIDE SILT FENCING ALONG PROPERTY LINE AS DIRECTED BY SUPERINTENDENT.
5. ADDITIONAL CONTROL DEVICES TO BE PLACED WHERE DIRECTED BY THE PRINCIPLE.
6. ALTERNATIVE DESIGNS TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION.
7. WASH DOWN/RUMBLE AREA TO BE CONSTRUCTED WITH PROVISIONS RESTRICTING ALL SILT AND TRAFFICKED DEBRIS FROM ENTERING THE STORMWATER SYSTEM.
8. NO WORK OR STOCKPILING OF MATERIALS TO BE PLACED OUTSIDE OF SITE WORK BOUNDARY.
9. APPROPRIATE EROSION AND SEDIMENT CONTROLS TO BE USED TO PROTECT STOCKPILES AND MAINTAINED THROUGH OUT CONSTRUCTION.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE DUE CARE OF NATURAL VEGETATION. NO CLEARING IS TO BE UNDERTAKEN WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT.
11. TO AVOID DISTURBANCE TO EXISTING TREES, EARTHWORKS WILL BE MODIFIED AS DIRECTED ON-SITE BY THE SUPERINTENDENT.
12. THE LOCATION OF EROSION AND SEDIMENTATION CONTROLS WILL BE DETERMINED ON SITE BY THE SUPERINTENDENT.
13. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.
14. ALL SETTING OUT IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO WORKS COMMENCING ON SITE. THE SUPERINTENDENT'S SURVEYOR SHALL PEG ALL ALLOTMENT BOUNDARIES, PROVIDE COORDINATE INFORMATION TO THESE PEGS AND PLACE BENCH MARKS. THE CONTRACTOR SHALL SET OUT THE WORKS FROM AND MAINTAIN THESE PEGS.
15. PLANS ARE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. EXACT MEASURES USED SHALL BE DETERMINED ON SITE IN CONJUNCTION WITH PROGRAM OF CONTRACTORS WORKS etc.



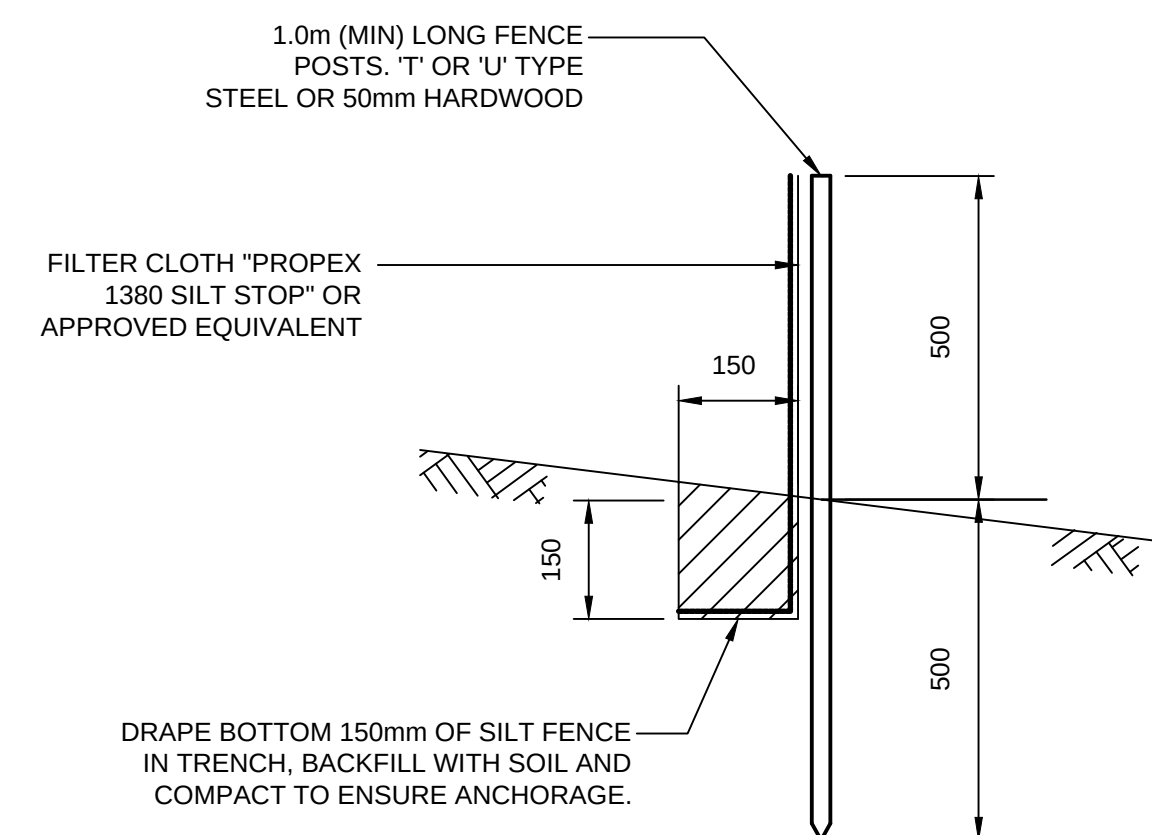
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N.T.S.



N.T.S.



N.T.S

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANIZED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.

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						Architect Fortey + Grant Architecture Suite 3/Level 1, 1141 Botany Lane Mascot NSW 2020 mob: 0401 822 223 email: james@fgarch.com.au		Council Northern Beaches Council		Scale  SCALE 1:100 @ A1		Certification By:  Anthony Hasham		 AUSTRALASIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941 LEVEL 4, 470 CHURCH STREET NORTH Parramatta NSW 2150 PH (02) 9763 1500 - FX (02) 9763 1515 EMAIL: info@aceeng.com.au		Project 51 KALANG ROAD, ELANORA HEIGHTS PROPOSED SHOP TOP HOUSING DEVELOPMENT STORMWATER CONCEPT PLAN DEVELOPMENT APPLICATION		Drawing Title SEDIMENT & EROSION CONTROL PLAN & DETAILS																									
<table><tr><td>A</td><td>ISSUE FOR DEVELOPMENT APPLICATION</td><td>06/10/2020</td><td>MD</td><td>EH</td><td>OC</td></tr><tr><td>Issue</td><td>Description</td><td>Date</td><td>Designed</td><td>Engineer</td><td>Checked</td></tr><tr><td colspan="6"> Scale 0 10m Scale 0 10m </td></tr></table>						A	ISSUE FOR DEVELOPMENT APPLICATION	06/10/2020	MD	EH	OC	Issue	Description	Date	Designed	Engineer	Checked	Scale 0 10m Scale 0 10m											<table><tr><td>Scale</td><td>A1</td><td>Project No.</td><td>Dwg. No.</td><td>Issue</td></tr><tr><td>As Shown</td><td></td><td>200870</td><td>107</td><td>A</td></tr></table>					Scale	A1	Project No.	Dwg. No.	Issue	As Shown		200870	107	A
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