Consulting Engineers

STRUCTURAL - CIVIL - STORMWATER - REMEDIAL

GENERAL NOTES: Dated - 23.06.2022

1. THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION IF THE ISSUE DATE PRECEDES THE ISSUE DATE ON THE LATEST ARCHITECTURAL DRAWINGS.
2. DO NOT SCALE FROM THESE DRAWING.
3. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY THE BUILDER BEFORE COMMENCING WITH ASSOCIATED WORK.

STORMWATER NOTES:

GENERAL:

A1. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS (LATEST VERSION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL AND ANY APPLICABLE AUTHORITIES.
A2. ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM (AHD) UNLESS NOTED OTHERWISE.
A3. THE LOCATION OF ALL DRAINAGE ELEMENTS ARE SHOWN INDICATIVELY BASED ON AVAILABLE SURVEY OR OTHER INFORMATION. ALL DRAINAGE ELEMENTS ARE TO BE INSTALLED WITH CONSIDERATION TO SITE CONSTRAINTS AND THE INTENT OF THE DRAINAGE CONCEPT.
A4. ANY MATERIAL VARIATIONS TO THE DRAINAGE CONCEPT OR DETAILED STORMWATER ELEMENTS MUST BE APPROVED BY NORTHERN BEACHES CONSULTING ENGINEERS PTY LTD PRIOR TO COMMENCEMENT.
A5. ANY EXCAVATION OR TRENCHING FOR SERVICES ADJACENT TO A STRUCTURE OR PROPERTY BOUNDARY MUST NOT ENCROACH ON THE 'ZONE OF INFLUENCE', REFER TO THE NCC FOR FURTHER DETAILS.

GENERAL CONSTRUCTION NOTES:

B1. CONTRACTORS TO LOCATE ALL EXISTING SERVICES PRIOR TO EXCAVATION AND NOTIFY ENGINEER OF ANY POTENTIAL CLASHES WITH THE PROPOSED STORMWATER DRAINAGE SYSTEM.
B2. ANY ELEMENTS OF THE EXISTING STORMWATER SYSTEM WHICH ARE PROPOSED TO BE RETAINED MUST BE INSPECTED AND APPROVED BY AN ENGINEER PRIOR TO CONSTRUCTION AS BOTH HAVING ADEQUATE CAPACITY TO CATER FOR THE RUNOFF DIRECTED TO IT AND BEING IN ADEQUATE CONDITION FOR USE.
B3. EXISTING STORMWATER SYSTEM ALSO TO BE INSPECTED BY A SUITABLY QUALIFIED PLUMBER PRIOR TO CONSTRUCTION AND UPGRADED AS REQUIRED IN ACCORDANCE WITH AS3500.3.
B4. CARE SHOULD BE TAKEN WHEN UNDERTAKING WORKS IN THE VICINITY OF TREES NOT TO DISTURB THE TREE ROOT SYSTEM. HAND DIGGING OF TRENCHES MAY BE REQUIRED SUBJECT TO THE PROJECT ARBORISTS REQUIREMENTS. REFER TO THE ARBORIST REPORT FOR EXCAVATION REQUIREMENTS SURROUNDING PROTECTED TREE ROOT ZONES.
B5. SWIMMING POOL SURCHARGE OVERFLOW TO BE CONNECTED VIA GRAVITY TO THE SEWER IN ACCORDANCE WITH AS3500. DETAILS AND CERTIFICATION BY OTHERS.
B6. EXTENT, ALIGNMENT, DEPTH AND CONDITION OF ANY COUNCIL STORMWATER PIPELINE WITHIN A DEVELOPMENT SITE MUST BE VERIFIED PRIOR TO CONSTRUCTION AND THE ENGINEER MUST BE NOTIFIED UPON VERIFICATION. ANY NEW CONNECTION TO A COUNCIL STORMWATER PIPELINE WILL BE SUBJECT TO COUNCIL APPROVAL AND MUST BE INSTALLED IN ACCORDANCE WITH THE LOCAL COUNCIL SPECIFICATIONS.

PIPEWORK INSTALLATION:

C1. ALL PIPES TO BE MINIMUM 100mm ϕ UNLESS NOTED OTHERWISE.
C2. ALL PIPES TO BE uPVC SEWER GRADE TO AS 1254 UNLESS NOTED OTHERWISE.
C3. ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
C4. ALL CONNECTIONS INTO EXISTING PIPES MUST BE MADE IN THE DIRECTION OF FLOW
C5. ANY NEW uPVC CONNECTIONS INTO EXISTING R.C. PIPES MUST BE MADE INTO THE TOP HALF OF THE PIPE USING A FLOWCON CONNECTION FITTING U.N.O
C6. ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS. (NO COMPACTION REQUIRED BELOW LANDSCAPING) COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM. BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH NO-FINES GRANULAR MATERIAL AS SPECIFIED.
C7. ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
C8. MINIMUM PIPE COVER TO ALL IN-GROUND PIPEWORK SHALL BE CARRIED OUT IN ACCORDANCE WITH TABLE 7.1 - AS3500.3.
C9. ALL SUSPENDED PIPE FIXINGS ARE TO BE CARRIED OUT IN ACCORDANCE WITH AS2032.
C10. ENSURE THAT ALL STORMWATER PITS AND PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
C11. ALL PIPEWORK MUST BE INSTALLED WITHIN THE SITE BOUNDARY OF THE DEVELOPMENT SITE. ANY NEW OR EXISTING PIPEWORK EXTENDING THROUGH PRIVATE PROPERTY BEYOND THE BOUNDARY OF THE DEVELOPMENT SITE MUST BE CONTAINED SOLELY WITHIN A DRAINAGE EASEMENT. IF NO DRAINAGE EASEMENT EXISTS, A NEW DRAINAGE EASEMENT MUST BE SOUGHT AND REGISTERED PRIOR TO UTILISING OR INSTALLING PIPEWORK THROUGH NEIGHBOURING PROPERTIES. CONTACT THE ENGINEER IF A DRAINAGE EASEMENT CANNOT BE OBTAINED.

ROOF DRAINAGE:

D1. ALL DOWN PIPES TO BE 100mm ϕ UNLESS NOTED OTHERWISE.
D2. DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
D3. PROVIDE CLEANING EYES AT ALL DOWNPIPES.
D4. GUTTER GUARDS MUST BE INSTALLED ON ALL GUTTERS UNLESS NOTED OTHERWISE.
D5. ALL EAVES GUTTER AND VALLEY GUTTER SYSTEMS MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3 REQUIREMENTS.
D6. ALL BOX GUTTER SYSTEMS MUST BE INSTALLED STRICTLY IN ACCORDANCE WITH THE DETAILS SHOWN ON THE APPROVED STORMWATER MANAGEMENT PLAN. IF NO DETAILS ARE SHOWN, THE BOX GUTTER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3. IF ANY CHANGE TO THE BOX GUTTER SYSTEM CONFIGURATION IS PROPOSED, THE ENGINEER MUST BE NOTIFIED FOR A RE-DESIGN. IF THE INSTALLED BOX GUTTER DOES NOT STRICTLY COMPLY WITH THE DESIGN DETAILED ON THE STORMWATER MANAGEMENT PLAN, CERTIFICATION OF THE HYDRAULIC SYSTEM MAY BE REFUSED.
D7. ALL GREEN ROOFS, PEBBLED ROOFS AND PLANTERS WITH A CONCRETE BASE MUST BE WATERPROOFED AND HAVE DRAINAGE CELL INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.

PITS:

E1. ALL STORMWATER PITS MUST BE INSTALLED IN ACCORDANCE WITH AS3500.3.
E2. ALL CONCRETE PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER. CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE. CAST INSITU PITS GREATER THAN 900 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
E3. MINIMUM INTERNAL DIMENSIONS FOR STORMWATER AND INLET PITS TO BE IN ACCORDANCE WITH TABLE 8.2, AS3500.3.
E4. ALL PITS GREATER THAN 1200mm DEEP SHALL HAVE STEP IRONS INSTALLED. STEP IRON INSTALLATION MUST BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
E5. THE BOUNDARY OR SILT ARRESTOR PIT MUST INCORPORATE A SUMP OF MINIMUM 200mm DEPTH BELOW THE INVERT OF THE OUTLET PIPE AND A MAXI-MESH SCREEN AS PER LOCAL COUNCIL AND THE AUSTRALIAN STANDARD REQUIREMENTS. HOWEVER, UNLESS SPECIFICALLY REQUIRED BY COUNCILS POLICY OR IF THE SITE CONSISTS OF A CLAY OR ROCK SUBGRADE, ALL OTHER DRAINAGE PITS WILL NOT REQUIRE A SUMP.
E6. ALL STORMWATER PITS TO BE LOCATED AT LOW POINTS TO PREVENT PONDED WATER.
E7. FOR STORMWATER PITS LOCATED BELOW THE WATER TABLE, CUT INTO ROCK OR IN POORLY DRAINED SOILS, THE PIT SUMP MAY BE FILLED WITH MORTAR AND SCREEDED TOWARDS THE OUTLET AT MINIMUM 1% FALL, SUBJECT TO THE ENGINEERS APPROVAL.

SUBSOIL DRAINAGE:

F1. ALL SUBSOIL DRAINAGE TO BE INSTALLED AS REQUIRED IN ACCORDANCE WITH AS3500.3 (SPECIFICALLY SECTION 6, 7 AND APPENDIX M) AND THE NCC.
F2. INSTALLATION OF SUBSOIL DRAINAGE LINES IS GENERALLY REQUIRED WHERE SUBSURFACE WATER MOVEMENT COULD DAMAGE BUILDINGS OR CAUSE LOSS OF AMENITY THROUGH THE BUILD-UP OF EXCESSIVE MOISTURE OR LATERAL WATER PRESSURE. THIS INCLUDES ALONG WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER, ON THE UPHILL SIDE OF CUT AND FILL SITES, ADJACENT TO DEEP FOOTINGS, BEHIND RETAINING WALLS AND ADJACENT TO BASEMENT WALLS. SUBSOIL DRAINAGE IS GENERALLY ALSO REQUIRED IN SHALLOW LANDSCAPED AREAS OVER ROCK OR POORLY DRAINED SOILS TO PREVENT OVERLY SATURATED LANDSCAPED AREAS.
F3. THE INSTALLATION OF SUBSOIL DRAINAGE MAY REQUIRE TRENCHING THROUGH ROCK.
F4. ALL SUBSOIL LINES ARE TO BE 100mm UPVC SLOTTED PIPE (UNSOCKED), LAID AT (MIN.) 0.5% FALL UNO.
F5. THE SUBSOIL LINE IS TO BE SURROUNDED BY SELECT FILTER MATERIAL, GENERALLY 10-20mm DIAMETER AGGREGATE.
F6. THE TRENCH SHALL BE SIZED TO PROVIDE A MINIMUM 50mm BEDDING AND 100mm COVER ALL AROUND THE SUBSOIL LINE, GENERALLY MINIMUM 300mm WIDE X 300mm DEEP. THE TRENCH IS TO BE WRAPPED ALL-ROUND IN NON-WOVEN, GEOTEXTILE FABRIC OF STRENGTH CLASS A, WITH SUFFICIENT OVERLAP (LESSER OF TRENCH WIDTH OR 500mm).
F7. WHERE THE IN-SITU SOILS HAVE A GRAIN SIZE SMALLER THAN THE GEOTEXTILE FABRIC, COURSE WASHED-SAND SHOULD BE USED AS A FILTER TO PREVENT BLOCKAGE OF THE GEOFABRIC.
F8. THE BACKFILL LAYER OVER THE TRENCH SHALL BE NO-FINES COURSE WASHED-SAND. WHERE LANDSCAPED AREAS ARE PROPOSED OVER THE TRENCH, THE TOP 300mm OF BACKFILL MAY BE MIXED WITH UP TO 20% ORGANIC MATTER.
F9. ALL SUBSOIL LINES ARE TO DISCHARGE INTO A GRATED PIT, AT A LEVEL MINIMUM 50mm ABOVE THE PIT OUTLET UNO. THE PROJECT BUILDER IS TO IMPLEMENT APPROPRIATE MEASURES TO PREVENT SUBSOIL LINE BLOCKAGE OR INFESTATION OF VERMIN.
F10. THE HIGH-END OF THE SUBSOIL LINE IS TO BE TURNED UP AT 45° AND TERMINATE AT GROUND LEVEL WITH AN INSPECTION CAP TO ENABLE FUTURE FLUSH OUT AND MAINTENANCE.
F11. 100mm ϕ x 3000 LONG TAIL OUT SUBSOIL LINE TO BE PROVIDED ON THE UPSTREAM SIDE OF ALL LARGE PITS OR IN AREAS WITH HIGH SEEPAGE FLOWS. SUBSOIL LINE TO BE COVERED WITH GEOTEXTILE FILTER SOCK FOR THE FULL LENGTH AND END COVERED. BACKFILL MUST BE IN NO-FINES COARSE WASHED-SAND.

CHARGED SYSTEM:

G1. ALL PIPEWORK IN A CHARGED SYSTEM TO BE 100mm ϕ UPVC PRESSURE OR SEWER GRADE PIPES WITH ALL JOINTS PRESSURE SEALED TO A MINIMUM OF 1,000mm (UNLESS NOTED OTHERWISE) ABOVE THE INLET OF THE DISCHARGE POINT. ALL JOINTS TO BE SOLVENT WELDED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS.
G2. ALL CHARGED SYSTEMS MUST HAVE A BLEED OUT LINE AT THE LOW POINT IN THE CHARGED SYSTEM WHICH MUST BE CONNECTED TO A FLUSH OUT PIT VIA GRAVITY. THE BLEED LINE MUST BE MAINTAINED AND REGULARLY FLUSHED OUT.

ON-SITE DETENTION NOTES:

H1. ORIFICE PLATE MUST BE INSTALLED PRIOR TO INSTALLATION OF THE ROOF DRAINAGE SYSTEM AND CONNECTION OF THE SITE STORMWATER SYSTEM TO THE ON-SITE DETENTION TANK.
H2. THE HEIGHT DIFFERENCE (H#) BETWEEN THE ORIFICE CENTRELINE AND THE TOP WATER LEVEL OF THE ON-SITE DETENTION TANK MUST BE CONSTRUCTED IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN. IF H# CHANGES DUE TO SITE CONDITIONS,THE ENGINEER MUST BE NOTIFIED FOR AN ORIFICE PLATE SIZE ADJUSTMENT.
H3. ANY PIPE FITTINGS FOR BELOW GROUND ON-SITE DETENTION TANKS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
H4. ACCESS HATCHES MUST BE INSTALLED AT BOTH ENDS OF THE ON-SITE DETENTION TANK. IF THE DEPTH OF THE TANK IS GREATER THAN 1200mm, STEPS IRONS MUST BE INSTALLED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.
H5. ABOVE GROUND ON-SITE DETENTION BASINS MUST NOT EXCEED A PONDING DEPTH OF 300mm, UNLESS NOTED OTHERWISE. THE BUILDER MUST ENSURE THAT THE REQUIRED DETENTION VOLUME IS ACHIEVED DURING CONSTRUCTION. A WORK-AS-EXECUTED PLAN DETAILING THE FINISHED LEVELS AND VOLUME OF THE ON-SITE DETENTION BASIN MUST BE CARRIED OUT AT THE COMPLETION OF WORKS BY A REGISTERED SURVEYOR AND APPROVED BY THE ENGINEER PRIOR TO FINAL CERTIFICATION.

SURFACE DRAINAGE:

J1. WHEN LAND FALLS TOWARDS A BUILDING, INCLUDING LAND UPSLOPE OF THE PROPERTY BOUNDARY, GROUND SURFACE LEVELS ADJACENT TO THE BUILDING ARE TO BE REGRADED SUCH THAT THE FIRST METRE HAS MINIMUM 50mm FALL AWAY FROM THE BUILDING, GENERALLY IN ACCORDANCE WITH THE NCC.
J2. ANY NEW DEVELOPMENT WORKS MUST NOT CREATE ANY TRAPPED SURFACE AREAS. IN SUCH CASES WHERE TRAPPED AREAS EXIST, SWALE DRAINS OR GRATED PITS WITH PIPED OUTLETS OF ADEQUATE CAPACITY MAY BE REQUIRED TO ROUTE RUNOFF AROUND THE BUILDING TO AN APPROVED DISCHARGE POINT. IF THE TRAPPED AREA IS BELOW THE NATURAL SURFACE LEVEL, A PUMP OUT SYSTEM MAY BE REQUIRED. IN EITHER CASE, THE PROJECT ENGINEER MUST BE CONTACTED FOR DESIGN DETAILS (AS REQUIRED) PRIOR TO CONSTRUCTION.
J3. BUILDER TO PROVIDE A MINIMUM 100mm WIDE x 30mm HIGH OR 50mm DIA OVERFLOW FOR EVERY 6m2 OF EXPOSED AREA THAT IS TRAPPED OR SURROUNDED BY HOBS/BALUSTRADES/WALLS/ETC. THE FULL OVERFLOW DEPTH MUST BE LOCATED BELOW ANY ADJACENT INTERNAL FLOOR LEVELS OR OPENINGS TO PROTECT AGAINST WATER INGRESS DUE TO BLOCKAGE OF THE PRIMARY OUTLET(S).

RAINWATER RE-USE TANKS:

K1: CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING A RAINWATER TANK FOR USE AS PER BASIX REQUIREMENTS, SYDNEY WATER AND NSW HEALTH REQUIREMENTS FOR NON DRINKING USE ONLY AS FOLLOWS:
a) TO WATER GARDEN AREAS b) WASHING CARS c) CONNECT TO W.C.
d) CONNECT TO WASHING MACHINE. e) USED IN HOT WATER SYSTEMS.
f) FILLING SWIMMING POOLS, SPAS AND ORNAMENTAL PONDS.
K2: THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
K3: REFERENCES: COOMBES P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE. PATRICK DUPONT & STEVE SHACKLE, "RAINWATER" AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS".
K4: ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS TO BE IN ACCORDANCE WITH SYDNEY WATERS' GUIDE "INSTALLING A RAINWATER TANK" AVAILABLE AT www.sydneywater.com.au
K5: PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANING AND NATURAL RESOURCES.
K6: IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100m2 OF ROOF CATCHMENT AREA PRIOR TO ENTERING THE RAINWATER TANK. INDIVIDUAL SITE ANALYSIS IS REQUIRED IN HEAVILY POLLUTED AREAS TO DETERMINE IF LARGER VOLUMES OF FIRST FLUSH RAINWATER ARE TO BE DIVERTED. IF IN DOUBT, CHECK WITH LOCAL HEALTH AUTHORITIES.
K7: SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING.
K8: FIRST FLUSH DEVICES, OR APPROVED ALTERNATIVE, TO BE INSTALLED WITH AN AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS.
K9: BEFORE PURCHASING MATERIALS OR PAINT TO BE USED ON ROOF CATCHMENT AREAS, THE MANUFACTURER'S RECOMMENDATIONS ON LABELS AND BROCHURES FOR RAINWATER TANK SUITABILITY TO BE READ AND ADHERED TO.
K10: PRE-STORAGE PITS FOR UNDERGROUND RAINWATER STORAGE TANKS AND FLUSH OUT PITS MAY ASSIST IN LIMITING SILT, AND PREVENT VERMIN, INSECTS (INCLUDING MOSQUITOES) AND DEBRIS FROM ENTERING THE RAINWATER STORAGE AREA.
K11: BUILDER/PLUMBER TO ENSURE THE INSTALLATION OF THE RAINWATER TANK SYSTEM IS IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND THE RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK - HB 230-2008. IF IN DOUBT CONTACT ENGINEER.
K12: RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230-200B

STORMWATER RE-USE TANKS:

ST1: BASIX RECOMMENDS PROVIDING A STORMWATER TANKS FOR USE AS PER BASIX REQUIREMENTS FOR THE FOLLOWING USES: a) TO WATER GARDEN AREAS
ST2: THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
ST3: IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100m2 OF ROOF CATCHMENT AREA PRIOR TO ENTERING THE RAINWATER TANK. INDIVIDUAL SITE ANALYSIS IS REQUIRED IN HEAVILY POLLUTED AREAS TO DETERMINE IF LARGER VOLUMES OF FIRST FLUSH RAINWATER ARE TO BE DIVERTED. IF IN DOUBT, CHECK WITH LOCAL HEALTH AUTHORITIES.
ST4: SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING.
ST5: FIRST FLUSH DEVICES, OR APPROVED ALTERNATIVES, TO BE INSTALLED WITH AN AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS.
ST6: BEFORE PURCHASING MATERIALS OR PAINT TO BE USED ON ROOF CATCHMENT AREAS, THE MANUFACTURER'S RECOMMENDATIONS ON LABELS AND BROCHURES FOR RAINWATER TANK SUITABILITY TO BE READ AND ADHERED TO.

NOTES:

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4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: S01.

BEFORE YOU DIG NOTE:

NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

BEFORE YOU DIG www.byda.com.au

MINIMISE YOUR RISK AND CONTACT www.byda.com.au BEFORE YOU DIG.

NORTHERN BEACHES - REGION 1
ON SITE DETENTION SYSTEM CALCULATION SHEET

ADDRESS: 58 WHALE BEACH ROAD. AVALON

TOTAL SITE AREA	671 m^2
PRE DEVELOPMENT IMPERVIOUS AREA	420 m^2 (63% IMPERVIOUS)
POST DEVELOPMENT IMPERVIOUS AREA	404 m^2 (60% IMPERVIOUS)
THERE IS NO INCREASE IN IMPERVIOUS AREA	

DEVELOPMENT IS A LOW LEVEL PROPERTY, DESIGN IN GENERAL ACCORDANCE WITH SECTION 5.5 OF DCP

STEP 1 - CONNECTION TO EXISTING SYSTEM	NO CURRENT CONNECTION EXISTS DUE TO SITE CONSTRAINTS
STEP 2 - ONSITE ABSORPTION	INADEQUATE DUE TO UNSUITABLE SOIL TYPE
STEP 3 - GRAVITY EASEMENT PIPE	OWNERS UNABLE TO OBTAIN AN AGREEMENT WITH LOWER PROPERTY OWNERS
STEP 4 - LEVEL SPREADER	ADEQUATE

SITE DISCHARGE

PRE DEVELOPMENT SITE DISCHARGE	
5 YR	14 l/s
100 YR	33 l/s
POST DEVELOPMENT SITE DISCHARGE	
5 YR	8 l/s (5 l/s FROM OSD)
100 YR	14 l/s (8 l/s FROM OSD)

SITE STORAGE REQUIREMENT

REQUIRED OSD BASIN STORAGE	5.12 m^3
OSD BASIN STORAGE PROVIDED	5.25 m^3
REQUIRED OSD ATLANTIS STORAGE	16.88 m^3
OSD ATLANTIS STORAGE PROVIDED	18.197 m^3
PERMITTED DISCHARGE RATE	14 L/s
OSD BASIN ORIFICE	40 mm
OSD ATLANTIS ORIFICE	50 mm
RAINWATER 'BASIX' REQUIRED	2265 L
RAINWATER 'BASIX' PROVIDED	4000 L

OUTLET CONTROL

METHOD OF DISCHARGE	LEVEL SPREADER
MAX. FLOW THROUGH LEVEL SPREADER	14 L/s
MIN. LENGTH OF LEVEL SPREADER	3 m

DRAWING SCHEDULE:

D01 - STORMWATER DRAINAGE GENERAL NOTES
D02 - GROUND FLOOR STORMWATER DRAINAGE PLAN
D03 - FIRST FLOOR AND ROOF STORMWATER DRAINAGE PLAN
D04 - STORMWATER DRAINAGE DETAILS SHEET 1

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

IF IN DOUBT ASK

Scale check - 100mm when printed to scale

A1

Date:	Issue:	Description:	By:	Review:
28.07.2022	A	ISSUED FOR DA SUBMISSION ONLY	NB	-
04.08.2022	B	AMENDMENTS TO D01 AND D02 TO ARCHITECT'S DETAIL	NB	-

DOCUMENT CERTIFICATION

Date : 4 Aug '22
Michael Wachjo
B.E.(Civil), MIEAust.
(Director NB Consulting Engineers)

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Architect: MARKHAM-LEE ARCHITECTURE

Client: DANIEL & SHAREE CHAMBERLAIN

Project: ALTERATIONS AND ADDITIONS 58 WHALE BEACH ROAD, AVALON

Drawing Title: STORMWATER DRAINAGE GENERAL NOTES

Date:	Design:	Drawn:
AUG '22	NT	NB

Job No:	Drawing No:	Issue:
2205070	D01	B

NB Consulting Engineers

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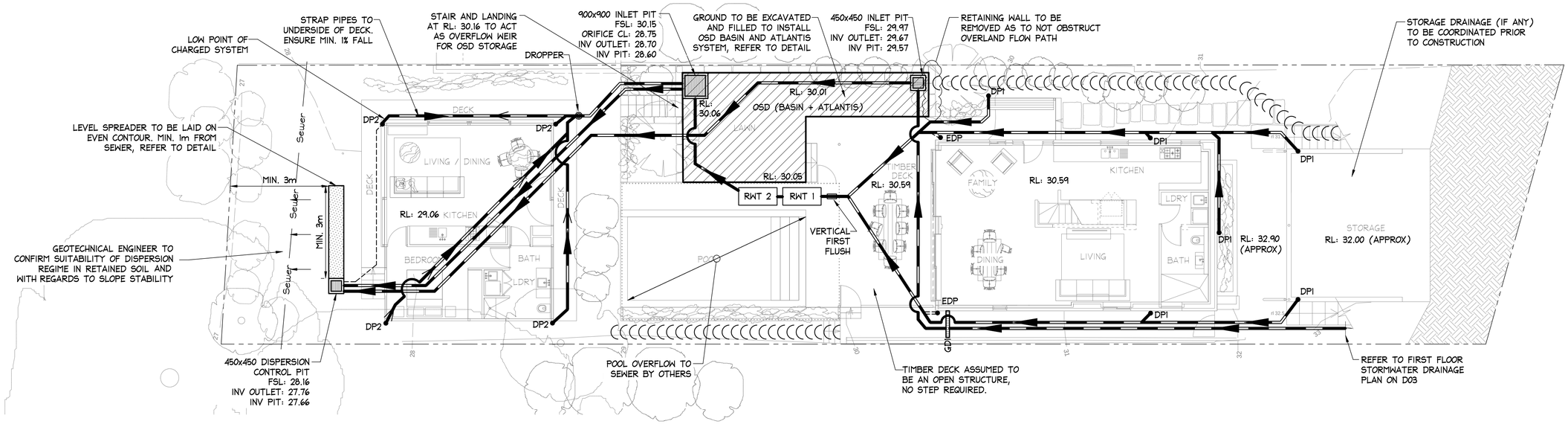

GROUND FLOOR STORMWATER DRAINAGE PLAN

SCALE = 1 : 100

LEGEND

DP1 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO RWT
DP2 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO OSD
———	NEW STORMWATER PIPE
==========	EXISTING STORMWATER PIPE
——◄——	STORMWATER PIPE FALL DIRECTION IN CHARGED SYSTEMS
——►——	STORMWATER PIPE FLOW DIRECTION
PIT	STORMWATER PIT
GDI	GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN
RWT 1, RWT 2	RAINWATER TANKS TO COLLECT ALL DP1 DOWNPIPES. TO BE RE-USED AS PER BASIX REQUIREMENTS LOCAL COUNCIL & SYDNEY WATER REQUIREMENTS
CCCCC	OVERLAND FLOW PATH

NOTE: ALL DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

NOTE:
SUBSOIL AND PLANTER DRAINAGE TO BE PROVIDED FOR CC DOCUMENTATION

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Architect: MARKHAM-LEE ARCHITECTURE

Client: DANIEL & SHAREE CHAMBERLAIN

Project: ALTERATIONS AND ADDITIONS 58 WHALE BEACH ROAD, AVALON

Drawing Title: GROUND FLOOR STORMWATER DRAINAGE PLAN

Date:	Design:	Drawn:
AUG '22	NT	NB

Job No:	Drawing No:	Issue:
2205070	D02	B

NB Consulting Engineers

NOTES:

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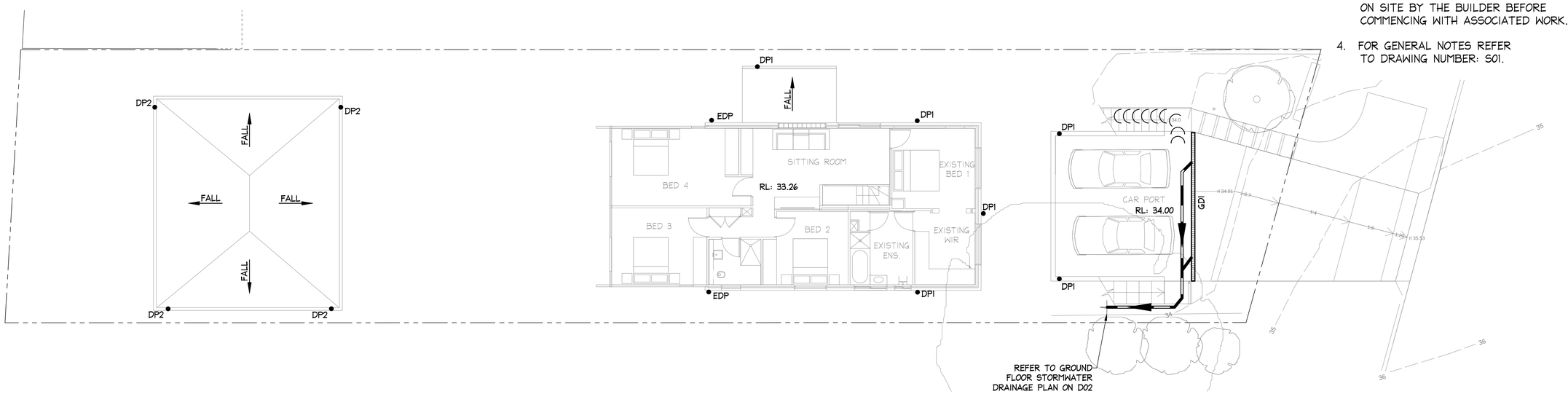
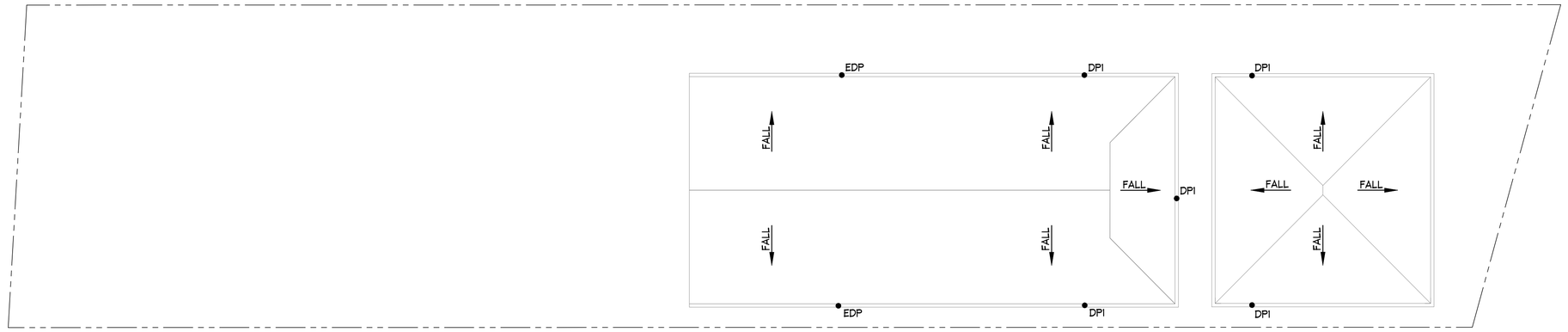
4. FOR GENERAL NOTES REFER TO DRAWING NUMBER: S01.



FIRST FLOOR STORMWATER DRAINAGE PLAN

SCALE = 1 : 100



ROOF STORMWATER DRAINAGE PLAN

SCALE = 1 : 100

LEGEND

DP1 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO RWT
DP2 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO OSD
———	NEW STORMWATER PIPE
———◄	STORMWATER PIPE FLOW DIRECTION
GDI	GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN
CCCCC	OVERLAND FLOW PATH

NOTE: ALL DRAINAGE LINE LOCATIONS ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

N

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Scale check - 100mm when printed to scale

A1

Date:	Issue:	Description:	By:	Review:
28.07.2022	A	ISSUED FOR DA SUBMISSION ONLY	NB	-
04.08.2022	B	AMENDMENTS TO D01 AND D02 TO ARCHITECT'S DETAIL	NB	-

DOCUMENT CERTIFICATION

Date : 4 Aug '22
Michael Wachjo
B.E.(Civil), MIEAust.
(Director NB Consulting Engineers)

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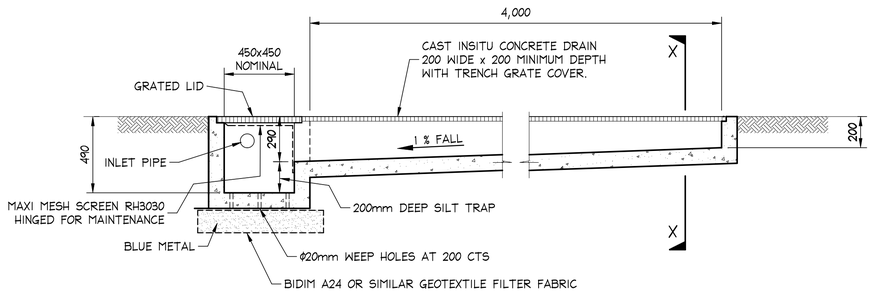
Architect: MARKHAM-LEE ARCHITECTURE	Project: ALTERATIONS AND ADDITIONS 58 WHALE BEACH ROAD, AVALON	Date: AUG '22	Design: NT	Drawn: NB
Client: DANIEL & SHAREE CHAMBERLAIN	Drawing Title: FIRST FLOOR AND ROOF STORMWATER DRAINAGE PLAN	Job No: 2205070	Drawing No: D03	Issue: B

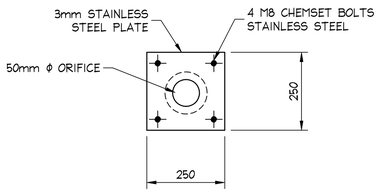
NOTE: DISPERSION TRENCH

1. DISPERSION TRENCH TO BE LAID ON A LEVEL CONTOUR.
2. GROUND LEVEL ABOVE TRENCH MUST BE LEVEL SO AS TO EVENLY DISPERSE WATER DOWN HILL OF THE TRENCH
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION FOR DISPERSION TRENCH NOTIFY ENGINEER FOR ALTERNATE DETAIL.



DISPERSION TRENCH LONGITUDINAL SECTION

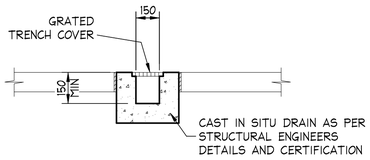
NOT TO SCALE



ORIFICE PLATE DETAIL

SCALE = 1 : 10

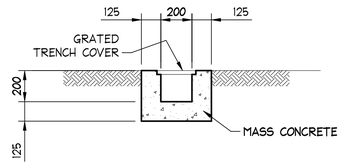
NOTE:
REAR OF ORIFICE PLATE TO BE HYDROSTATICALLY SEALED AGAINST PIT WALL USING SIKAFLEX 11 FC OR APPROVED EQUAVALENT.



OR PRECAST GRATED DRAIN BY MANUFACTURER
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER

TYPE 'GDI' GRATED DRAIN

SCALE = 1 : 20



OR PRECAST GRATED DRAIN
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER

SECTION X-X

NOT TO SCALE

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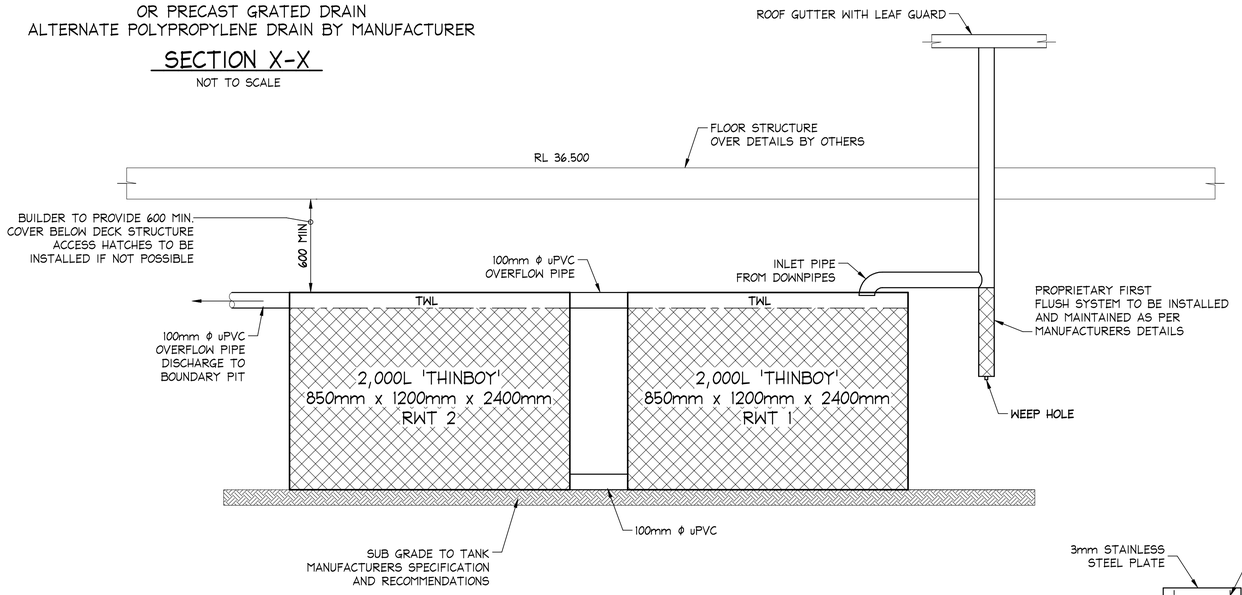
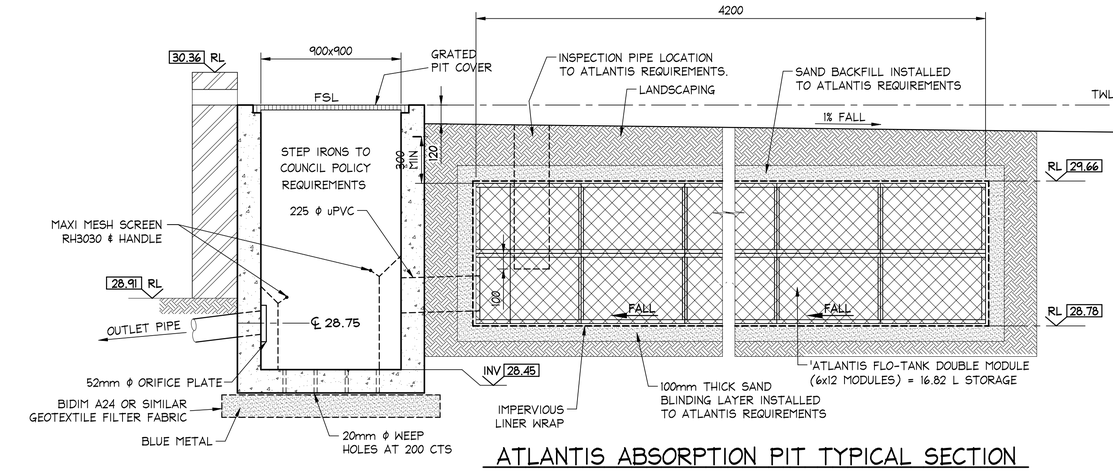


No. 4A TYPICAL SECTION RAINWATER RE-USE TANKS

NOT TO SCALE



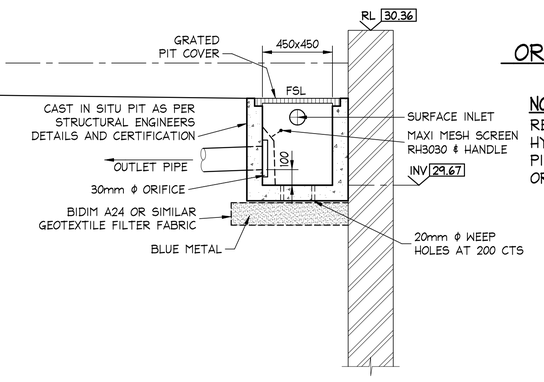
ATLANTIS ABSORPTION PIT TYPICAL SECTION

NOT TO SCALE

OR PRECAST GRATED PIT BY MANUFACTURER
ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER

900x900 PIT DETAIL

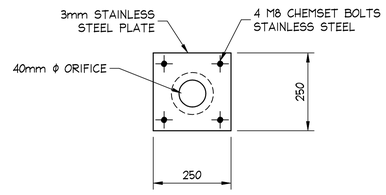
SCALE = N.T.S.



OR PRECAST GRATED PIT BY MANUFACTURER
ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER

450x450 PIT DETAIL

SCALE = N.T.S.



ORIFICE PLATE DETAIL

SCALE = 1 : 10

NOTE:
REAR OF ORIFICE PLATE TO BE HYDROSTATICALLY SEALED AGAINST PIT WALL USING SIKAFLEX 11 FC OR APPROVED EQUAVALENT.

TYPICAL SECTION OF OSD BASIN/ATLANTIS DRAINAGE SYSTEM

SCALE = N.T.S.

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Architect: MARKHAM-LEE ARCHITECTURE

Client: DANIEL & SHAREE CHAMBERLAIN

Project: ALTERATIONS AND ADDITIONS
58 WHALE BEACH ROAD, AVALON

Drawing Title: STORMWATER DRAINAGE DETAILS SHEET 1

Date:	Design:	Drawn:
AUG '22	NT	NB

Job No:	Drawing No:	Issue:
2205070	D04	B

NB Consulting Engineers