

STORMWATER MANAGEMENT PLAN

PROPOSED RESIDENTIAL DEVELOPMENT

LOT 5A (NO. 83A) PRINCES CHARLES RD, FRENCHS FOREST

GENERAL
1. THIS PLAN IS TO BE USED IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL, & LANDSCAPING PLANS. ANY DISCREPANCIES OR OMISSIONS ARE TO BE REFERRED TO THE ENGINEER FOR RESOLUTION PRIOR TO COMMENCING WORK.
2. ALL MATERIALS AND WORKMANSHIP IS TO MEET AS 3500.3:2015 STORMWATER DRAINAGE, BCA AND LOCAL COUNCIL DEVELOPMENT POLICIES, CONSENTS AND REQUIREMENTS.
3. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND DRAINAGE LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORKS. THIS INCLUDES EXISTING SERVICES AND/OR OTHER STRUCTURES THAT MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO CONSTRUCTION.
4. THIS DRAWING IS NOT TO BE USED FOR SET-OUT PURPOSES. .ALL SURVEY INFORMATION, PROPOSED BUILDING LEVELS, FINISHED SURFACE LEVELS AND SITE DETAILS SHOWN IN THESE DRAWINGS ARE ESTABLISHED UPON LEVELS/DETAILS SUPPLIED BY OTHERS.
5. FLOOR WASTE & DOWNPIPE LOCATIONS ARE INDICATIVE ONLY. ULTIMATE FLOOR WASTE & DOWNPIPE LOCATION, SIZE, & QUANTITY ARE TO BE DETERMINED BY BUILDER IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
6. IT IS THE BUILDERS RESPONSIBILITY TO LOCATE AND LEVEL ALL EXISTING SERVICES OR OTHER STRUCTURES WHICH MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO COMMENCEMENT OF WORKS.
7. ANY SUBSTITUTION OF MATERIALS SHALL BE APPROVED BY THE ENGINEER AND INCLUDED IN THE DEVELOPMENT APPLICATION.
8. CONTRACTORS ARE TO INVESTIGATE ALL EXISTING SERVICES AND APPLY FOR "DIAL BEFORE YOU DIG" PRIOR TO COMMENCEMENT OF CONSTRUCTION.

COMPLIANCE
1. THESE PLANS WERE PREPARED IN ACCORDANCE WITH COUNCIL'S POLICIES AND REQUIREMENTS, BASIX REQUIREMENTS, AS 3500:2013, ARR (2016), ARQ (2006), BCA (2015), RELEVANT LEGISLATION, AND NSW MUSIC MODELLING GUIDELINES.

SCOPE OF WORKS
1. DETAILED DESIGN, MODELLING AND DOCUMENTATION FOR THE FOLLOWING (WHERE APPLICABLE): ROOFED, IMPERVIOUS AND PERVIOUS AREAS; RAINWATER REUSE SYSTEM; OSD; AND STORMWATER DISPOSAL.

RAINWATER RE-USE SYSTEM
1. ALL GUTTERS TO BE FITTED WITH LEAF GUARDS AND SUBJECT TO REGULAR INSPECTION / CLEAN OUT.
2. MIN. TANK SIZE TO BE THAT SPECIFIED WITHIN DETAIL AND PLAN.
3. TANKS ARE TO BE INSTALLED BY A LICENSED PLUMBER IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS, AS3500 AND COUNCIL REQUIREMENTS.
4. RAINWATER RETENTION FOR RE-USE AS SPECIFIED BY BASIX CERTIFICATE.

MINIMUM PIPE COVER		
O.L OF PIPE TO F.S.L		
LOCATION	MIN. COVER (mm)	
	CAST IRON, DUCTILE IRON, GALV. STEEL	OTHER AUTHORISED PRODUCTS ⁽¹⁾
1. NOT SUBJECT TO VEHICULAR LOADING:		
a. WITHOUT PAVEMENT-		
i. FOR SINGLE DWELLINGS	0	100
ii. FOR ITEMS OTHER THAN i.	0	300
b. WITH PAVEMENT OF BRICK OR UNREINFORCED CONCRETE	0 ⁽²⁾	50 ⁽²⁾
2. SUBJECT TO VEHICULAR LOADING:		
a. OTHER THAN ROADS-		
i. WITHOUT PAVEMENT	300	450
ii. WITH PAVEMENT OF:		
- REINFORCED CONCRETE FOR HEAVY VEHICULAR LOADINGS	0 ^(2X3)	100 ^(2X3)
- BRICK/UNREINFORCED CONCRETE FOR LIGHT VEHICULAR LOADING	0 ^(2X3)	75 ^(2X3)
b. ROADS-		
i. SEALED	300	500 ⁽³⁾
ii. UNSEALED	300	500 ⁽³⁾
3. SUBJECT TO CONSTRUCTION EQUIPMENT OR IN EMBANKMENT CONDITIONS	300	500 ⁽³⁾
⁽¹⁾ INCLUDES OVERLAY ABOVE TOP OF THE PIPE NOT LESS THAN 50mm THICK		
⁽²⁾ BELOW THE UNDERSIDE OF THE PAVEMENT		
⁽³⁾ SUBJECT TO COMPLIANCE WITH AS 1762, AS 2033, AS 2566.1, AS 3725, AS 4060		

DRAINAGE LINES
1. MINIMUM PIPE GRADE AS SPECIFIED IN TABLE BELOW. MINIMUM DIAMETER IS TO BE (U.N.O): a. Ø100mm WHERE LINE RECEIVES ROOF WATER. b. Ø150mm WHERE LINE RECEIVES RUN-ON FROM PAVED/UNPAVED EXTERNAL SURFACES
2. PIPE EMBEDMENT IS TO BE IN ACCORDANCE WITH LOCAL AUTHORITY SPEC., AS 3500.3, AS 2032 FOR PVC, & AS 3725 FOR FCR/RCP PIPEWORK.
3. SUBSOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS AND EMBANKMENTS WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM.

MINIMUM SITE PIPE GRADIENT (U.N.O)			MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS		
DIAMETER Ø (mm)	MIN. GRADE	MIN. % SLOPE	DEPTH TO I.L OF OUTLET(mm)	MIN. INTERNAL DIMENSIONS (mm)	
				WIDTH	LENGTH
≤ Ø150	1:100	1%	≤ 600	450	450
225	1:200	0.5%	> 600 TO ≤ 900	600	600
300	1:250	0.4%	> 600 TO ≤ 900	600	900
375	1:300	0.33%	> 1200	900	900

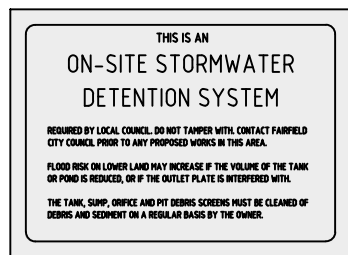
PITS
1. ALL PITS TO BE FITTED WITH APPROVED GALVANISED STEEL GRATES AND TO BE SUITABLE FOR THE FOLLOWING LOAD RATING (U.N.O): a. CLASS-B MIN. FOR LANDSCAPED AREAS b. CLASS-C WHERE SUBJECT TO VEHICULAR TRAFFIC
2. ALL PITS FITTED WITH CHILDPROOF SPRING LOCKING J-BOLTS.
3. GRATED COVERS OF PITS > 600SQ mm ARE TO BE HINGED & OFFSET FROM OBSTRUCTIONS TO ALLOW FOR FULL OPENING.
4. PROVIDE STEP IRONS TO STORMWATER PITS > 1200mm IN DEPTH.
5. PIT BASES ARE TO BE BENCHD LEVEL TO THE I.L OF THE OUTLET PIPE (NO SUMP U.N.O), WITH A MIN. FALL OF 20mm BETWEEN THE INLET AND OUTLET PIPE I.Ls. ALL PIPES SHOULD BE CUT FLUSH WITH THE WALL OF THE PITS.
6. PRECAST PITS ARE TO BE SET ON A 75mm CONCRETE BASE AND BACKFILLED WITH CONCRETE TO HALF THE PIT'S HEIGHT.
7. WATER SHOULD NOT BE PERMITTED TO POND WITHIN THE DRAINAGE SYSTEM.

ABBREVIATIONS			
A.H.D	AUSTRALIAN HEIGHT DATUM	N.T.S	NOT TO SCALE
A.R.I	AVERAGE RECURRENCE INTERVAL	O.F	OVERFLOW
C.O	CLEAN-OUT PIT	O.L	OBVERT LEVEL
DP	DOWNPIPE	O.S.D	ON-SITE DETENTION
D/S	DOWNSTREAM	R.C.P	REINFORCED CONCRETE PIPE
FF	FIRST FLUSH DEVICE	R.H.S	RECTANGULAR HOLLOW SECTION
F.F.L	FINISHED FLOOR LEVEL	R.L	REDUCED LEVEL
F.G.L	FINISHED GARAGE LEVEL	R.W.T	RAIN-WATER TANK
F.W	FLOOR WASTE	S.L	SURFACE LEVEL
G.S.I.P	GRATED SURFACE INLET PIT	SQ	SQUARE
H.G.L	HYDRAULIC GRADE LINE	TYP.	TYPICAL
I.L	INVERT LEVEL	T.W.L	TOP WATER LEVEL
I.P	INSPECTION POINT	U/S	UPSTREAM
N.S.L	NATURAL SURFACE LEVEL	U.N.O	UNLESS NOTED OTHERWISE



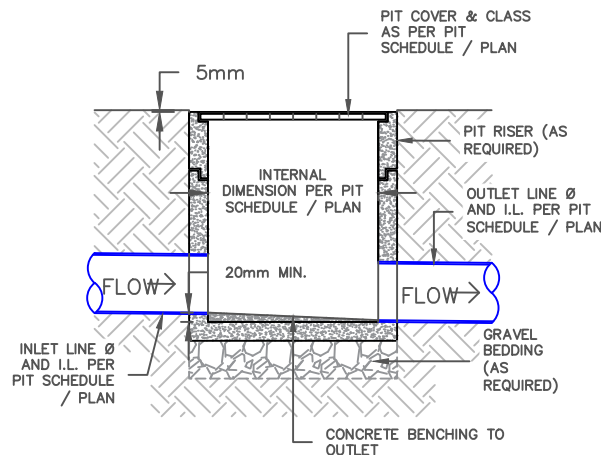
TYPICAL OSD WARNING SIGN DETAIL
SCALE: 1:10 @ A3

- NOTES
- SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION AT EACH DETENTION BASIN.
 - SIGN SHALL BE MADE FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE.
 - SIGN TO BE FIXED USING CHEMSET OR EPOXY.

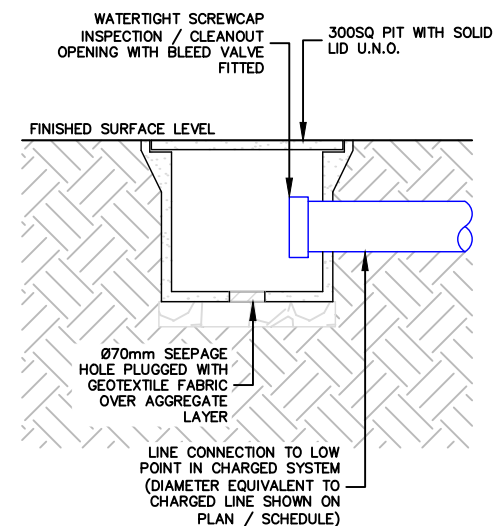


TYPICAL O.S.D. MARKER PLATE
DETAIL
SCALE: 1:10 @ A3

- NOTES
- TO BE ETCHED 0.9mm ALUMINUM PLATE.
 - SIGN TO BE PLACED IN A VISIBLE LOCATION NEAR DISCHARGE CONTROL PIT.
 - SIGN TO BE FIXED USING CHEMSET OR EPOXY.



GRATED SURFACE INLET PIT (GSIP) -
TYPICAL SECTION DETAIL
SCALE: N.T.S.



CHARGED LINE CLEAN-OUT PIT (CO)
- TYPICAL SECTION DETAIL
SCALE: N.T.S.

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
B-01	4/4/22	LS	LS	RS	REVISE TO OSD + L/SPREADER
A-01	01/02/22	LS	LS	RS	ISSUE FOR REVIEW



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PROJECT DESCRIPTION	SHEET
PROPOSED RESIDENTIAL DEVELOPMENT	TITLE PAGE & GENERAL NOTES
PROJECT SITE	PLAN
LOT 5A (NO. 83A) PRINCES CHARLES RD, FRENCHS FOREST	STORMWATER MANAGEMENT PLAN
IGA	CLIENT
NORTHERN BEACHES COUNCIL	ALLWORTH CONSTRUCTIONS PTY LTD

PROJECT ID	SCALE	SHEET NO.
1697-SW	NTS @ A3 NTS @ A1	1 of 3



CATCHMENT AREA CALCULATIONS [M ²]			
I.D	DEVELOPMENT CONDITION		CHANGE IN IMPERVIOUS AREA 'ΔIMP'
	PRE-DEV.	POST-DEV.	
LOT	767.1		278.360
IMPERVIOUS	278.721 (36.33%)	557.08 (72.62%)	

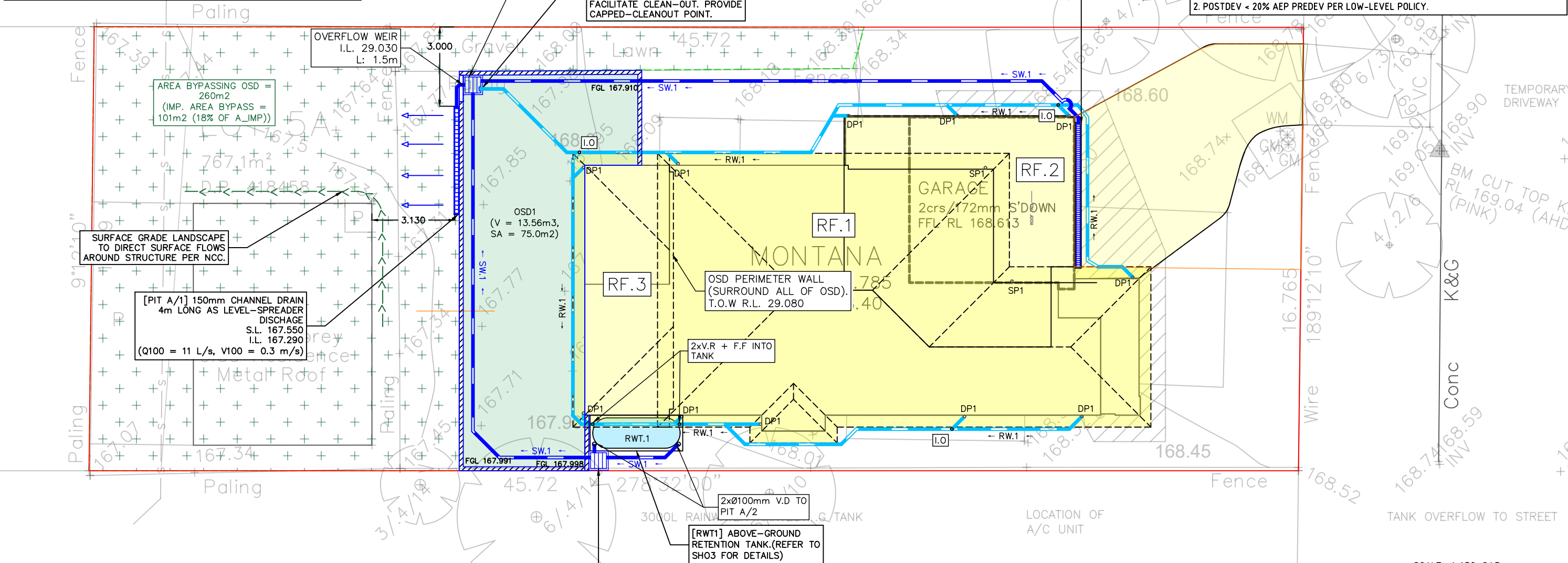
COUNCIL REQUIREMENTS

ABOVE-GROUND LANDSCAPE OSD [PIT/A1]. 450SQ CLASS A G.S.I.P
GRATE S.L. 167.850
INLET I.L. 167.570
OUTLET I.L. 167.510 (ORIFICE I.L. 167.550)
1% AEP T.W.L. 168.150 (0.30m PONDING DEPTH)
(SEE DETAIL SH03)

INDUCE LOW-POINT IN CHARGED LINES AT THIS LOCATION TO FACILITATE CLEAN-OUT. PROVIDE CAPPED-CLEANOUT POINT.

[PIT B/1] 150mm GRATED CHANNEL (OR EQUIV.)(CLASS C)
Ø100mm OUTLET
S.L. 168.593; L: 5.5m
OUTLET I.L. 168.333

TOTAL SITE DISCHARGE 'Q' [L/s] ¹							
(Refer to DRAINS model for further information)							
DESIGN STORM [A.R.I.]		1 _{YR}	2 _{YR}	5 _{YR} ^[2]	10 _{YR}	20 _{YR}	50 _{YR}
DEVELOPMENT CONDITION	PRE-DEV.	12	21	29	33	39	44
	POST-DEV.	16	16	20	21	25	26
NOTES							
1. MAXIMUM DISCHARGE FOR ALL STORM DURATIONS SIMULATED (5min TO 6hr)							
2. POSTDEV < 20% AEP PREDEV PER LOW-LEVEL POLICY.							



PIPE SCHEDULE (GENERAL)				
ID	TYPE	SIZE	PIPE GRADIENT	NOTES
		(mm)	(%)	
RW1	uPVC DWV	Ø10	1	CHARGED RAINWATER LINES TO TANK
SW1	uPVC	Ø100	1-10	SURFACE DRAINAGE LINE

- GENERAL NOTES – LGA CONTROLS & OSD WARRANT
- DEVELOPMENT: RESIDENTIAL, REGION 2, NET IMPERVIOUS AREA POST-DEV.: >40% IMPERVIOUS. PER NBC (2020) WMDP OSD IS REQUIRED.
 - REAR FALLING SITE. PER NBC (2020) WMDP 9.3.2.3 TABLE 8, SSR & PSD TO 'LOW LEVEL PROPERTIES' GUIDELINE.
 - LEEWARD LOT FROM ROAD WITHOUT EXISTING ACCESS TO INTERALLOTMENT DRAINAGE. SITE UNABLE TO OBTAIN NEW D/SLOPE EASEMENT (SEE ANCILLARY DOCUMENTS). OSD + LEVEL-SPREADER SYSTEM PROPOSED PER 'LOW LEVEL' GUIDELINE 2.2 STEP 3.
 - 1% AEP POST-DEV DISCHARGE LIMITED TO 20%AEP PREDEV DISCHARGE PER ATTACH.3 LOW-LEVEL POLICY.

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
B-01	4/4/22	LS	LS	RS	REVISE TO OSD + L/SPREADER
A-01	01/02/22	LS	LS	RS	ISSUE FOR REVIEW

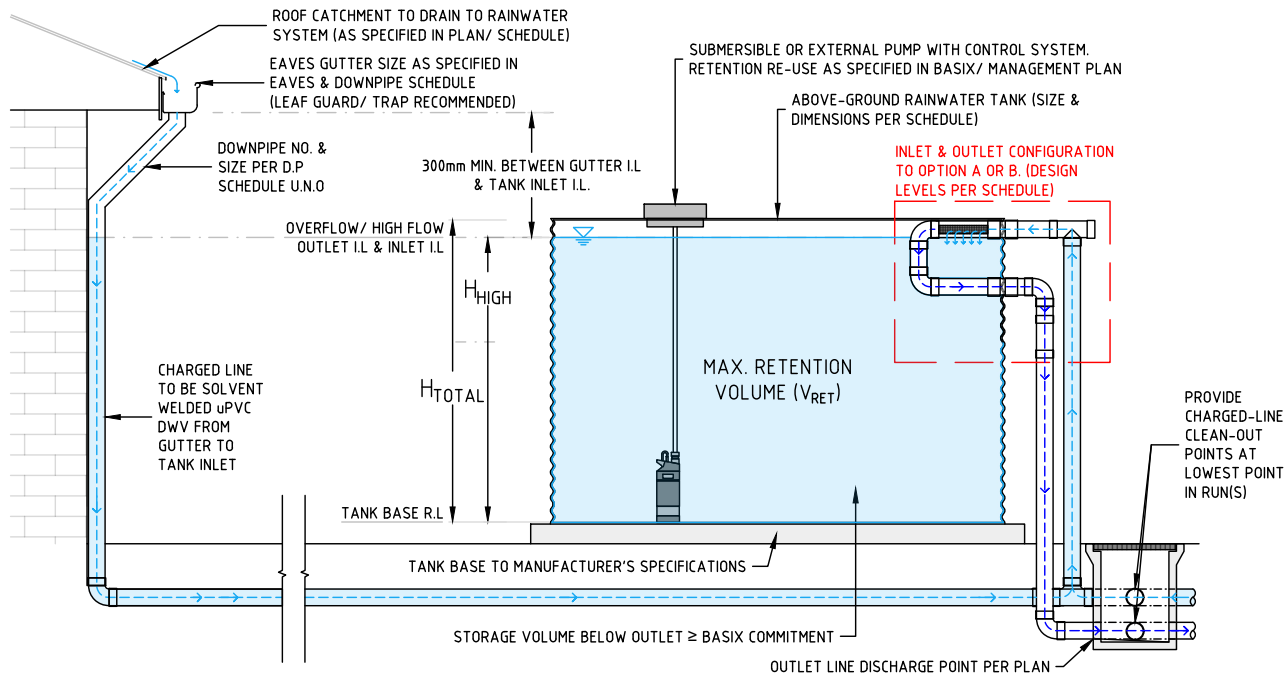
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ROOF I.D.	DESCRIPTION	MATERIAL	PITCH	MINIMUM DIMENSIONS (INTERNAL) (mm)		MIN. NO. OF DPs / SPs	MIN. GUTTER CROSS-SECTIONAL AREA (A _g)(mm ²)	GUTTER GRADE	DESIGN STORM
				CIRCULAR	RECTANGULAR / SQUARE				
RF.1	1ST FLOOR ROOF	COLORBOND	22.5°	Ø100	75 X 100	7	7,900	≥1: 500	1%AEP
RF.2	GND FLOOR GARAGE	COLORBOND	5°	Ø100	75 X 100	3	6,700	≥1: 500	1%AEP
RF.3	GND FLOOR ALFRESCO	COLORBOND	22.5°	Ø100	75 X 100	2	5,800	≥1: 500	1%AEP

PROJECT DESCRIPTION	SHEET
PROPOSED RESIDENTIAL DEVELOPMENT	DRAINAGE PLAN
PROJECT SITE	PLAN
LOT 5A (NO. 83A) PRINCES CHARLES RD, FRENCHS FOREST	STORMWATER MANAGEMENT PLAN
LGA	CLIENT
NORTHERN BEACHES COUNCIL	ALLWORTH CONSTRUCTIONS PTY LTD

PROJECT ID: 1697-SW
SCALE: 1:150 @ A3
1:75 @ A1
SHEET NO: 2 OF 3

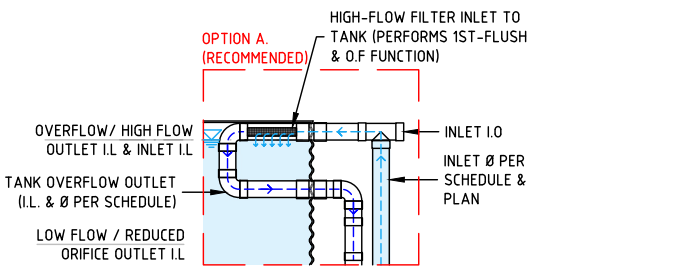
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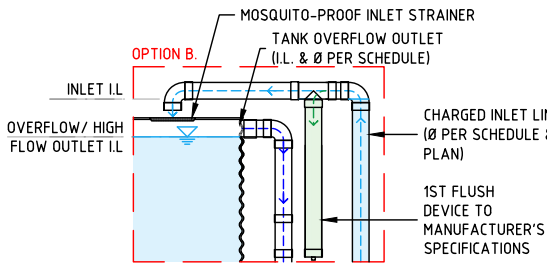
TYPICAL DETAIL - CHARGED LINE TO ABOVE GROUND RAINWATER TANK (RWT)
SCALE: N.T.S.

NOTES FOR CHARGED SYSTEM:

1. PLAN, DETAILS, & DIAGRAM ARE TO BE READ IN CONJUNCTION WITH MANUFACTURER SPECIFICATIONS FOR ALL PRODUCTS.
2. INLET/OUTLET CONFIGURATION CAN BE PROVIDED AT EITHER OR BOTH SIDES OF THE TANK(S).
3. AN OUTLET MUST BE PROVIDED WITH EACH INLET PIPE U.N.O.

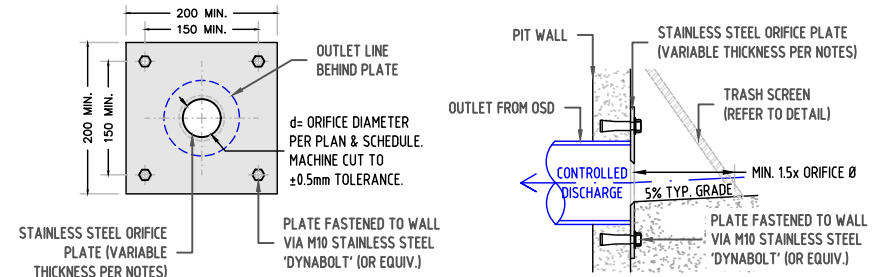


Ⓐ HIGH FLOW TANK INLET WITH FILTER & INBUILT HIGH FLOW BYPASS



Ⓑ CONVENTIONAL TANK INLET & OUTLET WITH EXTERNAL 1ST-FLUSH

RAINWATER TANK SCHEDULE		
SYSTEM ID		RWT1
TYPE		TANKWORKS SLIMLINE 3000
TANK VOLUME (kL)		3.278
TANK DIMENSIONS (m)		H: 2.02m, W: 0.8m, L: 2.2m
TANK BASE R.L. (m, AHD)		168.300
OVERFLOW OUTLET HEIGHT 'H _{HIGH} '	(m)	1.91
	I.L. (m, AHD)	170.210
HIGH FLOW OUTLET DIAMETER (mm)		2x Ø100
RETENTION VOLUME BELOW OUTLET (kL)		3.0
AIR VOID VOLUME (kL)		NIL
COMMENTS: TANK OUTLETS TO ADJACENT PIT A/2. CONFIGURED FOR RE-USE PER BASIX CERTIFICATE.		

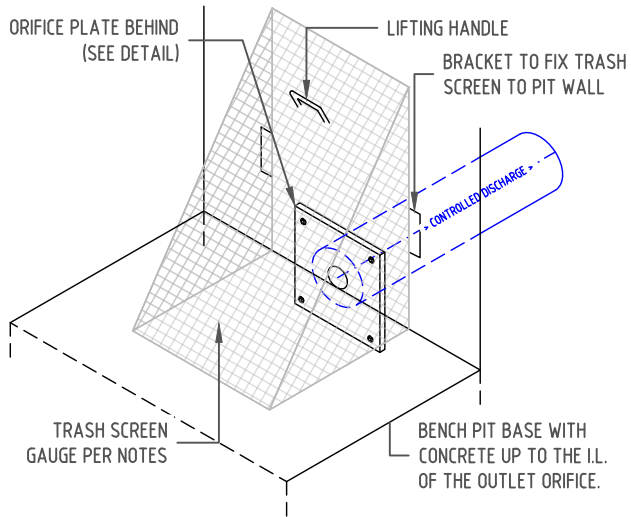


REDUCED ORIFICE PLATE- TYP. DETAIL
SCALE: 1:10 @A3

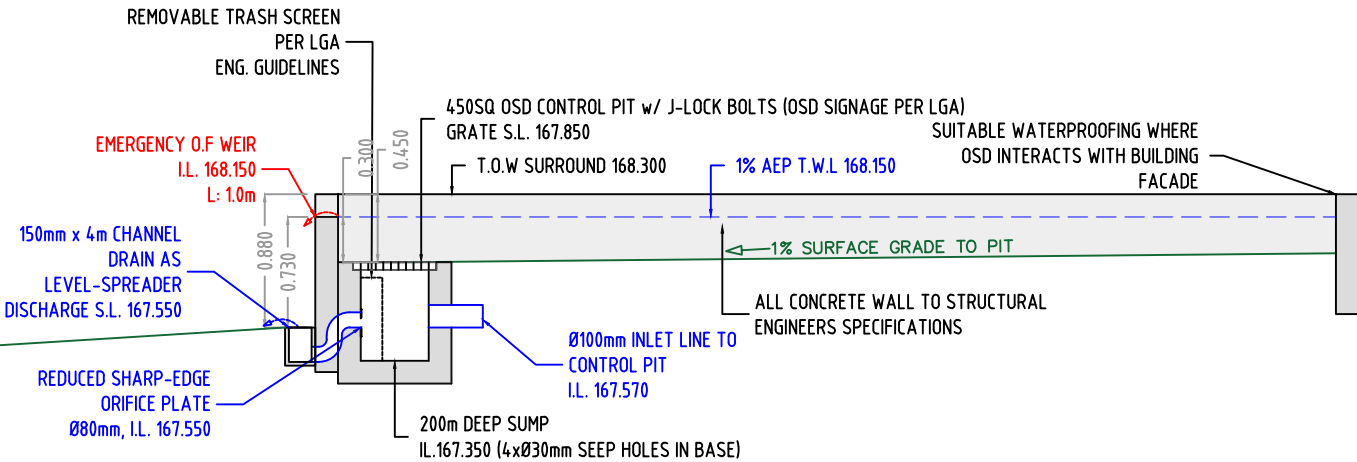
REDUCED ORIFICE ASSEMBLY- TYP. SECTION
SCALE: 1:10 @ A3

- NOTES:
1. ORIFICE TO BE SHARP-EDGE MACHINED INTO THE STAINLESS STEEL PLATE WITH A ±0.5mm DIAMETER TOLERANCE.
 2. ORIFICE PLATE TO BE 3mm THICK WHERE ORIFICE DIAMETER IS <150mm; OTHERWISE PLATE IS TO BE 5mm THICK.

ON-SITE DETENTION (OSD) TANK SCHEDULE	
SYSTEM ID	OSD1
TYPE	ABOVE-GROUND WALLED LANDSCAPED OSD
OSD VOLUME (kL) (BELOW WEIR)	16.95 (13.56 EFFECTIVE w/ 20% REDUCTION)
OSD DIMENSIONS (m)	INTERNAL: H: 0.45m, SA: 75.0m ²
OSD INTERNAL BASE I.L. (m, AHD)	167.850 (PIT SUMP I.L. 167.350)
MAX INTERNAL DEPTH (m)	0.30m TO O.F. WEIR, MAX 0.45m
ORIFICE CONTROL DETAILS	Ø80mm ORIFICE. I.L. 167.550
PEAK CONTROL DISCHARGE (L/s)	11
OVERFLOW WEIR DETAILS	1.0m WEIR CREST AT R.L. 168.150
PEAK 1% AEP TOP-WATER-LEVEL (m, AHD)	168.150 (T.O.W 168.300)
MIN. HABITABLE FFL (m, AHD)	168.450 (168.785 PROPOSED)
COMMENTS: IMPERVIOUS RETAINING WALL CONSTRUCTED IN REAR YARD TO CREATE OSD PONDING. 1% MIN GRADE TO PIT. WATERPROOF SURROUNDS.	



- NOTES:
1. FOLLOWING FIXTURE OF ORIFICE PLATE, BENCH PIT BASE WITH CONCRETE IN-FILL TO UNDERSIDE OF ORIFICE OUTLET.
 2. TRASH SCREEN TO BE OF HOT-DIPPED GALVANISED MESH. WHERE ORIFICE DIA. <150mm, TRASH SCREEN OF MAXI-MESH RH3030; OTHERWISE WELDLCK F40/203.



LANDSCAPE ON-SITE DETENTION TANK (OSD)
SCALE: 1:50 @ A3

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

B-01	4/4/22	LS	LS	RS	REVISE TO OSD + L/SPREADER
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PROJECT DESCRIPTION	SHEET
PROPOSED RESIDENTIAL DEVELOPMENT	OSD + RWT DETAILS
PROJECT SITE	PLAN
LOT 5A (NO. 83A) PRINCES CHARLES RD, FRENCHS FOREST	STORMWATER MANAGEMENT PLAN
LGA	CLIENT
NORTHERN BEACHES COUNCIL	ALLWORTH CONSTRUCTIONS PTY LTD

PROJECT ID	1697-SW
SCALE	NTS @ A3
	NTS @ A1
SHEET NO.	3 of 3

