RESIDENTIAL DEVELOPMENT

CONCEPT EROSION & SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLANS

1147 - 1149 PACIFIC HIGHWAY, PYMBLE

DESIGN SUMMARY

STORMWATER DRAINAGE CONCEPT PLAN

THE STORMWATER DRAINAGE MANAGEMENT PLAN FOR THE PROPOSED DEVELOPMENT HAS BEEN DESIGNED TO COMPLY WITH THE FOLLOWING GUIDELINES:
- AUSTRALIAN RAINFALL AND RUNOFF 2001; AND
- KU-RING-GAI COUNCIL'S DEVELOPMENT CONTROL PLAN (DCP 47 2005)

THE KEY DESIGN OBJECTIVE OF THE AFOREMENTIONED DOCUMENTS IS TO DESIGN AND CONSTRUCT AN ON SITE DETENTION (OSD) SYSTEM TO CONTROL STORMWATER RUNOFF FROM THE DEVELOPMENT SITE SUCH THAT, FOR THE 5 TO 100 YEAR ARI EVENTS, PEAK STORMWATER DISCHARGES FROM THE SITE DO NOT EXCEED PRE-DEVELOPMENT STORMWATER DISCHARGES SUCH THAT THE DEVELOPMENT
- DOES NOT INCREASE THE IMPACT OF RAINFALL EVENTS.
- DOES NOT INCREASE SURFACE AND SUB-SURFACE RUNOFF TO NEIGHBOURING PROPERTIES.
- DOES NOT ADVERSELY AFFECT THE INTEGRITY OF NATURAL WATERWAYS, GROUNDWATER AND ECOSYSTEMS.

DEVELOPMENT TYPE AND LOCATION
USING CHAPTER 3 OF DCP 47
- THE PROPOSED DEVELOPMENT TYPE IS IDENTIFIED AS DEVELOPMENT TYPE 5 – MULTI UNIT DEVELOPMENT; AND
- THE PROPOSED DEVELOPMENT LOCATION IS IDENTIFIED AS LOCATION A – LANDS DRAIN BY GRAVITY TO A DRAINAGE SYSTEM IN AN ADJACENT ROAD

PERMITTED SITE DISCHARGE AND MINIMUM OSD STORAGE VOLUME
THE PERMITTED SITE DISCHARGE AND REQUIRED MINIMUM OSD STORAGE VOLUME FOR THE PROPOSED DEVELOPMENT IS DETERMINED USING CHAPTER 6 AND APPENDIX 1 TO 3 OF DCP 47.
- USING APPENDIX 1 OF DCP 47 IS WAS DETERMINED THE SITE FALLS WITHIN THE COWEN CREEK (BC1) DRAINAGE CATCHMENT.
- USING APPENDIX 2 OF DCP 47 THE PERMITTED SITE DISCHARGE WAS IDENTIFIED AS 96 L/S/HA AND THE EQUIVALENT MINIMUM OSD STORAGE VOLUME WAS IDENTIFIED AS 414 M³/HA FOR SITE WITHIN THE COWEN CREEK DRAINAGE CATCHMENT.
- USING APPENDIX 3 OF DCP 47 THE PERMITTED SITE DISCHARGE RATE AND SITE STORAGE REQUIREMENT (SSR) FOR THE PROPOSED DEVELOPMENT OF SITE AREA 3834M² WERE CALCULATED AS 21 L/S AND 95.2M³ RESPECTIVELY. (REFER TO APPENDIX A FOR PSD AND SSR CALCULATIONS)

ON-SITE RETENTION DESIGN – RAINWATER REUSE TANK
THE MIN. REQUIRED CAPACITY OF THE RAINWATER RUSE TANK IS 5M³ AND THE MINIMUM ROOF AREA OF THE BUILDING RUN-OFF IS TO BE COLLECTED FROM IS 327m² IN ACCORDANCE WITH THE BASIX REPORT AVAILABLE AT THE TIME OF PRINTING.

4 THE COLLECTED WATER WILL BE USED FOR TOILET FLUSHING.

TOTAL ROOF AREA = 725m²

4 IT IS PROPOSED TO PROVIDE A 13.6M³ RAINWATER REUSE TANK 13.6M³ (8.6M³ IN EXCESS OF THE BASIX REQUIREMENT) LOCATED AT BASEMENT LEVEL 1. RUNOFF FROM THE SOUTHERN RESIDENTIAL COMPLEX ROOF AREA (327m²) SHALL GRAVITY DRAIN TO THE RAINWATER RETENTION TANK LOCATED AT BASEMENT LEVEL 1 VIA A NETWORK OF SLUNG DRAINAGE FOR ROOF WATER ONLY FROM THE UNDERSIDE OF THE GROUND FLOOR TRANSFER STRUCTURE. THE RAINWATER RETENTION TANK SHALL BE EQUIPPED WITH A SAFETY OVERFLOW DISCHARGING INTO THE ON SITE DETENTION TANK (TANK 1) LOCATED AT BASEMENT LEVEL 1.

WE NOTE REDUCTION IN THE MINIMUM OSD STORAGE VOLUME HAS BEING ACCOUNTED FOR THE INCLUSION OF ON SITE RETENTION.

ON-SITE DETENTION DESIGN – OSD TANKS
AS PREVIOUSLY DISCUSSED THE PERMITTED SITE DISCHARGE RATE AND SITE STORAGE REQUIREMENT (SSR) FOR THE PROPOSED DEVELOPMENT OF SITE AREA 3834M² IS CALCULATED AS 21 L/S AND 95.2M³ RESPECTIVELY.

AS PREVIOUSLY DISCUSSED THE MINIMUM REQUIRED MANDATORY RAINWATER RUSE TANK CAPACITY IS 5M³. IN ACCORDANCE WITH SECTION 6.4 AND 6.7.2 DCP 47, THE MINIMUM VOLUME OF THE MANDATORY RAINWATER TANK REQUIRED (5M³) IS DEDUCTED FROM THE MINIMUM DETENTION STORAGE VOLUME. THEREFORE IT IS PROPOSED TO PROVIDE A MINIMUM 90.2 M³ ON SITE DETENTION CAPACITY.

IT IS PROPOSED TO PROVIDE THE REQUIRED 90.2 M³ DETENTION VOLUME BY WAY OF TWO OSD TANKS LOCATED WITHIN THE SITE. WE NOTE THERE SHALL ONLY BE ONE STORMWATER DISCHARGE POINT FROM THE SITE TO COUNCILS DRAINAGE NETWORK.

OSD TANK 1 IS TO BE LOCATED AT BASEMENT LEVEL 1 AND SHALL CONTROL FLOWS FROM APPROXIMATELY 60% OF THE DEVELOPMENTS IMPERVIOUS AREAS INCLUDING FOR THE SOUTHERN BLOCKS ROOF AREA, SURFACE AREAS (BALCONIES, COURTYARDS AND PLANTERS) LOCATED WITHIN THE SOUTHERN FOOTPRINT OF THE BASEMENT CARPARK AND THE BASEMENT DRIVEWAY AREA.

OSD TANK 1 SHALL PROVIDE A DETENTION STORAGE CAPACITY OF 51.9M³. STORMWATER DISCHARGES FROM OSD TANK 1 SHALL BE RESTRICTED TO 12.5 L/S AND CONTROLLED USING AN INTERNAL ORIFICE. CONTROLLED DISCHARGES FROM OSD TANK 1 SHALL DISCHARGE TO OSD TANK 2.

OSD TANK 2 IS TO BE LOCATED UNDER THE BASEMENT CARPARK ENTRANCE RAMP AND SHALL CONTROL FLOWS FROM APPROXIMATELY 40% OF THE DEVELOPMENTS IMPERVIOUS AREAS INCLUDING FOR THE NORTHERN BLOCKS ROOF AREA, SURFACE AREAS (BALCONIES, COURTYARDS AND PLANTERS) LOCATED WITHIN THE CENTRAL AND NORTHERN FOOTPRINT OF THE BASEMENT CARPARK AND SOME LANDSCAPED AREAS (INCLUDING EXTERNAL PATHWAYS) LOCATED BEYOND THE BUILDING FOOTPRINT

OSD TANK 2 SHALL PROVIDE A DETENTION STORAGE CAPACITY OF 38.3M³. STORMWATER DISCHARGES FROM OSD TANK 2 SHALL BE RESTRICTED TO 8.5 L/S AND CONTROLLED USING AN INTERNAL ORIFICE.

CONTROLLED DISCHARGES FROM OSD TANKS 1 AND 2 SHALL PASS THROUGH A WATER QUALITY TREATMENT DEVICE PRIOR TO DISCHARGE TO THE EXISTING COUNCIL STORMWATER DRAINAGE SYSTEM IN BOBBIN HEAD ROAD VIA KERB OUTLET.

LOCALITY SKETCH
Not to Scale

DRAWING SCHEDULE

DA1.01	COVER SHEET, LOCALITY SKETCH, DRAWING SCHEDULE AND DESIGN SUMMARY
DA2.01	CONCEPT SEDIMENT & EROSION CONTROL PLAN
DA3.01	CONCEPT STORMWATER MANAGEMENT PLAN - GROUND FLOOR
DA3.02	CONCEPT STORMWATER MANAGEMENT PLAN - UNDERSIDE OF GROUND FLOOR SLAB
DA3.03	CONCEPT STORMWATER MANAGEMENT PLAN - BASEMENT LEVEL 1
DA3.04	CONCEPT STORMWATER MANAGEMENT PLAN - BASEMENT LEVEL 2
DA3.11	OSR / OSD TANK 1 DETAIL SHEET
DA3.12	OSD TANK 2 DETAIL SHEET
DA3.21	STORMWATER DETAILS SHEET 1
DA3.22	STORMWATER DETAILS SHEET 2

DRAWN: D.Cowher DESIGNED: G.EYRES JOB MANAGER: G.EYRES VERIFIER: G.EYRES

NOT FOR CONSTRUCTION

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	06.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11
4	REVISIONS SHOWN CLOUDED	CS		SF	06.12.11

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PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

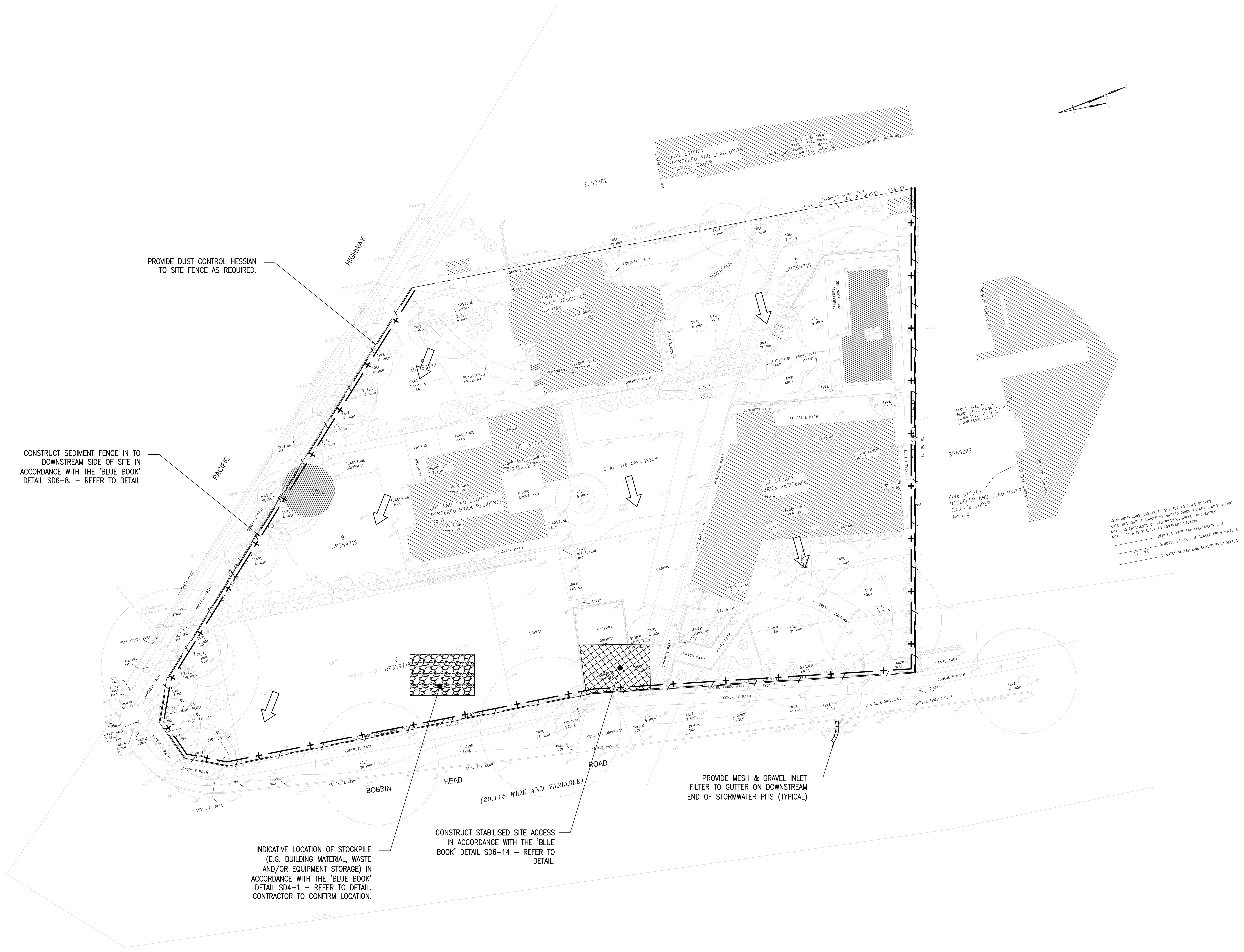
DRAWING TITLE: COVER SHEET, LOCALITY SKETCH, DRAWING SCHEDULE AND DESIGN SUMMARY

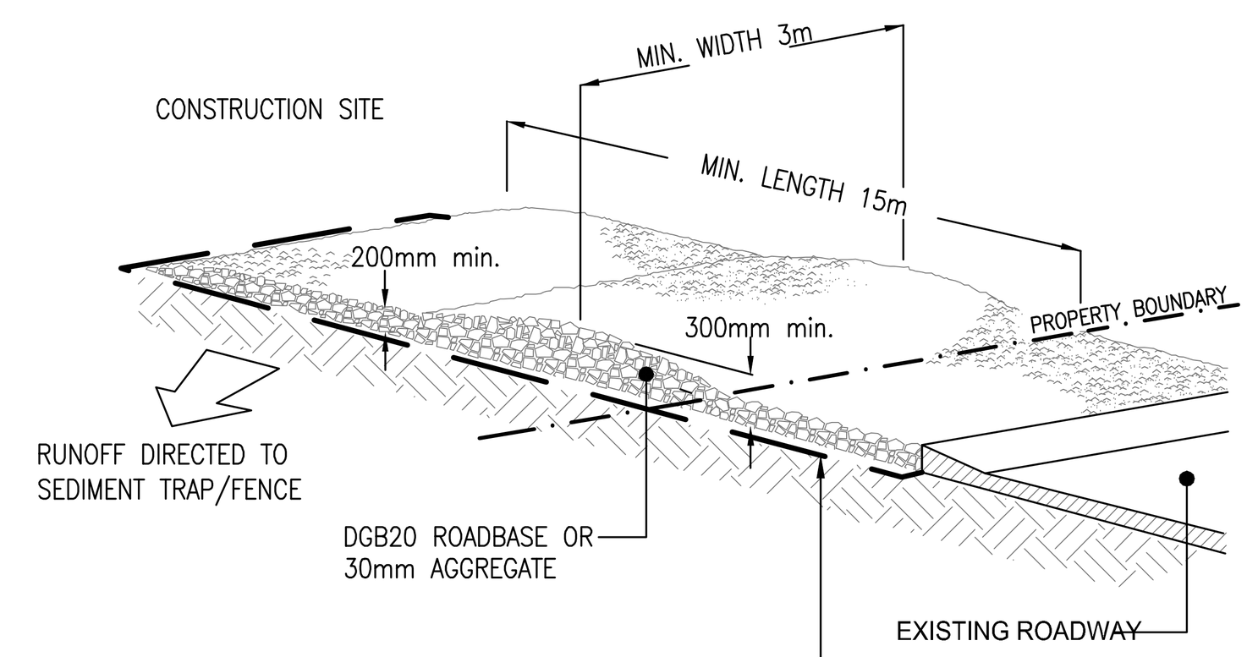
JOB NUMBER: 11010

DRAWING NUMBER: DA1.01

REVISION: 4

DRAWING SHEET SIZE = A0





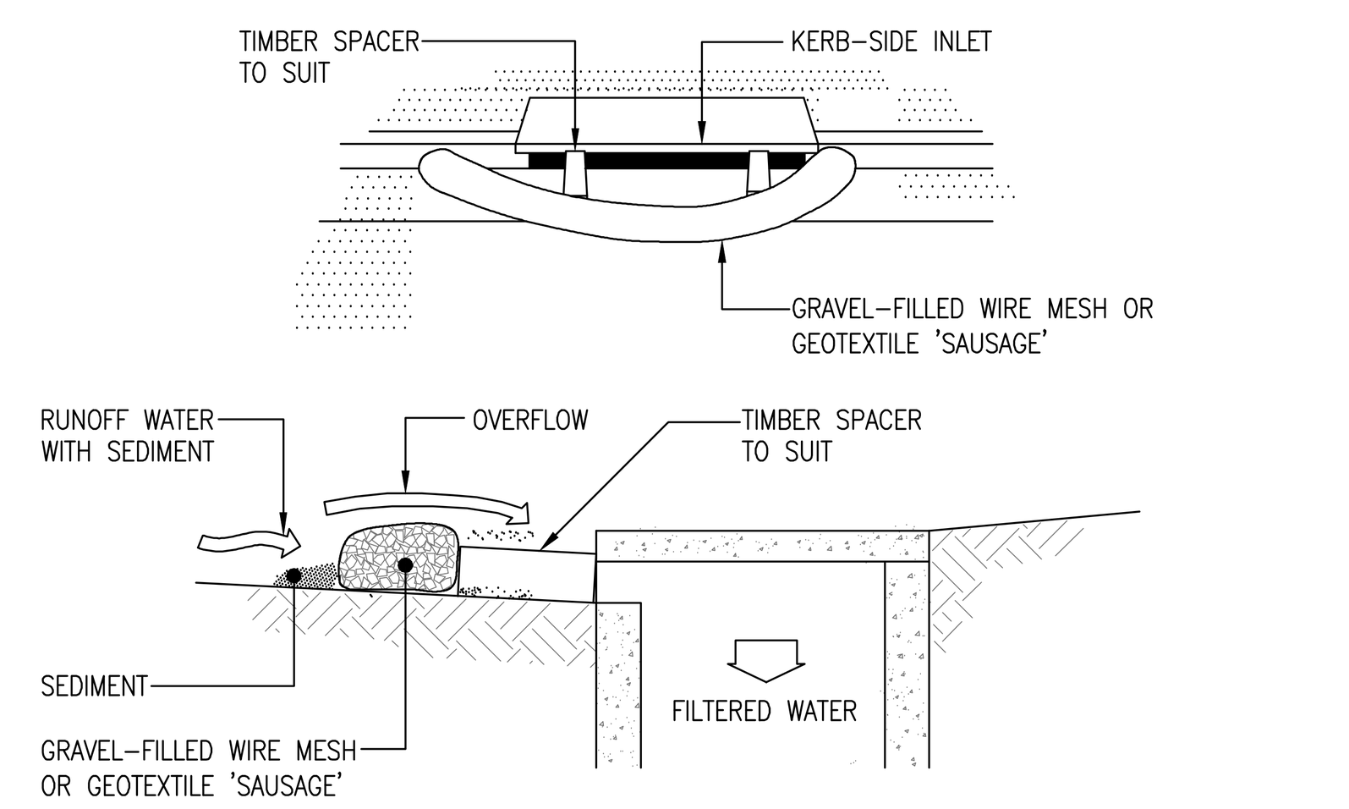
GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOFABRIC MAY BE A WOVEN OR NEEDLE-PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15m LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3m WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

STABILISED SITE ACCESS

NOT TO SCALE



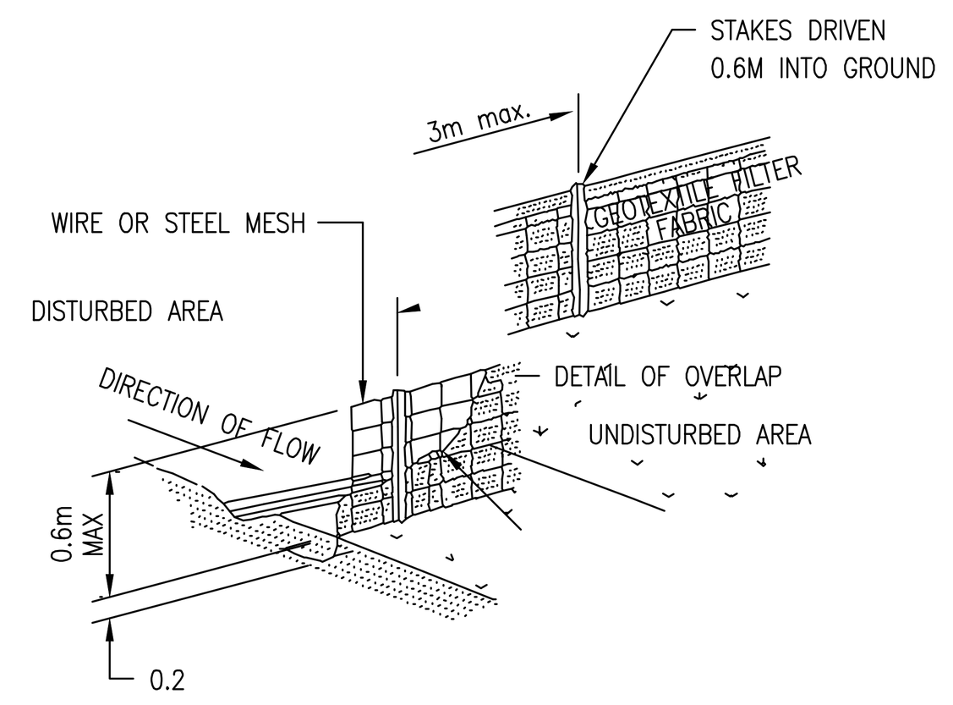
NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO PITS SHOWN.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER

NOT TO SCALE



SEDIMENT FENCE

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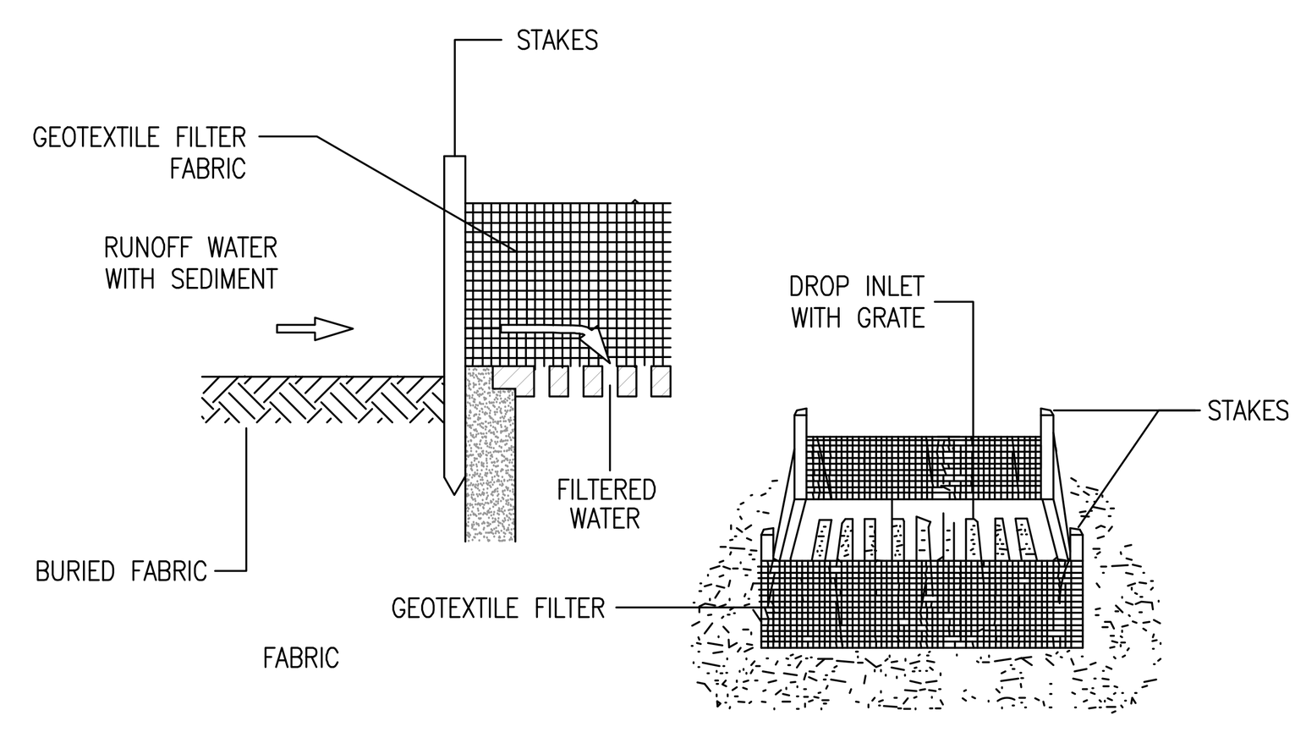
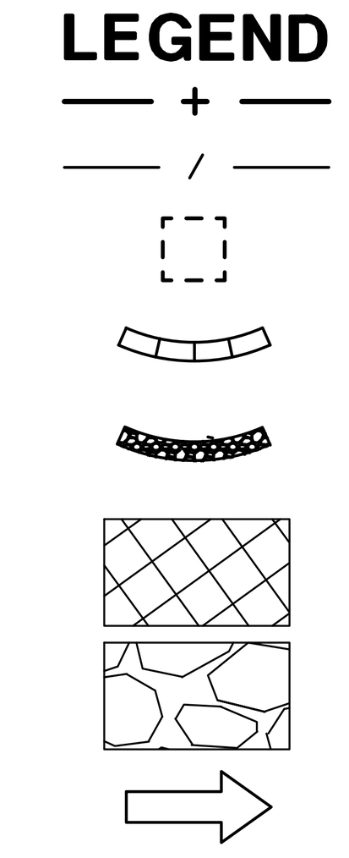


GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP

• DRAINAGE AREA – 0.4ha.

LEGEND



GENERAL NOTES

1. THE FOLLOWING STANDARD DRAWINGS SHALL BE USED IN CONJUNCTION WITH THIS PLAN;

SD4-1 STOCKPILE
SD6-8 SEDIMENT FENCE
SD6-11 MESH & GRAVEL INLET FILTER
SD6-12 GEOTEXTILE INLET FILTER
SD6-14 STABLISED SITE ACCESS

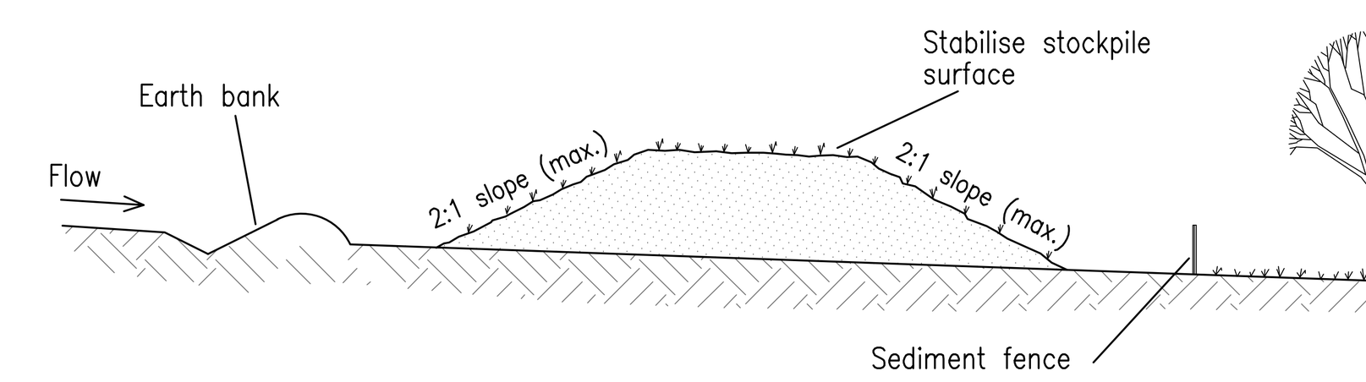
2. ALL SEDIMENT AND EROSION CONTROL MEASURES TO BE IN ACCORDANCE WITH NSW MEASURES DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER:SOILS AND CONSTRUCTION" (ALSO REFERED TO AS THE "BLUE BOOK").

3. PROTECT ALL INLETS TO STORMWATER DRAINAGE SYSTEM FOR THE DURATION OF CONSTRUCTION – REFER DETAIL SD6-11 & SD6-12.

4. KEEP DISTURBED AREAS TO A MINIMUM ALLOW TO DIVERT UPSTREAM RUNOFF AROUND ANY DISTURBED AREAS THROUGHOUT CONSTRUCTION.

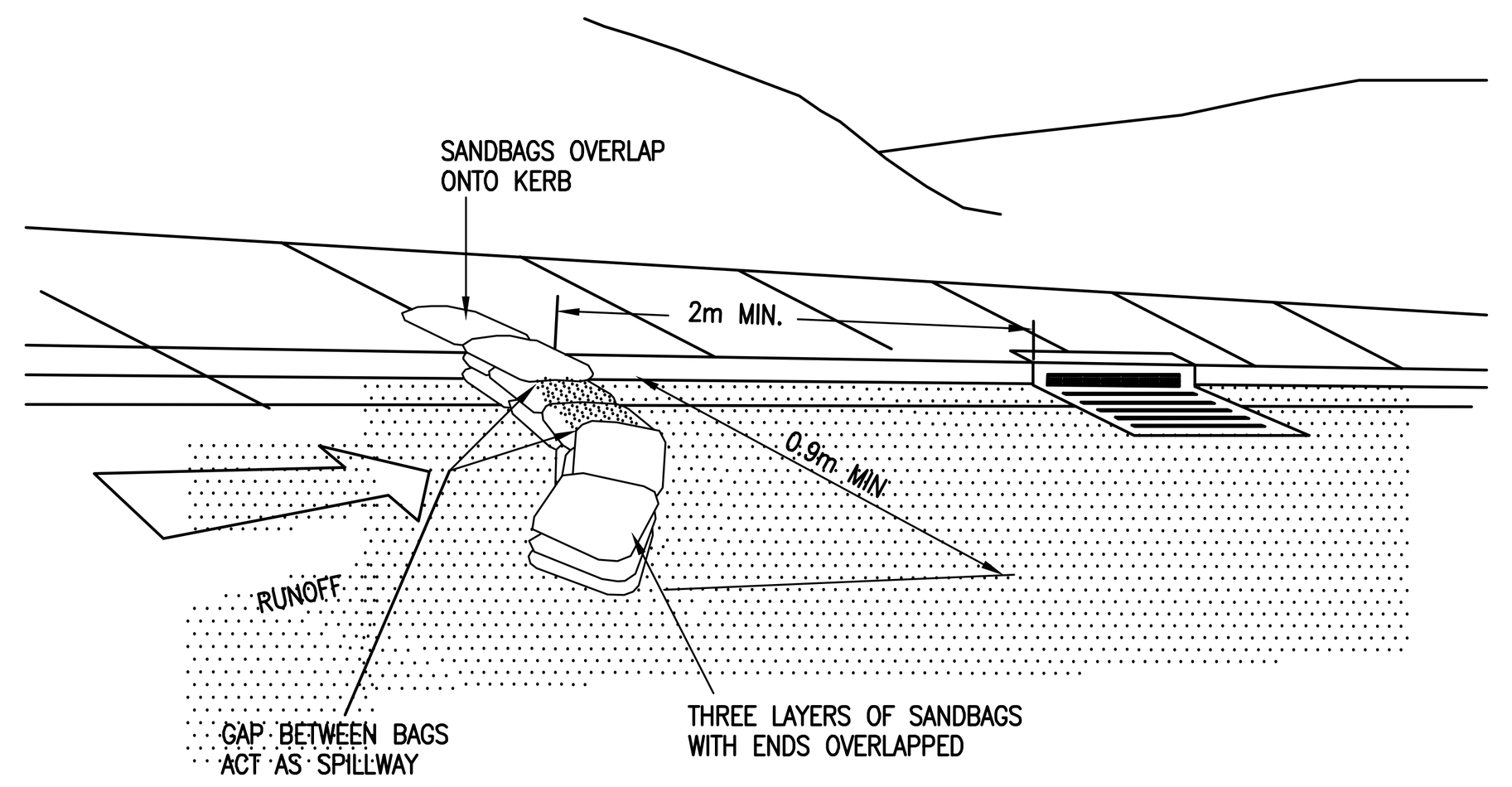
5. SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THIS PLAN ARE PREPARED AS A GUIDE ONLY & ARE TO BE CONFIRMED BY CONTRACTOR. IT DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO PLAN AND IMPLEMENT ENVIRONMENTAL PROTECTION MEASURES REQUIRED BY LAW, THE COUNCIL AND CONTRACT THROUGHOUT THE WORKS.

6. SEDIMENT & EROSION CONTROL MEASURES CONFIRMED BY CONTRACTOR ARE TO BE STAGED ACCORDINGLY.



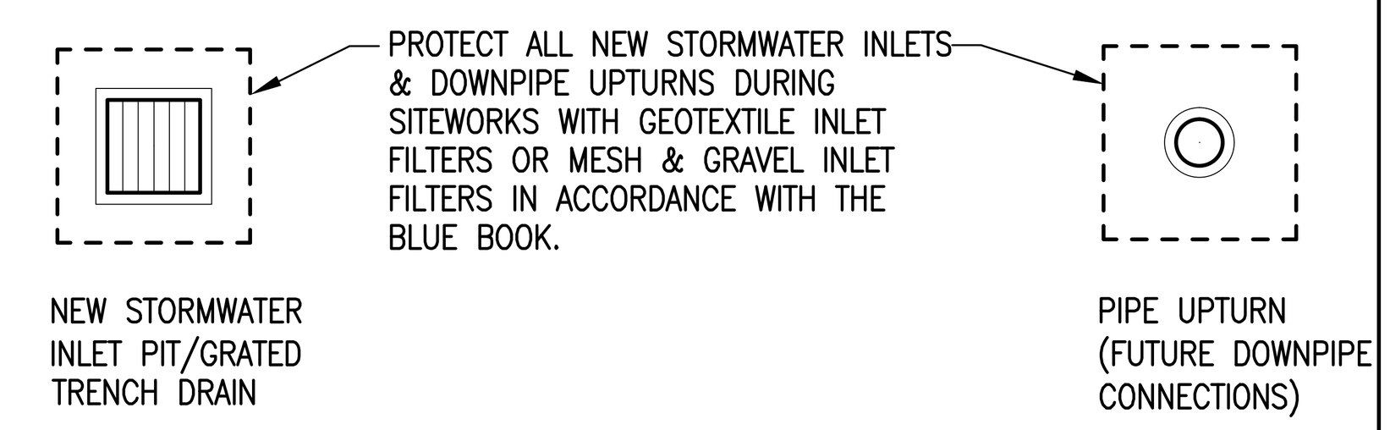
STOCKPILE

NOT TO SCALE



SANDBAG SEDIMENT TRAP

NOT TO SCALE



PROTECTED STORMWATER DRAINAGE INLETS

NOT TO SCALE

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ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11

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SCALE 1:100 @ A0

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PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

DRAWING TITLE: CONCEPT SEDIMENT & EROSION CONTROL PLAN

JOB NUMBER: 11010

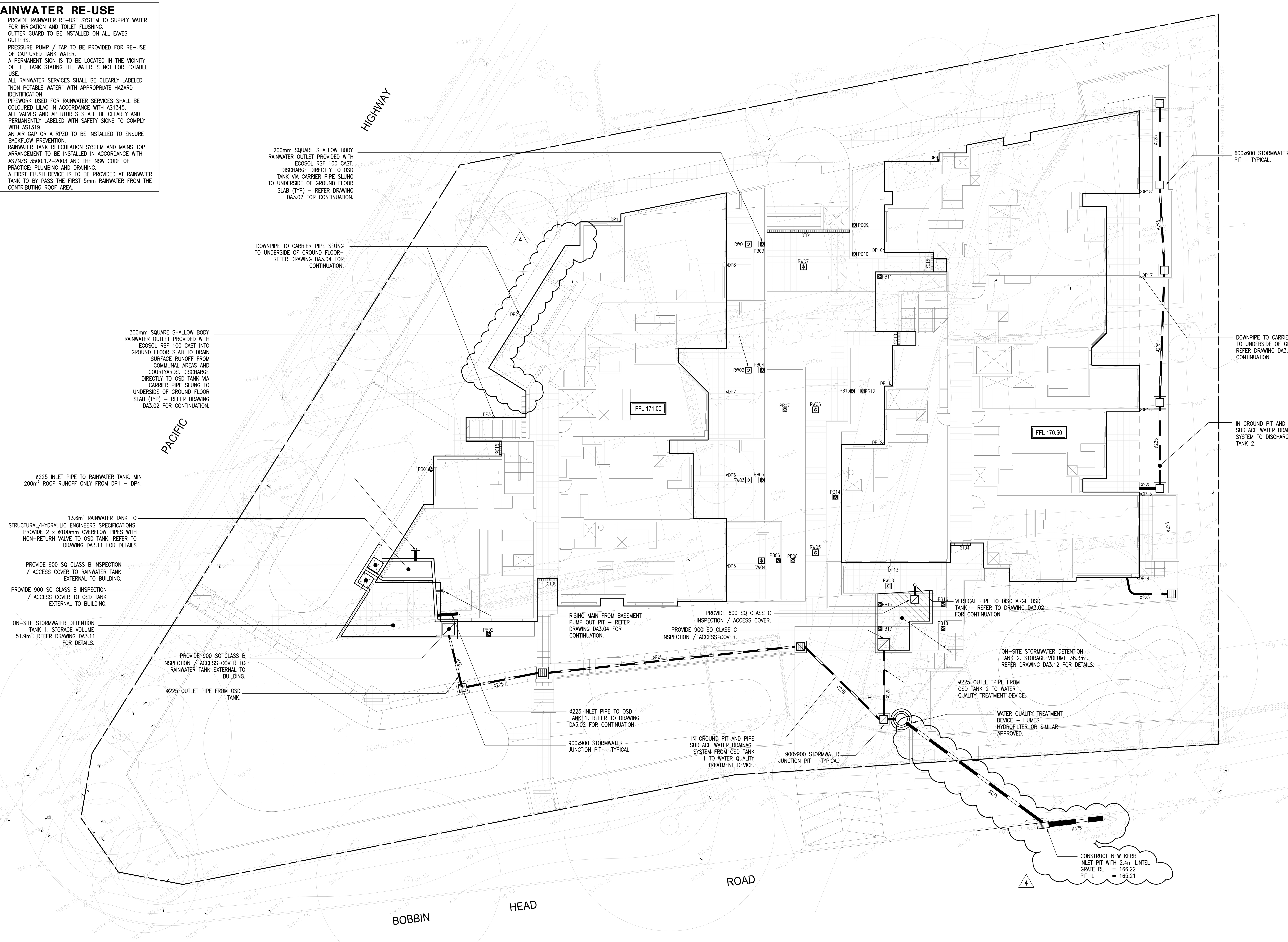
DRAWING NUMBER: DA2.01

REVISION: 3

DRAWING SHEET SIZE = A0

RAINWATER RE-USE

1. PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR IRRIGATION AND TOILET FLUSHING.
2. GUTTER GUARD TO BE INSTALLED ON ALL EAVES GUTTERS.
3. PRESSURE PUMP / TAP TO BE PROVIDED FOR RE-USE OF CAPTURED TANK WATER.
4. A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS NOT FOR POTABLE USE.
5. ALL RAINWATER SERVICES SHALL BE CLEARLY LABELED "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
6. PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LILAC IN ACCORDANCE WITH AS1345.
7. ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELED WITH SAFETY SIGNS TO COMPLY WITH AS1319.
8. AN AIR GAP OR A RPZD TO BE INSTALLED TO ENSURE BACKFLOW PREVENTION.
9. RAINWATER TANK RETICULATION SYSTEM AND MAINS TOP ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.1.2-2003 AND THE NSW CODE OF PRACTICE: PLUMBING AND DRAINING.
10. A FIRST FLUSH DEVICE IS TO BE PROVIDED AT RAINWATER TANK TO BY PASS THE FIRST 5mm RAINWATER FROM THE CONTRIBUTING ROOF AREA.



HIGHWAY
PACIFIC
BOBBIN
HEAD
ROAD
200mm SQUARE SHALLOW BODY RAINWATER OUTLET PROVIDED WITH ECOSOL RSF 100 CAST. DISCHARGE DIRECTLY TO OSD TANK VIA CARRIER PIPE SLUNG TO UNDERSIDE OF GROUND FLOOR SLAB (TYP) – REFER DRAWING DA3.02 FOR CONTINUATION.
DOWNPIPE TO CARRIER PIPE SLUNG TO UNDERSIDE OF GROUND FLOOR– REFER DRAWING DA3.04 FOR CONTINUATION.
300mm SQUARE SHALLOW BODY RAINWATER OUTLET PROVIDED WITH ECOSOL RSF 100 CAST INTO GROUND FLOOR SLAB TO DRAIN SURFACE RUNOFF FROM COMMUNAL AREAS AND COURTYARDS. DISCHARGE DIRECTLY TO OSD TANK VIA CARRIER PIPE SLUNG TO UNDERSIDE OF GROUND FLOOR SLAB (TYP) – REFER DRAWING DA3.02 FOR CONTINUATION.
ø225 INLET PIPE TO RAINWATER TANK. MIN 200m² ROOF RUNOFF ONLY FROM DP1 – DP4.
13.6m³ RAINWATER TANK TO STRUCTURAL/HYDRAULIC ENGINEERS SPECIFICATIONS. PROVIDE 2 x ø100mm OVERFLOW PIPES WITH NON-RETURN VALVE TO OSD TANK. REFER TO DRAWING DA3.11 FOR DETAILS
PROVIDE 900 SQ CLASS B INSPECTION / ACCESS COVER TO RAINWATER TANK EXTERNAL TO BUILDING.
PROVIDE 900 SQ CLASS B INSPECTION / ACCESS COVER TO OSD TANK EXTERNAL TO BUILDING.
ON-SITE STORMWATER DETENTION TANK 1. STORAGE VOLUME 51.9m³. REFER DRAWING DA3.11 FOR DETAILS.
PROVIDE 900 SQ CLASS B INSPECTION / ACCESS COVER TO RAINWATER TANK EXTERNAL TO BUILDING.
ø225 OUTLET PIPE FROM OSD TANK.
ø225 INLET PIPE TO OSD TANK 1. REFER TO DRAWING DA3.02 FOR CONTINUATION
900x900 STORMWATER JUNCTION PIT – TYPICAL
RISING MAIN FROM BASEMENT PUMP OUT PIT – REFER DRAWING DA3.04 FOR CONTINUATION.
PROVIDE 600 SQ CLASS C INSPECTION / ACCESS COVER.
PROVIDE 900 SQ CLASS C INSPECTION / ACCESS COVER.
IN GROUND PIT AND PIPE SURFACE WATER DRAINAGE SYSTEM FROM OSD TANK 1 TO WATER QUALITY TREATMENT DEVICE.
900x900 STORMWATER JUNCTION PIT – TYPICAL
VERTICAL PIPE TO DISCHARGE OSD TANK – REFER TO DRAWING DA3.02 FOR CONTINUATION
ON-SITE STORMWATER DETENTION TANK 2. STORAGE VOLUME 38.3m³. REFER DRAWING DA3.12 FOR DETAILS.
ø225 OUTLET PIPE FROM OSD TANK 2 TO WATER QUALITY TREATMENT DEVICE.
WATER QUALITY TREATMENT DEVICE – HUMES HYDROFILTER OR SIMILAR APPROVED.
CONSTRUCT NEW KERB INLET PIT WITH 2.4m LINTEL
GRATE RL = 166.22
PIT IL = 165.21
600x600 STORMWATER PIT – TYPICAL.
DOWNPIPE TO CARRIER PIPE SLUNG TO UNDERSIDE OF GROUND FLOOR – REFER DRAWING DA3.04 FOR CONTINUATION.
IN GROUND PIT AND PIPE SURFACE WATER DRAINAGE SYSTEM TO DISCHARGE TO OSD TANK 2.
FFL 171.00
FFL 170.50
ø225
ø375

STORMWATER LEGEND

— – —	SITE BOUNDARY
FFL	FINISHED FLOOR LEVEL
▬	IN GROUND STORMWATER DRAINAGE LINE
ø150	PIPE SIZE
→	PIPE FLOW DIRECTION
GTD	GRATED TRENCH DRAIN FROM GROUND FLOOR LEVEL
DP	DOWNPIPE FROM ROOF LEVEL
RW03	RAINWATER OUTLET FROM GROUND FLOOR LEVEL/PLANTER BOX
	COMBINED RAINWATER REUSE TANK/OSD TANK 1
	OSD TANK 2
	STORMWATER TREATMENT DEVICE
PB03	RAINWATER OUTLET FROM PLANTER BOX

NOT FOR CONSTRUCTION

DRAWN: D.Counter

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE	ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11						
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11						
3	REVISED AND REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11						
4	NEW ARCHITECTURAL REVISED. CHANGES SHOWN CLOUDED	CS		SF	06.12.11						

CLIENT

ARCHITECT

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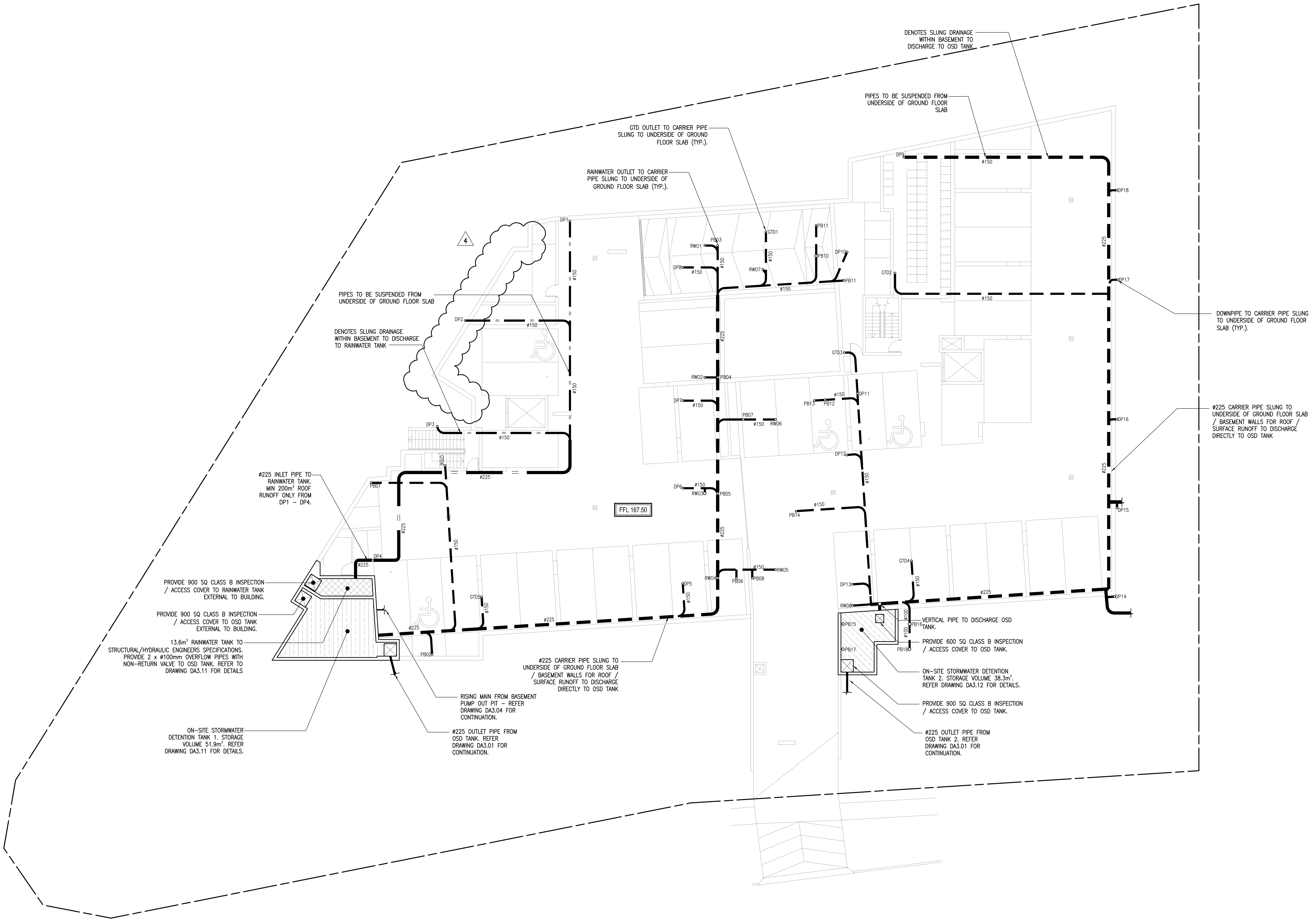
PROJECT
1147 - 1149 PACIFIC HIGHWAY PYMBLE

DRAWING TITLE
CONCEPT STORMWATER MANAGEMENT PLAN GROUND LEVEL

JOB NUMBER 11010
DRAWING NUMBER DA3.01
REVISION 4
DRAWING SHEET SIZE = A0



STORMWATER LEGEND

— — —	SITE BOUNDARY
FFL	FINISHED FLOOR LEVEL
	BASEMENT SLUNG STORMWATER DRAINAGE LINE
	BASEMENT SLUNG STORMWATER DRAINAGE LINE ROOF RUNOFF ONLY
ø150	PIPE SIZE
	PIPE FLOW DIRECTION
GTD4	GRATED TRENCH DRAIN FROM GROUND FLOOR LEVEL
DP	DOWNPIPE FROM ROOF LEVEL
RW03	RAINWATER OUTLET FROM GROUND FLOOR LEVEL/PLANTER BOX
	COMBINED RAINWATER REUSE TANK/OSD TANK 1
	OSD TANK 2

RAINWATER RE-USE

1. PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR **TOILET FLUSHING.**
2. GUTTER GUARD TO BE INSTALLED ON ALL EAVES GUTTERS.
3. PRESSURE PUMP / TAP TO BE PROVIDED FOR RE-USE OF CAPTURED TANK WATER.
4. A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS NOT FOR POTABLE USE.
5. ALL RAINWATER SERVICES SHALL BE CLEARLY LABELED "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
6. PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LILAC IN ACCORDANCE WITH AS1345.
7. ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELED WITH SAFETY SIGNS TO COMPLY WITH AS1319.
8. AN AIR GAP OR A RPZD TO BE INSTALLED TO ENSURE BACKFLOW PREVENTION.
9. RAINWATER TANK RETICULATION SYSTEM AND MAINS TOP ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.1.2-2003 AND THE NSW CODE OF PRACTICE: PLUMBING AND DRAINING.
10. A FIRST FLUSH DEVICE IS TO BE PROVIDED AT RAINWATER TANK TO BY PASS THE FIRST 5mm OF RAINWATER FROM CONTRIBUTING ROOF AREA.

SLUNG DRAINAGE

1. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE uPVC (CLASS SN4) SEWER GRADE DRAINAGE PIPE U.N.O.
2. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE INSTALLED IN ACCORDANCE WITH AS/NZS PLUMBING AND DRAINAGE—STORMWATER DRAINAGE.
3. EACH PIPE RUN IS TO BE PROVIDED WITH RODDING EYES AT EACH END AND AT ANY BENDS TO ALLOW FOR FUTURE MAINTAINANCE.
4. THE SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE CO-ORDINATED WITH ALL OTHER SERVICES TO MAXIMISE FUTURE MAINTAINANCE.
5. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE LAID AT A FALL OF 1:100 MINIMUM

NOT FOR CONSTRUCTION

DRAWN: D.Counter

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REVISED AND REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11
4	NEW ARCHITECTURAL REVISED. CHANGES SHOWN CLOUDED.	CS	GE	SF	06.12.11

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SCALE 1:100 @ A0

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PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN UNDERSIDE GROUND FLOOR SLAB

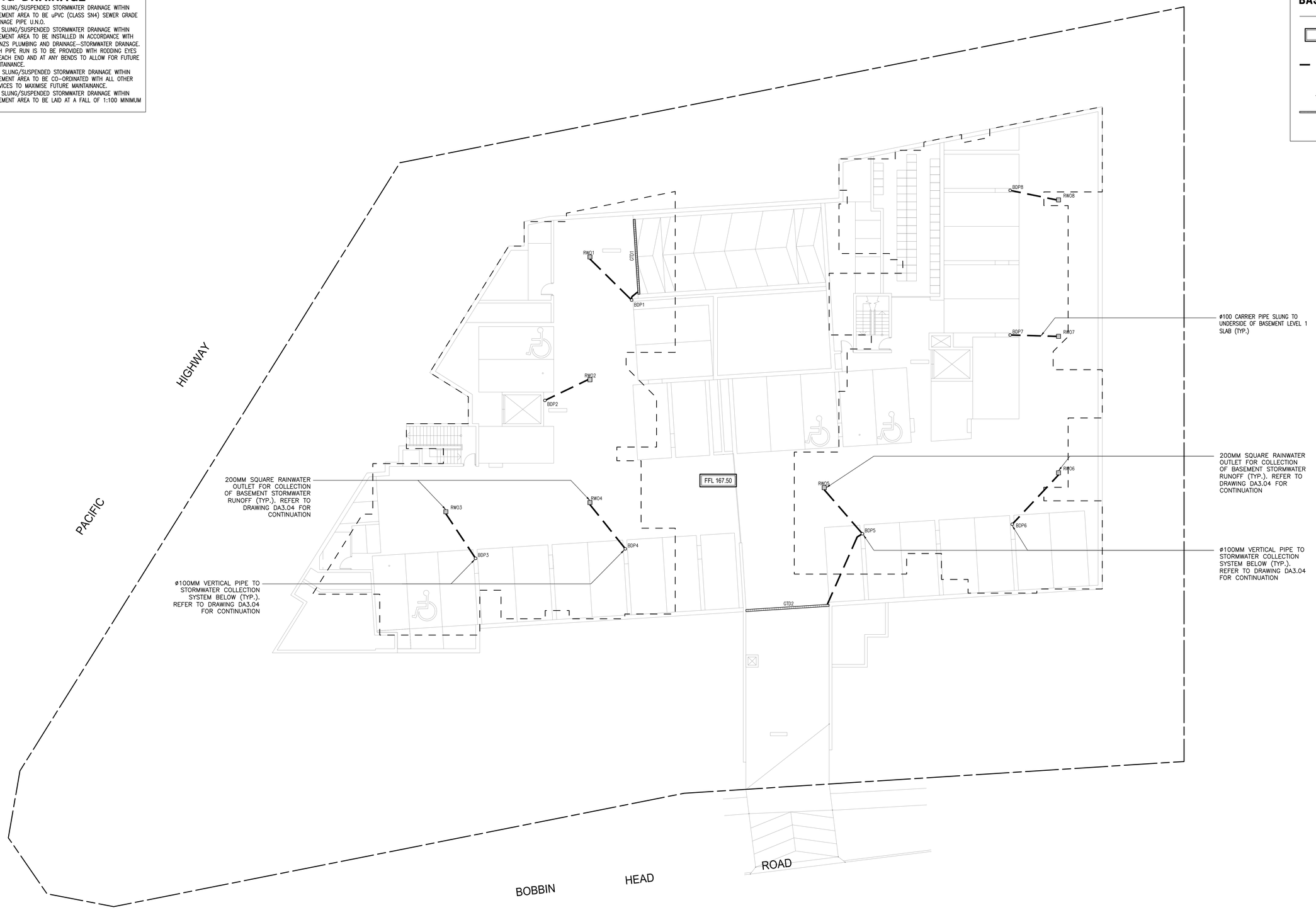
JOB NUMBER: 11010
DRAWING NUMBER: DA3.02
REVISION: 4
DRAWING SHEET SIZE = A0

SLUNG DRAINAGE

1. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE uPVC (CLASS SN4) SEWER GRADE DRAINAGE PIPE U.N.O.
2. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE INSTALLED IN ACCORDANCE WITH AS/NZS PLUMBING AND DRAINAGE--STORMWATER DRAINAGE.
3. EACH PIPE RUN IS TO BE PROVIDED WITH RODDING EYES AT EACH END AND AT ANY BENDS TO ALLOW FOR FUTURE MAINTAINANCE.
4. THE SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE CO-ORDINATED WITH ALL OTHER SERVICES TO MAXIMISE FUTURE MAINTAINANCE.
5. ALL SLUNG/SUSPENDED STORMWATER DRAINAGE WITHIN BASEMENT AREA TO BE LAID AT A FALL OF 1:100 MINIMUM

BASEMENT STORMWATER LEGEND

- SITE BOUNDARY
- FFL — FINISHED FLOOR LEVEL
- RW06 — STORMWATER DRAINAGE PIT
- BASEMENT SLUNG STORMWATER DRAINAGE LINE
- #150 — PIPE SIZE
- PIPE FLOW DIRECTION
- GTD1 — GRATED TRENCH DRAIN
- BDP1 — DOWNPIPE TO BASEMENT L2



NOT FOR CONSTRUCTION

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	05.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11
4	NEW ARCHITECTURAL REVISED	CS	GE	SF	06.12.11

CLIENT -

ARCHITECT MACKENZIE

0 1 2 3 4 5m SCALE 1:100 @ A0

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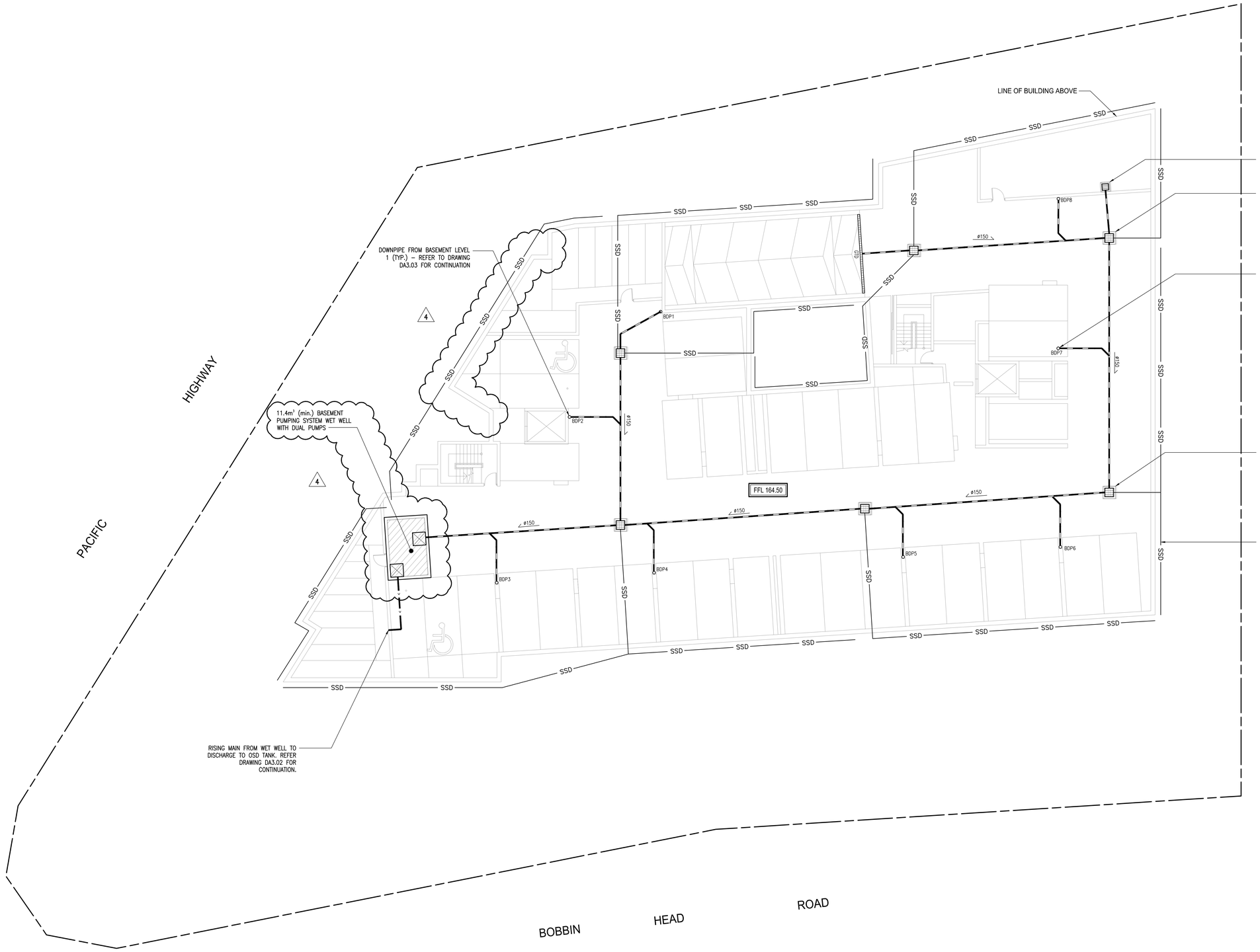
Sydney

PROJECT
1147 - 1149 PACIFIC HIGHWAY
PYMBLE

DRAWING TITLE
CONCEPT STORMWATER MANAGEMENT PLAN BASEMENT LEVEL 1

JOB NUMBER 11010
DRAWING NUMBER DA3.03
REVISION 4
DRAWING SHEET SIZE = A0

DRAWN D. COUNTER ..... DESIGNED G.EYRES ..... JOB MANAGER G.EYRES ..... VERIFIER G.EYRES



BASEMENT STORMWATER LEGEND

- SITE BOUNDARY
- FFL — FINISHED FLOOR LEVEL
- STORMWATER DRAINAGE PIT
- STORMWATER DRAINAGE LINE
- ø150 — PIPE SIZE
- PIPE FLOW DIRECTION
- SSD — SUBSOIL DRAINAGE LINE
- GTD — GRATED TRENCH DRAIN
- DP — DOWNPIPE FROM BASEMENT L1
- RISING MAIN
- BASEMENT PUMPING SYSTEM / WET WELL

PUMPED SYSTEM NOTES:

GENERAL

PUMPED SYSTEMS ARE FOR AREAS NORMALLY LESS THAN 2000 M2 WHERE IT IS NOT POSSIBLE FOR THE STORMWATER TO BE DISCHARGED BY GRAVITY THROUGH THE AVAILABLE GRAVITATIONAL POINT OF CONNECTION.
THE PUMPING EQUIPMENT SHALL INCLUDE A WET WELL, PUMPS AND MOTORS, PIPEWORK AND ELECTRICAL EQUIPMENT AND BE LOCATED TO FACILITATE EASY CONNECTION TO EITHER THE SURFACE WATER SYSTEM OR THE PUMPED POINT OF CONNECTION.

WET WELLS

GENERAL –
WET WELLS, FOR SUBMERSIBLE OR NON–SUBMERSIBLE TYPE PUMPS, SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.

CONSTRUCTION AND MATERIALS –
THC STRUCTURE SHALL BE SOUND AND CONSTRUCTED OF MATERIALS THAT WILL RESIST CORROSION FROM GROUND WATER AND AGGRESSIVE SOILS.

AUTHORIZED MATERIALS INCLUDE PRE–CAST OR CAST IN SITU REINFORCED CONCRETE, CORROSION–RESISTANT METALS, BRICKRWORK OR GLASS–REINFORCED PLASTICS.

BASE –
THE BASE SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE WALLS AND SHALL MAINTAIN A SELF–CLEANSING GRADIENT TOWARDS THE PUMP INLET. THE BASE SHALL BE SUPPORTED ON STABLE GROUND.

COVER –
THE COVER SHALL BE CONSTRUCTED OF SIMILAR MATERIALS TO THAT OF THE WET WELL AND SHALL HAVE REMOVABLE ACCESS OPENINGS SIZED FOR MAINTENANCE PURPOSES. IF THE ACCESS OPENING IS AIRTIGHT, A BREATHER PIPE WITH A NON–CORRODIBLE SCREEN SHALL BE INSTALLED.

LADDERS –
WHERE A WET WELL EXCEEDS A DEPTH OF 1.2m A LADDER, IN ACCORDANCE WITH AS/NZ 3500 SHALL BE INSTALLED.

WET WELL STORAGE VOLUME –
THE REQUIRED WET WELL STORAGE SHALL NOT BE LESS THAN THE VOLUME OF THE RUN–OFF FROM THE STORM OF ARI = 10 YEARS AND DURATION OF 120 MINS.

THE MINIMUM WET WELL STORAGE BETWEEN THE HIGH AND LOW WORKING LEVELS EXPRESSED IN CUBIC METRES SHALL BE 1% OF THE CATCHMENT AREA IN m^2 BUT IN ANY CASE SHALL NOT BE LESS THAN $3m^3$

ALARM

HIGH–LEVEL AND LOW LEVEL ALARMS SHALL BE INSTALLED IN EACH WET WELL AND LOCATED CLEAR OF THE DISCHARGE FROM THE INLET PIPE SO THAT FALSE ALARMS ARE PREVENTED. THE HIGH LEVEL ALARM SHOULD BE SET NO HIGHER THAN 100MM ABOVE THE INVERT OF THE INLET PIPE, PROVIDED THAT FLOODING OF HABITABLE OR STORAGE AREAS AND VEHICLE GARAGES SHALL BE AVOIDED.

INLET

THE INVERT OF THE INLET PIPE TO THE WET WELL SHALL BE LOCATED AT LEAST 100 MM ABOVE THE LEVEL OF THE DESIGN TOP WATER LEVEL

SEALING

ALL PIPES OR APPARATUS PASSING THROUGH A WALL OR COVER OF A WET WELL SHALL BE SEALED WITH A COMPATIBLE MATERIAL.

PUMPS

THE MINIMUM PUMPING CAPACITY SHALL BE 10 L/S.

THE PUMPS SHALL BE SUITABLE FOR UNSCREENED STORMWATER AND SHALL BE INSTALLED AS FOLLOWS:

(A) PUMPS SHALL BE IN DUPLICATE. THE MAXIMUM CAPACITY OF EACH PUMP SHALL BE SELECTED SO THAT THE CAPACITY OF THE SYSTEM RECEIVING THE DISCHARGE IS NOT EXCEEDED. THE PUMP CONTROLS SHALL BE SET UP TO ENABLE ALTERNATE PUMP OPERATION AT EACH START. IN THE EVENT THAT A PUMP FAILS TO OPERATE WHEN THE WATER LEVEL IN THE WET WELL REACHES THE PUMP START, THE OTHER PUMP SHALL BE ACTIVATED AND A VISIBLE ALARM INITIATED. IN THE EVENT BOTH PUMPS FAIL TO OPERATE, AN AUDIBLE ALARM SHALL BE INITIATED.
(B) PUMPING EQUIPMENT SHALL BE SECURELY FIXED TO THE WET WELL USING CORROSION–RESISTANT FIXINGS.
(C) PUMPS SHALL BE FITTED WITH A GATE VALVE AND NON–RETURN VALVE ON THE DELIVERY SIDE OF EACH PUMP.
(D) PUMPS SHALL HAVE FLANGES OR UNIONS INSTALLED TO FACILITATE REMOVAL.
(E) PUMPS SHALL BE CONTROLLED SO AS TO LIMIT THE NUMBER OF STARTS PER HOUR TO WITHIN THE CAPACITY OF THE ELECTRICAL MOTORS AND EQUIPMENT, AND SHALL, AS FAR AS PRACTICABLE, EMPTY THE CONTENTS OF THE WET WELL AT EACH OPERATION. THE REQUIRED PUMPING RATE SHALL BE CALCULATED BASED ON AN ASSESSMENT OF THE EXPECTED INFLOW AND, WHERE APPROPRIATE, THE ALLOWABLE DISCHARGE RATE.

RISING MAINS

RISING MAINS SHALL COMPLY WITH THE RELEVANT SECTIONS OF AS/NZS 3500.1 AND AS/NZS 3500.3, AND CONNECT TO –
(A) A STORMWATER OR INLET PIT; OR
(B) DIRECT TO A STORMWATER DRAIN OR ON SITE DETENTION SYSTEM

ELECTRICAL CONNECTION

ALL ELECTRICAL MOTORS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH AS/NZS 3000

NOT FOR CONSTRUCTION

DRAWN: DLowther DESIGNED: G EYRES JOB MANAGER: G EYRES VERIFIER: G EYRES

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REVISED AND REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11
4	NEW ARCHITECTURAL REVISED CHANGES SHOWN CLOUDED.	CS	GE	SF	06.12.11

CLIENT: -

ARCHITECT: MACKENZIE

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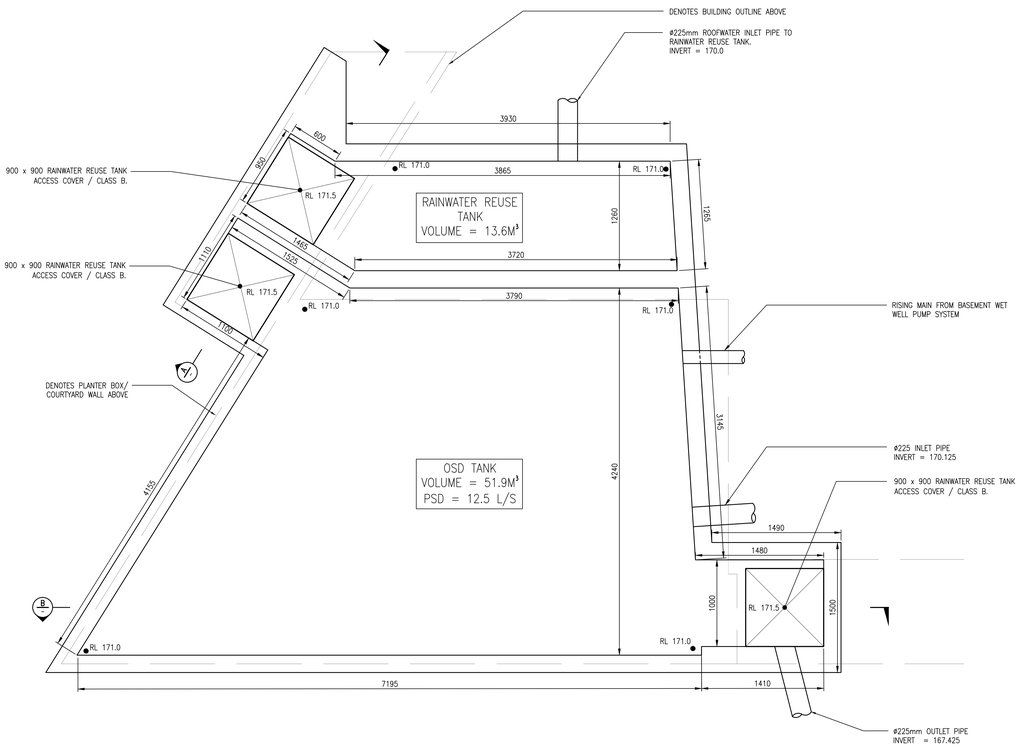
PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

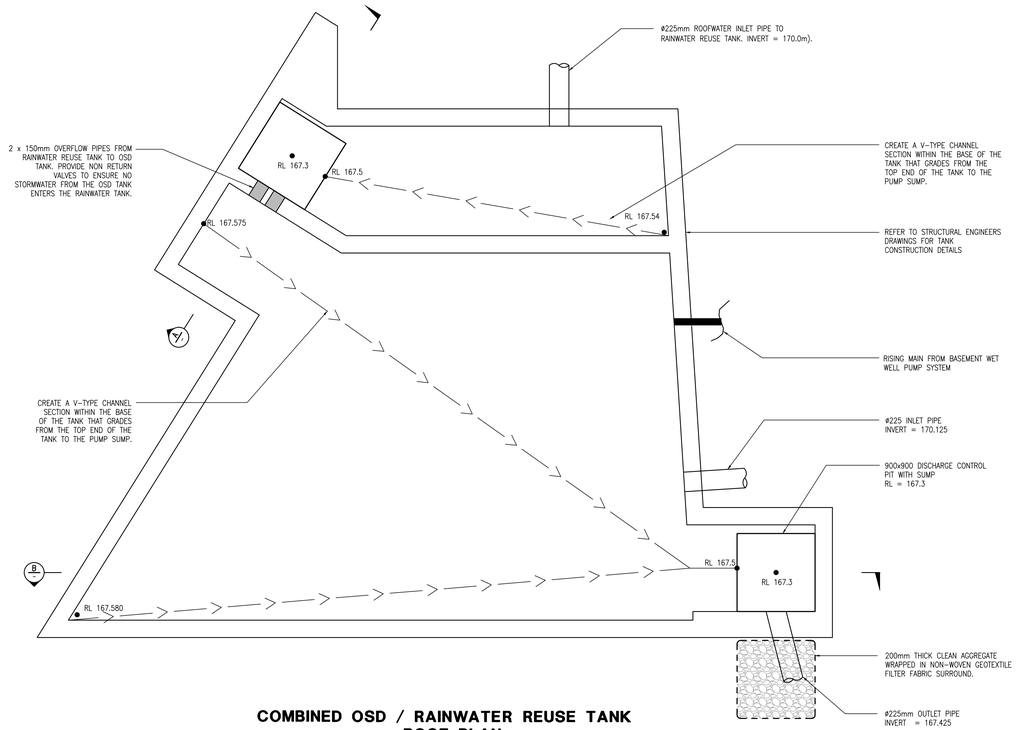
DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN BASEMENT LEVEL 2

JOB NUMBER: 11010
DRAWING NUMBER: DA3.04
REVISION: 4
DRAWING SHEET SIZE = A0



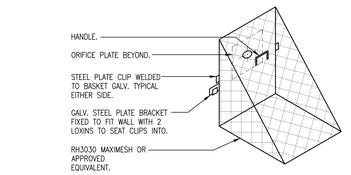
COMBINED OSD / RAINWATER REUSE TANK - ROOF PLAN

SCALE 1:25



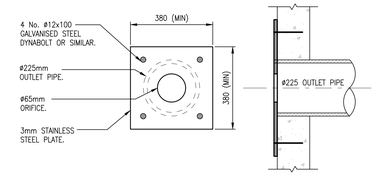
COMBINED OSD / RAINWATER REUSE TANK - ROOF PLAN

SCALE 1:25



TRASH SCREEN DETAIL

NOT TO SCALE

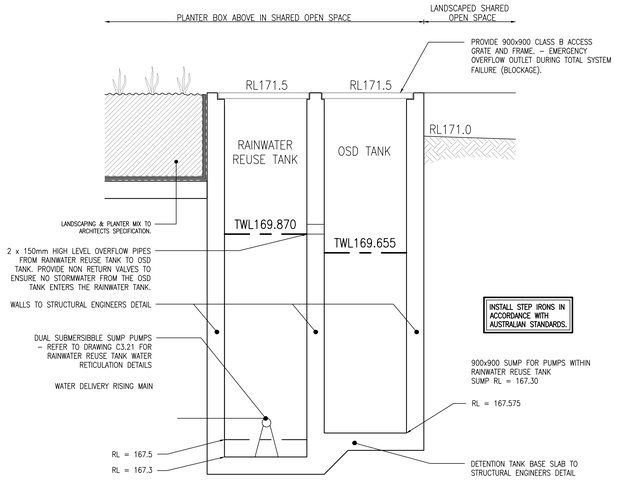


ORIFICE PLATE DETAIL

SCALE 1:10

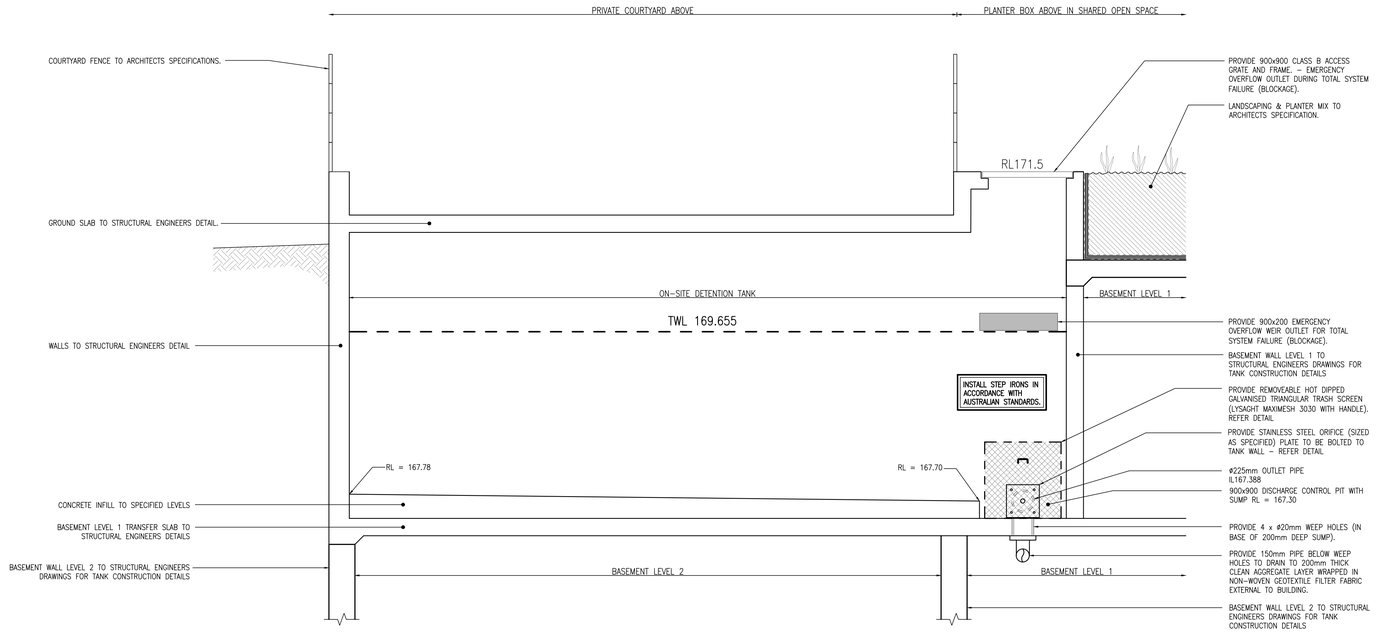
DISCHARGE CONTROL PITS

1. THE DISCHARGE CONTROL PIT SHALL BE HAVE DIMENSIONS OF 600MM X 600MM FOR PITS UP TO 600MM DEEP, AND 900MM X 600MM FOR PITS EXCEEDING 600MM DEPTH.
2. TO PROTECT AGAINST BLOCKAGE, ALL OUTFLOW CONTROLS SHALL BE TOTALLY AND SOLELY ENCLOSED BY A RUSTPROOF DEBRIS SCREEN OR WIRE CAGE IN ACCORDANCE WITH THE FOLLOWING:
   - THE SCREEN MATERIAL SHALL BE HOT DIPPED GALVANISED MESH (LYSAGHT'S MAXIMESH 3030 OR EQUIVALENT PRODUCT);
   - THE MINIMUM SURFACE AREA OF THE DEBRIS SCREEN SHALL BE 50 TIMES THE AREA OF THE OUTLET PIPE OR ORIFICE;
   - THE SCREEN SHALL BE A MINIMUM OF 100MM FROM THE FACE OF THE ORIFICE AND ATTACHED (GENERALLY ON A SLIDING MECHANISM) TO THE WALL;
   - THE SCREEN SHALL BE CAPABLE OF REMOVAL BY HAND TO PERMIT CLEANING AND EASY INSPECTION OF THE OUTLET CONTROL; AND
   - THE INLET PIPE TO A DCP SHOULD DIRECT INFLOWS PARALLEL TO THE SCREEN. TO ASSIST IN SHEDDING DEBRIS, THE SCREEN SHOULD BE POSITIONED AS CLOSE AS POSSIBLE TO THE VERTICAL, BUT NOT LESS THAN 45 DEGREES TO THE HORIZONTAL.
3. A SEDIMENT COLLECTION SUMP SHALL BE PROVIDED BELOW THE ORIFICE OUTLET TO THE STORMWATER DETENTION SYSTEM THAT:
   - HAS A MINIMUM DEPTH OF 200MM BELOW THE INVERT OF THE ORIFICE;
   - IS CONNECTED TO THE OUTLET PIPE BY MEANS OF 3 X 40MM (MIN) WEEPHOLES PLUGGED WITH A GEOFABRIC FILTER CLOTH; AND
   - INCLUDES AN ADDITIONAL FILTER MEDIUM BETWEEN THE WEEPHOLES AND THE CONNECTION TO THE OUTLET THAT CONSISTS OF 15MM RIVER GRAVEL WRAPPED IN GEOFABRIC OVER A MINIMUM LENGTH OF 600MM, THENCE TO SUBSOIL DRAINAGE CONNECTED TO THE MAIN OUTLET (WHERE POSSIBLE).
4. SITE DISCHARGE IS TO BE CONTROLLED BY A SHARP EDGED ORIFICE, THE FOLLOWING CONTROLS APPLY:
   - ORIFICE PLATES SHALL HAVE MINIMUM DIMENSIONS OF 200 X 200MM WITH A MINIMUM ORIFICE DIAMETER OF 30MM AND SHALL BE 3MM THICK FLAT STAINLESS STEEL.
   - THE ORIFICE PLATE IS TO BE TOOLED TO THE EXACT DIMENSION AS CALCULATED AND SHALL BE SECURELY FASTENED IN A CENTRAL POSITION OVER THE OUTLET PIPE USING FOUR GALVANISED (4) DYNABOLTS AND EPOXY CEMENT.
   - ORIFICE PLATES SHALL BE FLUSH WITH THE WALL SUCH THAT FLOW DOES NOT PASS BETWEEN THE PLATE AND THE WALL AND SHALL BE LOCATED SO THAT THE CENTRELINE OF THE ORIFICE IS IN LINE WITH THE BASE OF THE ON-SITE DETENTION TANK.
   - THE OUTLET PIPE TO WHICH THE ORIFICE DISCHARGE IS CONNECTED IS TO HAVE A CAPACITY AT LEAST 1.5 TIMES THE PERMISSIBLE SITE DISCHARGE FOR AT LEAST THE FIRST 2.0 METRES DOWNSTREAM FROM THE ORIFICE.



COMBINED OSD / RAINWATER REUSE TANK - SECTION A

SCALE 1:25



COMBINED OSD / RAINWATER REUSE TANK - SECTION B

SCALE 1:25

BELOW GROUND OSD STRUCTURES

1. THE TANK SHALL BE STRUCTURALLY DESIGNED TO WITHSTAND ALL SERVICE LOADS (NORMAL EARTH, SURCHARGE, TRAFFIC AND HYDROSTATIC) AND TO PROVIDE A SERVICE LIFE OF FIFTY (50) YEARS;
2. INTERNAL SUPPORTING WALLS MUST BE MINIMISED TO EASE MAINTENANCE. TYPICALLY INTERNAL SUPPORTS SHOULD ONLY BE CONSIDERED FOR SPANS GREATER THAN 3M.
3. EXCAVATION FOR THE TANK MUST BE CHECKED FOR IMPACT ON THE ZONE OF INFLUENCE ON ADJACENT FOOTINGS AND STRUCTURES
4. AN INSPECTION / ACCESS GRATE MEASURING 600MM X 900MM (MIN) SHALL BE INSTALLED DIRECTLY OVER THE OVERFLOW OUTLET AND SHALL BE READILY ACCESSIBLE FROM A POINT EXTERNAL TO THE SITE BUILDING(S);
5. WHERE THE INTERNAL DEPTH OF THE TANK IS LESS THAN 0.6 METRES, SURFACE GRATES ARE TO BE PROVIDED IN EACH CORNER OF THE ON-SITE DETENTION TANK AND ALL INLET PIPES SHALL BE CONNECTED DIRECTLY UNDER THE GRATE ACCESS TO THE CONTROL OUTLET OF THE ON-SITE DETENTION TANK. THIS IS TO MINIMISE ANY NEED TO ENTER THE TANK FOR MAINTENANCE REASONS AND TO ALLOW FOR VENTILATION AND REMOTE FLUSHING OF THE TANK FLOOR;
6. THE BASE OF THE TANK SHALL HAVE A MINIMUM 1% GRADE TOWARDS THE DISCHARGE CONTROL PIT TO ENSURE PROPER DRAINAGE.
7. FIXED STEP IRONS SHALL BE FITTED INTO THE TANK WHERE THE INTERNAL TANK DEPTH EXCEEDS 1.2 METRES;
8. A CHILD-PROOF LOCKING SYSTEM SHALL BE EMPLOYED FOR SURFACE GRATES AND LIDS; IN HIGH WATER TABLE AREAS, THE TANK SHALL BE DESIGNED TO AVOID FLOTATION;
9. ALL INLET PIPES SHALL DISCHARGE AT THE TANK FLOOR LEVEL IN ORDER TO MINIMISE NOISE DISTURBANCE;
10. THE LOCATION OF ALL ON-SITE STORMWATER DETENTION SYSTEMS SHALL BE MARKED ON SITE BY THE FIXING OF A MARKER PLATE OF MINIMUM SIZE OF 150 X 100MM TO THE NEAREST CONCRETE OR PERMANENT SURFACE IN A PROMINENT POSITION. THE PLATE SHALL BE OF NON-CORROSIVE METAL OR 4MM THICK LAMINATED PLASTIC AND THAT CONTAINS THE FOLLOWING WORDING:
    THIS IS AN ON-SITE STORMWATER DETENTION SYSTEM REQUIRED BY KU-RING-GAI COUNCIL. IT IS AN OFFENCE TO REDUCE THE VOLUME OF THE TANK OR BASIN OR TO INTERFERE WITH THE ORIFICE PLATE THAT CONTROLS THE OUTFLOW. THE OWNER MUST CLEAN THE BASE OF THE OUTLET CONTROL PIT AND THE DEBRIS SCREEN OF DEBRIS AND SEDIMENT ON A REGULAR BASIS.THIS PLATE MUST NOT BE REMOVED

NOT FOR CONSTRUCTION

DRAWN D'Courtie DESIGNED G.EYRES JOB MANAGER G.EYRES VERIFIER G.EYRES

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.07.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.07.11
3	REVISED AND REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11

CLIENT: -

ARCHITECT: [redacted]

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PROJECT: **1147 - 1149 PACIFIC HIGHWAY PYMBLE**

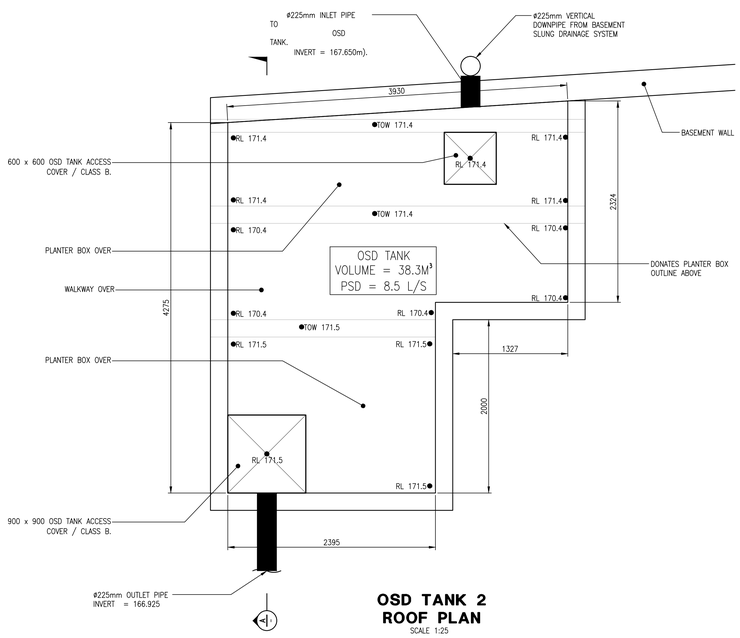
DRAWING TITLE: **DETAIL SHEET MANAGEMENT PLAN**

JOB NUMBER: **11010**

DRAWING NUMBER: **DA3.11**

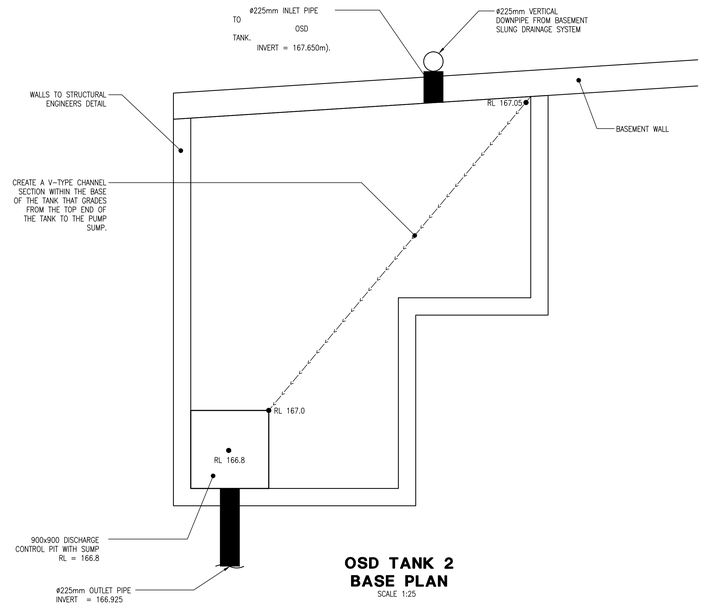
REVISION: **3**

DRAWING SHEET SIZE = A0



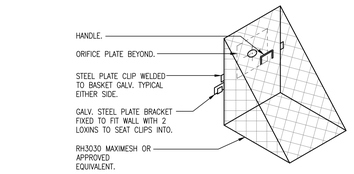
OSD TANK 2 ROOF PLAN

SCALE 1:25



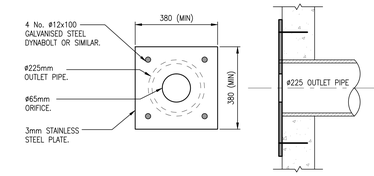
OSD TANK 2 BASE PLAN

SCALE 1:25



TRASH SCREEN DETAIL

NOT TO SCALE

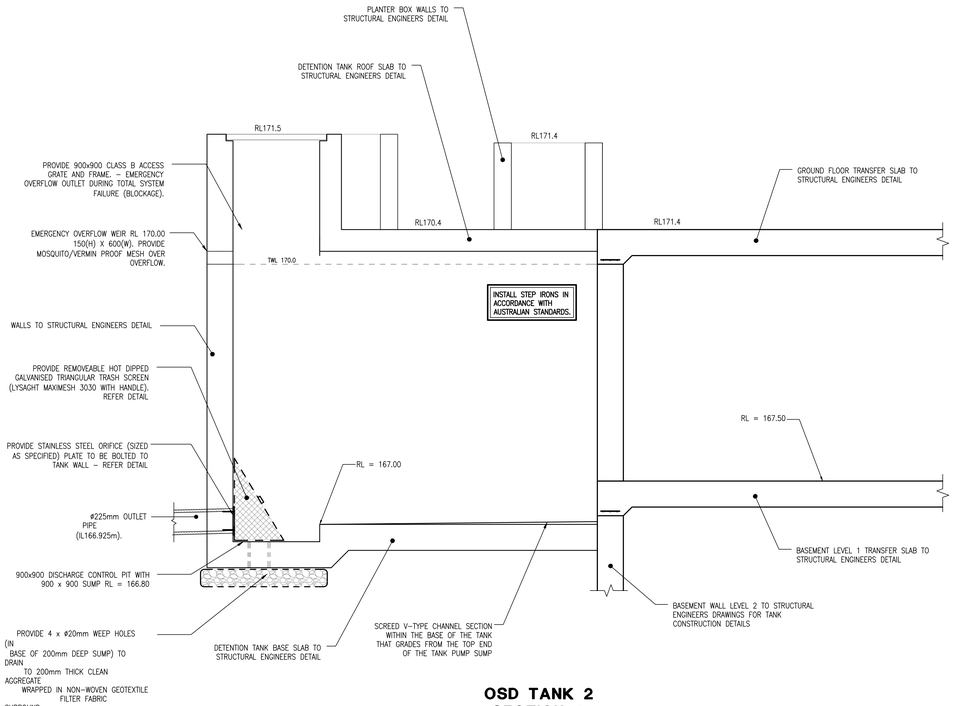


ORIFICE PLATE DETAIL

SCALE 1:10

DISCHARGE CONTROL PITS

1. THE DISCHARGE CONTROL PIT SHALL BE HAVE DIMENSIONS OF 600MM X 600MM FOR PITS UP TO 600MM DEEP, AND 900MM X 600MM FOR PITS EXCEEDING 600MM DEPTH.
2. TO PROTECT AGAINST BLOCKAGE, ALL OUTFLOW CONTROLS SHALL BE TOTALLY AND SOLELY ENCLOSED BY A RUSTPROOF DEBRIS SCREEN OR WIRE CAGE IN ACCORDANCE WITH THE FOLLOWING:
   - THE SCREEN MATERIAL SHALL BE HOT DIPPED GALVANISED MESH (LYSAGHT'S MAXIMESH 3030 OR EQUIVALENT PRODUCT);
   - THE MINIMUM SURFACE AREA OF THE DEBRIS SCREEN SHALL BE 50 TIMES THE AREA OF THE OUTLET PIPE OR ORIFICE;
   - THE SCREEN SHALL BE A MINIMUM OF 100MM FROM THE FACE OF THE ORIFICE AND ATTACHED (GENERALLY ON A SLIDING MECHANISM) TO THE WALL;
   - THE SCREEN SHALL BE CAPABLE OF REMOVAL BY HAND TO PERMIT CLEANING AND EASY INSPECTION OF THE OUTLET CONTROL; AND
   - THE INLET PIPE TO A DCP SHOULD DIRECT INFLOWS PARALLEL TO THE SCREEN. TO ASSIST IN SHEDDING DEBRIS, THE SCREEN SHOULD BE POSITIONED AS CLOSE AS POSSIBLE TO THE VERTICAL, BUT NOT LESS THAN 45 DEGREES TO THE HORIZONTAL.
3. A SEDIMENT COLLECTION SUMP SHALL BE PROVIDED BELOW THE ORIFICE OUTLET TO THE STORMWATER DETENTION SYSTEM THAT:
   - HAS A MINIMUM DEPTH OF 200MM BELOW THE INVERT OF THE ORIFICE;
   - IS CONNECTED TO THE OUTLET PIPE BY MEANS OF 3 X 40MM (MIN) WEEPHOLES PLUGGED WITH A GEOFABRIC FILTER CLOTH; AND
   - INCLUDES AN ADDITIONAL FILTER MEDIUM BETWEEN THE WEEPHOLES AND THE CONNECTION TO THE OUTLET THAT CONSISTS OF 15MM RIVER GRAVEL WRAPPED IN GEOFABRIC OVER A MINIMUM LENGTH OF 600MM, THENCE TO SUBSOIL DRAINAGE CONNECTED TO THE MAIN OUTLET (WHERE POSSIBLE).
4. SITE DISCHARGE IS TO BE CONTROLLED BY A SHARP EDGED ORIFICE, THE FOLLOWING CONTROLS APPLY:
   - ORIFICE PLATES SHALL HAVE MINIMUM DIMENSIONS OF 200 X 200MM WITH A MINIMUM ORIFICE DIAMETER OF 30MM AND SHALL BE 3MM THICK FLAT STAINLESS STEEL.
   - THE ORIFICE PLATE IS TO BE TOOLED TO THE EXACT DIMENSION AS CALCULATED AND SHALL BE SECURELY FASTENED IN A CENTRAL POSITION OVER THE OUTLET PIPE USING FOUR GALVANISED (4) DYNABOLTS AND EPOXY CEMENT.
   - ORIFICE PLATES SHALL BE FLUSH WITH THE WALL SUCH THAT FLOW DOES NOT PASS BETWEEN THE PLATE AND THE WALL AND SHALL BE LOCATED SO THAT THE CENTRELINE OF THE ORIFICE IS IN LINE WITH THE BASE OF THE ON-SITE DETENTION TANK.
   - THE OUTLET PIPE TO WHICH THE ORIFICE DISCHARGE IS CONNECTED IS TO HAVE A CAPACITY AT LEAST 1.5 TIMES THE PERMISSIBLE SITE DISCHARGE FOR AT LEAST THE FIRST 2.0 METRES DOWNSTREAM FROM THE ORIFICE.



OSD TANK 2 SECTION A

SCALE 1:25

BELOW GROUND OSD STRUCTURES

1. THE TANK SHALL BE STRUCTURALLY DESIGNED TO WITHSTAND ALL SERVICE LOADS (NORMAL EARTH, SURCHARGE, TRAFFIC AND HYDROSTATIC) AND TO PROVIDE A SERVICE LIFE OF FIFTY (50) YEARS;
2. INTERNAL SUPPORTING WALLS MUST BE MINIMISED TO EASE MAINTENANCE. TYPICALLY INTERNAL SUPPORTS SHOULD ONLY BE CONSIDERED FOR SPANS GREATER THAN 3M.
3. EXCAVATION FOR THE TANK MUST BE CHECKED FOR IMPACT ON THE ZONE OF INFLUENCE ON ADJACENT FOOTINGS AND STRUCTURES
4. AN INSPECTION / ACCESS GRATE MEASURING 600MM X 900MM (MIN) SHALL BE INSTALLED DIRECTLY OVER THE OVERFLOW OUTLET AND SHALL BE READILY ACCESSIBLE FROM A POINT EXTERNAL TO THE SITE BUILDING(S);
5. WHERE THE INTERNAL DEPTH OF THE TANK IS LESS THAN 0.6 METRES, SURFACE GRATES ARE TO BE PROVIDED IN EACH CORNER OF THE ON-SITE DETENTION TANK AND ALL INLET PIPES SHALL BE CONNECTED DIRECTLY UNDER THE GRATE ACCESS TO THE CONTROL OUTLET OF THE ON-SITE DETENTION TANK. THIS IS TO MINIMISE ANY NEED TO ENTER THE TANK FOR MAINTENANCE REASONS AND TO ALLOW FOR VENTILATION AND REMOTE FLUSHING OF THE TANK FLOOR;
6. THE BASE OF THE TANK SHALL HAVE A MINIMUM 1% GRADE TOWARDS THE DISCHARGE CONTROL PIT TO ENSURE PROPER DRAINAGE.
7. FIXED STEP IRONS SHALL BE FITTED INTO THE TANK WHERE THE INTERNAL TANK DEPTH EXCEEDS 1.2 METRES;
8. A CHILD-PROOF LOCKING SYSTEM SHALL BE EMPLOYED FOR SURFACE GRATES AND LIDS; IN HIGH WATER TABLE AREAS, THE TANK SHALL BE DESIGNED TO AVOID FLOTATION;
9. ALL INLET PIPES SHALL DISCHARGE AT THE TANK FLOOR LEVEL IN ORDER TO MINIMISE NOISE DISTURBANCE;
10. THE LOCATION OF ALL ON-SITE STORMWATER DETENTION SYSTEMS SHALL BE MARKED ON SITE BY THE FIXING OF A MARKER PLATE OF MINIMUM SIZE OF 150 X 100MM TO THE NEAREST CONCRETE OR PERMANENT SURFACE IN A PROMINENT POSITION. THE PLATE SHALL BE OF NON-CORROSIVE METAL OR 4MM THICK LAMINATED PLASTIC AND THAT CONTAINS THE FOLLOWING WORDING:
    THIS IS AN ON-SITE STORMWATER DETENTION SYSTEM REQUIRED BY KU-RING-GAI COUNCIL. IT IS AN OFFENCE TO REDUCE THE VOLUME OF THE TANK OR BASIN OR TO INTERFERE WITH THE ORIFICE PLATE THAT CONTROLS THE OUTFLOW. THE OWNER MUST CLEAN THE BASE OF THE OUTLET CONTROL PIT AND THE DEBRIS SCREEN OF DEBRIS AND SEDIMENT ON A REGULAR BASIS.THIS PLATE MUST NOT BE REMOVED

NOT FOR CONSTRUCTION

DRAWN: D Courtier ..... DESIGNED: G EYRES ..... JOB MANAGER: G EYRES ..... VERIFIER: G EYRES

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO PRELIMINARY ASSESSMENT QUERIES		GE	SF	15.07.11

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE

CLIENT: -

ARCHITECT: [redacted]

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PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

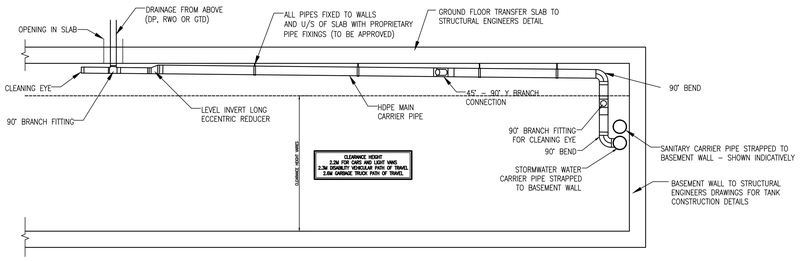
DRAWING TITLE: OSD TANK 2 MANAGEMENT PLAN

JOB NUMBER: 11010

DRAWING NUMBER: DA3.12

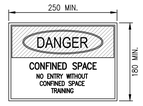
REVISION: 3

DRAWING SHEET SIZE = A0



TYPICAL SECTION THROUGH BASEMENT SLUNG DRAINAGE

SCALE 1:40



COLOURS:

'DANGER' AND BACKGROUND	WHITE
ELLIPTICAL AREA	RED
RECTANGLE CONTAINING ELIPSE	BLACK
OTHER LETTERING AND BORDER	BLACK

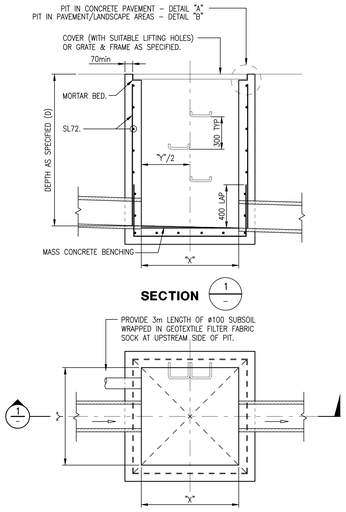
CONFINED SPACE WARNING

NOT TO SCALE

1. A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.
2. MINIMUM DIMENSIONS OF THE SIGN – 300mm x 450mm (LARGE ENTRIES, SUCH AS DOOR)
   – 250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)
3. THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINIUM OR POLYPROPYLENE.
4. SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN.

OSD WARNING SIGN

NOT TO SCALE

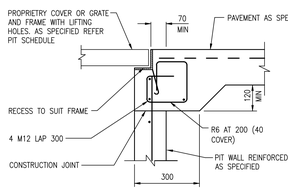


PIT STRUCTURE TO BE 150 THICK UNLESS NOTED OTHERWISE.

SURFACE INLET / JUNCTION PIT

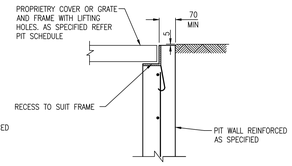
NOT TO SCALE

– PIT STRUCTURE TO BE 150 THICK UNLESS NOTED OTHERWISE.
– PROVIDE STEP IRONS IF PIT DEEPER THAN 900mm IN ACCORDANCE WITH AUSTRALIAN STANDARDS.
– INTERNAL DIMENSIONS AS SPECIFIED



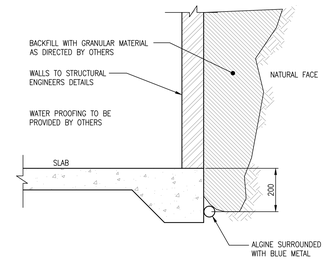
DETAIL 'A'

SCALE 1:10



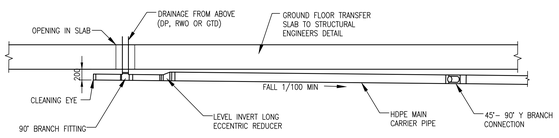
DETAIL 'B'

SCALE 1:10



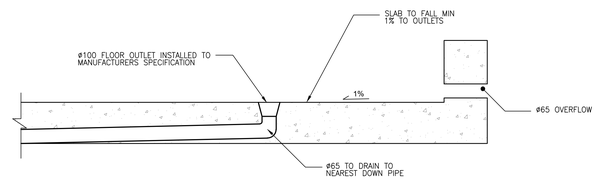
TYPICAL BASEMENT WALL DRAINAGE DETAIL WITH SPACE BEHIND THE WALL

N.T.S



BASEMENT SLUNG DRAINAGE PIPE DETAILS TYPICAL DEATIL A

SCALE 1:40



BALCONY OUTLET DETAIL

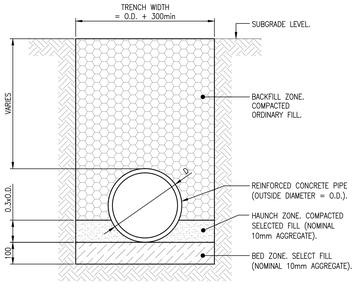
SCALE 1:10

BASEMENT SLUNG DRAINAGE PIPE DETAILS TYPICAL DEATIL B

SCALE 1:40

BASEMENT SLUNG DRAINAGE PIPE DETAILS TYPICAL DEATIL C

SCALE 1:40



TYPICAL PIPE TRENCH

GENERAL AREAS

NOT TO SCALE

NOTES:

1. TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING ADEQUATE COMPACTION.
2. MINIMUM PIPE COVER NOT UNDER ROADS = 300mm UNO.
3. THE CONTRACTOR SHALL ENSURE THAT THE SHORENG OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS.
4. ENSURE BACKFILLING OF TRENCHES NOT UNDER PAVEMENTS IS COMPACTED TO 90% SMDD.

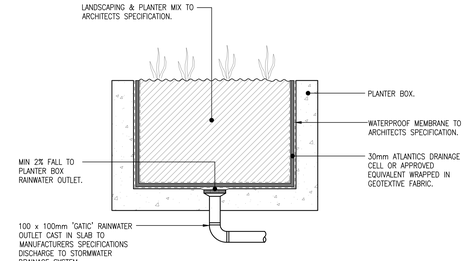
BASEMENT SLUNG DRAINAGE PIPE DETAILS TYPICAL DEATIL D

SCALE 1:40

NOTES: JUNCTION PITS TYPE A

1. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25mPA AT 28 DAYS
2. PIT STRUCTURE TO BE 150 THICK UNLESS NOTED OTHERWISE.

   INTERNAL DIMENSIONS AS SPECIFIED
3. TOP OF BENCHING TO BE ½ OF OUTLET PIPE DIAMETER
4. PROVIDE 3m LENGTH OF 100mmø SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK ADJACENT TO TO INLET PIPE INVERT AND DRAINING TO PIT
5. ALL COVERS AND GRATES TO BE HOP DIPPED GALVANISED
6. FOR GRATES PROVIDE WELDLOCK HOP DIPPED HINGED PIT GRATES HPG6060B OR HPG9090B OR APPROVED EQUIVALENT.
7. ALL GRATES TO BE PROVIDED WITH LOCKING CLIP
8. ALL PITS GREATER THAN 0.9m (FROM GRATE TO INVERT) TO BE PROVIDED WITH STEP IRONS
9. PROVIDE ONE CENTRAL LAYER OF SL82 MESH TO FLOOR AND WALLS FOR FULL DEPTH FOR PIT DEPTHS GREATER THAN 1.5m.



TYPICAL PLANTER BOX DETAIL

SCALE 1:20

NOT FOR CONSTRUCTION

DESIGNED G EYRES ..... JOB MANAGER G EYRES ..... VERIFIER G EYRES ..... DRAWN D Kramer

ISSUE	AMENDMENT	DRAWN	VERD	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	06.02.11
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESOONCE TO PRELIMARY ASSESSMENT QUERIES		GE	SF	15.07.11

CLIENT: -

ARCHITECT: MACKENZIE

0 1 2 3 4 5m
SCALE 1:100 @ A0

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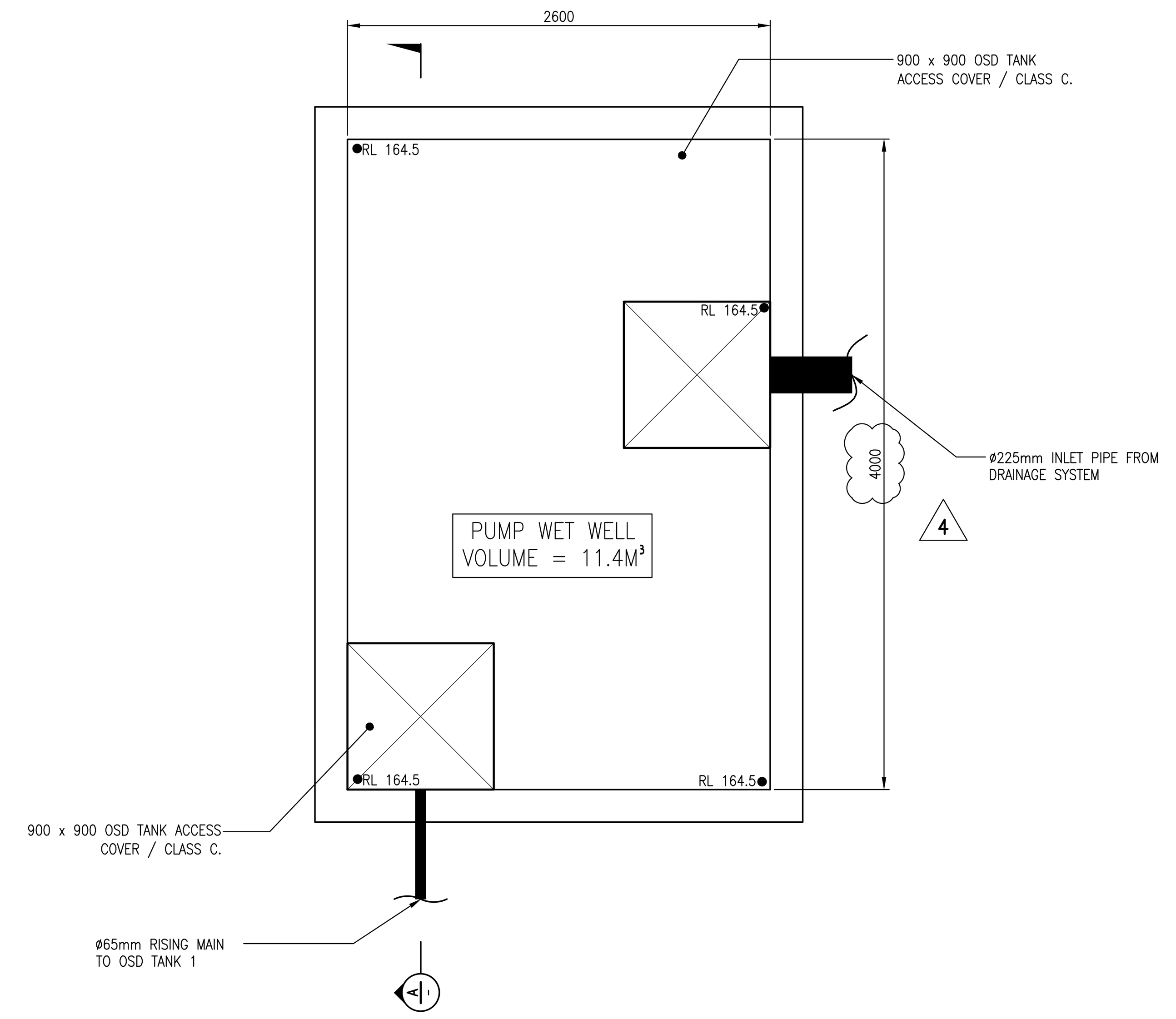
PROJECT: 1147 - 1149 PACIFIC HIGHWAY PYMBLE

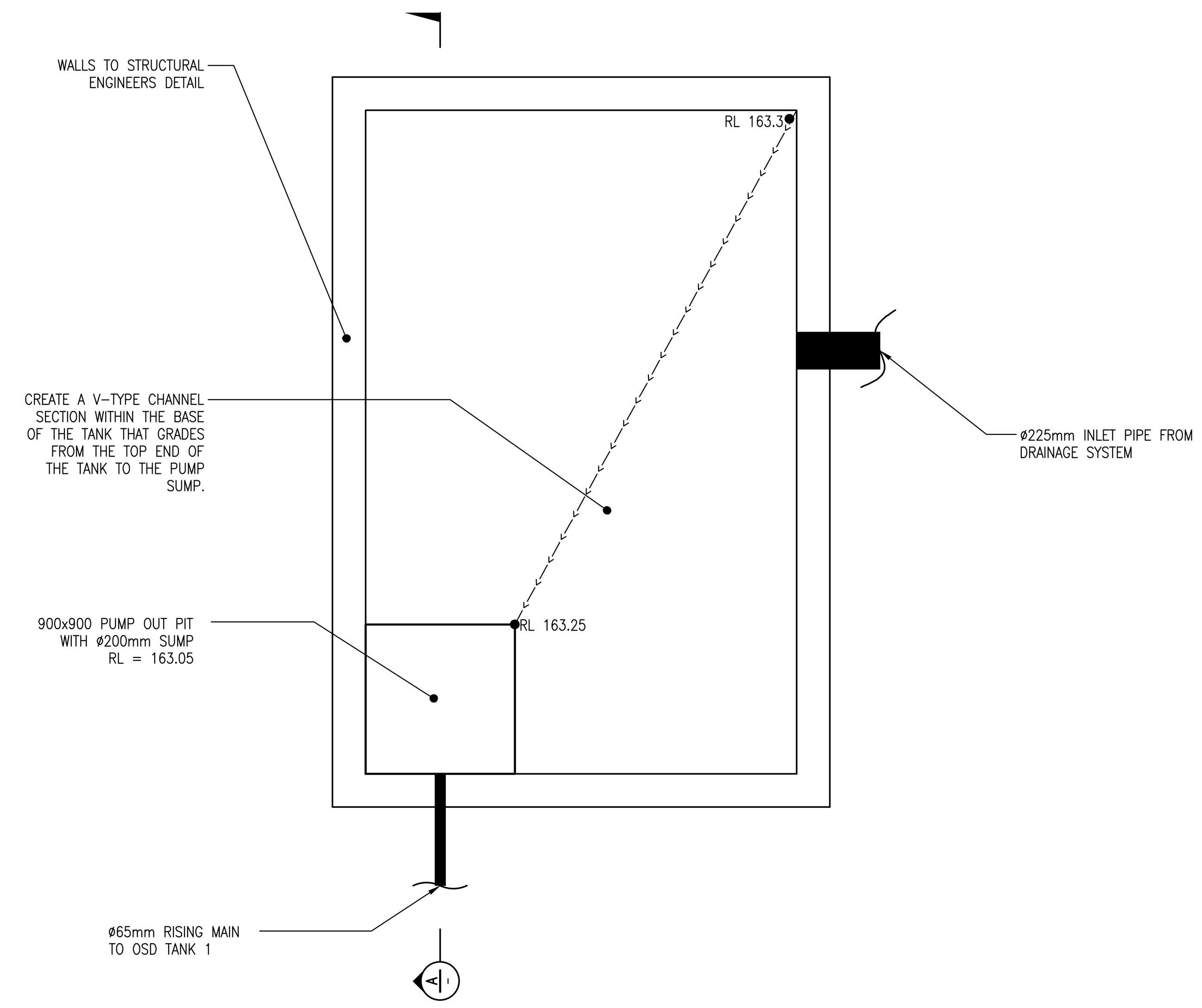
DRAWING TITLE: STORMWATER DETAILS SHEET 1

JOB NUMBER: 11010
DRAWING NUMBER: DA3.21
REVISION: 3
DRAWING SHEET SIZE = A0



BASEMENT PUMPING SYSTEM PLAN

SCALE 1:25



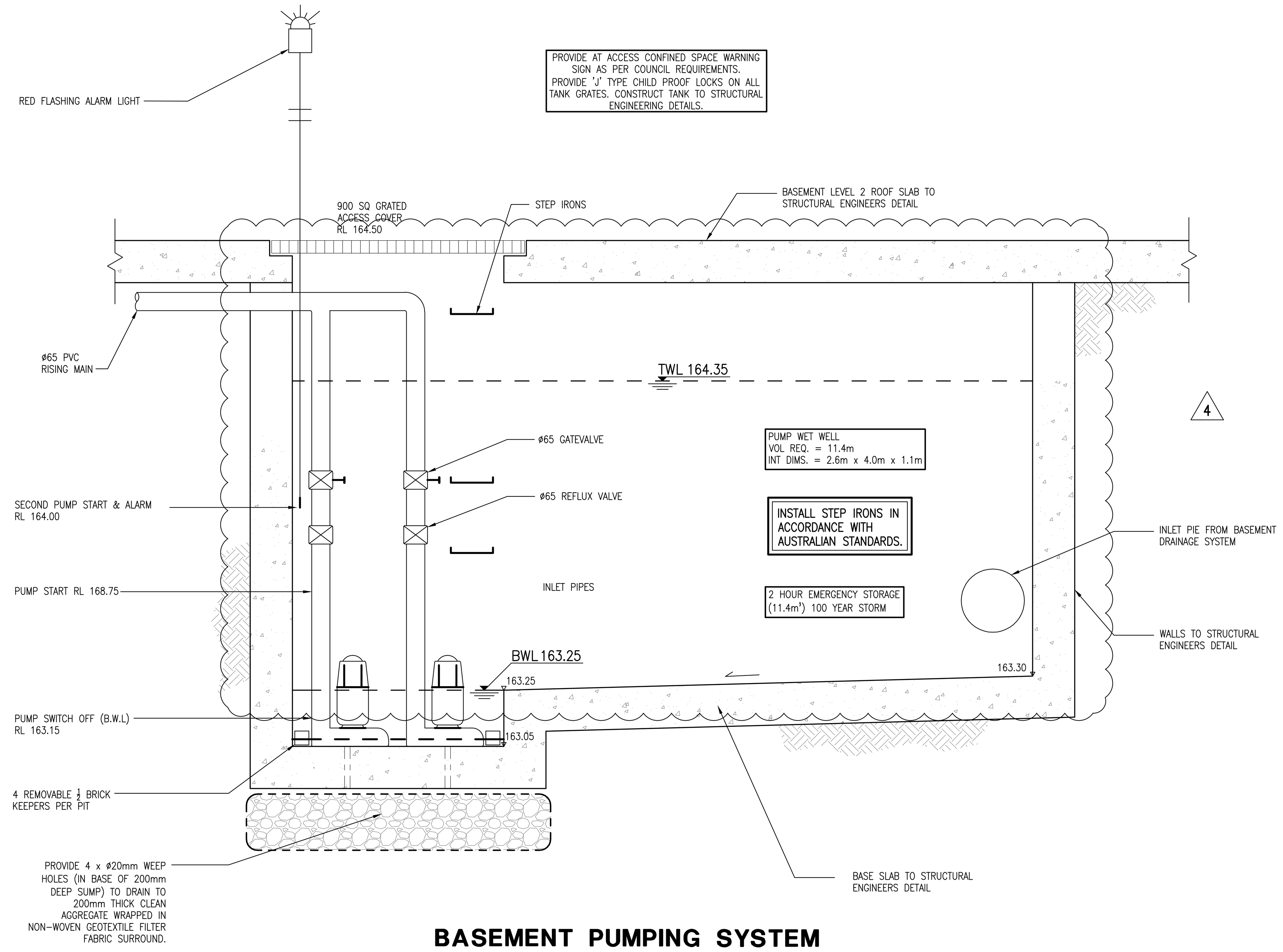
BASEMENT PUMPING SYSTEM ROOF

SCALE 1:25

PUMPOUT SYSTEM CALCULATIONS

CATCHMENT = 85m² (DRIVEWAY)
Q_{PUMP} = 10 L/s (AS3500 PART 3)
EMERGENCY STORAGE (100 YEAR ARI)
PROVIDE 2 HOUR STORAGE
$^{100}I_{120}$ = 62mm/hr

STORAGE VOLUME REQUIRED
V = 85 x 62 / 1000 x 2
V = 10.54m³
VOLUME PROVIDED = 11.4m³



4

4

BASEMENT PUMPING SYSTEM

SCALE 1:25

NOT FOR CONSTRUCTION

ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE	ISSUE	AMENDMENT	DRAWN	VER'D	APP'D	DATE
1	ISSUED FOR PRE DEVELOPMENT MEETING REVIEW		GE	SF	04.02.11						
2	ISSUED FOR DEVELOPMENT APPLICATION		GE	SF	22.02.11						
3	REISSUED FOR DEVELOPMENT APPLICATION IN RESPONCE TO		GE	SF	15.07.11						
	PRELIMINARY ASSESSMENT QUERIES										
4	REVISIONS SHOWN CLOUDED	CS	GE	SF	06.12.11						

DRAWN D.Counter

CLIENT -

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ARCHITECT MACKENZIE

SCALE 1:100 @ A0

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PROJECT
1147 - 1149 PACIFIC HIGHWAY
PYMBLE

DRAWING TITLE
STORMWATER DETAILS
SHEET 2

JOB NUMBER 11010
DRAWING NUMBER DA3.22
REVISION 4
DRAWING SHEET SIZE = A0