







# STORMWATER MANAGEMENT PLANS

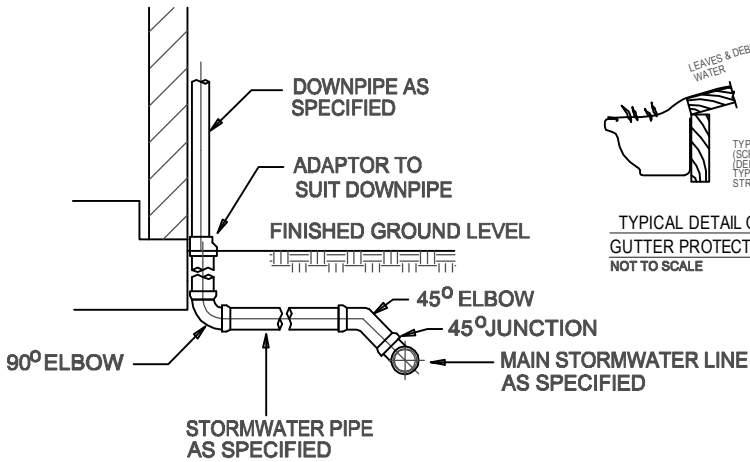
## PROPOSED NEW RESIDENTIAL DEVELOPMENT

### No.30 OWEN STANLEY AVENUE, BEACON HILL NSW 2100

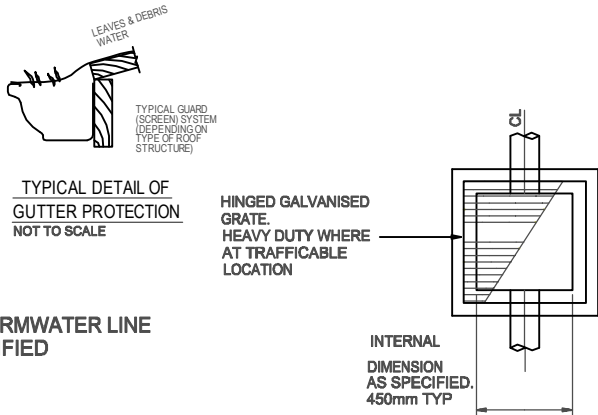
LEGEND	
	GRATED INLET PIT
450x450	450mm SQUARE INTERNAL
GRT 75.54	GRATE LEVEL = RL 75.54
IL 75.12	INVERT LEVEL = RL 75.12
o IO	INSPECTION OPENING CAP
o DP	PROPOSED DOWNPIPE 90mm dia or 100mm x 50mm RECTANGULAR UNO
	EXISTING TREE
	GRATED TRENCH DRAIN
	GRATED ROUND OUTLET 100mm DIAMETER
	PROPOSED DOWNPIPE SPREADER
	STRUCTURE No 1 (FOR HYDRAULIC CALCS)
---	STORMWATER DRAINAGE
- . - . -	100 DIA CHARGED/1% MIN - ROOF AREA ONLY

NORTHERN BEACHES COUNCIL- STORMWATER DRAINAGE DESIGN REQUIREMENTS	
<b>DESIGN CODE: WARRINGAH COUNCIL'S ONSITE STORMWATER DETENTION TECHNICAL SPECIFICATION REVISED AUGUST 2012</b>	
PROPOSED DEVELOPMENT: NEW SINGLE DWELLING DEVELOPMENT SITE AREA= 618m2	
PROPOSED SITE COVERAGE CALCULATIONS: ROOF + IMPERVIOUS AREAS = 190m2 + 74m2 =264/618= 43% <b>THEREFORE OSD IS REQUIRED.</b> SSR=200m3 per Ha PSD=400 L/s per Ha	
THEREFORE OSD VOLUME = 200 x 0.0618 = 12.36m3 - ADD 20% FOR LANDSCAPING THEREFORE <b>FINAL OSD VOLUME IS 14.80m3</b> <b>PERMITTED SITE DISCHARGE = 400 x .0618 = 24.72 L/s</b>	
THEREFORE COLLECT THE MAJORITY OF THE NEW ROOF AREA AND DISCHARGE TO THE BASIN RAINWATER TANK WITH THE OVERFLOW AND REMAINING ROOF AREA DRAINING INTO THE ABOVE GROUND DETENTION BASIN LOCATED WITHIN THE FRONT YARD. THE DRIVEWAY BYPASSES THE OSD BASIN GIVEN THE GARAGE FLOOR LEVEL.	
<b>DESIGN BASED ON AR &amp; R, AS3500 &amp; RELEVANT STORMWATER MANAGEMENT CODE.</b>	

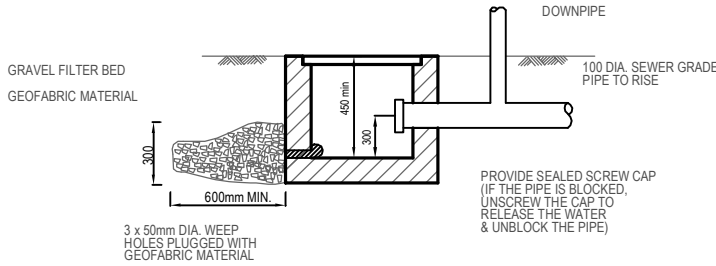
GENERAL NOTES	
1. FINAL LOCATION OF NEW DOWNPIPES TO BE DETERMINED BY BUILDER/ARCHITECT AT TIME OF CONSTRUCTION.	
2. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTS AND OTHER CONSULTANTS DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH WORK.	
3. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH AS/NZS 3500.3:2003 STORMWATER DRAINAGE, BCA AND LOCAL COUNCIL POLICY/CONSENT/REQUIREMENTS.	
4. ALL DIMENSIONS AND LEVELS TO BE VERIFIED BY BUILDER ON-SITE PRIOR TO COMMENCEMENT OF WORKS. THESE DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONS NOR TO BE USED FOR SETOUT PURPOSES.	
5. ALL SURVEY INFORMATION AND PROPOSED BUILDING AND FINISHED SURFACE LEVELS SHOWN IN THESE DRAWINGS ARE BASED ON LEVELS OBTAINED FROM DRAWINGS BY OTHERS.	
6. THESE DRAWINGS DEPICT THE DESIGN OF SURFACE STORMWATER RUNOFF DRAINAGE SYSTEMS ONLY AND DO NOT DEPICT ROOF DRAINAGE OR SUBSOIL DRAINAGE SYSTEMS UNLESS NOTED OTHERWISE. THE DESIGN OF ROOF AND SUBSOIL DRAINAGE SYSTEMS IS THE RESPONSIBILITY OF OTHERS.	
7. ALL STORMWATER DRAINAGE PIPES ARE TO BE 100mm DIAMETER uPVC AT MINIMUM 1% GRADE UNLESS NOTED OTHERWISE.	
8. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND LEVEL ALL EXISTING SERVICES OR OTHER STRUCTURES WHICH MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO COMMENCEMENT OF WORKS.	
9. ALL PITS WITHIN DRIVEWAYS TO BE 150mm THICK CONCRETE OR EQUAL.	
10. THIS PLAN IS THE PROPERTY OF EZE DRAINAGE SOLUTIONS PTY LTD AND MAY NOT BE USED OR REPRODUCED WITHOUT WRITTEN PERMISSION FROM EZE DRAINAGE SOLUTIONS PTY LTD.	



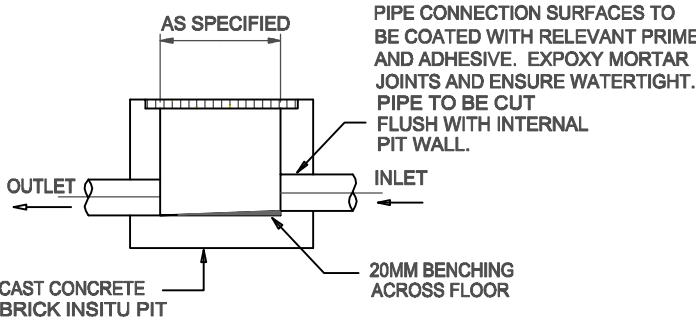
TYPICAL DETAIL - DOWNPIPE CONNECTION  
NOT TO SCALE



TYPICAL DETAIL - STANDARD PIT  
NOT TO SCALE



TYPICAL DETAIL - CLEANING EYE PIT  
NOT TO SCALE



A	01.04.20	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
WINCREST HOMES
CLIENT
MR. & MRS. DRY

<b>EZE DRAINAGE SOLUTIONS</b>
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CIVIL & STORMWATER MANAGEMENT
Ph: (02) 97067767
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DWG TITLE
COVER SHEET & CALCULATION TABLE
PROJECT TITLE
PROPOSED NEW RESIDENTIAL DEVELOPMENT
No.30 OWEN STANLEY AVENUE, BEACON HILL NSW 2100

DESIGNED BY :
EZ
ISSUED BY :
BE MIE Aust PENG
JOB No
18093
DWG No
D1
No IN SET
4
ISSUE
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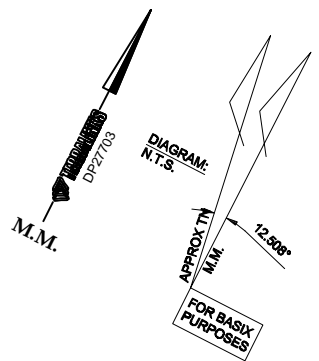
**NOTE**  
LOCATION OF NEW DOWNPIPES SHOWN ON THIS DRAWING ARE SUBJECT TO VERIFICATION BY BUILDER DURING CONSTRUCTION. DOWNPIPE LOCATION MAY BE VARIED PROVIDED INTENT OF THIS DESIGN IS MAINTAINED.

**NOTE**  
THIS DRAWING IS FOR STORMWATER MANAGEMENT DESIGN AND DOES NOT COVER ANY OVERLAND FLOW DESIGN REQUIREMENTS.

100 DIA ROOF ONLY.  
CHARGED LINE PRESSURE GRADE uPVC SOLVENT WELDED.  
NOTE CHARGED SYSTEM TO BE FULLY SEALED FROM TANK INLET TO ROOF GUTTER LEVEL.  
ROOF GUTTER RL = 116.80  
TANK INLET RL = 112.80  
DIFFERENTIAL HEAD = 4.00  
SUFFICIENT TO DRIVE SYSTEM.

**BASIX COMMITMENT**  
PROPOSED DWELLING TO HAVE A 2000 LITRE (MINIMUM) RAINWATER TANK TO BE CONNECTED TO 80m2 OF ROOF AREA IN ACCORDANCE WITH BASIX REQUIREMENTS.

**NOTE**  
THIS DRAWING IS NOT TO BE USED FOR SETOUT PURPOSES- REFER TO ARCHITECTURAL DRAWINGS.



**BASIX RAINWATER/RE-USE TANK**  
1 x 3000 litre ABOVE GROUND TANK  
DIMENSIONS : 2400 LONG x 950 WIDE x 1480 HEIGHT  
"TANKWORKS/KINGSPAN EVOLUTION TANK" OR APPROVED EQUIV.FOR RE-USE IN ACCORDANCE WITH BASIX CERTIFICATE. INSTALL TO MANUFACTURERS SPECIFICATIONS, AS 3500, DEPT HEALTH AND COUNCIL'S REQUIREMENTS. REFER TYPICAL DETAIL SHEET D3.  
TANK INVERT = RL 111.30 nom  
TOP TANK = RL 112.78  
CONNECT AT LEAST 80m2 OF ROOF AREA TO TANK AS REQUIRED BASIX CERTIFICATE

HD GRATED TRENCH DRAIN  
150 mm WIDE min  
120 mm DEEP min  
GRATE RL : 111.38 NOM  
100 DIA OUTLET 1 % MIN

ORIGIN OF LEVELS :  
PM 2125 RL=127.53 (AHD) FOUND NEAR THE INTERSECTION OF PATRICK STREET & ETHIE ROAD.  
ACCURACY OF ORIGIN : ±0.010m

PIT P4 : 600 x 600 SQ  
GRATE RL : 111.35 nom  
INVERT RL : 110.30  
APPROX LOCATION OF SEWER MAIN

DISCHARGE TO KERB & GUTTER TO COUNCIL REQUIREMENTS. USE 150 x 100 x 4mm RHS AT 1% MIN OUTLET. OUTLET IL 110.15 AHD TO BE CONFIRMED PRIOR TO COMMENCEMENT OF WORKS. ALL SERVICES TO BE LOCATED PRIOR BY OTHERS. ENSURE SUFFICIENT COVER OVER PIPE.

**WARNING**  
LOCATION AND DEPTH OF ALL UNDERGROUND SERVICES TO BE INVESTIGATED WITH THE RELEVANT AUTHORITIES PRIOR TO COMMENCING WORKS.




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**WINCREST HOMES**  
CLIENT  
**MR. & MRS. DRY**

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DWG TITLE  
**STORMWATER MANAGEMENT PLAN**  
PROJECT TITLE  
**PROPOSED NEW RESIDENTIAL DEVELOPMENT**  
No.30 OWEN STANLEY AVENUE, BEACON HILL NSW 2100

DESIGNED BY :  EZ		ISSUED BY :    BE MIE Aust PENG	
JOB No 18093	DWG No D2	No IN SET 4	ISSUE A

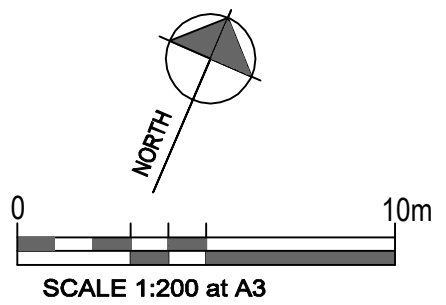
**NOTE**  
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL PLANS:  
**WINCREST HOMES**  
**JOB NO.17386 ISSUE D**  
**DATED 06.12.2019**

**NOTE**  
LOCATION OF NEW PITS SHOWN ON THIS DRAWING ARE SUBJECT TO VERIFICATION BY BUILDER DURING CONSTRUCTION. PIT LOCATIONS MAY BE VARIED PROVIDED INTENT OF THIS DESIGN IS MAINTAINED.

**STORMWATER DETENTION BASIN - ABOVE GROUND**  
**EXTENT OF BASIN SHOWN SHADED.**  
DESIGN AREA = 43m<sup>2</sup>  
AVERAGE DEPTH = 350mm  
MAXIMUM DEPTH = 500mm  
TOP WATER LEVEL = RL 112.50 AHD  
DESIGN VOLUME = 15.00m<sup>3</sup>  
DISCHARGE CONTROL PIT : REFER DETAIL SHEET D4  
BASIN OVERFLOW : FRONT FENCE WEIR OVERFLOW PERIMETER WALL TO BE MASONRY & WATERTIGHT TO SEPARATE STRUCTURAL ENGINEERS DETAIL AT CONSTRUCTION CERTIFICATE STAGE BY OTHERS.

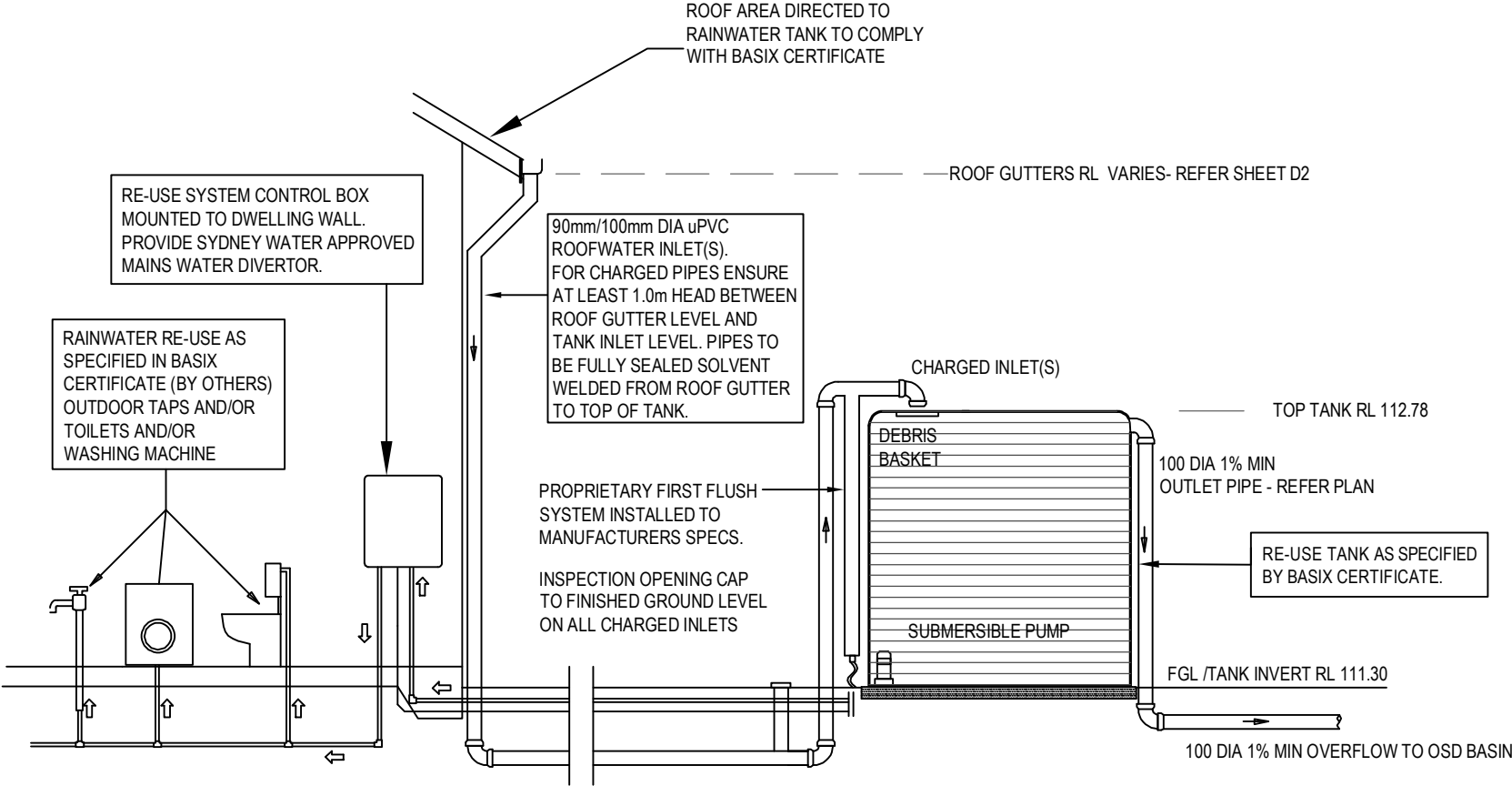
**BUSHFIRE ATTACK LEVEL (BAL)**  
**BAL 40**  
( BAL IN ACCORDANCE WITH AS3959-2009)  
TRADES & SUPPLIERS TO COMPLY WITH BAL LEVEL IN ACCORDANCE WITH AS3959-2009

**STORMWATER MANAGEMENT PLAN**  
SCALE 1: 200 A3



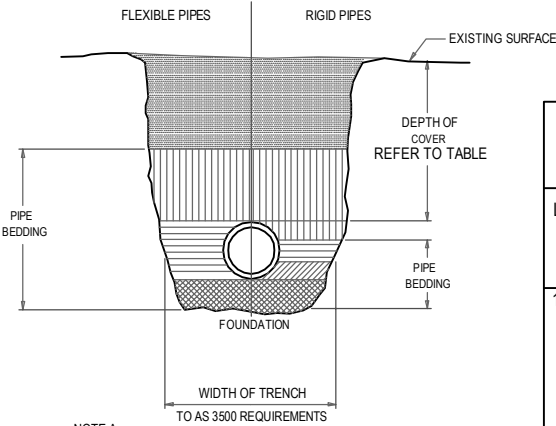
RAINWATER RE-USE SYSTEM NOTES

1. TOWNWATER CONNECTION TO RAINWATER TANK TO BE TO THE SATISFACTION OF SYDNEY WATER. THIS MAY REQUIRE PROVISION OF:
- a. PERMANENT AIR GAP.
  - b. A BACKFLOW PREVENTION DEVICE.
  - c. NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE RAIN WATER SUPPLY.
  - d. AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK.
2. PROVIDE AT LEAST ONE (1) EXTERNAL HOSE COCK ON THE TOWN WATER SUPPLY FOR FIRE FIGHTING.
3. PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES
4. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE.
5. PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY LICENSED ELECTRICIAN.
6. ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK. SURFACE WATER INLETS ARE NOT TO BE CONNECTED.
7. PIPE MATERIALS FOR RAINWATER SUPPLY PLUMBING ARE TO BE APPROVED MATERIALS TO AS 3500 PART 1 SECTION 2 AND TO BE CLEARLY AND PERMANENTLY IDENTIFIED "RAINWATER". THIS MAY BE ACHIEVED FOR BELOW GROUND PIPES USING IDENTIFICATION TAPE (MADE IN ACCORDANCE WITH AS 2648) OR FOR ABOVE GROUND PIPES BY USING ADHESIVE PIPE MARKERS (MADE IN ACCORDANCE WITH AS1345).
8. EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELLED "RAINWATER" ON A METALLIC SIGN IN ACCORDANCE WITH AS 1319.
9. ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY.
10. SYSTEM TO COMPLY WITH SYDNEY WATER REQUIREMENTS AND ANY CONDITIONS OF LOCAL COUNCIL DEVELOPMENT CONSENT.



TYPICAL DETAIL - RAINWATER RE-USE TANK

NOT TO SCALE

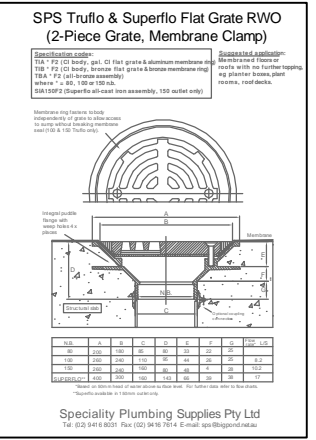
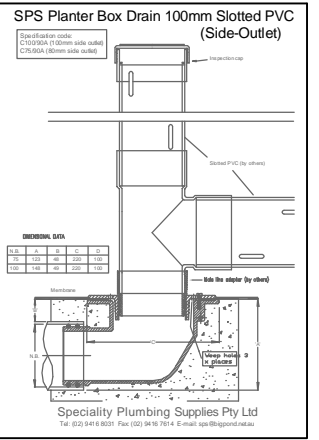
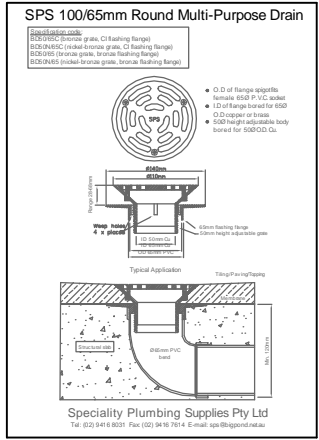


NOTE A  
STORMWATER DRAINS CONSTRUCTED OF OTHER THAN CAST IRON, DUCTILE IRON OR GALVANISED STEEL HAVING COVER LESS THAN THAT SPECIFIED IN TABLE SHALL BE COVERED WITH AT LEAST 50mm OVERLAY AND SHALL BE PAVED WITH AT LEAST —  
(a) 100mm THICKNESS OF REINFORCED CONCRETE WHERE SUBJECT TO HEAVY VEHICULAR LOADING

LEGEND - TRENCH BACKFILL

SYMBOL	FLEXIBLE PIPES	RIGID PIPES
	BACKFILL	
	PIPE OVERLAY	
	PIPE SIDE SUPPORT	SIDE ZONE
	—	HAUNCH ZONE
	PIPE UNDERLAY	BED ZONE

MINIMUM PIPE COVER (FROM FINISHED SURFACE TO TOP OF PIPE)		
LOCATION	MINIMUM COVER (mm)	
	CAST/DUCTILE IRON GAL STEEL	OTHER AUTHORISED PRODUCTS (*)
1. NOT SUBJECT TO VEHICULAR LOADING: A. WITHOUT PAVEMENT: i. FOR SINGLE DWELLINGS - ii. OTHER THAN SINGLE DWELLINGS -	0 0	100 300
B. WITH PAVEMENT OF BRICK/UNREINFORCED CONCRETE -	0 (**)	50 (**)
2. SUBJECT TO VEHICULAR LOADING: A. OTHER THAN ROADS: i. WITHOUT PAVEMENT - ii. WITH PAVEMENT OF: - REINF. CONC. FOR HEAVY VEHICLES - - BRICK/UNREINF. CONC LIGHT VEHICLES -	300 0 (** #) 0 (** #)	450 100 (** #) 75 (** #)
B. ROADS i. SEALED ii. UNSEALED	300 300	500 (#) 500 (#)
3. SUBJECT TO CONSTRUCTION VEHICLES OR IN EMBANKMENT CONDITIONS	300	500 (#)
(*) INCLUDES OVERLAY ABOVE THE TOP OF THE PIPE OF NOT LESS THAN 50mm THICK (**) BELOW THE UNDERSIDE OF THE PAVEMENT (#) SUBJECT TO COMPLIANCE WITH AS1762, AS2033, AS/NZS 2566.1, AS3725 OR AS 4060		



TYPICAL DETAILS- PLANTER BOX, BALCONY & TERRACE GRATE

NTS

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ARCHITECT/BUILDER  
**WINCREST HOMES**

CLIENT  
**MR. & MRS. DRY**

EZE DRAINAGE SOLUTIONS

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DWG TITLE  
**TYPICAL DETAILS**

PROJECT TITLE  
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No.30 OWEN STANLEY AVENUE, BEACON HILL NSW 2100**

DESIGNED BY :  
**EZ**

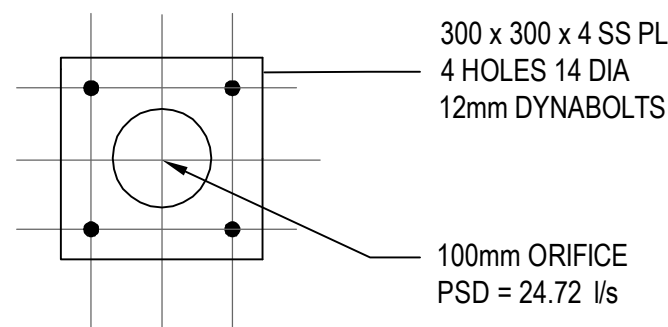
JOB No  
18093

DWG No  
D3

ISSUED BY :  
**BE MIE Aust PENG**

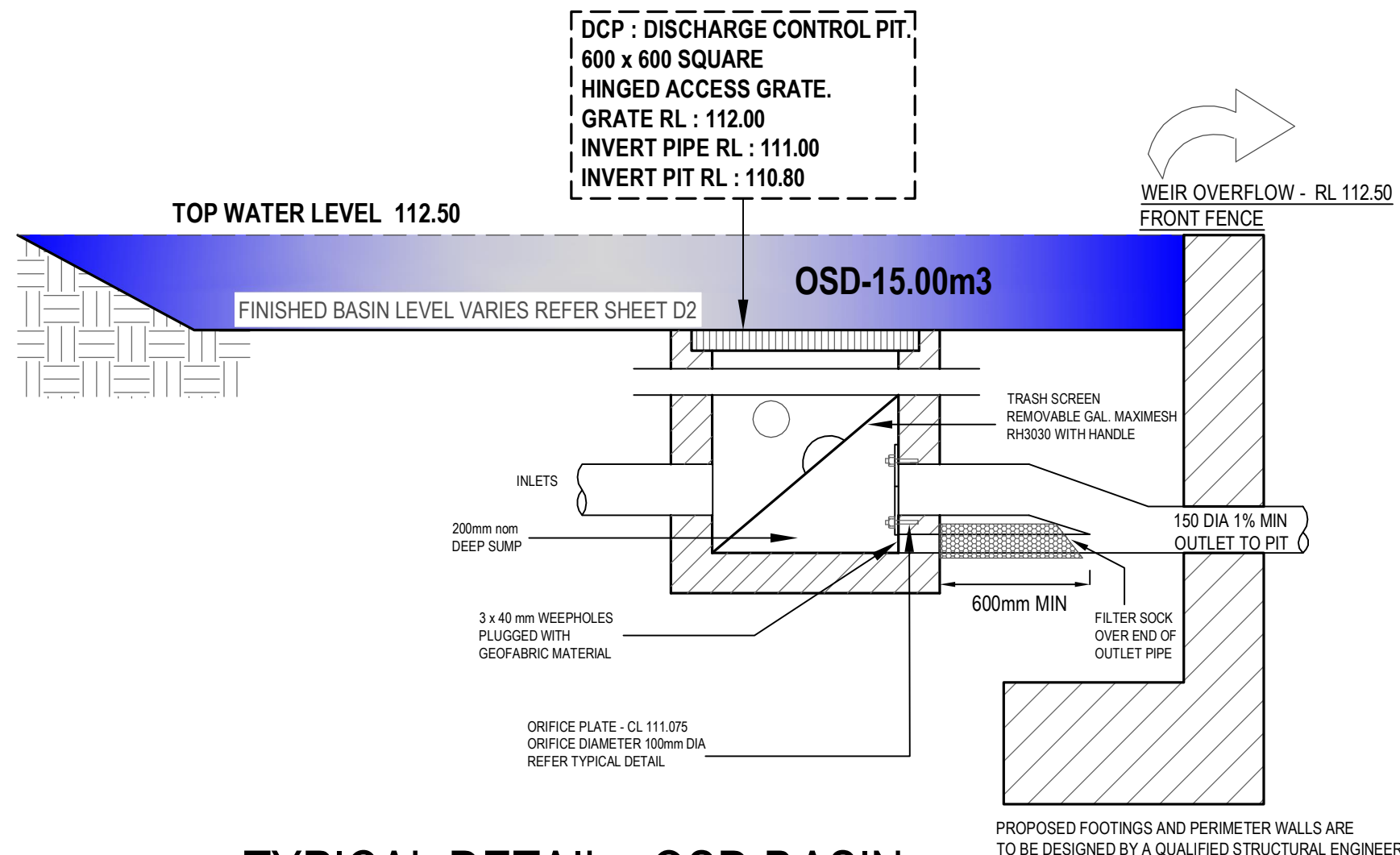
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## TYPICAL DETAIL - ORIFICE PLATE

NOT TO SCALE



## TYPICAL DETAIL - OSD BASIN

NOT TO SCALE

### To Calculate Orifice Size Plate


	$D=21.9*(PSD/(h^{.5}))^{.5}$
D(Orifice Size)mm	99.65856559
PSD(Permitted Site Discharge) L/s	24.72
h(Pressure Head)	1.425

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CLIENT MR. & MRS. DRY

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DWG TITLE OSD CALCULATION SHEET & OSD DETAILS
PROJECT TITLE PROPOSED NEW RESIDENTIAL DEVELOPMENT No.30 OWEN STANLEY AVENUE, BEACON HILL NSW 2100

DESIGNED BY :  EZ		ISSUED BY :   BE MIE Aust PENG	
JOB No 18093	DWG No D4	No IN SET 4	ISSUE A