

STORMWATER NOTES:

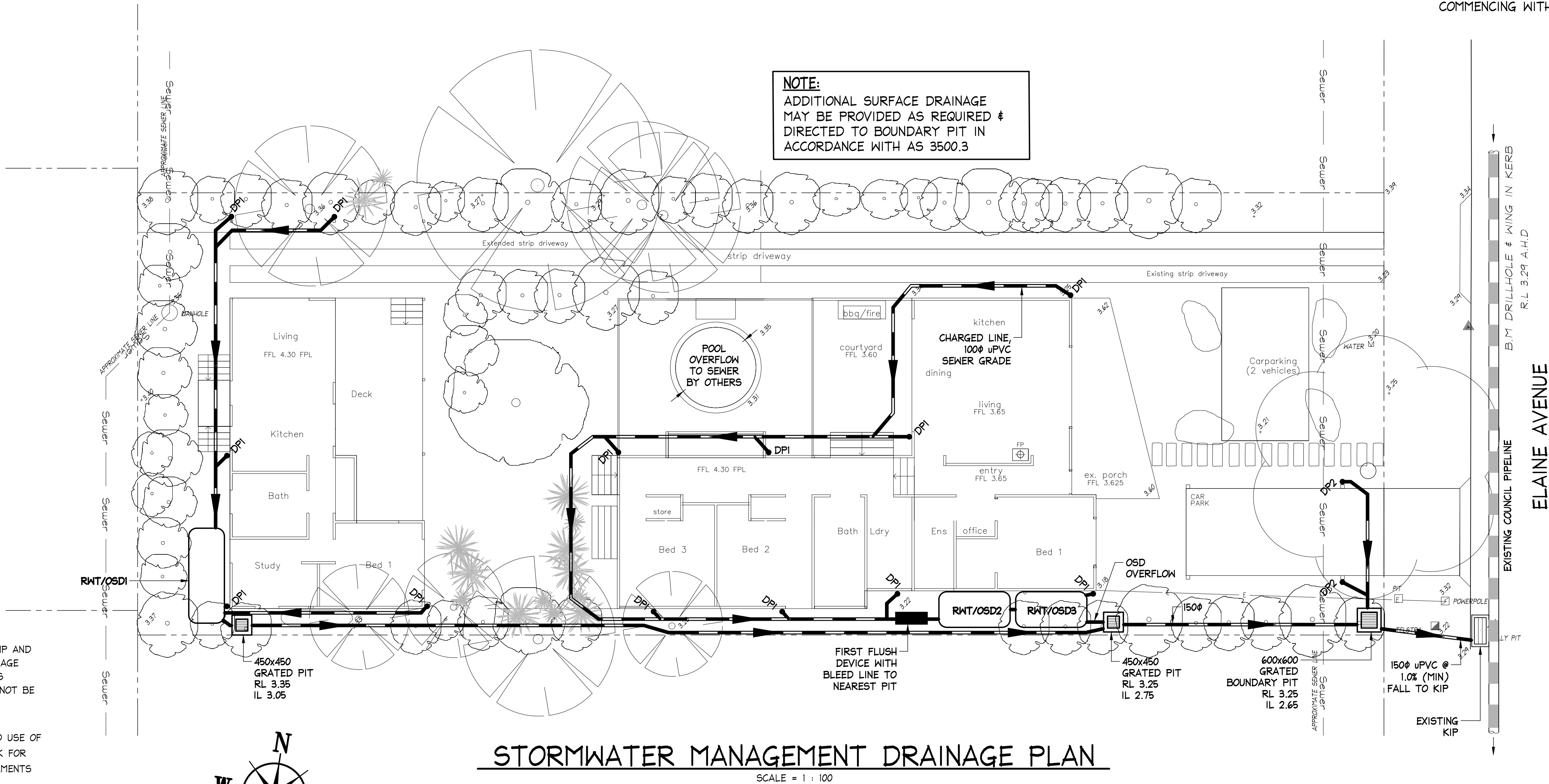
- 1 - ALL PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
- 2 - ALL PIPES TO BE uPVC TO AS 1254-2002 UNLESS NOTED OTHERWISE.
- 3 - ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
- 4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.
(NO COMPACTION 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.
- 5 - ALL DOWN PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
- 6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
- 7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- 8 - ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER.
CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE.
WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE.
CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
- 9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
- 10 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
- 11 - PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS.
ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
- 12 - ALL LEVELS SHOWN ARE TO AHD
- 13 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- 14 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
- 15 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-2003 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
- 16 - UNLESS NOTED OTHERWISE, SUB-SOIL 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.
- 17 - IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES.
- 18 - ORIFICE PLATE MUST BE INSTALLED PRIOR TO INSTALLATION OF THE ROOF DRAINAGE SYSTEM AND CONNECTION OF THE SITE STORMWATER SYSTEM TO THE ONSITE DETENTION TANK.
- 19 - THE BOUNDARY OR SILT ARRESTOR PIT SHOULD ALWAYS INCORPORATE A SUMP AND MAXI-MESH SCREEN AS PER LOCAL COUNCIL REQUIREMENTS. ALL OTHER DRAINAGE PITS WILL NOT REQUIRE A SUMP UNLESS SPECIFICALLY REQUIRED BY COUNCILS POLICY. IF THE SITE CONSISTS OF A CLAY OR ROCK SUBGRADE A SUMP MAY NOT BE REQUIRED. THE ENGINEER IS TO BE NOTIFIED.

RAINWATER RE-USE TANKS:

1. CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING A RAINWATER TANK FOR USE AS PER BASIX REQUIREMENTS, SYDNEY WATER AND NSW HEALTH REQUIRMENTS FOR NON DRINKING USE ONLY AS FOLLOWS:
a) AS PER BASIX REQUIREMENTS
2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
3. REFERENCES:
COOMBS P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE.
PATRICK DUPONT & STEVE SHACKEL, "RAINWATER"
AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS"
4. ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS TO BE IN ACCORDANCE WITH SYDNEY WATERS' GUIDE "INSTALLING A RAINWATER TANK"
AVAILABLE AT www.sydneywater.com.au
5. PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANING AND NATURAL RESOURCES.
6. IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100m² 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.
7. 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.
8. FIRST FLUSH DEVICES, OR APPROVED ALTERNATIVE, TO BE INSTALLED WITH AN AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS.
9. 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.
10. PRE-STORAGE PITS FOR UNDERGROUND RAINWATER STORAGE TANKS AND FLUSH OUT PITS MAY ASSIST IN LIMITING SILT, AND PREVENT VERMIN, INSECTS (INCLUDING MOSQUITOES) AND DEBRIS FROM ENTERING THE RAINWATER STORAGE AREA.
11. 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.
12. RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230-2008

NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.



STORMWATER MANAGEMENT DRAINAGE PLAN

SCALE = 1 : 100

LEGEND

- DPI • 100mm ϕ DOWNPIPE DISCHARGE TO RWT
- DP2 • 100mm ϕ DOWNPIPE DISCHARGE TO BOUNDARY PIT
- NEW STORMWATER PIPE
- EXISTING STORMWATER PIPE
- STORMWATER PIPE FLOW DIRECTION
- PIT
- GDI

RWT/OSDI

ABOVE GROUND RAINWATER / ONSITE DETENTION TANK
RAINWATER TO BE RE-USED AS PER BASIX,
LOCAL COUNCIL & SYDNEY WATER REQUIREMENTS
RWT VOLUME = 780 L, OSDI VOLUME = 6,700 L
(1.35m W x 3.6m L x 1.7m H, REFER DETAIL)

RWT/OSD2,
RWT/OSD3

ABOVE GROUND RAINWATER / ONSITE DETENTION TANKS
RAINWATER TO BE RE-USED AS PER BASIX,
LOCAL COUNCIL & SYDNEY WATER REQUIREMENTS
RWT VOLUME = 1,250 L (EACH)
OSD2 VOLUME = 4,850 L, OSD3 VOLUME = 4,850 L
(2 x 1.35m W x 3.0m L x 1.7m H, REFER DETAIL)

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

ONSITE DETENTION CALCULATIONS
ACCORDING TO PITTWATER 21

TOTAL SITE AREA	=	792 m ²
PROPOSED IMPERVIOUS AREA	=	435 m ² (20 %)
PRE DEVELOPED IMPERVIOUS AREA FROM "PITTWATER 21"	=	162 m ² (20 %)
REQUIRED RAINWATER TANK	=	3,200 L (BASIX)
PROVIDED RAINWATER TANK	=	3,300 L (BASIX)
REQUIRED OSD TANK	=	18,000 L
REDUCED OSD TANK	=	16,400 L
OSD DISCHARGE REQUIRED	=	9 l/s
ORIFICE 1	=	40 mm
ORIFICE 2	=	46 mm

NOTE:

STORMWATER DRAWINGS DO NOT INCLUDE SUBSOIL
AGRICULTURAL DRAINAGE DETAILS FOR D.A. SUBMISSION.
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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 OWN
SHOULD THEY DAMAGE UNDERGROUND NETWORK

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
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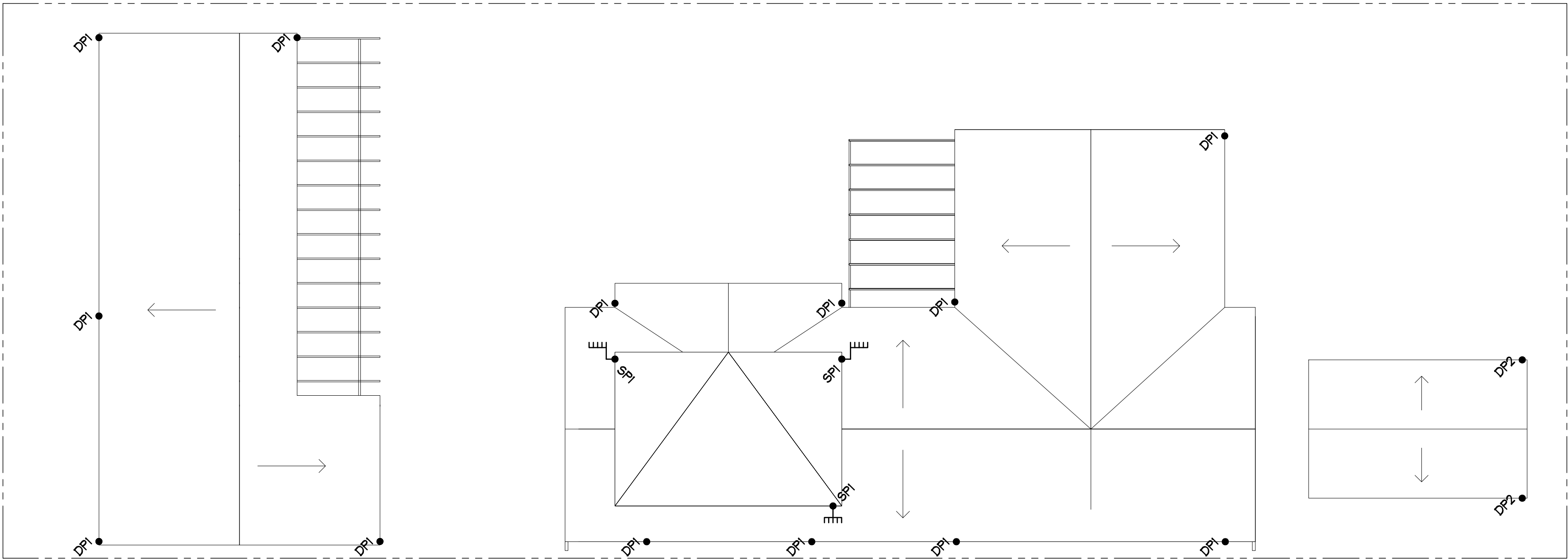
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				DOCUMENT CERTIFICATION	<div><div>NB Consulting Engineers</div><div>STRUCTURAL - CIVIL - STORMWATER - REMEDIAL A.C.N. 076 121 616 A.B.N. 24 076 121 616</div><div>Sydney: Ph: (02) 9984 7000 Fax: (02) 9984 7444 Suite 207, 30 Fisher Road Dee Why N.S.W. 2099 Gold Coast: Ph: (07) 5631 4744 Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220 E : nb@nbconsulting.com.au W : www.nbconsulting.com.au</div></div>	Architect:	Project:	Date:	Design:	Drawn:	Review:
				Date : 21.07.2016 Rick G Wray		MARKHAM-LEE ARCHITECTURE	ADDITIONS & ALTERATIONS 38 ELAINE AVENUE, AVALON	July 2016	RM	LS	CH
21.07.2016	B	RE-USED TANKS TO ARCHITECTS REQUEST	LS	BE(Civil), CPEng, MIEAust., NPER, RPEO: 08293, (Director NB Consulting Engineers)		Client:	Drawing Title:	Job No:		Drawing No:	Rev:
14.07.2016	A	ISSUE FOR D.A. SUBMISSION ONLY	LS	The copyright of this drawing remains with Northern Beaches Consulting Engineers Pty Ltd. Trading as NB Consulting Engineers		PETER BOSLEY	STORMWATER MANAGEMENT DRAINAGE PLAN & NOTES	160572		D01	B
Date:	Rev:	Amendment:	By:								

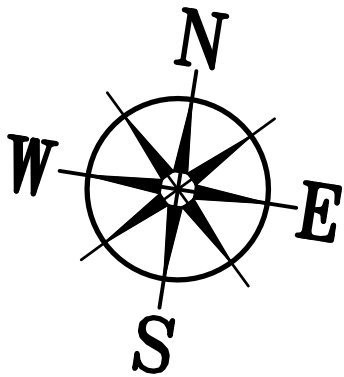
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1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
 2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: D01.



ROOF DRAINAGE PLAN

SCALE = 1 : 100



LEGEND

- DP1 • 100mm Ø DOWNPIPE DISCHARGE TO RW
- DP2 • 100mm Ø DOWNPIPE DISCHARGE TO BOUNDARY PIT
- SP • E 100mm Ø DOWNPIPE WITH SPREADER

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

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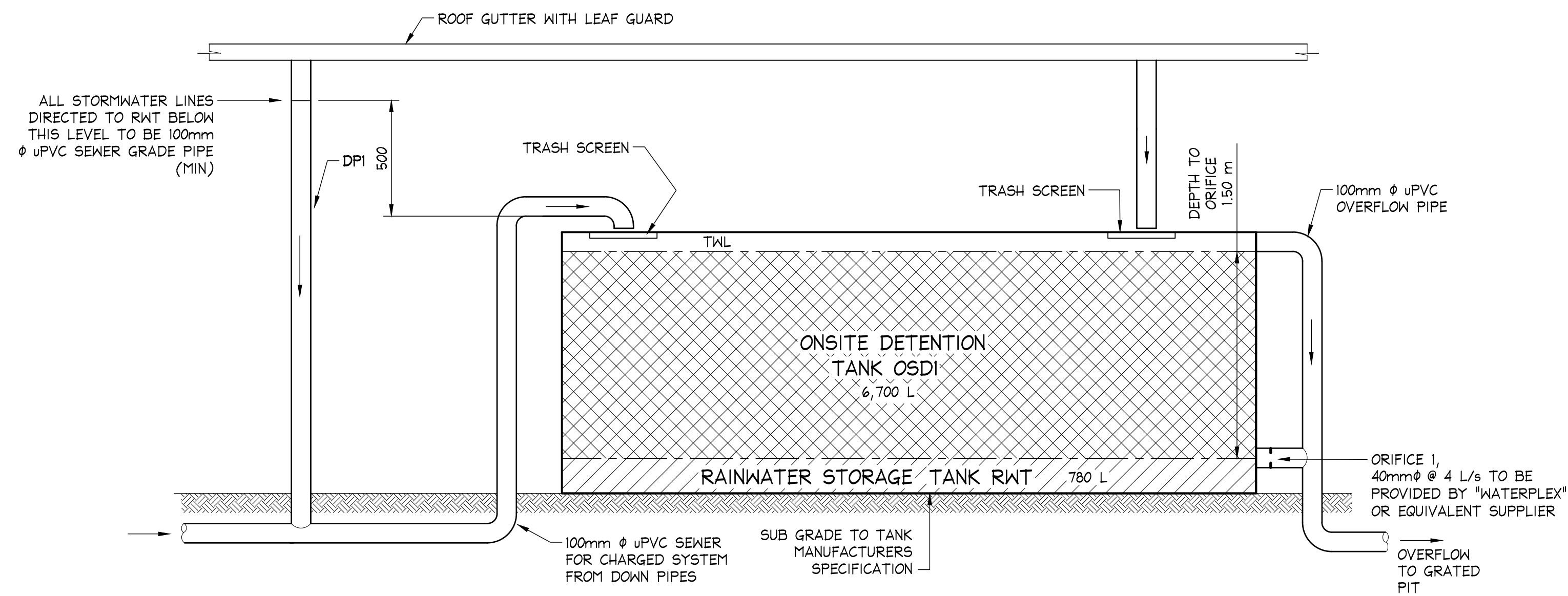
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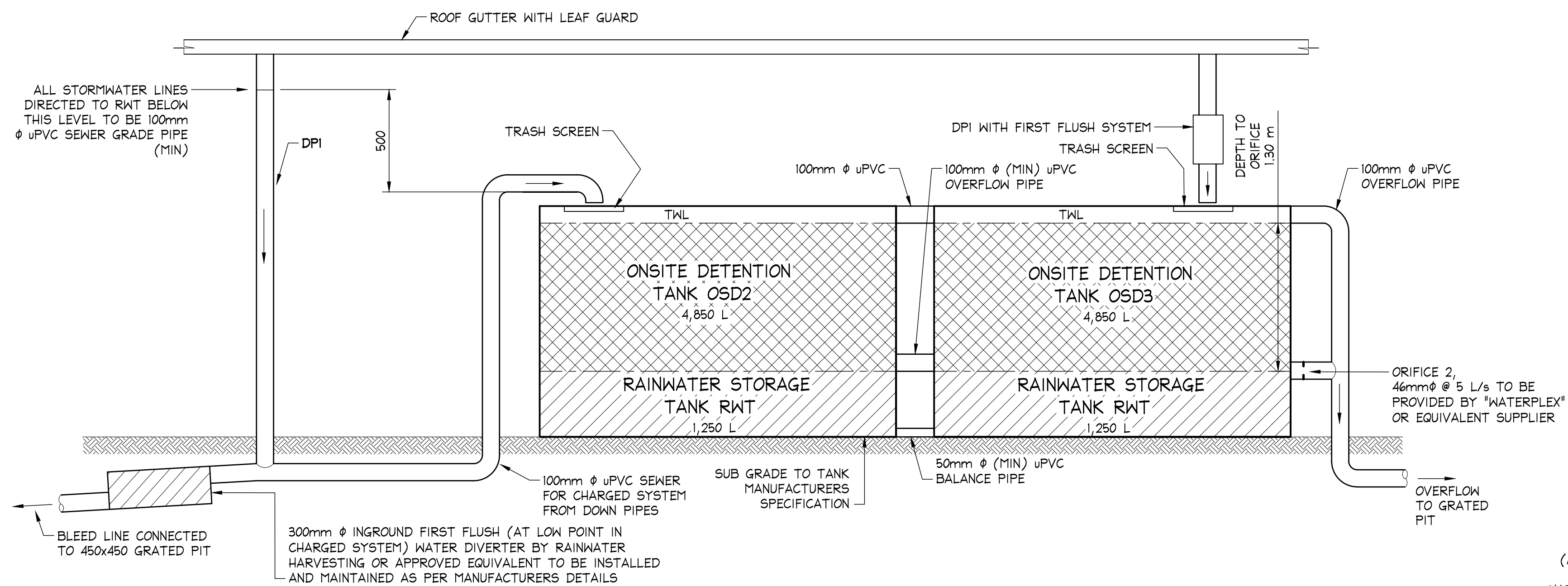
				DOCUMENT CERTIFICATION	NB Consulting Engineers STRUCTURAL - CIVIL - STORMWATER - REMEDIAL A.C.N. 076 121 616 A.B.N. 24 076 121 616 Sydney: Ph: (02) 9984 7000 Fax: (02) 9984 7444 Suite 207, 30 Fisher Road Dee Why N.S.W. 2099 Gold Coast: Ph: (07) 5631 4744 Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220 E : nb@nbconsulting.com.au W : www.nbconsulting.com.au	Architect: MARKHAM-LEE ARCHITECTURE	Project: ADDITIONS & ALTERATIONS 38 ELAINE AVENUE, AVALON	Date: July 2016	Design: RM	Drawn: LS	Review: CH
21.07.2016	B	RE-USED TANKS TO ARCHITECTS REQUEST	LS	Date : 21.07.2016 Rick G Wray	By: The copyright of this drawing remains with Northern Beaches Consulting Engineers Pty Ltd. Trading as NB Consulting Engineers	Client: PETER BOSLEY	Drawing Title: ROOF DRAINAGE PLAN	Job No: 160572	Drawing No: D02	Rev: B	
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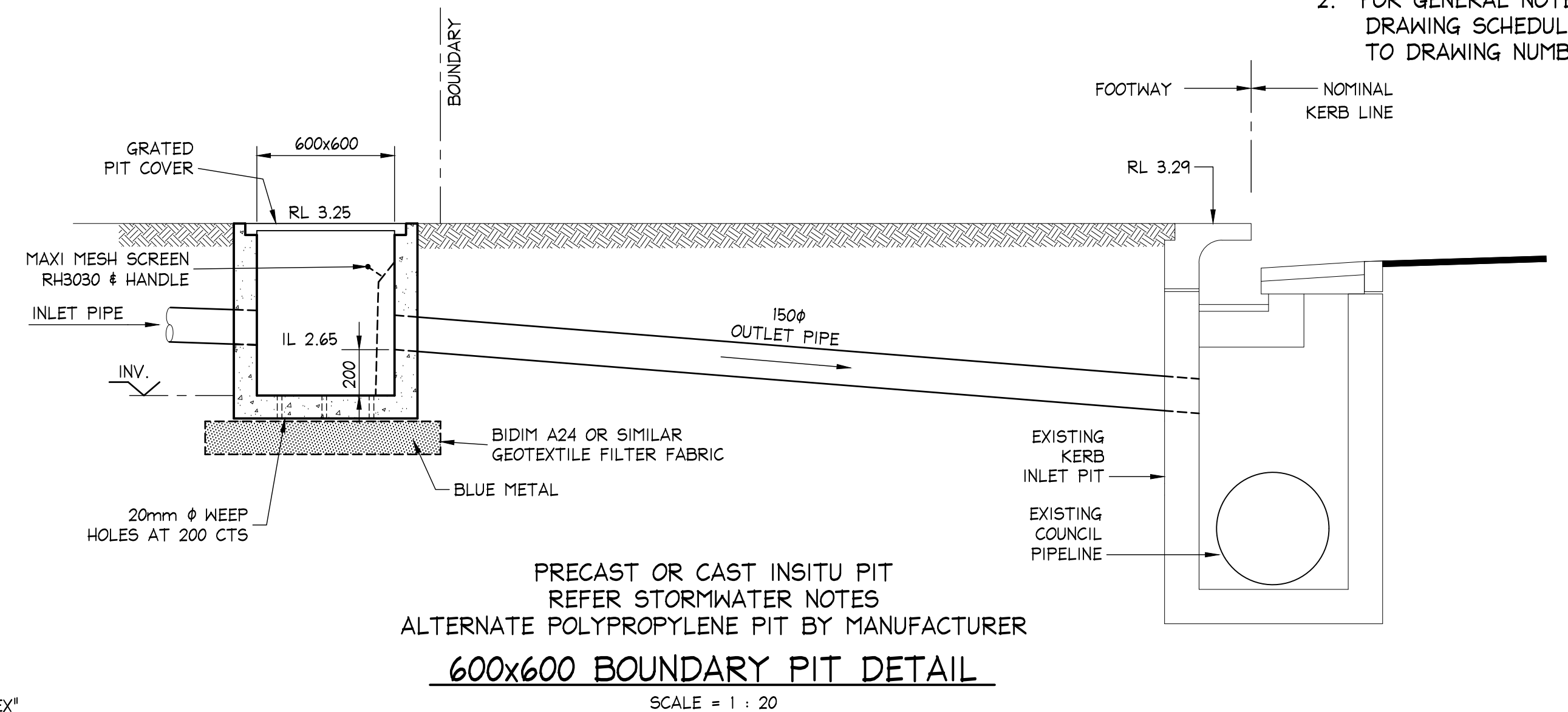
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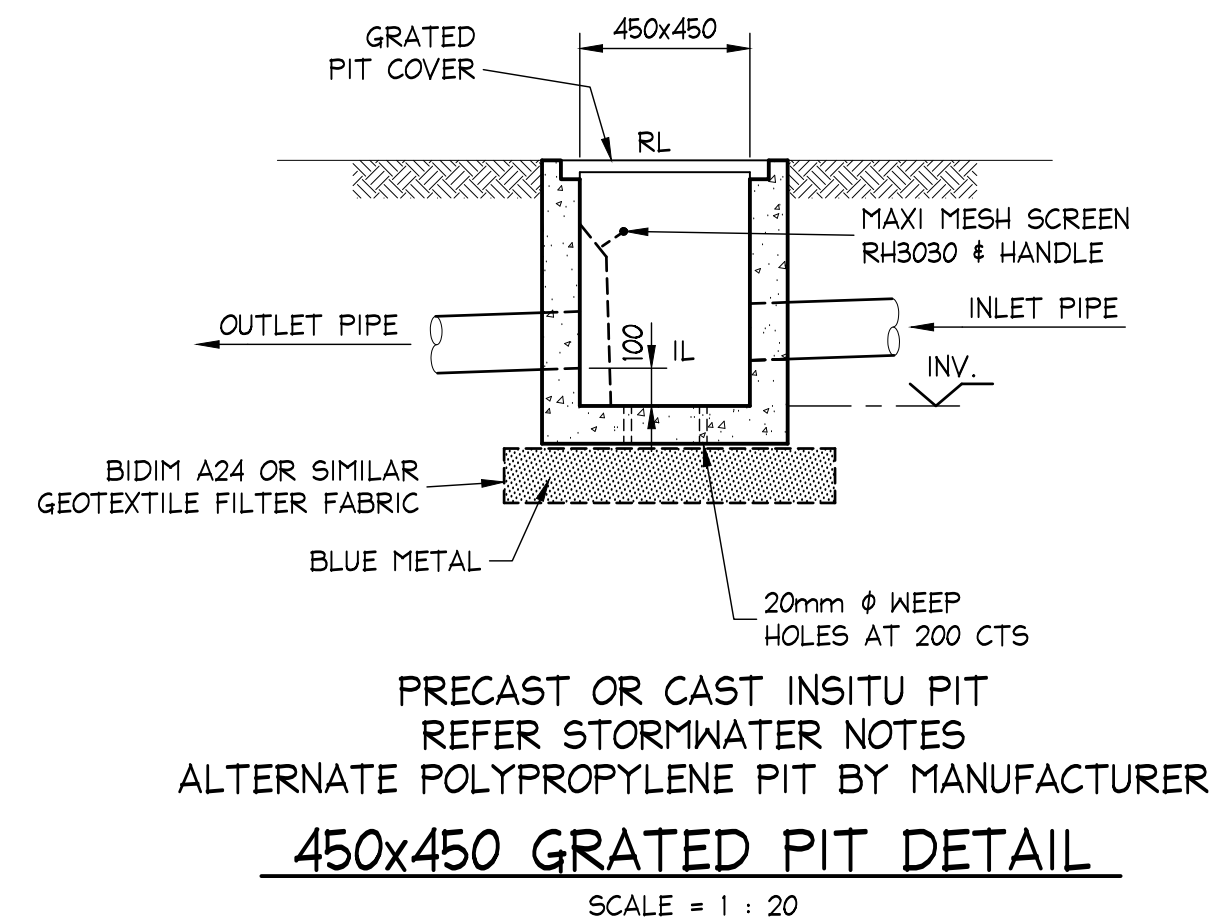
RAINWATER / ONSITE DETENTION TANK SECTION - RWT/OSD 1
NOT TO SCALE



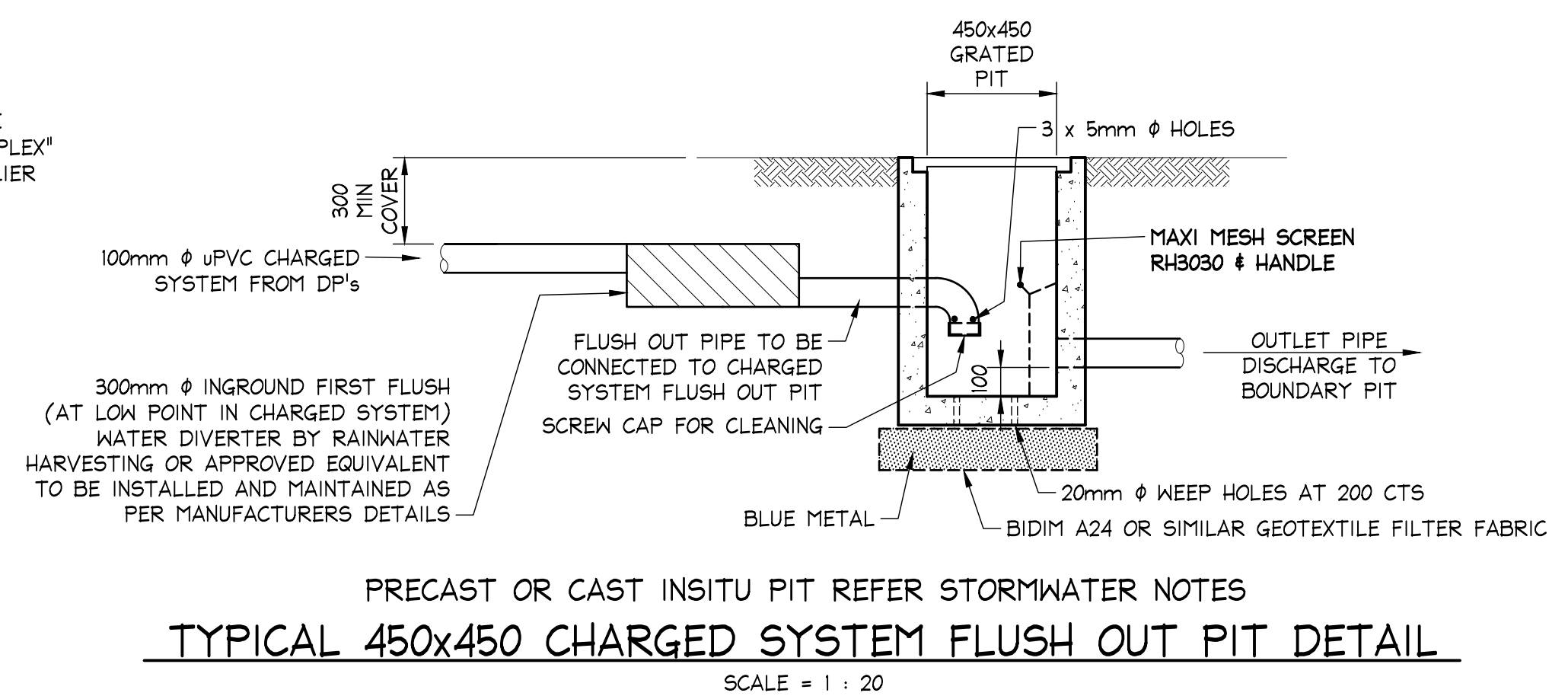
RAINWATER / ONSITE DETENTION TANK SECTION - RWT/OSD 2 & 3
NOT TO SCALE



600x600 BOUNDARY PIT DETAIL
SCALE = 1 : 20



450x450 GRATED PIT DETAIL
SCALE = 1 : 20



TYPICAL 450x450 CHARGED SYSTEM FLUSH OUT PIT DETAIL
SCALE = 1 : 20

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