

STORMWATER CONCEPT PLAN

RES. ALTS & ADS + SHED

259 AUMUNA RD, TERRY HILLS

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.	MANAGEMENT DESIGN, CALCULATION AND DOCUMENTATION FOR THE FOLLOWING (WHERE APPLICABLE): ROOFED, IMPERVIOUS AND PERVIOUS AREAS; RAINWATER REUSE SYSTEM; DETENTION; 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	100	100
ii. FOR ITEMS OTHER THAN i.	100	300
b. WITH PAVEMENT OF BRICK OR UNREINFORCED CONCRETE	100 ⁽²⁾	100 ⁽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	Ø (2X3)	100 (2X3)
- BRICK/UNREINFORCED CONCRETE FOR LIGHT VEHICULAR LOADING	Ø (2X3)	75 (2X3)
b. ROADS-		
i. SEALED	600	750 ⁽³⁾
ii. UNSEALED	600	750 ⁽³⁾
3. SUBJECT TO CONSTRUCTION EQUIPMENT OR IN EMBANKMENT CONDITIONS	600	750 ⁽³⁾

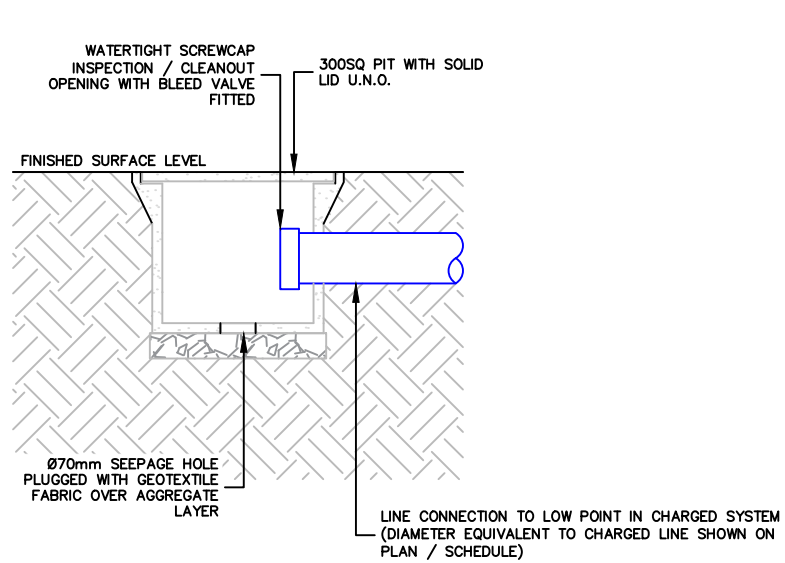
⁽¹⁾ INCLUDES OVERLAY ABOVE TOP OF THE PIPE NOT LESS THAN 50mm THICK
⁽²⁾ BELOW THE UNDERSIDE OF THE PAVEMENT
⁽³⁾ SUBJECT TO COMPLIANCE WITH AS 1762, AS 2033, AS 2566.1, AS 3725, AS 4060

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.

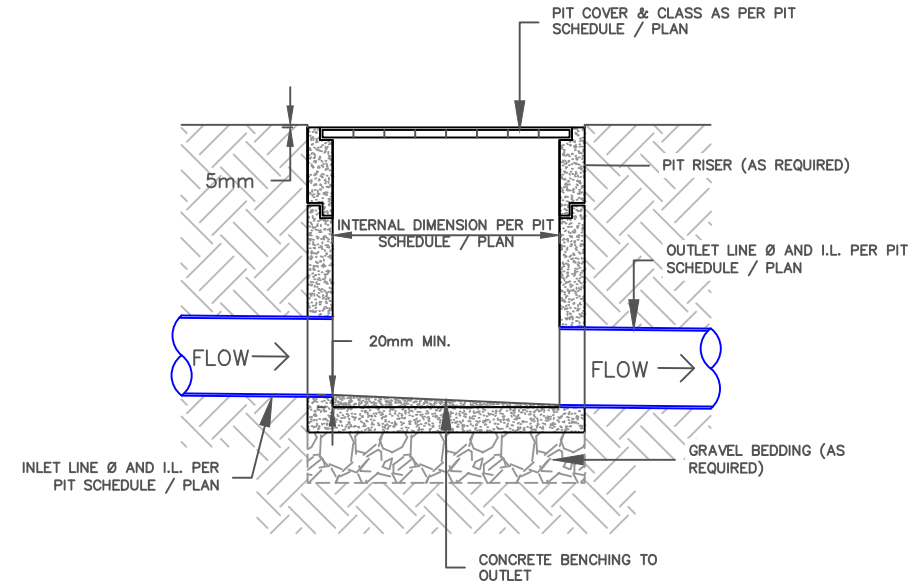
MINIMUM SITE PIPE GRADIENT (U.N.O)			MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS		
DIAMETER Ø (mm)	MIN. GRADE	MIN. % SLOPE	DEPTH TO I.L. OF OUTLET (mm)	MIN. INTERNAL WIDTH (mm)	MIN. INTERNAL LENGTH (mm)
≤ Ø150	1:100	1%	≤ 600	450	450
225	1:200	0.5%	> 600 TO ≤ 900	600	600
300	1:250	0.4%	> 600 TO ≤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



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



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

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A-05	23/01/23	LS	LS	RS	UPDATE TO ABORIST
A-04	16/12/22	LS	LS	RS	UPDATE TO ABORIST
A-03	12/10/22	KR	KR	LS	REVISED SHED DESIGN/LOCATION
A-02	6/04/22	KR	KR	LS	UPDATE TO REVISED ARCHITECTURALS
A-01	06/09/21	LS	LS	RS	ISSUE FOR REVIEW

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PROJECT DESCRIPTION	RES. ALTS & ADS + SHED	SHEET	TITLE PAGE & GENERAL NOTES
PROJECT SITE	259 AUMUNA RD, TERRY HILLS	PLAN	STORMWATER CONCEPT PLAN
LGA	NORTHERN BEACHES COUNCIL	CLIENT	R. SLOSS C/O: BLUE SKY BUILDING DESIGN

PROJECT ID: 1381-SW
SCALE: NTS @ A3, N/A @ A1
SHEET NO: 1 of 5

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CATCHMENT AREA CALCULATIONS [M ²]			
I.D	DEVELOPMENT CONDITION		ΔMP
	PRE-DEV.	POST-DEV.	
LOT	18082.0		674.000
IMPERVIOUS	1880m (10.40%)	2554m (14.12%)	

GENERAL NOTES – LGA CONTROLS & OSD WARRANT

1. SITE LOCATED IN REGION 2 OF NBC WMDP2020 MAP2. TOTAL IMPERVIOUS AREA < 40% OF SITE, THEREFORE OSD NOT WARRANTED.

	ROOF DRAINAGE LINE		SURFACE FLOW DIRECTION
	SURFACE DRAINAGE LINE		GRATED SURFACE INLET PIT (G.S.I.P)
	PROPERTY BOUNDARY	○ VR ○ VD	VERTICAL RISER / VERTICAL DROPPER
○ CO	CLEAN OUT PIT	○ DP.1 ○ SP.1	DOWNPIPE / SPREADER TYPE 1

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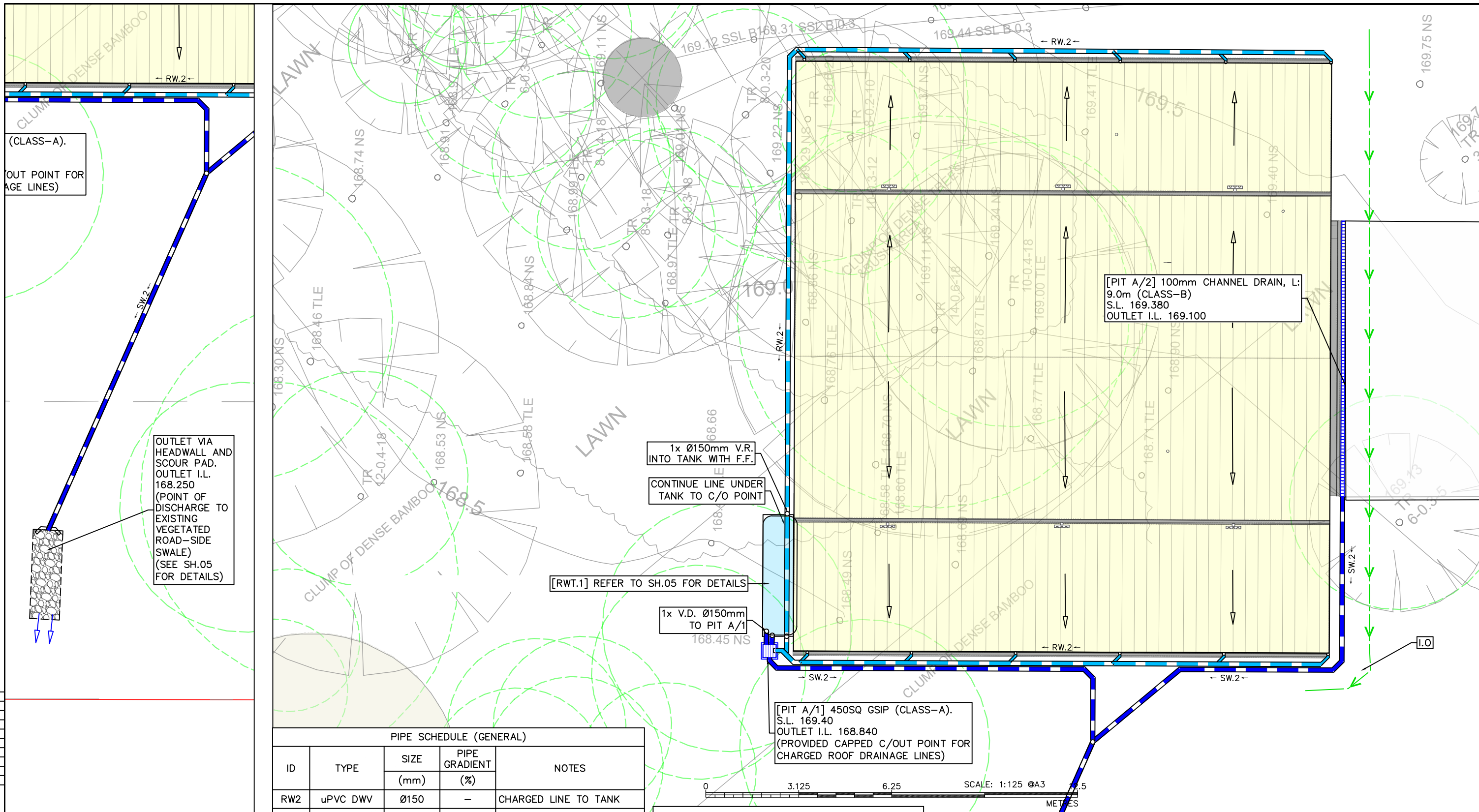
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PROJECT DESCRIPTION RES. ALTS & ADS + SHED	SHEET SITE DRAINAGE PLAN
PROJECT SITE 259 AUMUNA RD, TERRY HILLS	PLAN STORMWATER CONCEPT PLAN
LGA NORTHERN BEACHES COUNCIL	CLIENT R. SLOSS C/O: BLUE SKY BUILDING DESIGN

PROJECT ID
1381-SW
SCALE
1:500 @ A3
1:250 @ A1
SHEET NO.
2 of 5

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KEY
A1
A3
A4
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PIPE SCHEDULE (GENERAL)

ID	TYPE	SIZE	PIPE	NOTES
		(mm)	GRADIENT (%)	
RW2	uPVC DWV	Ø150	-	CHARGED LINE TO TANK
SW2	uPVC	Ø150	MIN 1%	SURFACE LINE TO OUTLET

DOWNPIPE & SPREADER SCHEDULE

I.D.	MINIMUM DIMENSIONS (INTERNAL) (mm)		DESIGN STORM
	CIRCULAR	RECTANGULAR / SQUARE	
DP.1 / SP.1	Ø100	100 X 75	5%AEP

ROOF & EAVES GUTTER SCHEDULE

ROOF I.D.	DESCRIPTION	MATERIAL	PITCH	DOWNPIPE / SPREADER I.D.	MIN. NO. OF DPs / SPs	MIN. GUTTER CROSS-SECTIONAL AREA (A _g)(mm ²)	GUTTER GRADE	DESIGN STORM
RF.2	SHED: 360m ²	COLORBOND	12°	DP.1/SP.1	12	7,900mm ²	≥1:500	5%AEP

Legend for symbols and line types:

- ROOF DRAINAGE LINE
- SURFACE DRAINAGE LINE
- PROPERTY BOUNDARY
- CLEAN OUT PIT
- SURFACE FLOW DIRECTION
- GRATED SURFACE INLET PIT (G.S.I.P)
- VERTICAL RISER / VERTICAL DROPPER
- DOWNPIPE / SPREADER TYPE 1

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PROJECT DESCRIPTION
RES. ALTS & ADS + SHED

PROJECT SITE
259 AUMUNA RD, TERRY HILLS

LGA
NORTHERN BEACHES COUNCIL

SHEET
SHED DRAINAGE PLAN

PLAN
STORMWATER CONCEPT PLAN

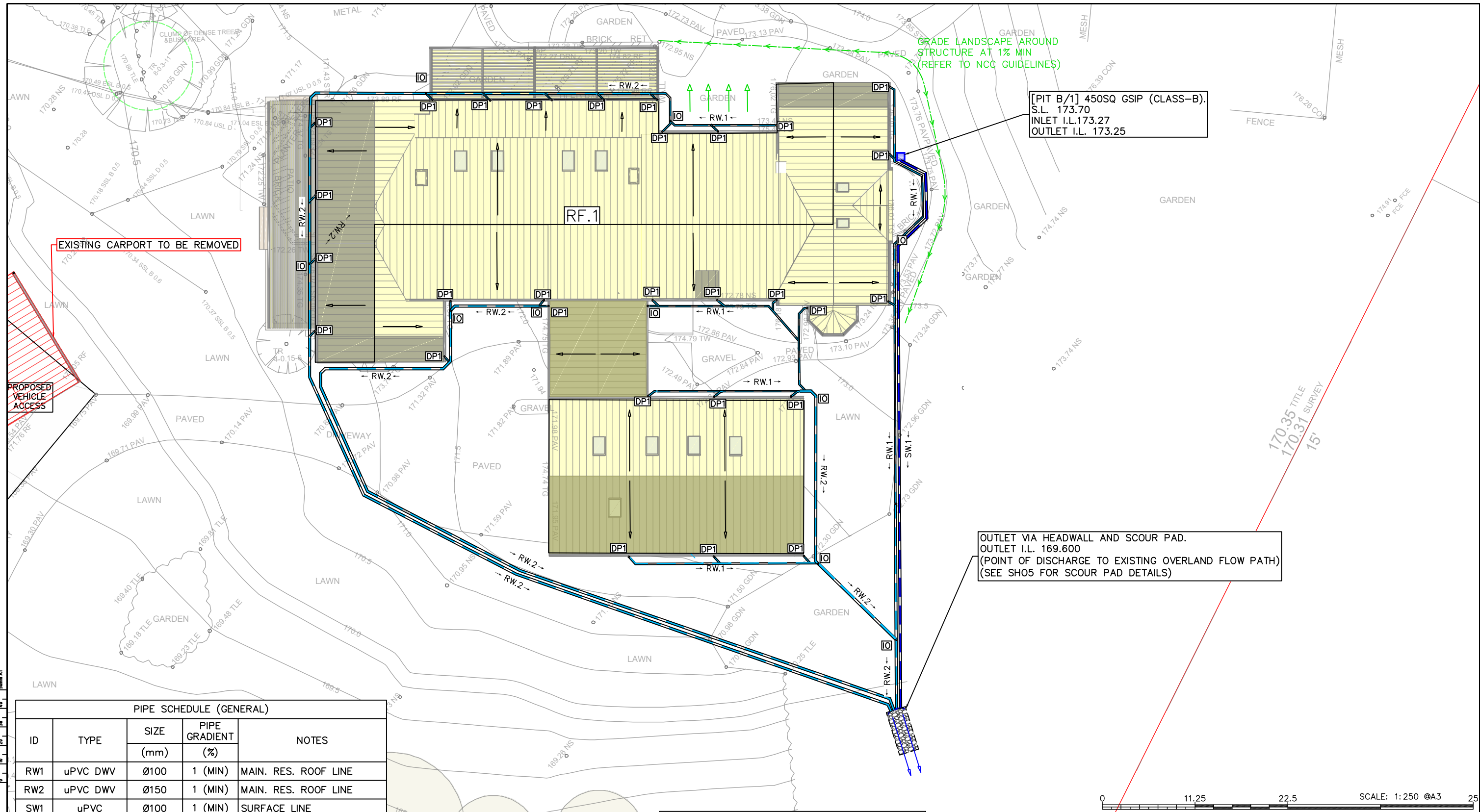
CLIENT
R. SLOSS C/O: BLUE SKY BUILDING DESIGN

PROJECT ID
1381-SW

SCALE
1:125 @ A3
1:112.5 @ A1

SHEET NO.
3 of 5

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EXISTING CARPORT TO BE REMOVED

PROPOSED VEHICLE ACCESS

GRADE LANDSCAPE AROUND STRUCTURE AT 1% MIN (REFER TO NCC GUIDELINES)

[PIT B/1] 450SQ GSIP (CLASS-B).
S.L. 173.70
INLET I.L.173.27
OUTLET I.L. 173.25

OUTLET VIA HEADWALL AND SCOUR PAD.
OUTLET I.L. 169.600
(POINT OF DISCHARGE TO EXISTING OVERLAND FLOW PATH)
(SEE SH05 FOR SCOUR PAD DETAILS)

PIPE SCHEDULE (GENERAL)				
ID	TYPE	SIZE (mm)	PIPE GRADIENT (%)	NOTES
RW1	uPVC DWV	Ø100	1 (MIN)	MAIN. RES. ROOF LINE
RW2	uPVC DWV	Ø150	1 (MIN)	MAIN. RES. ROOF LINE
SW1	uPVC	Ø100	1 (MIN)	SURFACE LINE

ROOF & EAVES GUTTER SCHEDULE								
ROOF I.D.	DESCRIPTION	MATERIAL	PITCH	DOWNPIPE / SPREADER I.D.	MIN. NO. OF DPs / SPs	MIN. GUTTER CROSS-SECTIONAL AREA (A _g)(mm ²)	GUTTER GRADE	DESIGN STORM
RF.1	MAIN RES. + GARAGE	COLORBOND	18-30°	DP.1/SP.1	30	8,000mm ²	≥1:500	5%AEP

DOWNPIPE & SPREADER SCHEDULE			
I.D.	MINIMUM DIMENSIONS (INTERNAL) (mm)		DESIGN STORM
	CIRCULAR	RECTANGULAR / SQUARE	
DP.1	Ø100	100 X 75	5%AEP

	ROOF DRAINAGE LINE		SURFACE FLOW DIRECTION
	SURFACE DRAINAGE LINE		GRATED SURFACE INLET PIT (G.S.I.P)
	PROPERTY BOUNDARY	○ VR ○ VD	VERTICAL RISER / VERTICAL DROPPER
○ CO	CLEAN OUT PIT	○ DP.1 ○ SP.1	DOWNPIPE / SPREADER TYPE 1

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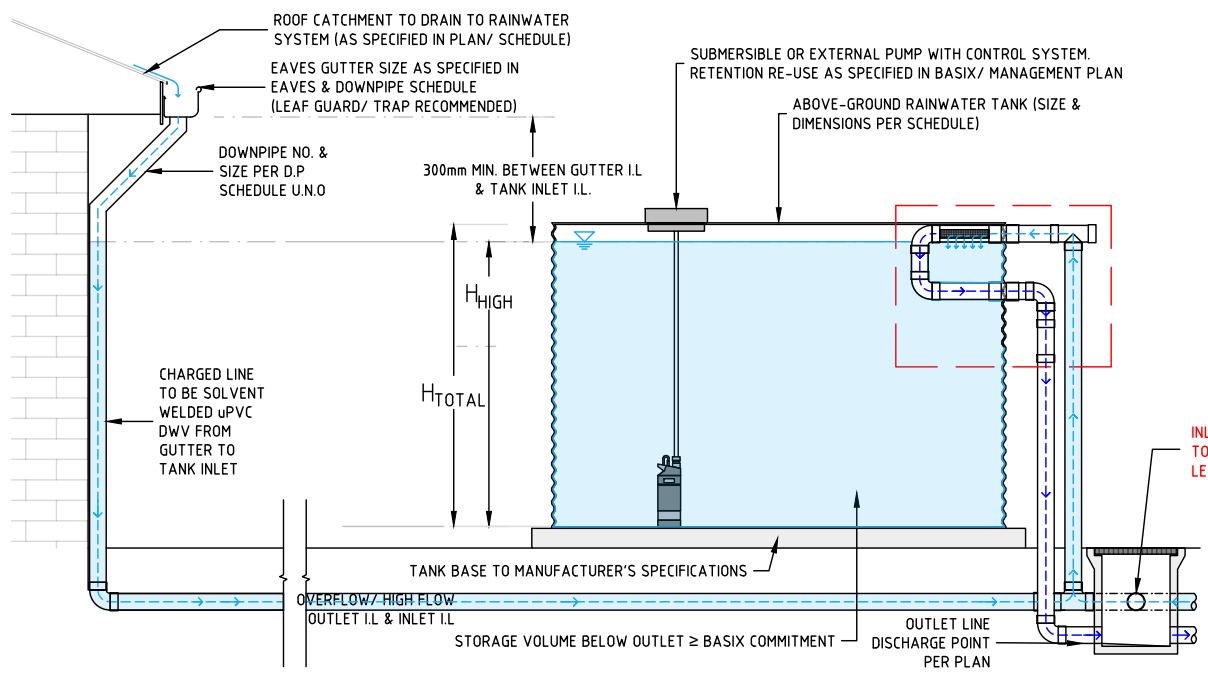
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PROJECT DESCRIPTION RES. ALTS & ADS + SHED	SHEET RESIDENCE DRAINAGE PLAN
PROJECT SITE 259 AUMUNA RD, TERRY HILLS	PLAN STORMWATER CONCEPT PLAN
LGA NORTHERN BEACHES COUNCIL	CLIENT R. SLOSS C/O: BLUE SKY BUILDING DESIGN

PROJECT ID 1381-SW	
SCALE 1:250 @ A3 1:125 @ A1	
SHEET NO. 4 of 5	

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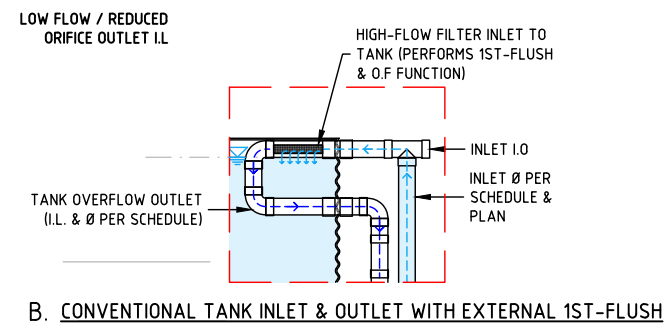
TYPICAL DETAIL - CHARGED LINE TO ABOVE GROUND RAINWATER TANK (RWT)

SCALE: N.T.S.

MAX. RETENTION VOLUME (V_{RET})

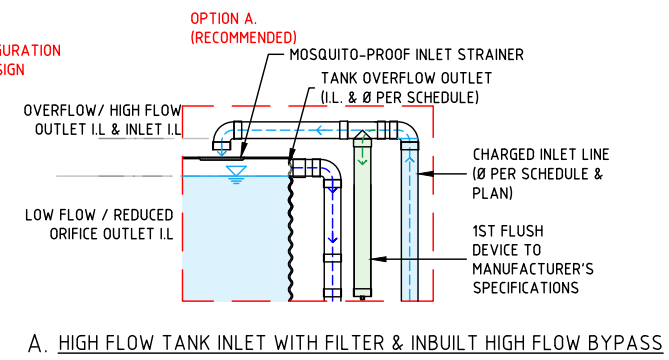
NOTES FOR CHARGED SYSTEM:

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.



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

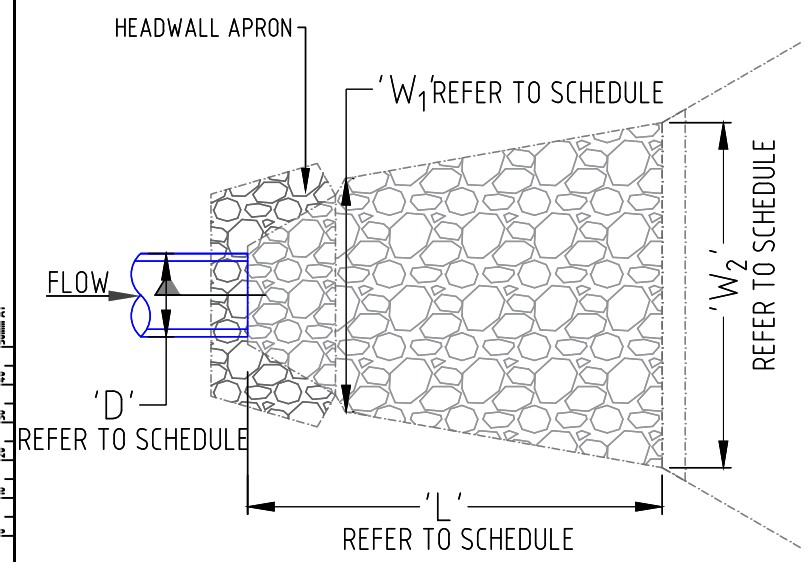
INLET & OUTLET CONFIGURATION TO OPTION A OR B. (DESIGN LEVELS PER SCHEDULE)



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

OPTION B.

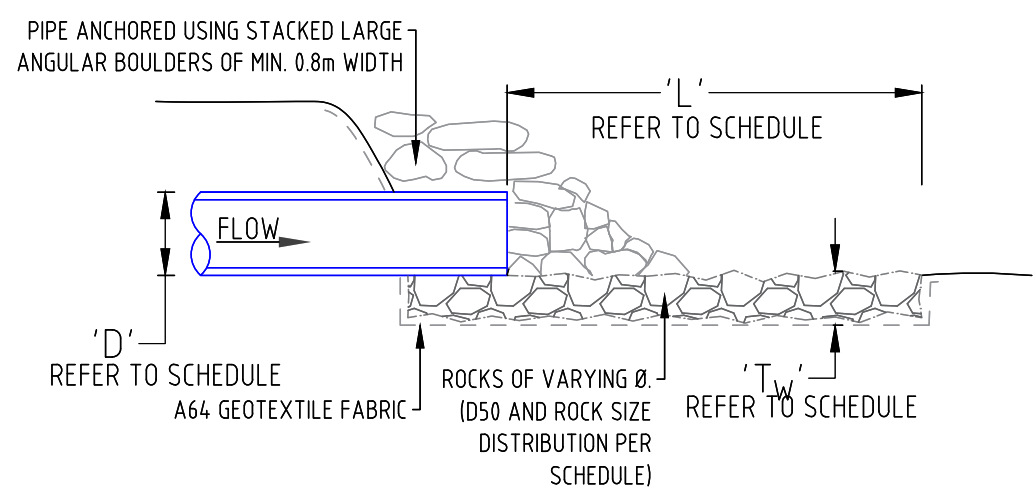
RAINWATER TANK SCHEDULE	
SYSTEM ID	RWT 1
TYPE	11000L MODLINE AQUAPLATE STEEL WATER TANK
TOTAL TANK VOLUME (kL)	11.00
TANK DIMENSIONS (m)	H: 2.47, W: 1.15, L: 4.0
TANK BASE R.L. (m, AHD)	169.40
OVERFLOW OUTLET HEIGHT 'OF _{HIGH} ' (m)	2.36
	I.L. (m, AHD)
OVERFLOW OUTLET DIAMETER (mm)	2x Ø150
RETENTION VOLUME BELOW OUTLET (kL)	3.052
AIR VOID VOLUME (kL)	0.268
COMMENTS	1x Ø150 INLET. 1xØ150 OVERFLOW TO PIT A/1. RETENTION RE-USE FOR INTERNAL NON-POTABLE & L/SCAPE USE.



TYPICAL OUTLET TO ROCK SCOUR PAD LAYOUT

NTS
NOTES:

1. HEADWALL APRON MAY BE OF CONCRETE-PRECAST OR STACKED ROCK CONSTRUCTION (AS SHOWN). WHERE STACKED ROCK, MINIMUM 0.8m WIDTH ROCKS ARE TO BE USED.
2. ROCK IS TO BE GRADED IN ACCORDANCE WITH ROCK SIZES NOMINATED IN SCHEDULE.



OUTLET TO ROCK SCOUR PAD SECTION A-A

NTS

OUTLET SCOUR PAD SCHEDULE			
ID	MAIN RES. OUTLET	SHED	
DESIGN DISCHARGE 'QD' [m ³ /s]	0.041	0.031	
DESIGN VELOCITY 'VD' [m/s]	0.8	0.117	
OUTLET 'D' [mm]	2xØ150 & 2xØ100	Ø150	
OUTLET I.L.. (m, AHD)	168.740	168.250	
ROCK PROPERTIES	ROCK FINISH	ANGULAR	ANGULAR
	MEAN ROCK SIZE 'D50' [mm]	100	100
	SIZE DISTRIBUTION 'D50/D90'	0.67	0.67
	D90 [mm]	150	150
PAD DIMENSIONS	MIN. PAD THICKNESS 'TMIN' [mm]	200	200
	PAD LENGTH 'L' [m]	3.0	3.0
	WIDTH 'W1' [m]	1.44	0.75
	WIDTH 'W2' [m]	2.64	1.95

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PROJECT DESCRIPTION	RES. ALTS & ADS + SHED	SHEET	RAINWATER TANK & PAD SCHEDULES
PROJECT SITE	259 AUMUNA RD, TERRY HILLS	PLAN	STORMWATER CONCEPT PLAN
LGA	NORTHERN BEACHES COUNCIL	CLIENT	R. SLOSS C/O: BLUE SKY BUILDING DESIGN

PROJECT ID: 1381-SW
SCALE: NTS @ A3
N/A @ A1
SHEET NO.: 5 of 5