STORMWATER MANAGEMENT PLAN
PROPOSED RESIDENTIAL ALTS & ADS
139 GEORGE ST, AVALON BEACH

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 [2][3]	100 [2][3]
- BRICK/UNREINFORCED CONCRETE FOR LIGHT VEHICULAR LOADING	0 [2][3]	75 [2][3]
b. ROADS-		
i. SEALED	300	500 [3]
ii. UNSEALED	300	500 [3]
3. SUBJECT TO CONSTRUCTION EQUIPTMENT 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 COMPLAINCE 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)

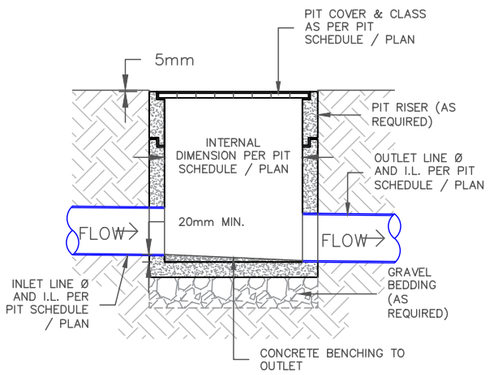
DIAMETER Ø (mm)	MIN. GRADE	MIN. % SLOPE
≤ Ø150	1:100	1%
225	1:200	0.5%
300	1:250	0.4%
375	1:300	0.33%

MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS

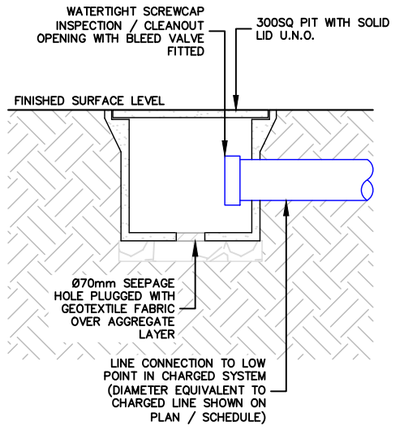
DEPTH TO I.L OF OUTLET(mm)	MIN. INTERNAL DIMENSIONS (mm)	
	WIDTH	LENGTH
≤ 600	450	450
> 600 TO ≤ 900	600	600
> 600 TO ≤ 900	600	900
> 1200	900	900

PITS

1. ALL PITS TO BE FITTED WITH APPROVED GALAVANISED 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.L.s. 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.



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.

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

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

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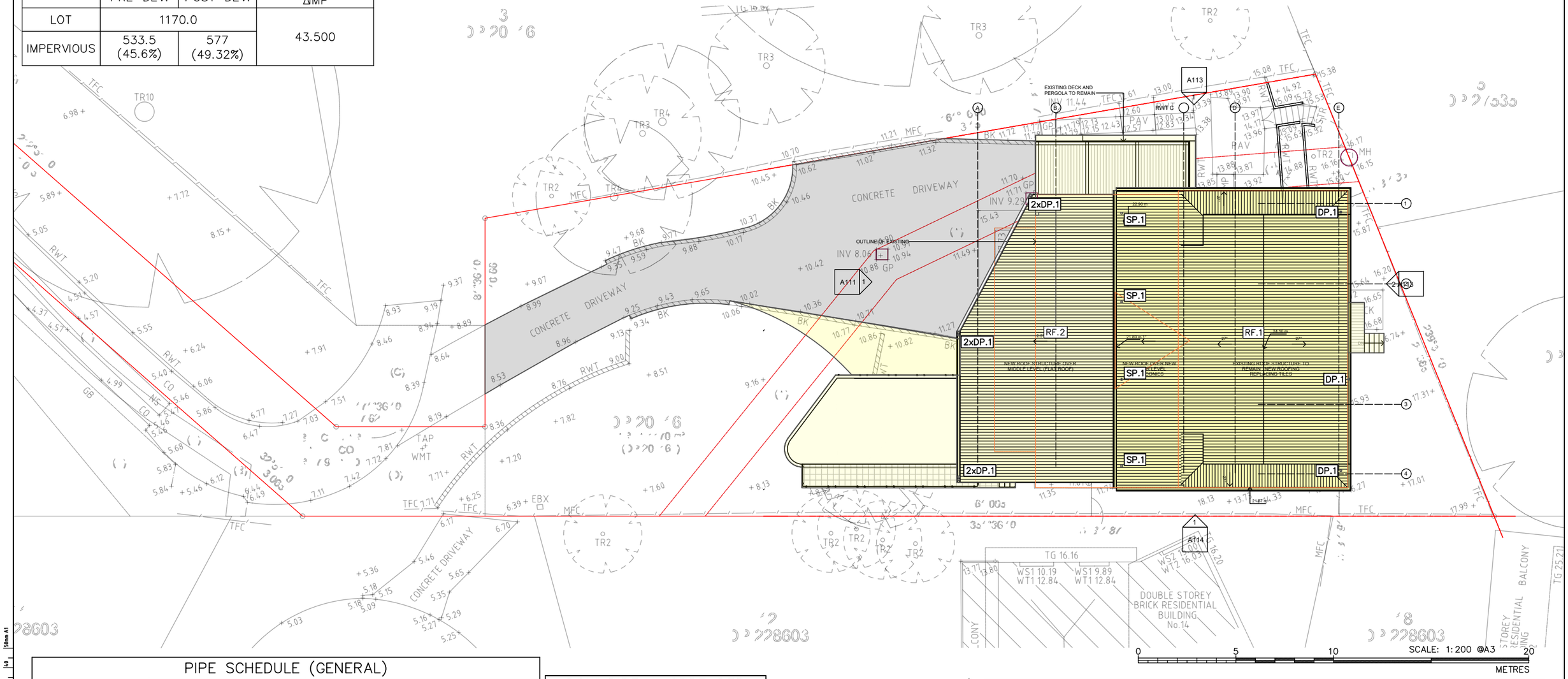
PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: TITLE PAGE & GENERAL NOTES
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID: 1813-SW
SCALE: NTS @ A3
NTS @ A1
SHEET NO.: 1 OF 6

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE MADE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm A3
0 10 20 30 40 50mm A1

CATCHMENT AREA CALCULATIONS [M²]			
I.D	DEVELOPMENT CONDITION		CHANGE IN IMPERVIOUS AREA 'ΔIMP'
	PRE–DEV.	POST–DEV.	
LOT	1170.0		43.500
IMPERVIOUS	533.5 (45.6%)	577 (49.32%)	



PIPE SCHEDULE (GENERAL)				
ID	TYPE	SIZE (mm)	PIPE GRADIENT (%)	NOTES
RW1	uPVC DWV	Ø100	1	CHARGED RAINWATER LINES TO TANK
SW1	uPVC	Ø90	1–10	BALCONY DRAINAGE LINE
SW2	uPVC	Ø100	1–10	SURFACE DRAINAGE LINE
SW3	uPVC	Ø150	1–10	SURFACE DRAINAGE LINE

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

KEY

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

GENERAL NOTES – LGA CONTROLS & OSD WARRANT

1. DEVELOPMENT: RESIDENTIAL, REGION 1, INCREASE IN IMPERVIOUS AREA POST–DEV <50m2 IMPERVIOUS. PER NBC (2020) WMDP OSD IS NOT WARRANTED.
2. PRESENT SITE DISCHARGE TO CAREEL BAY CRES EASEMENT PIT, CONTINUED USE OF EXISTING DISCHARGE ARRANGEMENT PROPOSED.

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

ROOF DRAINAGE SCHEDULE								
ROOF I.D.	DESCRIPTION	MATERIAL	PITCH	DP I.D	MIN. NO. OF DPs / SPs	MIN. GUTTER CROSS–SECTIONAL AREA (A_e)(mm²)	GUTTER GRADE	DESIGN STORM
RF.1	2ND FLOOR ROOF	COLORBOND	27°/1°	DP.1	7	7,100	≥1:500	5%AEP
RF.2	1ST FLOOR ROOF	COLORBOND	2.5°	DP.1	6	7,800	≥1:500	5%AEP

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PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: ROOF DRAINAGE PLAN
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID	1813-SW
SCALE	1:150 @ A3 1:75 @ A1
SHEET NO.	2 OF 6

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CATCHMENT AREA CALCULATIONS [M²]			
I.D	DEVELOPMENT CONDITION		CHANGE IN IMPERVIOUS AREA 'ΔIMP'
	PRE–DEV.	POST–DEV.	
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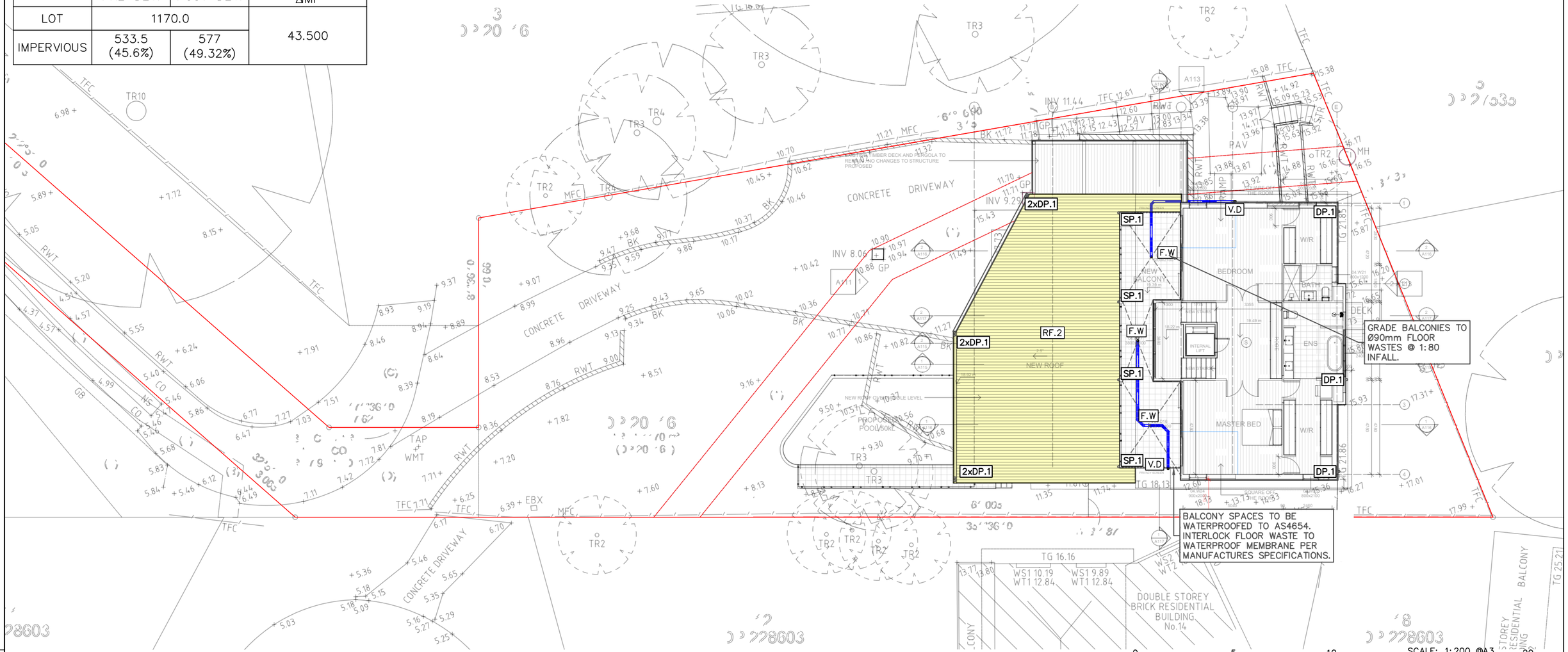

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SW3	uPVC	Ø150	1–10	SURFACE DRAINAGE LINE

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

KEY

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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ROOF DRAINAGE SCHEDULE								
ROOF I.D.	DESCRIPTION	MATERIAL	PITCH	DP I.D	MIN. NO. OF DPs / SPs	MIN. GUTTER CROSS–SECTIONAL AREA (A_e)(mm²)	GUTTER GRADE	DESIGN STORM
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PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: 2ND FLR - DRAINAGE PLAN
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID	1813-SW
SCALE	1:150 @ A3 1:75 @ A1
SHEET NO.	3 OF 6

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CATCHMENT AREA CALCULATIONS [M²]			
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	PRE–DEV.	POST–DEV.	
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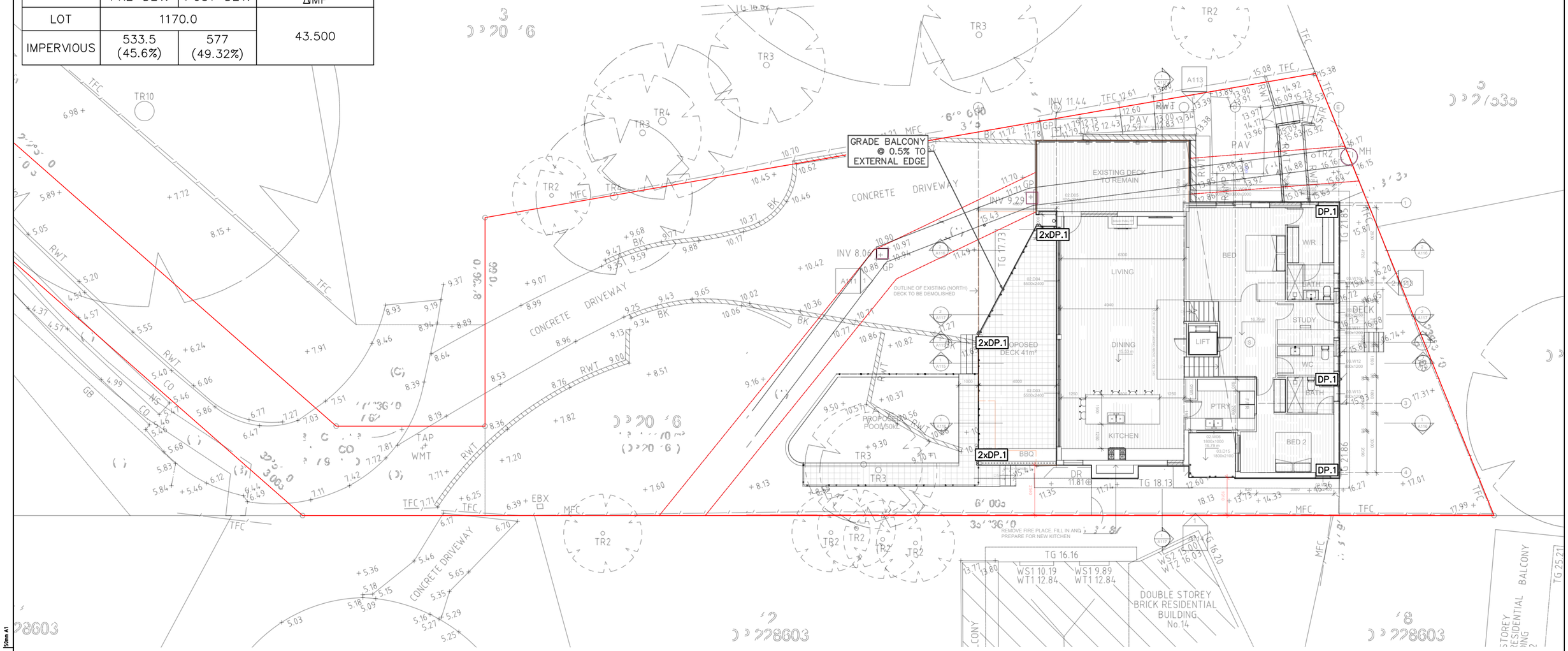

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SW3	uPVC	Ø150	1–10	SURFACE DRAINAGE LINE

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

GENERAL NOTES – LGA CONTROLS & OSD WARRANT

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SCALE: 1:200 @A3

0 5 10 20 METRES

KEY

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

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PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: 1ST FLR -DRAINAGE PLAN
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID	1813-SW
SCALE	1:150 @ A3 1:75 @ A1
SHEET NO.	4 OF 6

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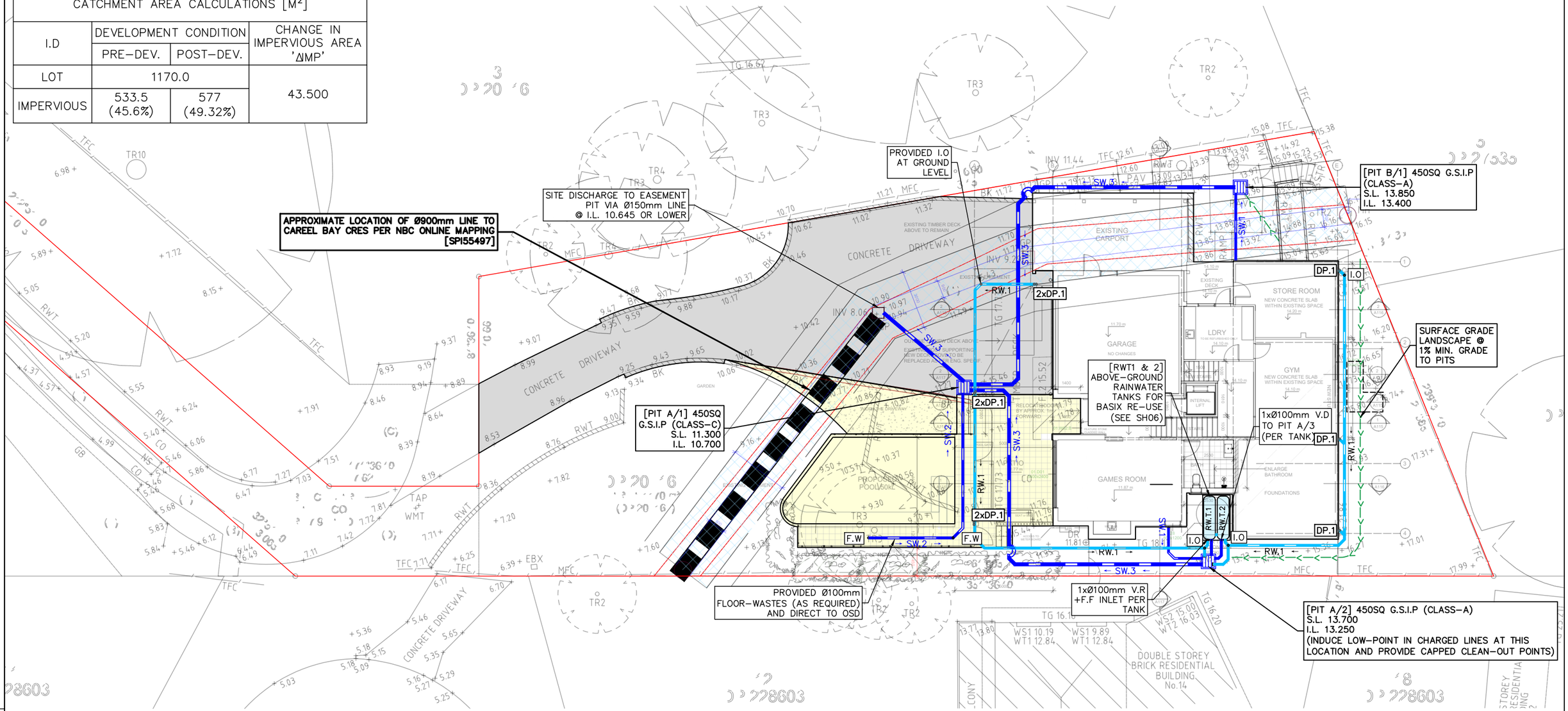
CATCHMENT AREA CALCULATIONS [M^2]			
I.D	DEVELOPMENT CONDITION		CHANGE IN IMPERVIOUS AREA 'ΔIMP'
	PRE–DEV.	POST–DEV.	
LOT	1170.0		43.500
IMPERVIOUS	533.5 (45.6%)	577 (49.32%)	



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SW3	uPVC	Ø150	1–10	SURFACE DRAINAGE LINE

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

GENERAL NOTES – LGA CONTROLS & OSD WARRANT

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SCALE: 1:200 @A3

0 5 10 20 METRES

KEY

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

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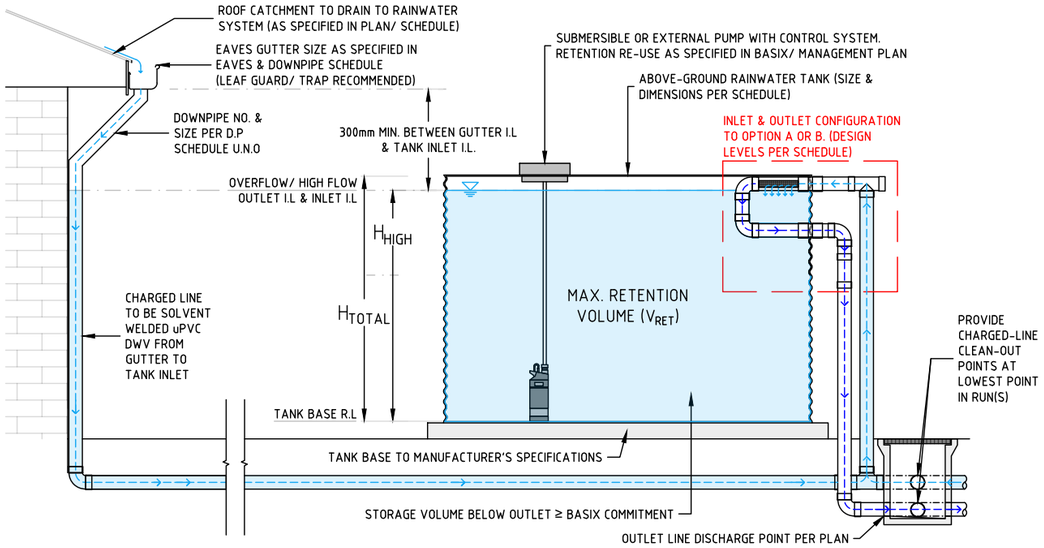
PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: G FLOOR–DRAINAGE PLAN
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID	1813-SW
SCALE	1:150 @ A3 1:75 @ A1
SHEET NO.	5 OF 6

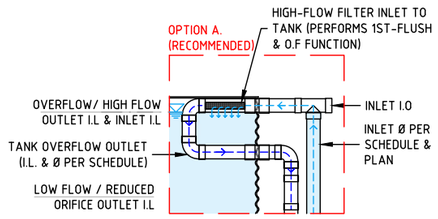


TYPICAL DETAIL - CHARGED LINE TO ABOVE GROUND RAINWATER TANK (RWT)

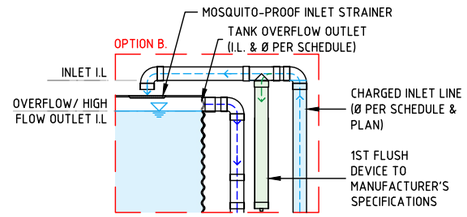
SCALE: N.T.S.

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 & 2
TYPE		2x TANKWORKS CORRUGATED SLIMLINE
TANK VOLUME (kL)		2x 2.51 (5.02 TOTAL)
TANK DIMENSIONS (m)		H: 2.02m, W: 0.6m, L: 2.2m
TANK BASE R.L. (m, AHD)		13.700
OVERFLOW OUTLET HEIGHT 'H_{HIGH}'	(m)	1.91
	I.L. (m, AHD)	15.610
HIGH FLOW OUTLET DIAMETER (mm)		1x Ø100 PER TANK
RETENTION VOLUME BELOW OUTLET (kL)		2.37 PER TANK (4.74 TOTAL)
AIR VOID VOLUME (kL)		NIL

COMMENTS: TANK OUTLETS TO ADJACENT PIT A/3. CONFIGURED FOR RE-USE PER BASIX CERTIFICATE. PROVIDE 1xØ100mm INLET LINE PER TANK VIA FIRST-FLUSH DEVICE. PROVIDE PRESSURE RATED BALANCE LINE BETWEEN TANKS AT BASE & Ø100mm BALANCE LINE AT I.L 13.700.

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE MADE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm A3

0 10 20 30 40 50mm A1

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A-01	13/04/22	LS	LS	RS	ISSUE FOR REVIEW

BROADCREST
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PROJECT DESCRIPTION: PROPOSED RESIDENTIAL ALTS & ADS	SHEET: RWT DETAILS
PROJECT SITE: 139 GEORGE ST, AVALON BEACH	PLAN: STORMWATER MANAGEMENT PLAN
LGA: NORTHERN BEACHES COUNCIL	CLIENT: BLUE SKY BUILDING DESIGN

PROJECT ID	1813-SW
SCALE	NTS @ A3 NTS @ A1
SHEET NO.	6 OF 6