STORMWATER MANAGMENT PLAN
PROPOSED CHILDCARE
28-30 FOREST RD, EAST HILLS NSW

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, CALCULATION AND DOCUMENTATION FOR THE FOLLOWING (WHERE APPLICABLE): ROOFED, IMPERVIOUS AND PERVIOUS AREAS; RAINWATER REUSE SYSTEM, WATER QUALITY TREATMENT, ON-SITE DETENTION AND STORMWATER DISPOSAL.

GENERAL

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	MIN. COVER (mm) 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	0 (2)(3)	100 (2)(3)
- BRICK/UNREINFORCED CONCRETE FOR LIGHT VEHICULAR LOADING	0 (2)(3)	75 (2)(3)
b. ROADS-		
i. SEALED	600	600 (3)
ii. UNSEALED	600	750 (3)
3. SUBJECT TO CONSTRUCTION EQUIPTMENT OR IN EMBANKMENT CONDITIONS	600	750 (3)
4. LAND ZONE FOR AGRICULTURAL USE	600	600

(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)

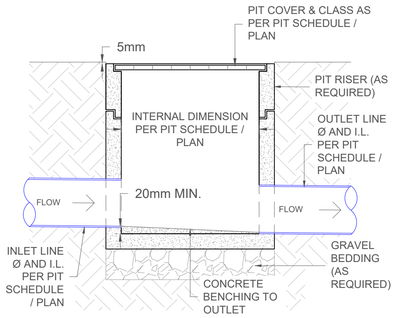
DIAMETER Ø (mm)	MIN. GRADE	MIN. % SLOPE
≤ Ø150	1:100	1%
225	1:200	0.5%
300	1:250	0.4%
375	1:300	0.33%

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
> 900 TO ≤ 1200	600	900
> 1200	900	900

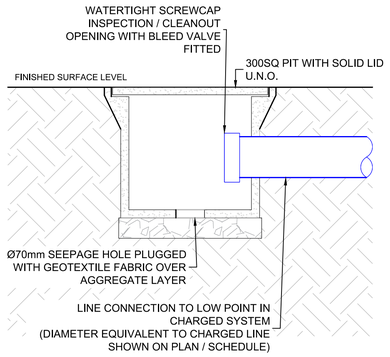
PITS

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.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.



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.

KEY

	SITE BOUNDARY
	EXISTING DRAINAGE LINE
	ROOF DRAINAGE LINE
	SURFACE DRAINAGE LINE
	GRATED SURFACE INLET PIT
	FLOW DIRECTION
DP.1	DOWNPIPE TYPE 1
SP.1	SPREADER TO LWR ROOF TYPE 1
IO	INSPECTION OPENING
VD / VR	VERTICAL DROPPER / VERTICAL RISER
RWO	RAINWATER OUTLET
OF	TANK OVERFLOW TO PIT / PIPE BELOW
VR.T	VERTICAL RISER OUTLET INTO TANK
CO	CHARGED LINE CLEAN-OUT POINT WITHIN PIT

ABBREVIATIONS

A.H.D	AUSTRALIAN HEIGHT DATUM
A.R.I	AVERAGE RECURRENCE INTERVAL
A.E.P	ANNUAL EXCEEDANCE PROBAILITY
C.O	CLEAN-OUT PIT
DP	DOWNPIPE
D/S	DOWNSTREAM
FF	FIRST FLUSH DEVICE
F.F.L	FINISHED FLOOR LEVEL
F.G.L	FINISHED GROUND LEVEL

ABBREVIATIONS

FW	FLOOR WASTE
G.S.I.P	GRATED SURFACE INLET PIT
HGL	HYDRAULIC GRADE LINE
I.L.	INVERT LEVEL
I.O	INSPECTION OPENING
N.S.L	NATURAL SURFACE LEVEL
N.T.S	NOT TO SCALE
O.F	OVERFLOW
O.L	OBVERT LEVEL
O.S.D	ON-SITE DETENTION

ABBREVIATIONS

R.C.P	REINFORCED CONCRETE PIPE
R.H.S	RECTANGULAR HOLLOW SECTION
R.L	REDUCED LEVEL
R.W.T	RAINWATER TANK
S.L	SURFACE LEVEL
SQ	SQUARE
TYP.	TYPICAL
T.W.L	TOP WATER LEVEL
U/S	UPSTREAM
U.N.O	UNLESS NOTED OTHERWISE
w/	WITH

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A-01	06/09/24	LS	LS	RS	ISSUE FOR REVIEW

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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: TITLE PAGE & GENERAL NOTES
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

PROJECT ID: 3837-SW
SCALE: NTS @ A3, NTS @ A1
SHEET NO.: 1 OF 5

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

LGA WARRANTED & DESIGN SUMMARY NOTES

1. PREDEV / EXISTING DRAINAGE REGIME:
   - 1.1. 2x SINGLE DWELLINGS ON REAR-FALLING LOTS. EACH EXISTING LOT ROOF DISCHARGING TO KERBLINE VIA 1x Ø100mm CHARGED LINE PER DWELLING.
   - 1.2. EXISTING L/SCAPE & HARDSTANDS SURFACE DRAINS TO REAR.

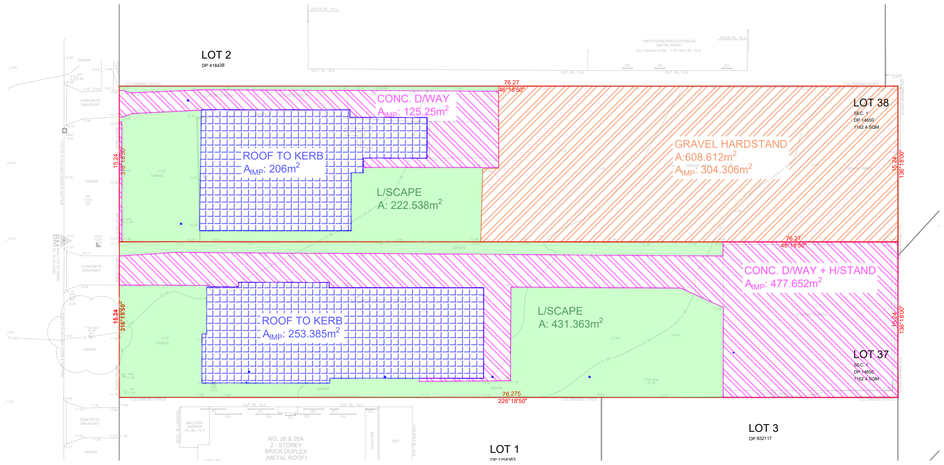
2. POST-DEV PROPOSED DRAINAGE REGIME:
3. CHARGED ROOF LINE DRAINAGE TO SITE FRONTAGE OSD, WITH REAR LANDSCAPE DRAIN TO REAR
   - 3.1. ALL FRONTAGE HARDSTAND, OSD & ROOF CATCHMENT TO OSD, WITH CONTINUED DISCHARGE TO KERB.
   - 3.2. KERB OUTLET DISCHARGE LIMITED TO PRE-DEVELOPMENT DISCHARGE FOR ALL STORM EVENTS VIA OSD.
   - 3.3. RESIDUAL SITE LANDSCAPE AND LIMITED HARDSTAND TO REAR, WITH HYDRAULIC MODELLING CONFIRMATION THAT REDUCED CATCHMENT TO REAR RESULTS IN REDUCTION IN DISCHARGE/NUISANCE TO DOWNSTREAM ALLOTMENTS RELATIVE TO PREDEV CONDITIONS.
4. PER CBC 2023DCP DEV ENG STD GUIDE, SECTION 5 *SITE STORMWATER DRAINAGE*:
   "IN SOME CASES, WHERE A COMMERCIAL TYPE DEV IS SITUATED IN AND RESEMBLES A RESIDENTIAL ENVIRONMENT, THE STORMWATER DRAINAGE SYSTEM MAY BE DESIGN TO MEET RESIDENTIAL REQUIREMENTS".
   AS THE PROPOSED DEVELOPMENT: (a) MAINTAINS A FRONTAGE AND SCALE SIMILAR TO THAT OF A RESIDENTIAL DWELLING / DUAL-OC, (b) POSES A ~8% REDUCTION IN LOT IMPERVIOUS AREA, AND (c) MAINTAINS A ROUGHLY 50% RESIDUAL LANDSCAPE AREA, SITE STORMWATER DRAINAGE REGIME CONSISTANT WITH SECTION 3.7-3.9 OF CHAPTER 3.1DEV ENG STDs SOUGHT.

CHARGED ROOF LINE TO OSD

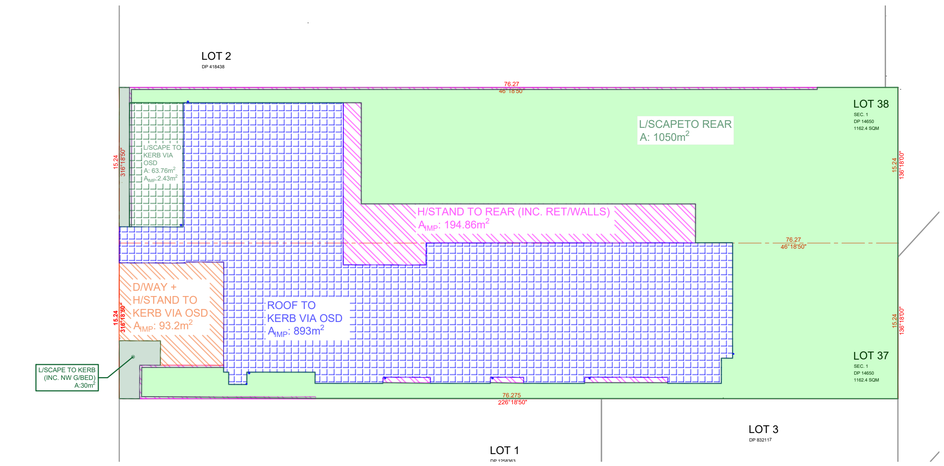
5. CHARGED SOUTHERN ROOF LINE TO OSD, GRAVITY NORTHERN ROOF TO OSD, OSD GRAVITY DRAIN TO KERBLINE UNDERSTOOD TO BE THEREFORE PERMISSIBLE PER CONTROL 3.9 OF CBC 2023DCP CHP 3.1 PROVIDING THAT:
   - 5.1. THE CHARGED LINE IS SEALED w/ HGL LONG-SECTION PROVIDE FOR 1% AEP CHARGED LINE DESIGN (DETAILED IN PLAN HEREIN)
   - 5.2. I.Os ARE PROVIDED FOR MAINTENANCE AT 30m INTERVALS (DETAILED HEREIN)
   - 5.3. CLEAN-OUT PROVISIONS ARE PROVIDED SUFFICIENT TO CAPTURE/CONTAIN CHARGED LINE VOLUME (DETAILED HEREIN)
   - 5.4. TO SURFACE LINES/PITS CONNECTED TO CHARGED LINE (PROPOSAL FOR CHARGED ROOF LINE ONLY)
   - 5.5. GRAVITY FALL SHOULD BE PROVISIONED ACROSS VERGE TO OUTLET (SYSTEM DESIGNED TO GRAVITY DRAINS FROM OSD TO KERB OUTLET)

CATCHMENT MODIFICATION & OSD

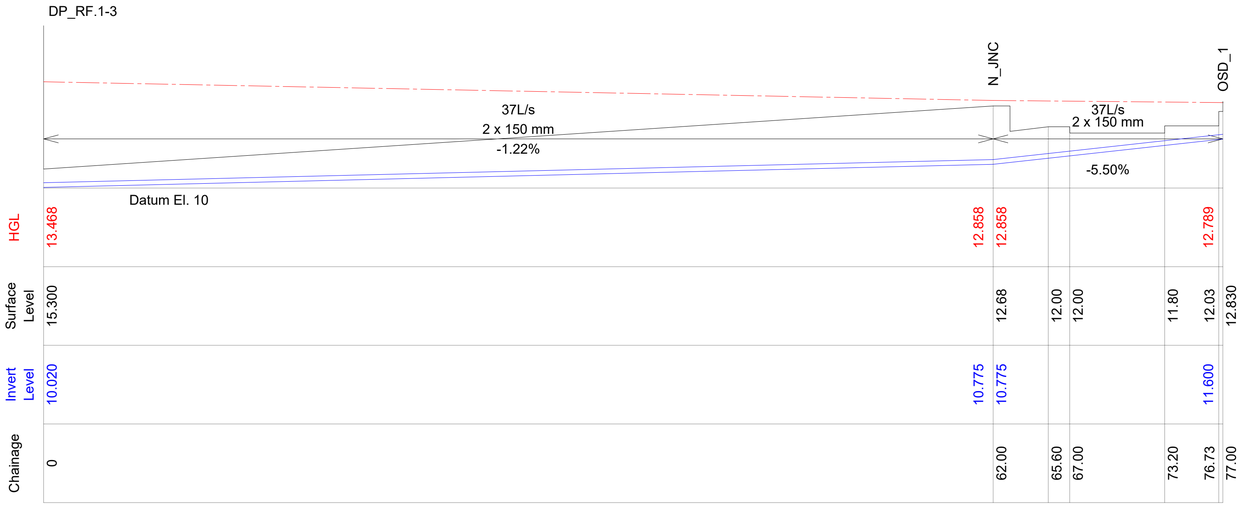
6. PER CBC 2023DCP DEV ENG STD GUIDE, SECTION 5.2: CONFIRMATION BY DRAINAGE STUDY OF SIMILAR MAY BE REQUIRED FOR REDIRECTION OF AREAS INTO ALTERNATE CATCHMENT DUE TO IMPACT ON D/STREAM DRAINAGE INFRASTRUCTURE / OVERLAND FLOW PATHS. THE FOLLOWING IS PROVIDED:
   - 6.1. TO ENSURE NO OVERLOADING OF FOREST RD EASTERN KERBLINE DRAINAGE, POST-DEVELOPMENT DISCHARGE TO FOREST RD FROM THE SITE HAS BEEN MAINTAINED AT LESS-THAN OR EQUAL-TO PREDEVELOPMENT DISCHARGE RATES FOR ALL STORM EVENTS 1EY TO 1%AEP VIA OSD. KERBLINE DISCHARGE HAS BEEN CONFIRMED VIA DRAINS SOFTWARE HYDRAULIC MODELLING (SEE ANCILLARY MODELLING FILE AND SUMMARY TABLE HEREIN).
   - 6.2. THE REDIRECT CATCHMENT WILL THEREBY NOT INCREASE PEAK FLOW WITHIN FOREST DR DRAINAGE INFRASTRUCTURE, AND WILL ALSO RESULT IN AN IMPROVED OUTCOME FOR REAR EASTERN D/STREAM ALLOTMENTS.
7. KERB OUTLET DISCHARGE HAS BEEN LIMITED TO PREDEVELOPMENT RATE FOR ALL STORM EVENTS 1EY TO 1%AEP AND BELOW THE 30L/S PERMISSIBLE BY SECTION 5.4 DEV ENG STD GUIDE.
8. OSD HAS BEEN PROVIDED WITHIN FRONTAGE LANDSCAPE OF DEVELOPMENT WITH 45.16% OF THE SITE DIRECTED TO THE OSD. 100% OF SITE PIPED DRAINAGE IS DIRECTED TO THE OSD, WITH MAXIMUM SITE DISCHARGE BELOW PREDEVELOPMENT DISCHARGE IN COMPLIANCE WITH CONTROL 7.4 OF THE CBC DEV ENG STD GUIDE.
9. LANDSCAPE OSD CONTROLS PER SECTION 7.8 HAVE BEEN PROVIDED INCLUDING: 1m BOUNDARY SETBACK, 0.3m MAX PONDING DEPTH, 0.3m BELOW HABITABLE FFLs & 1.2 FACTOR REDUCTION ON MODELLED VOLUME TO ALLOW FOR PLANTING.



SITE DRAINAGE CATCHMENTS - PREDEV
SCALE: 1:300 @ A1



SITE DRAINAGE CATCHMENTS - POSTDEV
SCALE: 1:300 @ A1



SOUTHERN ROOF CHARGED DRAINAGE LINE - RF.3 TO OSD.1 - 1%AEP LONG SECTION
SCALE: (H)1:200, (V) 1:100 @ A1

CATCHMENT DELINEATED AREAS			
ID	PREDEV [m2]	POSTDEV [m2]	DIF. Δ [m2]
SITE AREA TO KERBLINE	459.385	1,079.96	+620.575
IMP. AREA TO KERBLINE	459.385 (100%)	988.63 (91.5%)	+529.245
SITE AREA TO REAR	1,865.4	1,244.86	-620.575
IMP. AREA TO REAR	907.208	194.86	-712.348
TOTAL IMPERVIOUS AREA	1,366.593 (58.8%)	1,183.49 (50.9%)	-183.103 (-7.88%)

DEV. DISCHARGE SUMMARY 'Q' [L/s][1] (Refer to DRAINS model for further information)									
DESIGN STORM [A.E.P]			1EY	50%	20%	10%	5%	2%	1%
DEVELOPMENT CONDITION	KERB	PRE-DEV.	13	15	18	19	22	23	25
		POST-DEV.[2]	13	13	18	19	20	20	21
	REAR	PRE-DEV.	21	26	43	56	66	82	93
		POST-DEV.[2]	9	13	25	34	40	50	58
	TOTAL	PRE-DEV.	34	41	61	75	88	105	118
		POST-DEV.[2]	22	26	43	53	60	70	79

NOTES
1. MAXIMUM DISCHARGE FOR ALL STORM DURATIONS SIMULATED (5min TO 6hr)
2. POSTDEV DISCHARGE REDUCED TO PREDEV FOR ALL STORM DURATIONS VIA OSD.

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: L/SECTION, CATCH, & DESIGN SUMMARY
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

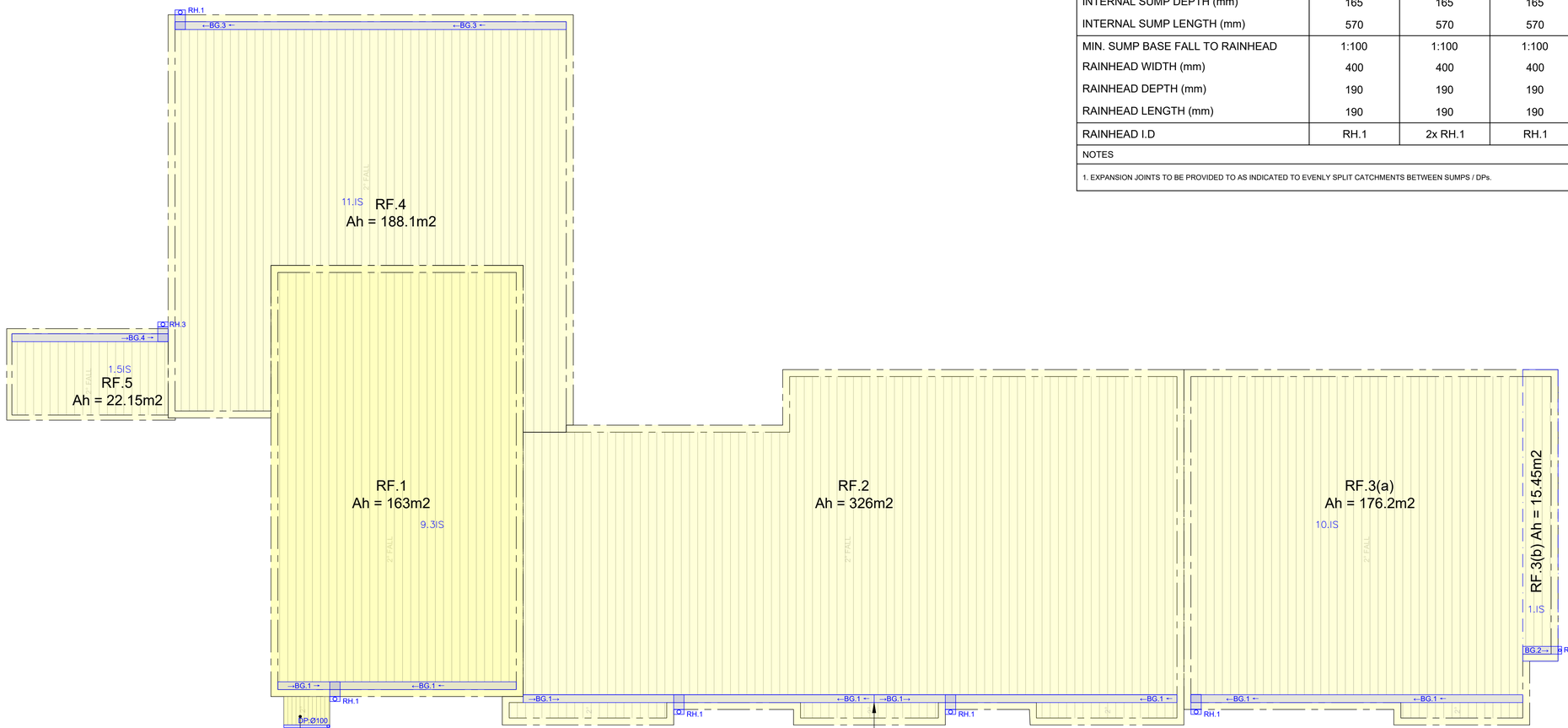
PROJECT ID	3837-SW
SCALE	1:150@ A3 1:75@ A1
SHEET NO.	2 OF 5

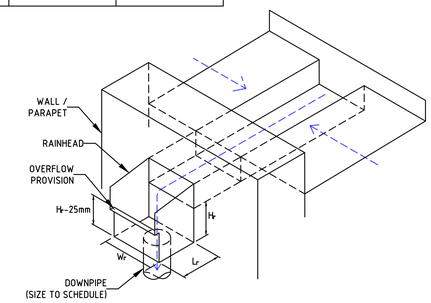
ROOF DRAINAGE NOTES

1.	UNDERLYING BOX GUTTER STRUCTURAL SUPPORT TO BE CONFIRMED BY STRUCTURAL ENGINEER PER AS3500.3.
2.	TOTAL RUN OF ALL ROOF DRAINAGE LINES FROM OUTLET TO GUTTER UNDERSIDE TO BE SOLVENT-WELDED AND WATERTIGHT FOR CHARGED FUNCTION.

BOX-GUTTER TO SUMP OVERFLOW THROUGH PARAPET TO EXTERNAL RAINHEAD [1] (1%AEP DESIGN STORM)

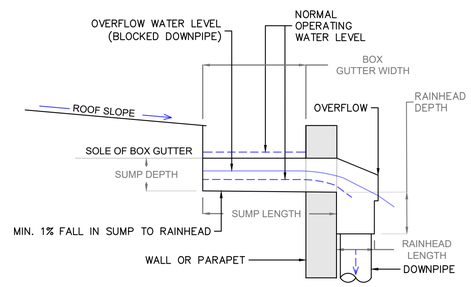
ROOF IDENTIFIER	RF.1	RF.2	RF.3(a)	RF.3(b)	RF.4	RF.5
DESCRIPTOR	1ST FLOOR STAFF ROOF.	GND FLOOR ROOF.	GND FLOOR EAST ROOF.	GND FLOOR EAST ROOF.	GND FLOOR NW ROOF.	GND FLOOR BIN ROOF.
BOX GUTTER WIDTH (mm)	300	300	300	300	300	300
BOX GUTTER MIN. DEPTH (mm)	140	140	140	85	150	85
BOX MIN. FALL	1:200	1:200	1:200	1:200	1:200	1:200
BOX GUTTER ID	BG.1	BG.1	BG.1	BG.2	BG.3	BG.4
MIN. DOWNPIPE SIZE (Ø, mm)	150	150	150	100	150	100
NO. OF SUMPS w/ RH.S & DPs [2]	1	2	1	1	1	1
INTERNAL SUMP WIDTH (mm)	400	400	400	NIL	400	NIL
INTERNAL SUMP DEPTH (mm)	165	165	165	NIL	175	NIL
INTERNAL SUMP LENGTH (mm)	570	570	570	NIL	570	NIL
MIN. SUMP BASE FALL TO RAINHEAD	1:100	1:100	1:100	NIL	1:100	NIL
RAINHEAD WIDTH (mm)	400	400	400	300	400	400
RAINHEAD DEPTH (mm)	190	190	190	125	190	125
RAINHEAD LENGTH (mm)	190	190	190	140	190	140
RAINHEAD I.D	RH.1	2x RH.1	RH.1	RH.2	RH.1	RH.3
NOTES						
1. EXPANSION JOINTS TO BE PROVIDED TO AS INDICATED TO EVENLY SPLIT CATCHMENTS BETWEEN SUMPS / DPs.						





BOX GUTTER WITH SUMP OVERFLOW THROUGH PARAPET TO RAINHEAD - ISOMETRIC
SCALE: NTS

NOTE:
1. SEE SCHEDULE FOR DIMENSIONS.
2. THE SUMP AND RAINHEAD ARE TO BE FULLY SEALED TO THE BOX GUTTER AND THE FRONT OF THE RAINHEAD LEFT OPEN ABOVE THE OVERFLOW WEIR.



BOX GUTTER WITH SUMP OVERFLOW THROUGH PARAPET TO RAINHEAD - SECTION
SCALE: NTS

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: ROOF DRAINAGE PLAN
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

PROJECT ID	3837-SW
SCALE	1:150@ A3 1:75@ A1
SHEET NO.	3 OF 5

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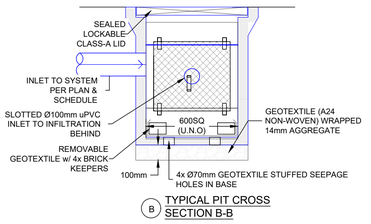
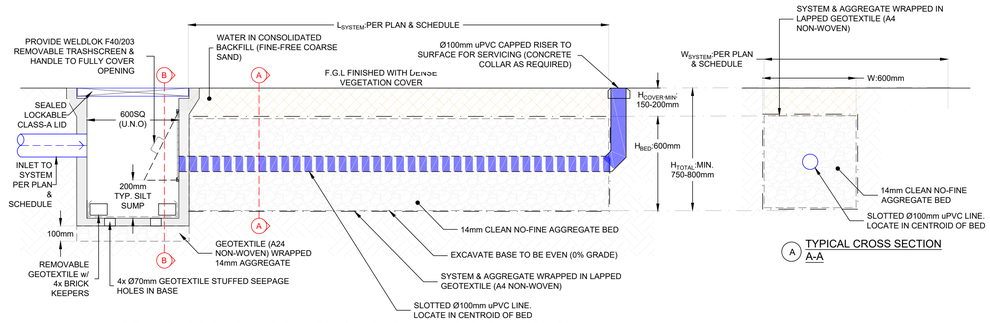


B TYPICAL PIT CROSS SECTION B-B



GRAVEL TRENCH ABSORPTION SYSTEM - TYPICAL LONGITUDINAL SECTION

SCALE: 1:20@ A1

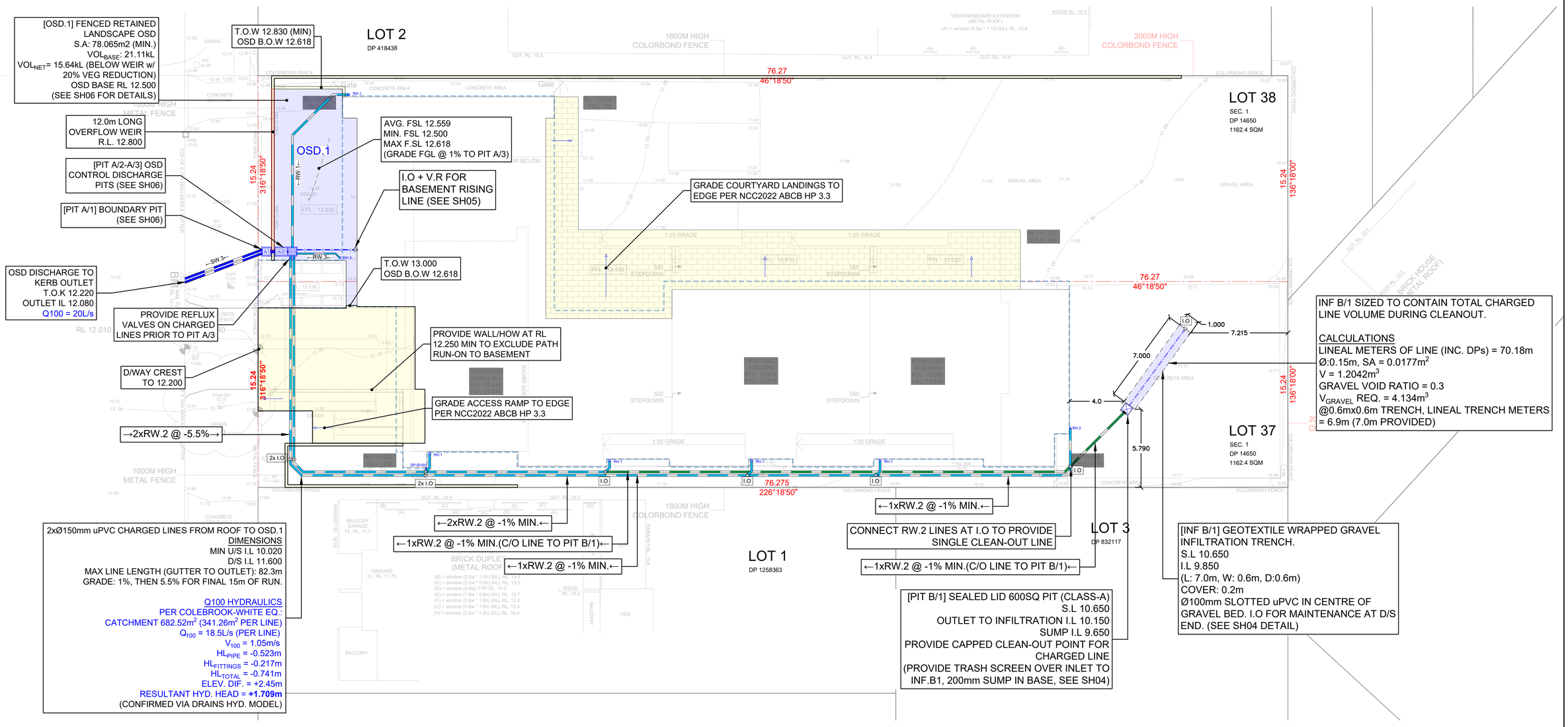
A TYPICAL CROSS SECTION A-A

NOTES FOR ABSORPTION SYSTEM:

1. SYSTEM DETAILED IN STANDARD DRAWING IS FOR REPRESENTATIONAL PURPOSES. REFER TO SCHEDULE AND PLAN FOR SITE SPECIFIC SYSTEM DIMENSIONS.
2. SYSTEM TO BE ORIENTATED LEVEL WITH CONTOUR, PERPENDICULAR TO LAND FALL.
3. DETAIL AND SCHEDULE TO BE READ IN CONJUNCTION WITH PRODUCT MANUFACTURE'S SPECIFICATIONS FOR ALL PRODUCTS.

PIPE SCHEDULE (GENERAL)

ID	TYPE	DN (Ø) (m)	PIPE GRADIENT (%)	NOTES
RW.1	uPVC DWV	150	1% MIN.	GRAVITY ROOF DRAINAGE LINE
RW.2	uPVC DWV	150	AS MARKED	CHARGED ROOF DRAINAGE LINE
RW.3	uPVC DWV	100	1% MIN.	GRAVITY ROOF DRAINAGE LINE
SW.1	uPVC DWV	150	1% MIN.	GRAVITY STORMWATER LINES.
SW.3	GALV RHS	2x 75x150	1% MIN.	GRAVITY STORMWATER LINES.



2xØ150mm uPVC CHARGED LINES FROM ROOF TO OSD.1
DIMENSIONS
MIN U/S I.L 10.020
D/S I.L 11.600
MAX LINE LENGTH (GUTTER TO OUTLET): 82.3m
GRADE: 1%, THEN 5.5% FOR FINAL 15m OF RUN.

Q100 HYDRAULICS
PER COLEBROOK-WHITE EQ.:
CATCHMENT 682.52m2 (341.26m2 PER LINE)
Q100 = 18.5L/s (PER LINE)
V100 = 1.05m/s
HL PIPE = -0.523m
HL FITTINGS = -0.217m
HL TOTAL = -0.741m
ELEV. DIF. = +2.45m
RESULTANT HYD. HEAD = **+1.709m**
(CONFIRMED VIA DRAINS HYD. MODEL)

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: GROUND FLOOR DRAINAGE PLAN
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

PROJECT ID: 3837-SW
SCALE: 1:150@ A3, 1:75@ A1
SHEET NO.: 4 OF 5

PUMP-WELL SIZING CALCULATIONS:

CATCHMENT: 70.4 (m2)
20% INCREASE ALLOWING FOR WIND-DRIVEN RAIN: 84.6 (m2)

1% AEP PARAMETERS

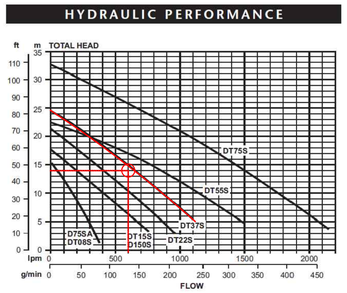
1% AEP 2HR IFD: 35.7 (mm/hr)
DISCHARGE $^{1\%}Q_{2HR}$: 0.755 (L/s)
VOLUME $^{1\%}Q_{2HR}$: 5.44 [kL]
1% AEP 5MIN IFD: 195 (mm/hr)
INFLOW $^{1\%}Q_{5MIN}$: 5 (L/s)

10% AEP PARAMETERS

10% AEP 2HR IFD: 24.4 (mm/hr)
DISCHARGE $^{10\%}Q_{2HR}$: 0.516 (L/s)
VOLUME $^{10\%}Q_{2HR}$: 3.716 [kL]

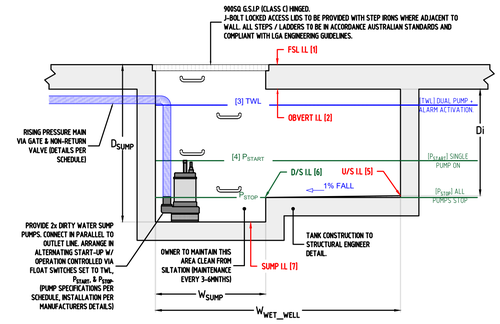
RESULTANT DESIGN VALUES

1. MINIMUM PUMP RATE SET TO 10 L/S PER AS3500.3:2018; RESULTANT HEAD CALCULATED VIA COLEBROOK WHITE EQ, (SEE PUMP WELL SCHEDULE FOR DETAILS)
2. PER AS3500.3:2018, MINIMUM CONTROL VOLUME OF PUMP (TWL - P_{STOP}) SET TO 3.0 kL FOR 10 L/S (600LPM) MINIMUM PUMP RATE.
3. TO REDUCE IN NUISANCE C/PARK PONDING IN POWER OUTAGE, WELL VOLUME SET TO 1%AEP 2HR INFLOW OF 5.5kL.



PUMP-WELL DESIGN LEVELS

REF	DETAIL	DEPTH FROM BASE [m]	R.L [m, AHD]	CUMULATIVE VOLUME [m^3]
[1]	SURFACE LEVEL F.S.L.	0.890	8.890	-
[2]	TANK OBVERT	0.680	8.690	5.535
[3]	DESIGN TOP WATER LEVEL (TWL)	0.500	8.500	3.558
[4]	SINGLE PUMP START (P_{START})	0.500	8.500	3.558
[5]	WELL U/STREAM STORAGE LEVEL (U.S I.L)	0.234	8.236	0.763
[6]	WELL D/STREAM STORAGE LEVEL (D.S I.L) + PUMP STOP (P_{STOP})	0.200	8.200	0
[7]	SUMP I.L	0	8.000	0

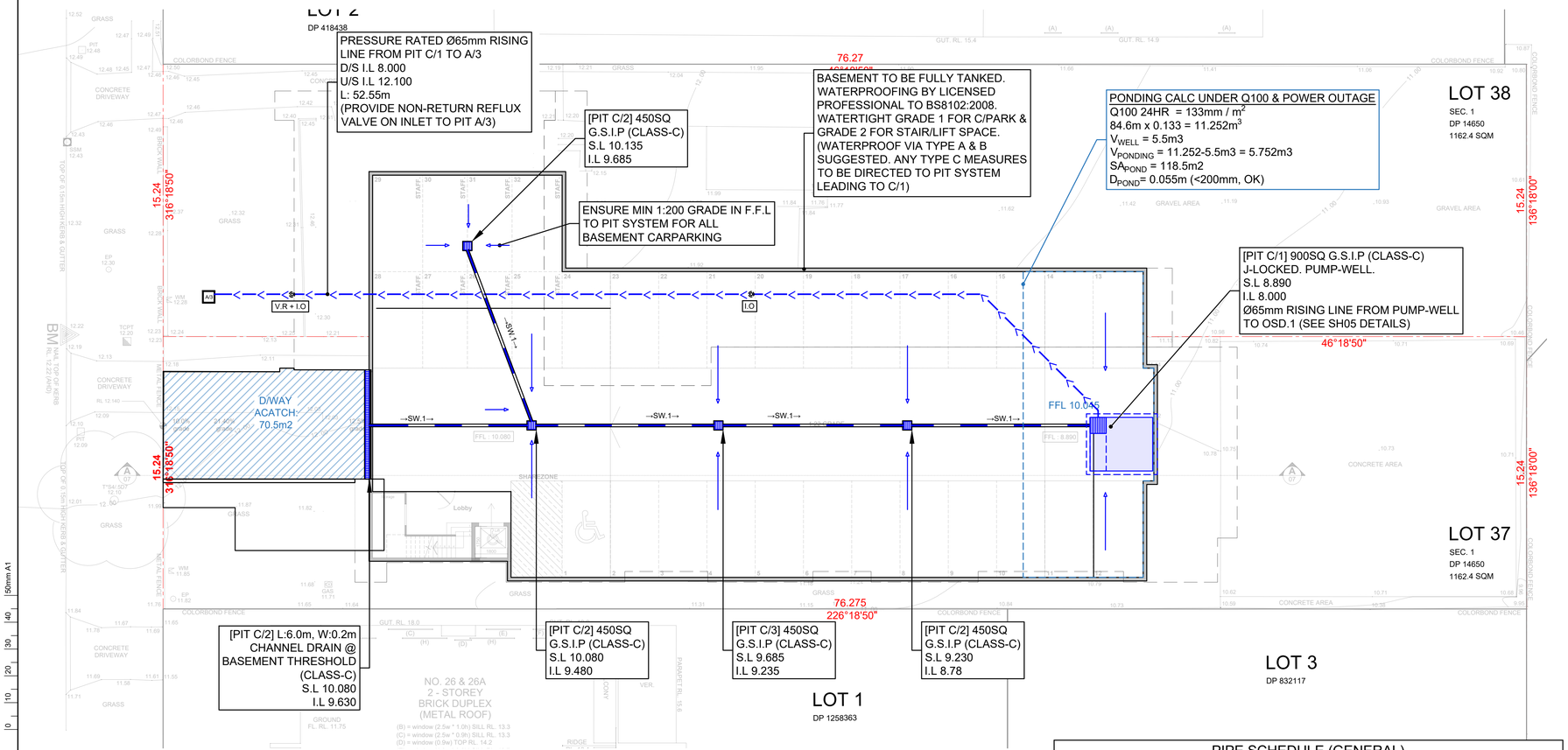


BASEMENT PUMP WELL - TYPICAL SECTION
SCALE: 1:25 @ A3

STANDARD BASEMENT PUMP-WELL NOTES

THE PUMP-WELL SYSTEM IS DESIGNED TO WORK IN THE FOLLOWING MANNER:

1. THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE EQUAL OPERATION LOAD & PUMP LIFE.
2. A LOW LEVEL FLOAT SWITCH SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE WELL. THIS SWITCH WILL FUNCTION AS THE OFF SWITCH FOR ALL PUMPS.
3. A SECOND FLOAT SWITCH SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm (U.N.O) ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL ACTIVATE AND DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL SWITCH.
4. A THIRD FLOAT SWITCH SHALL BE PROVIDED AT A HIGH LEVEL OF THE WELL. THIS SWITCH SHOULD START THE OTHER PUMP SO THAT BOTH PUMPS ARE ACTIVATED. THIS SWITCH SHALL ALSO ACTIVATE THE HIGH LEVEL ALARM.
5. AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT & AUDIBLE SIGNAL. THE ALARM AND PUMP FAILURE WARNING SIGN ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH BATTERY BACK-UP IN THE EVENT OF POWER OUTAGE.



TYPICAL PUMP-OUT WARNING SIGN DETAIL
SCALE: 1:10 @A3

NOTES
1. SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT.
2. A SUITABLE ALARM SYSTEM POSITIONED AT ENTRANCE OF BASEMENT TO BE PROVIDED ADJACENT TO WARNING SIGN TO SIGNAL PUMP FAILURE (TO LGA SPEC.)
3. SIGN SHALL BE MADE FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE.
4. SIGN TO BE FIXED USING CHEMSET OR EPOXY.

TYPICAL CONFINED SPACE DANGER SIGN DETAIL
SCALE: 1:10 @A3

NOTES
1. A CONFINED SPACE DANGER SIGN SHALL BE PLACED NEXT TO EACH AND EVERY ACCESS POINT SO THAT THEY ARE VISIBLE TO PERSONS ENTERING ANY BELOW GROUND TANK OR PIT.
2. MINIMUM SIGN DIMENSIONS:
   2.1. LARGE ENTRIES: 300mm x 450mm
   2.2. SMALL ENTRIES: 250mm x 180mm
3. SIGN SHALL BE MADE FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE.
4. SIGN TO BE FIXED USING CHEMSET OR EPOXY.

PIPE SCHEDULE (GENERAL)

ID	TYPE	DN (Ø) (m)	PIPE GRADIENT (%)	NOTES
RW.1	uPVC DWV	150	1% MIN.	GRAVITY ROOF DRAINAGE LINE
RW.2	uPVC DWV	150	AS MARKED	CHARGED ROOF DRAINAGE LINE
RW.3	uPVC DWV	100	1% MIN.	GRAVITY ROOF DRAINAGE LINE
SW.1	uPVC DWV	150	1% MIN.	GRAVITY STORMWATER LINES.
SW.3	GALV RHS	2x 75x150	1% MIN.	GRAVITY STORMWATER LINES.

PUMP-WELL SCHEDULE

SYSTEM ID	PIT D/1	
TYPE	CONCRETE FORMED PUMP-WELL	
TOTAL VOLUME [kL]	5.5	
CONTROL VOLUME 'TWL-P_{STOP}' [kL]	3.0	
PUMP-WELL DIMENSIONS (m)	LENGTH Li:	3.50
	WIDTH Wi:	3.00
	DEPTH Di:	0.89
SUMP DIMENSIONS (m)	LENGTH L_{SUMP}:	3.00
	WIDTH W_{SUMP}:	0.90
	DEPTH D_{SUMP}:	0.20
ACCESS DETAILS	DIMENSIONS (m):	0.9x0.9
	CLASS-C GRATED LID w/ J-BOLTS (OR EQUIV.)	
PUMP & RISING MAIN SCHEDULE		
PUMP DETAILS	PERFORMANCE:	13.8m HEAD @ 600LPM (MIN.)
	MODEL:	2x DAVEY DT37S (OR EQUIV. DIRTY WATER SUMP PUMP)
PUMP CONFIGURATION	ALTERNATING AUTOMATED OPERATIONS VIA FLOAT SWITCHES (SEE PUMP-WELL DESIGN LEVEL & NOTES). PROVIDE FAILURE ALARM PER DETAILS.	
RISING PRESSURE LINE	DIMENSIONS [mm]:	Ø65mm PVC CLASS 6
	PUMP SUMP I.L (m, AHD)	8.000
	LINE OUTLET I.L (m, AHD)	12.1 (12.8 ADOPTED AS OSD TWL)
	LINE LENGTH (m)	52.550
HEAD LOSS	ELEVATION DIFFERENCE (m)	4.800
	H/LOSS IN PIPE LINE (m)	6.605
	H/LOSS IN FITTINGS (m)	2.398
	TOTAL RESULTANT HEAD (m)	13.800
RISING LINE NOTES	CONNECT BOTH PUMPS IN PARALLEL TO RISING MAIN VIA GATE & NON-RETURN VALVES. PROVIDE NON-RETURN VALVE ON OUTLET OF RISING LINE.	

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: BASEMENT DRAINAGE PLAN
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

PROJECT ID: 3837-SW
SCALE: 1:150@ A3
1:75@ A1
SHEET NO.: 5 OF 5

THIS IS AN

ON-SITE STORMWATER DETENTION SYSTEM

REQUIRED BY LOCAL COUNCIL. DO NOT TAMPER WITH. CONTACT LOCAL COUNCIL PRIOR TO ANY PROPOSED WORKS IN THIS AREA.

FLOOD RISK ON LOWER LAND MAY INCREASE IF THE VOLUME OF THE TANK OR POND IS REDUCED, OR IF THE OUTLET PLATE IS INTERFERED WITH.

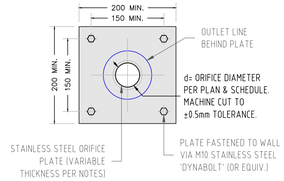
THE TANK, SUMP, ORIFICE AND PIT DEBRIS SCREENS MUST BE CLEANED OF DEBRIS AND SEDIMENT ON A REGULAR BASIS BY THE OWNER.

TYPICAL O.S.D. MARKER PLATE DETAIL

SCALE: –

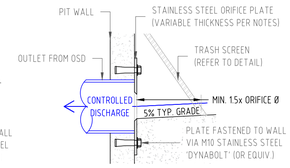
NOTES

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



REDUCED ORIFICE PLATE- TYP. DETAIL

SCALE: -

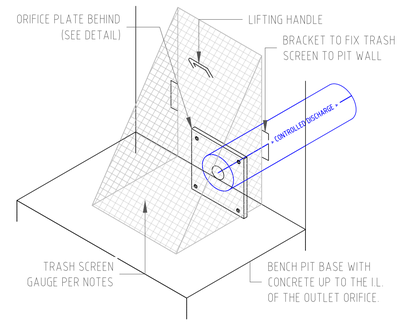


REDUCED ORIFICE ASSEMBLY- TYP. SECTION

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.

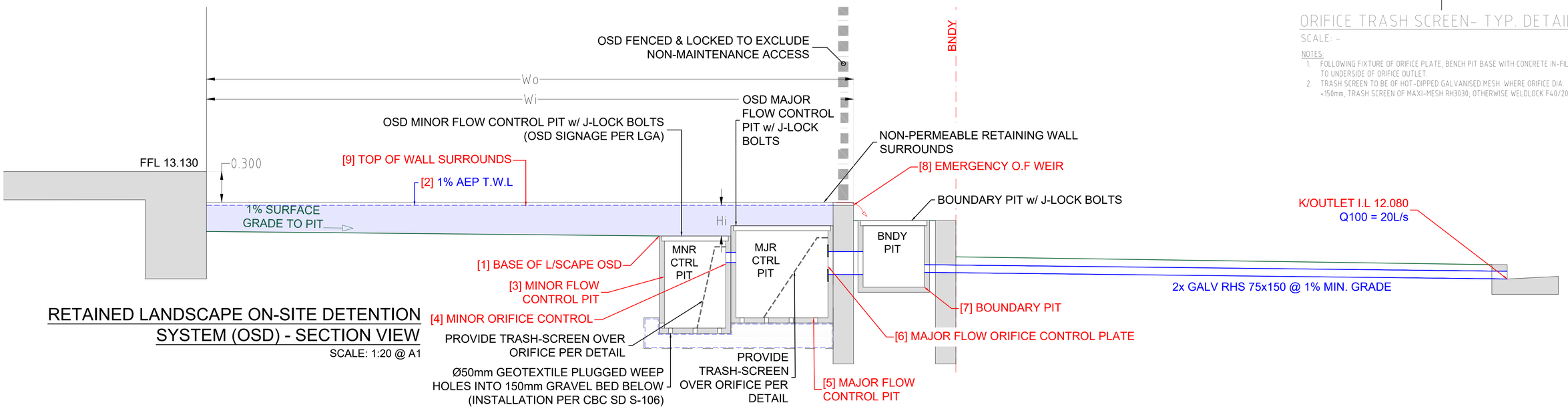


ORIFICE TRASH SCREEN- TYP. DETAIL

SCALE: -

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 WELDLOCK F40/203.



RETAINED LANDSCAPE ON-SITE DETENTION SYSTEM (OSD) - SECTION VIEW

SCALE: 1:20 @ A1

ON-SITE DETENTION (OSD) SCHEDULE

REF						
-	SYSTEM ID		OSD1			
-	TYPE		RETAINED LANDSCAPE OSD			
-	SURFACE AREA (m^2)		78.065			
-	OSD VOLUME (kL)		18.77 (15.64 EFFECTIVE VOLUME BELOW WEIR w/ 20% REDUCTION DUE TO VEGETATION)			
-	TOTAL VOLUME (kL)		21.11 (17.55 EFFECTIVE VOLUME BELOW T.O.W w/ 20% VEG. REDUCTION)			
-	OSD DIMENSIONS (m)	LENGTH:	Li:	12.67-13.07	Lo:	VARIABLE
		WIDTH:	Wi:	6.13	Wo:	6.33
		HEIGHT:	Hi:	0.3 (MAX)	Ho:	VARIABLE
[1]	BASE SURFACE LEVEL S.L. (m, AHD)		12.500AT PIT A/3 (GRADES TO EDGES @ 1%)			
[2]	1% AEP DESIGN T.W.L	DEPTH (m):	0.300 (MAX)			
		T.W.L (m, AHD):	12.800			
[3]	MINOR FLOW CONTROL PIT (A/3)	DIMENSIONS (m):	L_{CTR_PIT}:	0.600	W_{CTR_PIT}:	0.600
		LID DETAIL:	CLASS-A GRATE w/ J-BOLTS			
		LID S.L. (m, AHD):	12.500			
		SUMP DETAIL:	H_{SUMP} (m):	0.900	I.L (m, AHD):	11.600
[4]	MINOR ORIFICE CONTROL DETAILS	MNR OUTLET (mm):	Ø100 (uPVC OUTLET ONLY, NO ORIFICE REQUIRED)			
		REDUCED ORIFICE (mm):	Ø (mm):	-	$I.L_{ORIFICE}$ (m, AHD):	12.240
-	MINOR CTRL PIT PEAK DISCHARGE (L/S):		16			

[5]	MAJOR FLOW CONTROL PIT (A/2)	DIMENSIONS (m):	L_{CTR_PIT}:	0.600	W_{CTR_PIT}: 0.900
		LID DETAIL:	CLASS-A GRATE w/ J-BOLTS		
		LID S.L. (m, AHD):	12.600		
		SUMP DETAIL:	H_{SUMP} (m):	0.900	I.L (m, AHD): 11.700
[6]	MAJOR ORIFICE CONTROL DETAILS	OSD OUTLET (mm):	Ø225 uPVC w/ SHARP-EDGE ORIFICE PLATE		
		REDUCED ORIFICE (mm):	Ø (mm):	120	$I.L_{ORIFICE}$ (m, AHD): 12.175
-	MAJOR CTRL PIT PEAK DISCHARGE (L/S):		20		
[7]	BOUNDARY PIT (A/1)	DIMENSIONS (m):	L_{OF_PIT}:	0.600	W_{OF_PIT}: 0.600
		LID DETAIL:	CLASS-A SEALED LID w/ J-BOLTS (OR EQUIV.)		
		LID S.L. (m, AHD):	12.650		
		PIT OUTLET:	H_{OF_PIT} (m):	0.505	$I.L_{OUT}$ (m, AHD): 12.145
			Ø (mm):	2x RHS GALV 75x150	
[8]	EMERGENCY OSD OVERFLOW WEIR		D_{OF} (m):	0.030	$I.L_{WEIR}$ (m, AHD): 12.800
			LWEIR (m):	12.0 (MIN.)	Q100 (m3/s): NIL
			Q_{CAP} (L/s)	108	Q_{REQ} (L/s): 57
[9]	TOP OF WALL 'T.O.W' R.L. (m, AHD)		12.830 (MIN)		

COMMENTS: RETAINED LANDSCAPE OSD. DISCHARGE CONTROL OF 1% AEP POSTDEV TO PREDEV KERB-OUTLET DISCHARGE. OSD TO BE PROVIDED WITH STAFF & STUDENT EXCLUSION FENCING. ALL ADJACENT WALLS AND FOOTINGS TO BE WATERPROOFED TO RL 13.300

ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

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ENVIRONMENTAL FLOOD STORMWATER GEOTECHNICAL ACOUSTICS WASTEWATER

PROJECT DESCRIPTION: PROPOSED CHILDCARE	SHEET: OSD SYSTEM DETAILS
PROJECT SITE: 28-30 FOREST RD, EAST HILLS NSW	PLAN: STORMWATER MANAGMENT PLAN
LGA: CANTERBURY-BANKSTOWN COUNCIL	CLIENT: J. ABI C/- DAWSONVU

PROJECT ID: 3837-SW

SCALE: -@ A3 -@ A1

SHEET NO.: 6 OF 6

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