

# STORMWATER MANAGEMENT

## 19 DRESS CIRCLE ROAD, AVALON BEACH

### GENERAL

- ANY DEVIATIONS FROM LEVELS AND DETAILS SHOWN WITHIN THIS PACKAGE TO BE CONSULTED WITH THE ENGINEER CONSULTANT PRIOR TO ON-SITE CHANGES BEING MADE.
- ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL COUNCIL ENGINEERING SPECIFICATIONS.
- FINAL LOCATION OF NEW DOWNPIPES TO BE DETERMINED BY BUILDER/ARCHITECT AT TIME OF CONSTRUCTION.
- THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTS AND OTHER CONSULTANT DRAWINGS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER BEFORE PROCEEDING.
- INSPECTIONS BY THE CERTIFYING AUTHORITY SHALL BE CARRIED OUT FOR ALL THE CIVIL WORKS PRIOR TO RELEASE OF THE HOLD POINTS INCLUDING THE FOLLOWING STAGES:
  - PRIOR TO INSTALLATION OF EROSION AND SEDIMENT CONTROL STRUCTURES
  - FINAL INSPECTION AFTER ALL WORKS ARE COMPLETED AND 'WORK AS EXECUTED' PLANS HAVE BEEN SUBMITTED TO COUNCIL
- MAKE SMOOTH JUNCTIONS WITH EXISTING WORKS.
- NO WORK TO BE CARRIED OUT ON COUNCIL PROPERTY OR ADJOINING PROPERTIES WITHOUT THE WRITTEN PERMISSION FROM THE OWNER/S.
- VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION.
- ALL RUBBISH, BUILDINGS, SHEDS AND FENCES TO BE REMOVED TO SATISFACTION OF COUNCIL'S ENGINEER.
- THE CONTRACTOR SHALL OBTAIN ALL LEVELS FROM ESTABLISHED BENCH MARKS ONLY.

### WARNING BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site.  
No guarantee is given that all existing services are shown.  
Locate all underground services before commencement of works  
**DIAL 1100 BEFORE YOU DIG**  
www.1100.com.au

### EXISTING UNDERGROUND SERVICES NOTES

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.

### SITWORKS NOTES

- ORIGIN OF LEVELS:- REFER SURVEY NOTES.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO THE CIVIL CONSULTANT.
- MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
- ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
- BASE AND SUB-BASE LAYERS ARE TO BE INSPECTED AND TESTED BY AN INDEPENDENT GEOTECHNICAL TESTING AUTHORITY TO LEVEL 1 RESPONSIBILITY AS DEFINED IN AS3798.
- ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m<sup>3</sup> OF BASECOURSE MATERIAL PLACED.
- ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m<sup>3</sup> OF SUB-BASE COURSE MATERIAL PLACED.
- SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
- WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.

### STORMWATER DRAINAGE NOTES

- ALL PIPES ON DRAWINGS TO BE MIN 1% GRADE UNLESS NOTED OTHERWISE.
- ALL DOWNPIPES TO BE 100Ø PVC UNLESS NOTED OTHERWISE.
- PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS 'Z' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
- PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
- EQUIVALENT STRENGTH FRC PIPES MAY BE USED.
- ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
- PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
- ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
- PIPES TO BE INSTALLED TO TYPE H51 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
- REFER TO AS/NZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
- WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS.
- ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2018) AND AS/NZS 3500 3.2 (2018).
- ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
- WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
- CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
- GRATES AND COVERS SHALL CONFORM TO AS 3996.
- ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
- AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
- ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TABLE 7.1  
MINIMUM PIPE COVER  
(from finished surface to top of pipe)

Location	millimetres	
	Cast iron, ductile iron, galvanized steel	Other authorized* products
Minimum cover		
1 Not subject to vehicular loading:		
(a) without pavement—		
(i) for single dwellings	Nil	100
(ii) for other than Item (i)	Nil	300
(b) with pavement of brick or unreinforced concrete	Nil†	50†
2 Subject to vehicular loading:		
(a) other than roads—		
(i) without pavement	300	450
(ii) with pavement of—		
(A) reinforced concrete for heavy vehicular loading	Nil‡	100‡
(B) brick or unreinforced concrete for light vehicular loading	Nil‡	75‡
(b) roads—		
(i) sealed	300	500‡
(ii) unsealed	300	500‡
3 Subject to construction equipment loading or in embankment conditions	300	500‡

\* Includes overlay above the top of the pipe of not less than 50 mm thick.  
† Below the underside of the pavement.  
‡ Subject to compliance with AS 1762, AS 2033, AS/NZS 2566.1, AS 3725 or AS 4060.

AS3500.3

### MINIMUM GRADIENT OF SITE STORMWATER DRAINS

Nominal size	Minimum gradient		Nominal size	Minimum gradient	
	Aust.	NZ		DN	Aust.
DN 90	1:100	1:90	225	1:200	1:350
100	1:100	1:120	300	1:250	1:350
150	1:100	1:200	375	1:300	1:350

AS3500.3

### MINIMUM INTERNAL DIMENSIONS FOR STORMWATER AND INLET PITS

Depth to invert of outlet	Minimum internal dimensions mm		
	Rectangular		Circular
	Width	Length	Diameter
≤600	450	450	600
>600 ≤900	600	600	900
>900 ≤1200	600	900	1 000
> 1 200	900	900	1 000

AS3500.3

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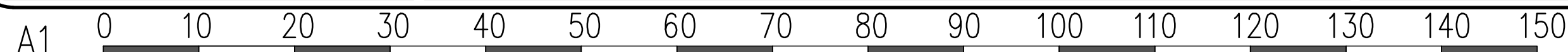
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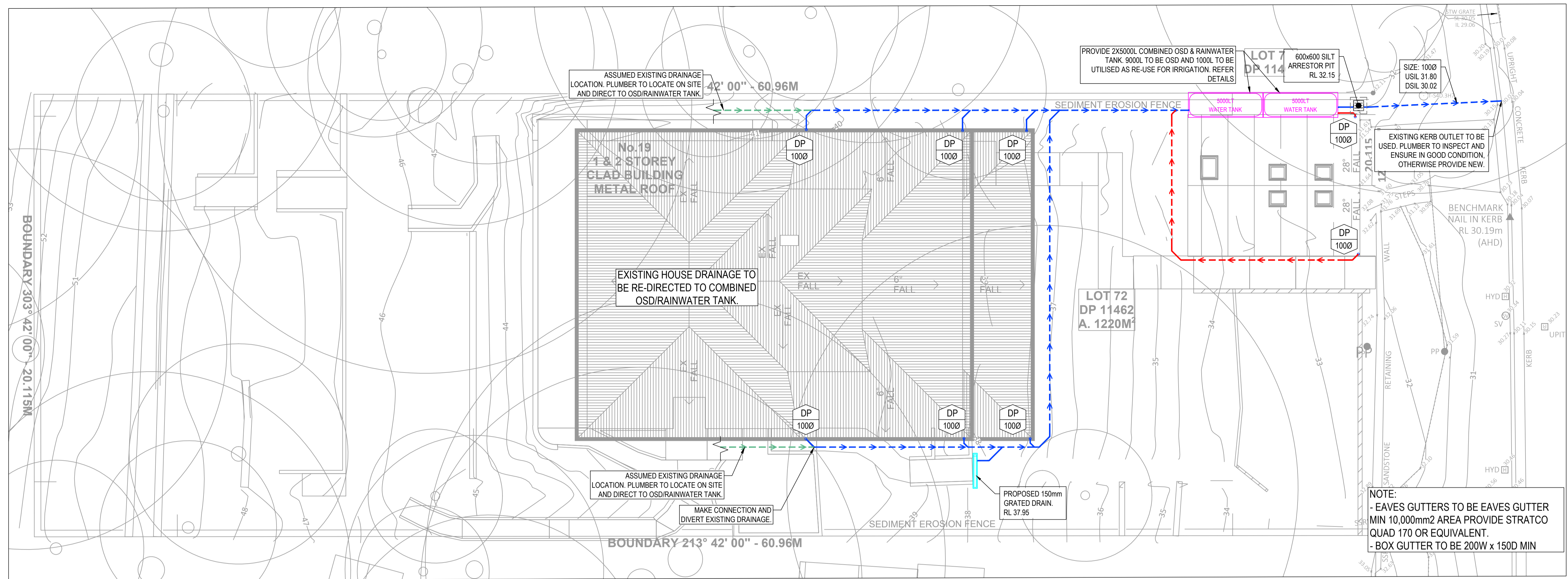
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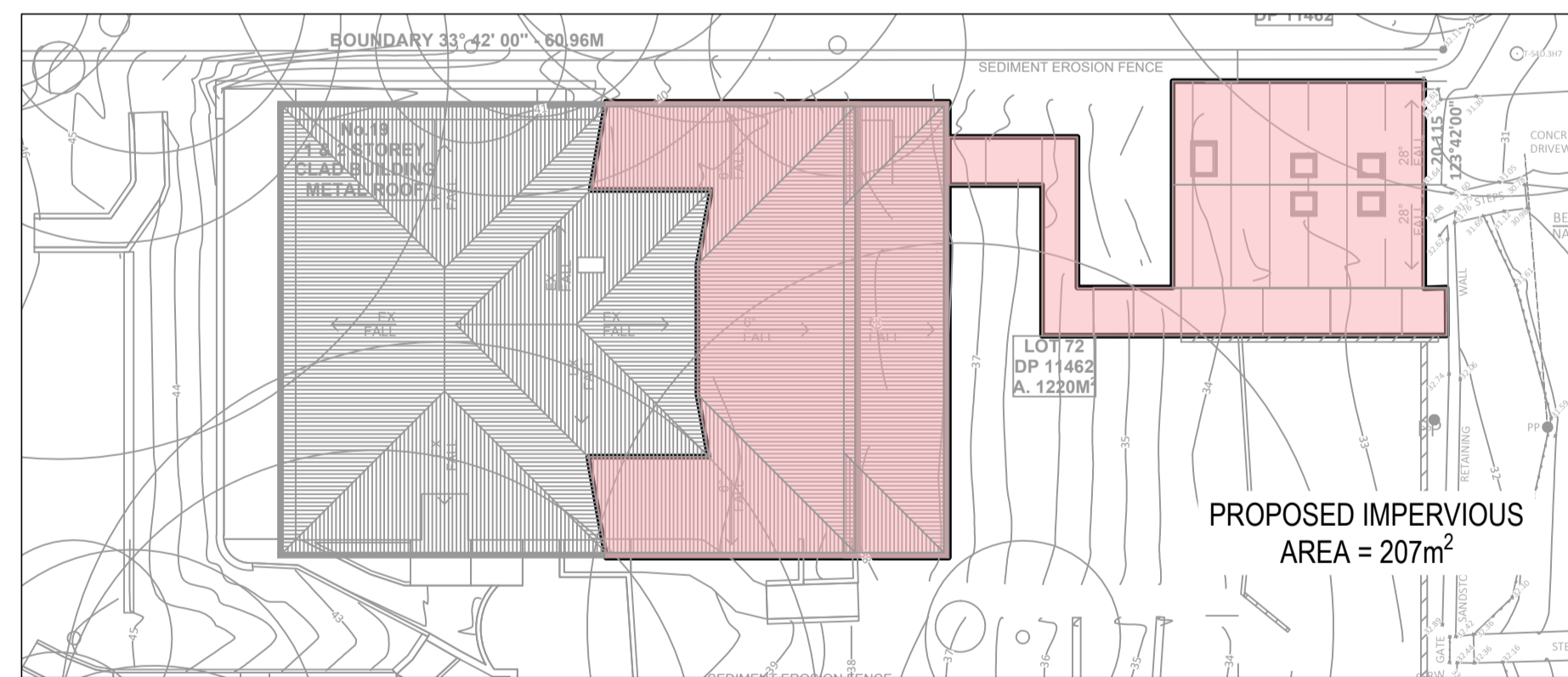
CLIENT	MATHEW & POLLYANNA HAYWARD
PROJECT	19 DRESS CIRCLE ROAD AVALON BEACH

TITLE	COVER SHEET		DESIGN	DRAWN
			M.A.	M.A.
ISSUED FOR	PROJECT NUMBER	DRAWING NO.		
FOR APPROVAL	23 H 325	SW 00		

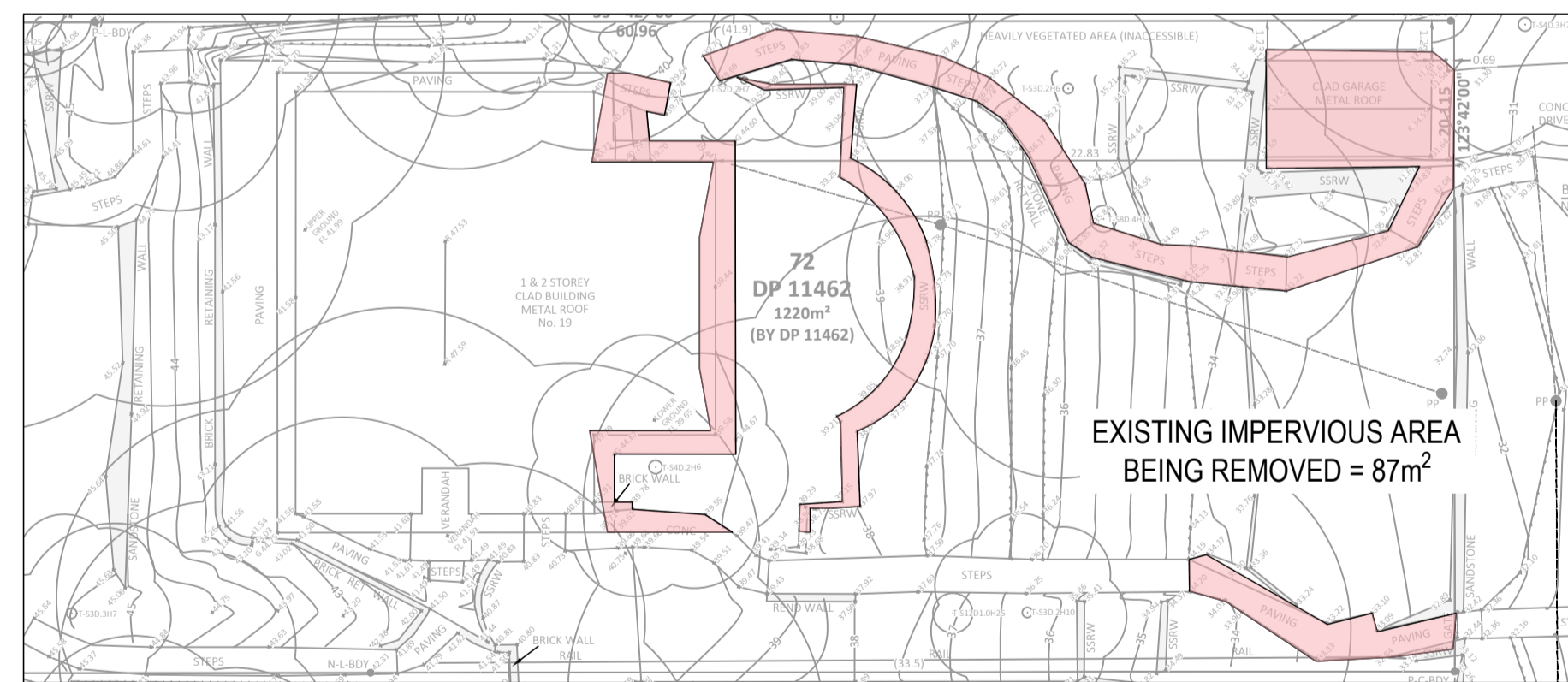




**STORMWATER PLAN**  
SCALE 1:100



**POST DEVELOPMENT CATCHMENT PLAN**  
SCALE 1:200



**PRE DEVELOPMENT CATCHMENT PLAN**  
SCALE 1:200

LEGEND	
	GRAVITY PIPE (TO BE Ø100 @ 1% MIN UNO)
	CHARGED PIPE TO RW/OSD (TO BE Ø100 UNO)
	EXISTING DRAINAGE PIPE
	GRATED DRAIN
	DOWNPIPE SIZE
	DRAINAGE PIT
	INSPECTION RISER

**DESIGN NOTES**

SITE IS LOCATED IN NORTHERN BEACHES COUNCIL

THE SITE IS LOCATED IN REGION 1

THE PROPOSED WORKS IS >50m² IMPERVIOUS AREA.

TOTAL INCREASE IN IMPERVIOUS AREA = 120m² (REFER CATCHMENT PLAN)

THEREFORE IN ACCORDANCE WITH TABLE 7 OSD SIZE = 9000L DISCHARGE RATE = 4L/S

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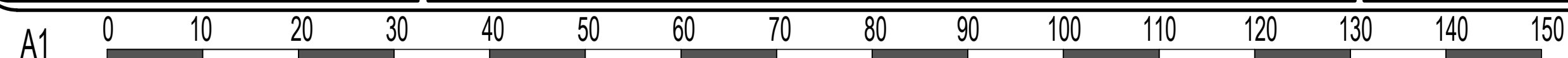
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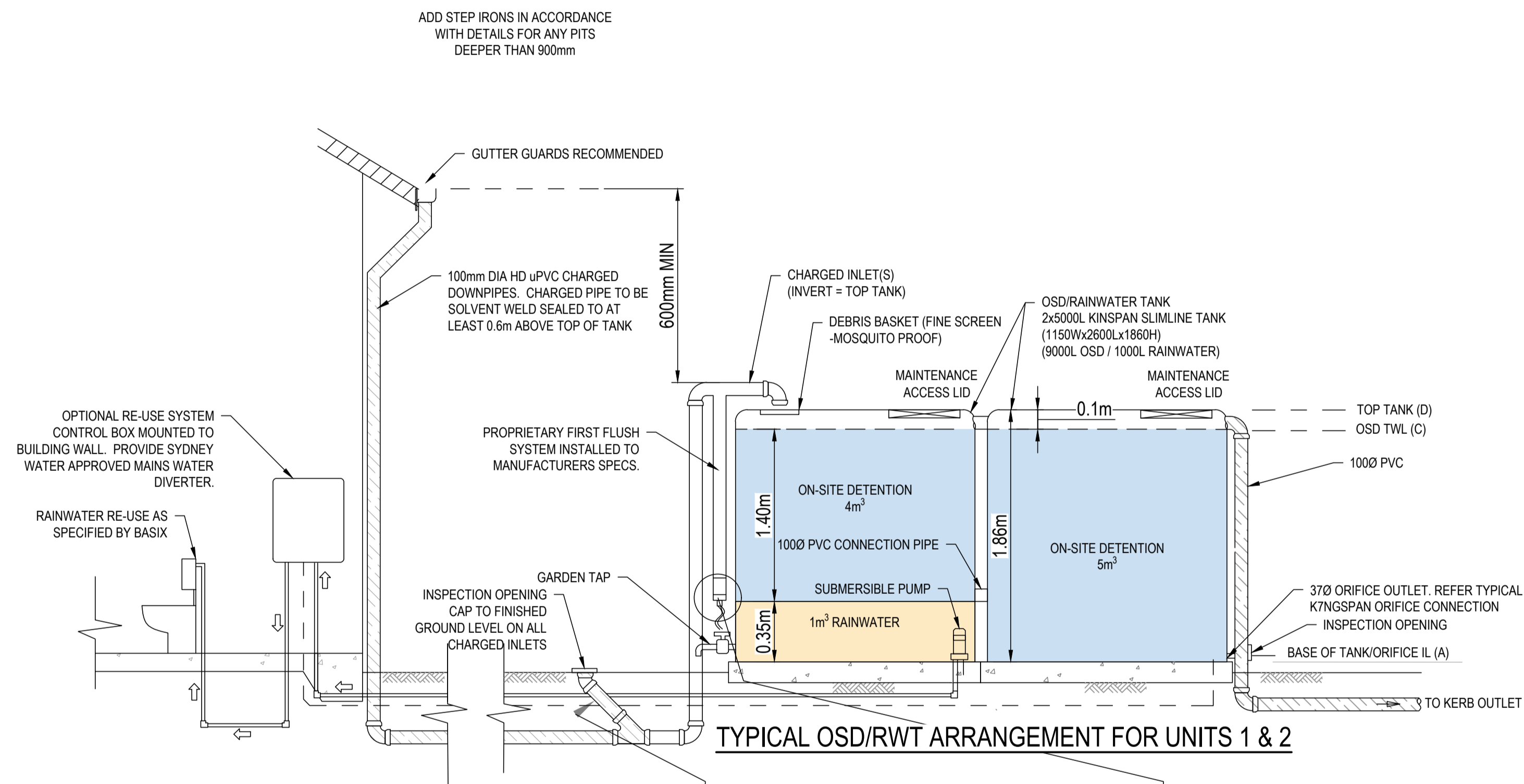
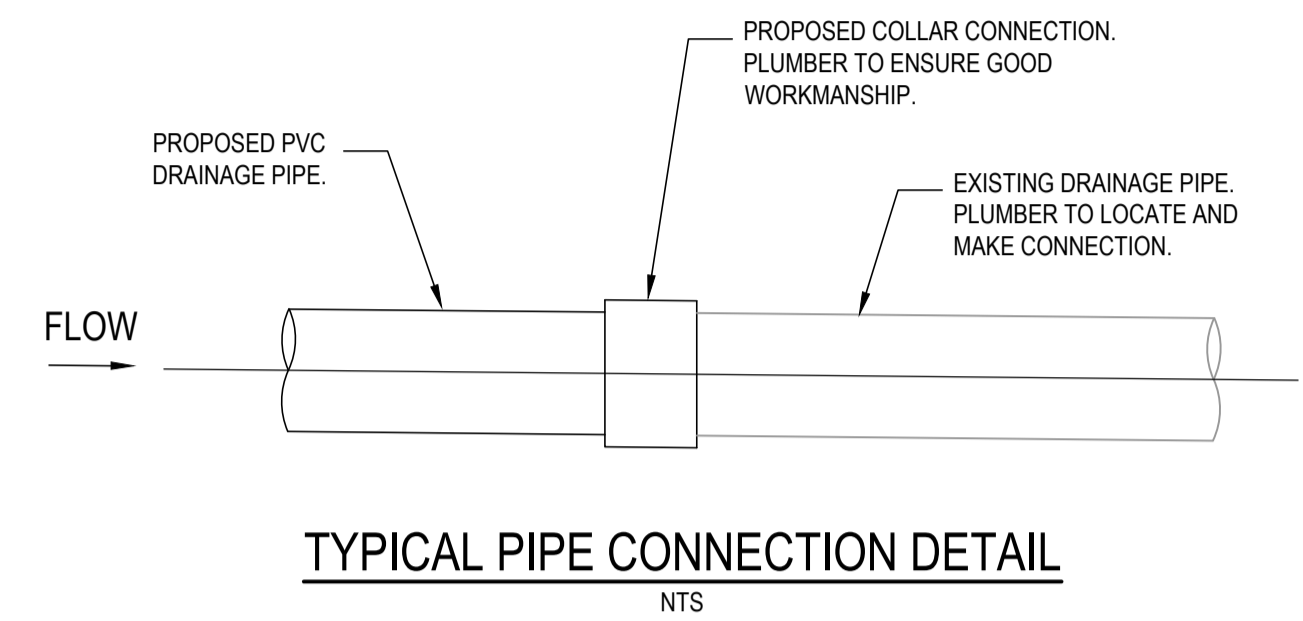
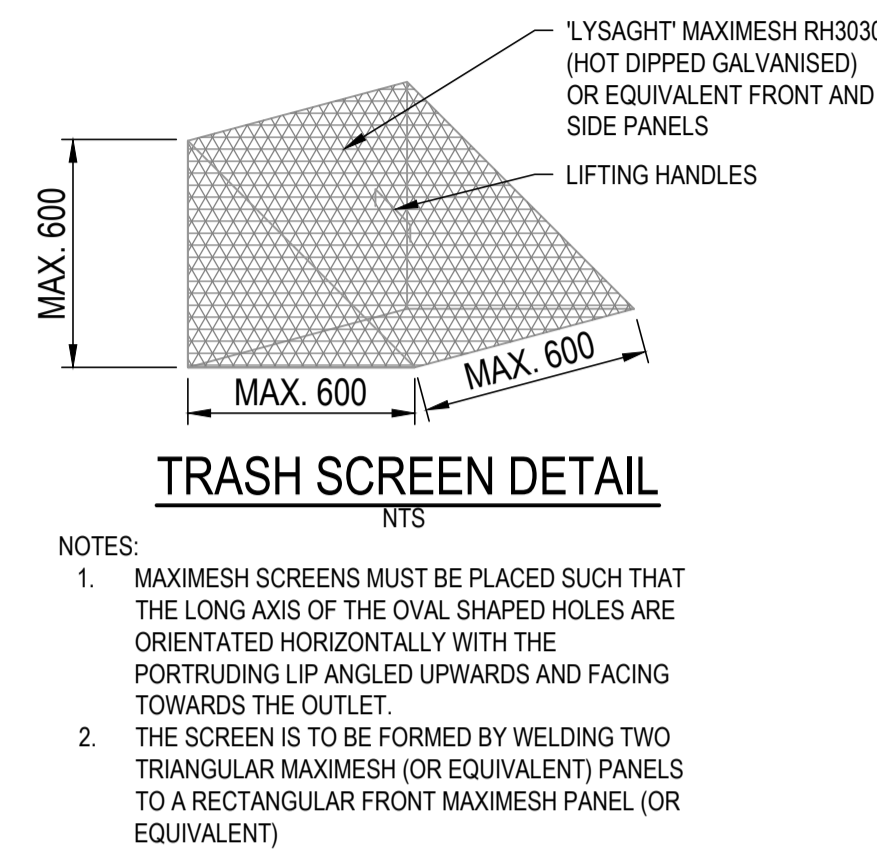
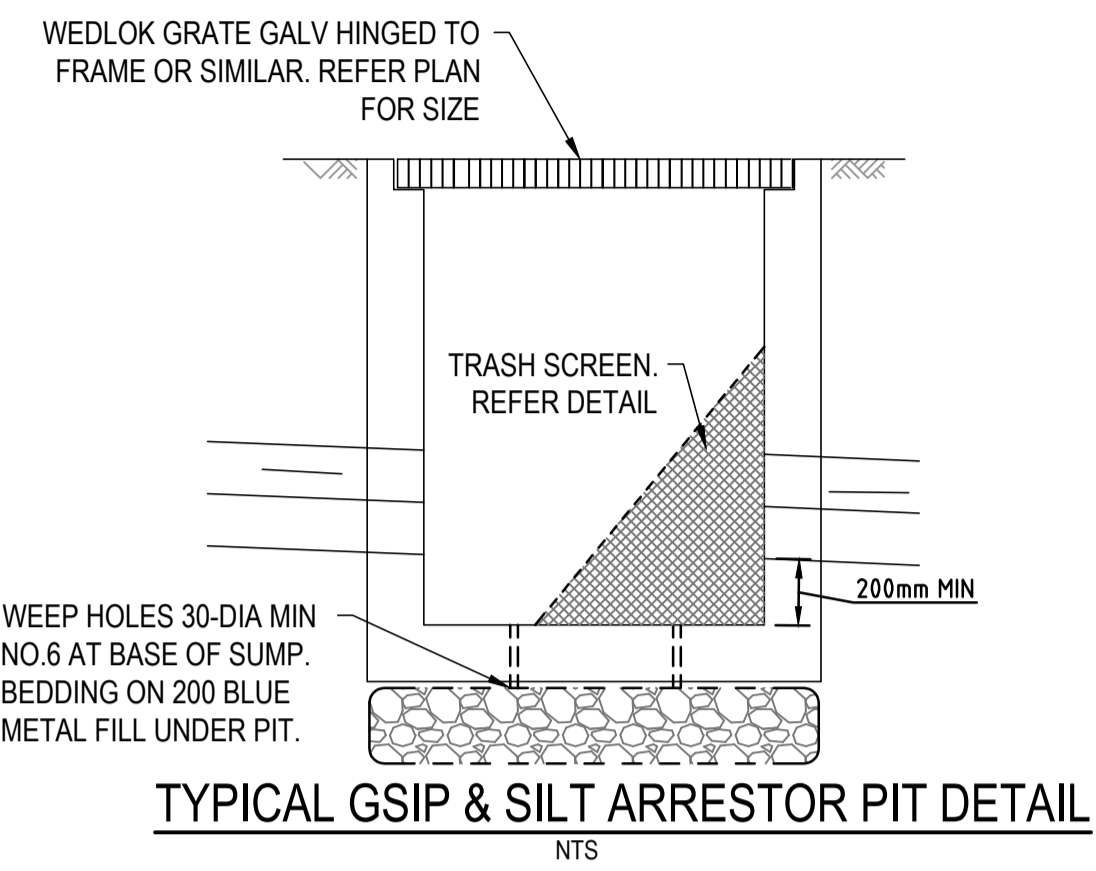
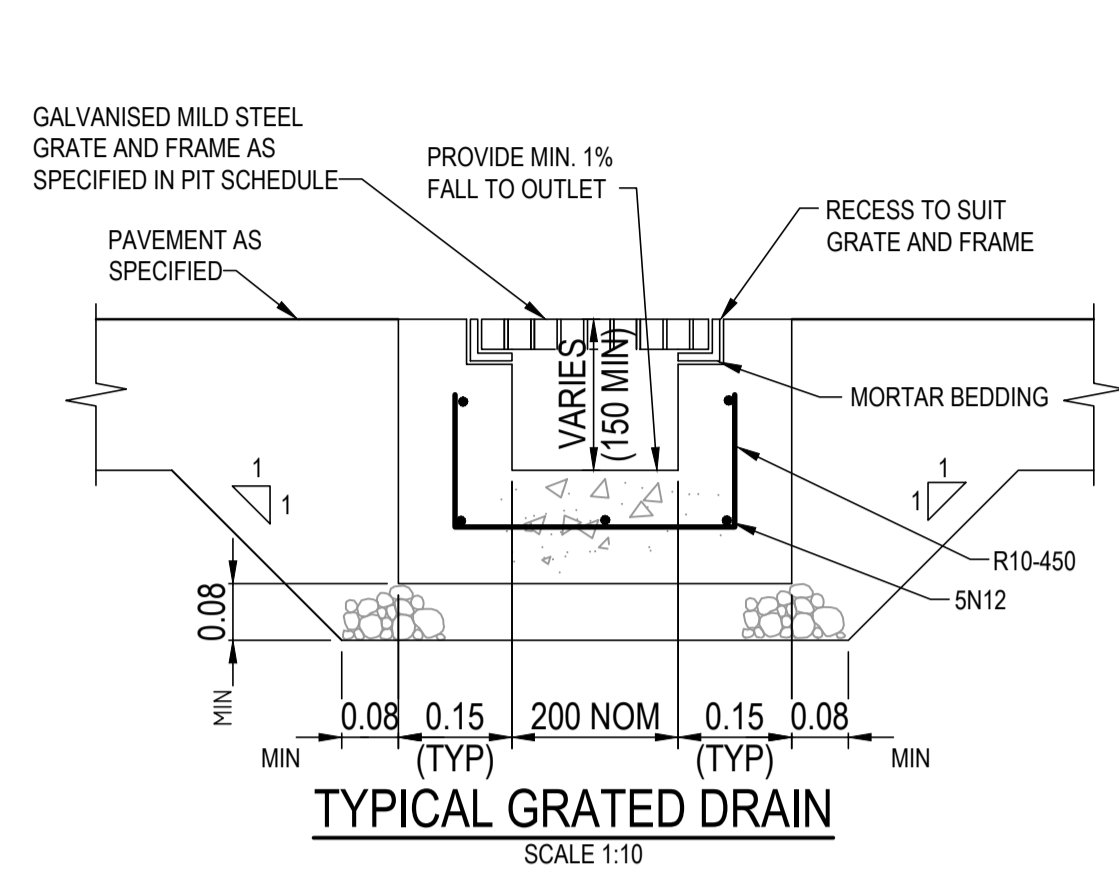
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PROJECT	19 DRESS CIRCLE ROAD AVALON BEACH

TITLE	STORMWATER PLAN
ISSUED FOR	FOR APPROVAL
PROJECT NUMBER	23 H 325

DESIGN	M.A.	DRAWN	M.A.
DRAWING NO.	SW 01		





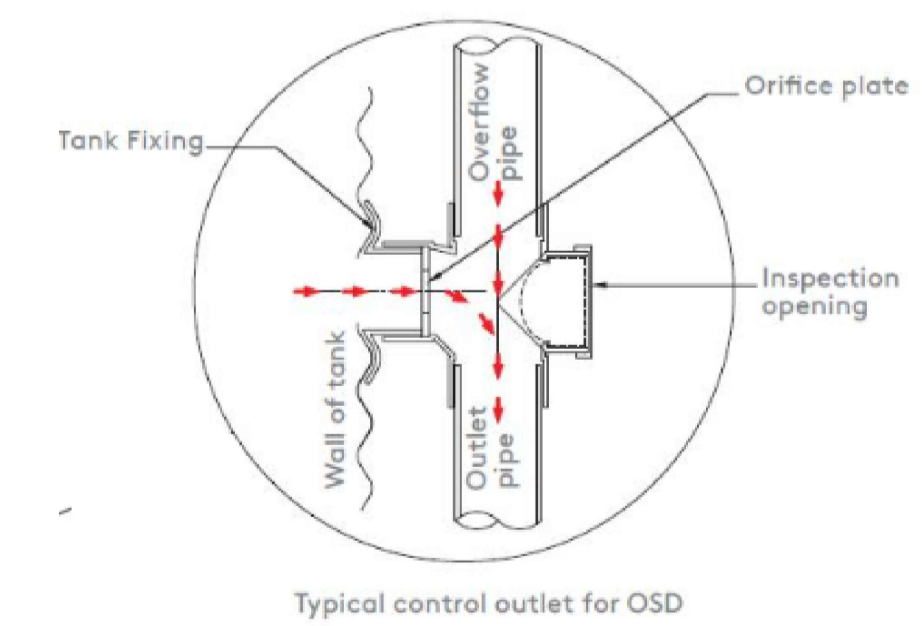
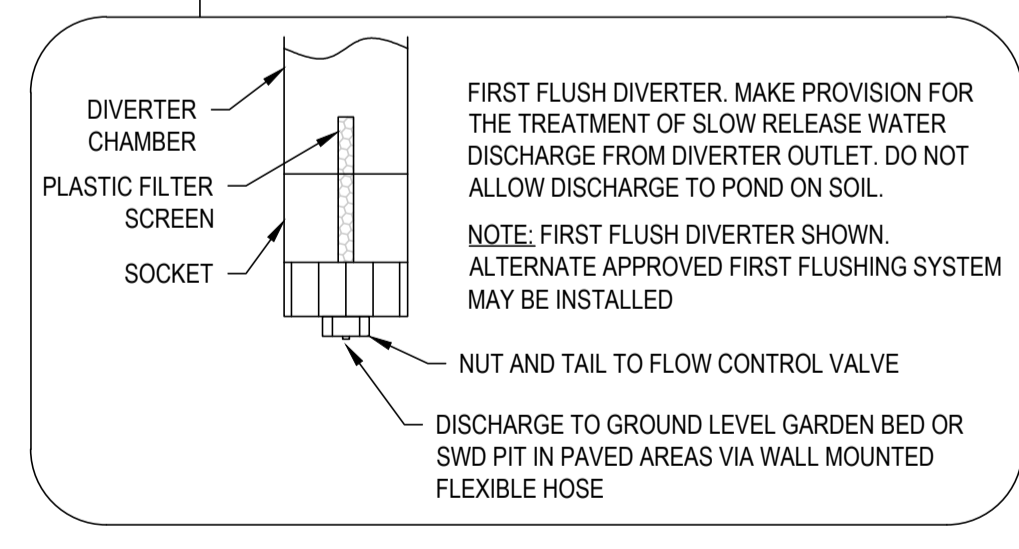
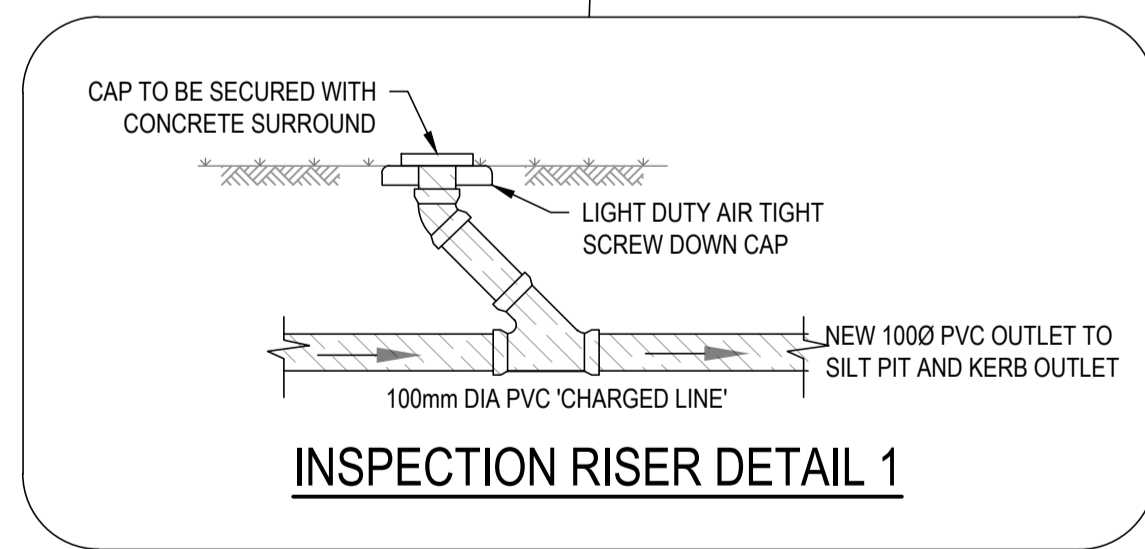
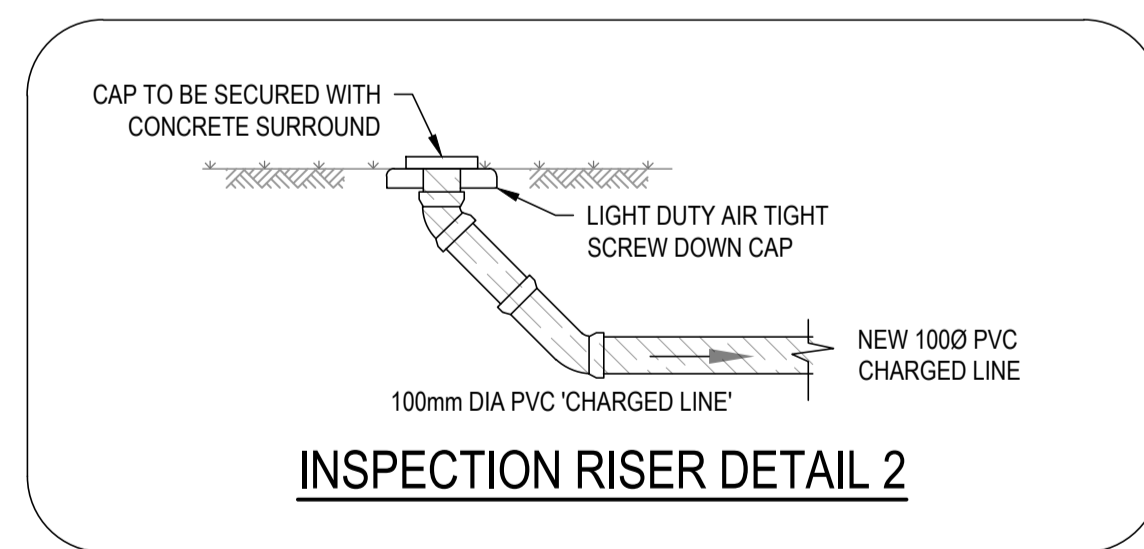
**CUSTOM OSD/RWT DETAIL**

	OSD
HEIGHT	1.76m
VOLUME	2x5m <sup>3</sup>
(A)	X
(C)	X + 1.76
(D)	X + 1.86
ORIFICE Ø	37mm
ORIFICE CL	X + 18.5mm

**Orifice Sizing**

BASIN No	OUTLET DIAMETER	DISCHARGE COEFFICIENT	HEAD OF WATER	OUTLET X-SECTIONAL AREA	PSD
	mm	C	m	m <sup>2</sup>	L/s
1	37	0.62	1.760	0.001	3.9178

Orifice formula used  $Q = C \cdot A \cdot \sqrt{2gh}$



**RAINWATER RE-USE TANK - ABOVE GROUND**  
NTS

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CLIENT **MATHEW & POLLYANNA HAYWARD**  
PROJECT **19 DRESS CIRCLE ROAD AVALON BEACH**

TITLE **STORMWATER DETAILS**  
ISSUED FOR **FOR APPROVAL**  
PROJECT NUMBER **23 H 325**

DESIGN **M.A.** DRAWN **M.A.**  
DRAWING NO. **SW 02**

