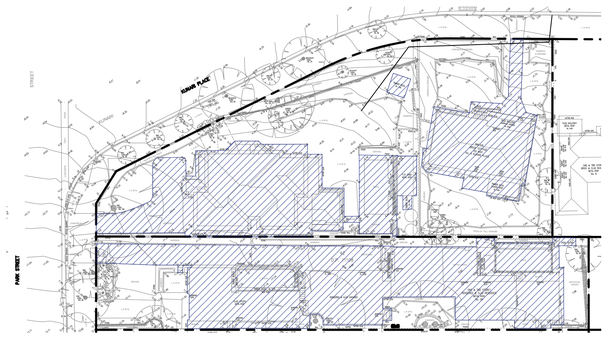
NOT FOR CONSTRUCTION

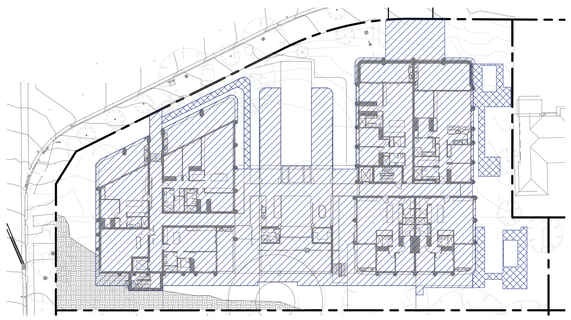
CIVIL CONSULTING ENGINEERS

PROPOSED RESIDENTIAL FLAT BUILDING

94–96 PARK STREET & 4 KUNARI PLACE, MONA VALE



EXISTING IMPERVIOUS AREA: 1610m² (52%)
SCALE = 1 : 500



PROPOSED IMPERVIOUS AREA: 1911m² (62%)
SCALE = 1 : 500

STORMWATER DRAINAGE NOTES:

1. ALL PIPES TO BE 100mm ø UNLESS NOTED OTHERWISE.
2. ALL PIPES TO BE uPVC TO AS 1254–2002 UNLESS NOTED OTHERWISE.
3. ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
4. 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 GRANULAR MATERIAL AS SPECIFIED.
5. ALL DOWN PIPES TO BE 100mm ø UNLESS NOTED OTHERWISE.
6. DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT WITH WORK.
7. PROVIDE CLEANING EYES AT ALL DOWNPIPES.
8. ALL 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 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 250 EACH WAY UNLESS NOTED OTHERWISE.
9. ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
10. ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
11. PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
12. ALL LEVELS SHOWN ARE TO AHD UNLESS NOTED OTHERWISE.
13. ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
14. ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
15. ALL WORKS TO BE IN ACCORDANCE WITH AS 3500.3:2018 NATIONAL PLUMBING DRAINAGE CODE PART 3 – STORMWATER DRAINAGE.
16. UNLESS NOTED OTHERWISE, SUB–SOIL DRAINS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3500.3 ALONGSIDE WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER. THIS MAY ALSO INVOLVE TRENCHING INTO THE CLAY OR ROCK SUBGRADE TO DIRECT GROUNDWATER AWAY FROM STRUCTURES.
17. IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES.
18. EXISTING STORMWATER SYSTEM TO BE CHECKED AND UPGRADED AS REQUIRED IN ACCORDANCE WITH AS 3500.3: 2018.
19. CARE SHOULD BE TAKEN WHEN UNDERTAKING WORKS IN THE VICINITY OF SELECTED TREES NOT TO DISTURB THE TREE ROOT SYSTEM. HAND DIGGING OF TRENCHES MAY BE NECESSARY. REFER ARBORISTS REPORT WHERE REQUIRED.
20. CONTRACTOR TO LOCATE ALL EXISTING SERVICES PRIOR TO EXCAVATION AND NOTIFY ENGINEER OF ANY POTENTIAL CLASHES WITH THE PROPOSED DRAINAGE EASEMENT PIPE LINE.
21. ALL SUB–SOIL DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH THE STRUCTURAL AND GEOTECHNICAL REQUIREMENTS, AUSTRALIAN STANDARDS AS 3500.3: 2018 AND IS TO BE DIRECTED TO THE SITE DRAINAGE SYSTEM BY MEANS OF GRAVITY DISCHARGE ONLY. DO NOT CONNECT SUB–SOIL PIPES TO AREAS WITH HIGHER SURFACE LEVELS U.N.O..
22. ALL PIPES SHOWN ARE INDICATIVE ONLY AND MINIMUM CLEARANCES FROM THE EXTERNAL WALLS OF BUILDINGS, FOR THE EXCAVATION OF TRENCHES, ARE TO BE PROVIDED IN ACCORDANCE WITH AS 3500.3: 2018.
23. ANY COMPONENTS OF THE EXISTING SYSTEM PROPOSED TO BE RETAINED ARE TO BE CERTIFIED DURING CONSTRUCTION TO BE IN GOOD CONDITION AND OF ADEQUATE CAPACITY TO CONVEY ADDITIONAL RUNOFF AND BE REPLACED OR UPGRADED IF REQUIRED.
24. ANY CHARGED PIPES MUST BE A MINIMUM OF 100mm (UNLESS NOTED OTHERWSIE) WITH ALL JOINTS MUST BE SOLVENT WELDED. A CLEANING EYE, OR FLUSH OUT POINT, MUST BE PROVIDED AT THE LOW POINT IN THE SYSTEM WITHIN A PIT THAT CAN BE DRAINED TO AN ONSITE DISPERSAL SYSTEM.
25. PROVISION IS TO BE MADE FOR THE COLLECTION AND DISPOSAL IN AN APPROVED MANNER OF ANY OVERLAND FLOW OR SUB–SURFACE FLOW ENTERING THE SUBJECT PROPERTY, OR CONCENTRATED AS A RESULT OF THE PROPOSED WORKS. ANY REDIRECTION OR TREATMENT OF FLOWS ENTERING THE PROPERTY SHALL NOT ADVERSELY AFFECT ANY OTHER PROPERTIES.
26. PREVENT ANY STORMWATER EGRESS INTO ADJACENT PROPERTIES BY CREATING PHYSICAL BARRIERS AND SURFACE DRAINAGE INTERCEPTION.
27. GUTTER GUARDS MUST BE INSTALLED ON ALL GUTTERS TO MINIMISE DEBRIS ENTERING THE SYSTEM.
28. ALL SUB–SOIL DRAINAGES, STRIP DRAINS AND DRAINAGE PITS SHALL DISCHARGE TO THE ESTABLISHED SITE DISCHARGE POINT U.N.O AND BE CONSTRUCTED IN ACCORDANCE WITH AS3500.3: 2018 REQUIREMENTS.
29. OVERFLOW PATHS SHALL BE PROVIDED TO ALLOW FOR FLOWS IN EXCESS OF THE CAPACITY OF THE PIPE/DRAINAGE SYSTEM DRAINING THE SITE.
30. WHERE ANY NEW STORMWATER DRAINAGE SYSTEM CROSSES THE FOOTPATH AREA WITHIN ANY ROAD, SEPERATE APPROVAL UNDER SECTION 138 OF THE ROAD ACT 1993 MUST BE OBTAINED FROM COUNCIL FOR THOSE WORKS PRIOR TO THE ISSUE OF ANY CONSTRUCTION CERTIFICATE.
31. CONCEALED DOWNPIPES MUST BE INSTALLED IN ACCORDANCE WITH SECTION 4.5.6 OF AUSTRALIAN STANDARDS AS3500.3: 2018 REQUIREMENTS. BUILDER TO ENSURE LOCATIONS DO NOT RESTRICT NORMAL OPERATION OF DOORS, WINDOWS, ACCESS OPENINGS OR OCCUPANCY OF A BUILDING, DO NOT CAUSE NUISANCE OR LEAD TO INJURY OF A PERSON, DO NOT INTERFERE WITH THE STRUCTURAL INTEGRITY OF THE WALL OR COLUMN, AS CLOSE AS PRACTICABLE TO THE SUPPORTING STRUCTURE, ARE PROTECTED FROM MECHANICAL DAMAGE, AT LEAST 100mm CLEAR OF ANY ELECTRICAL CABLE OR GAS PIPE, AT LEAST 50mm FROM ANY OTHER PIPEWORK OR SERVICE. CONCEALED DOWNPIPES TO HAVE INSPECTION OPENINGS THAT EXTEND TO THE FACE OF THE WALL OR SLAB FOR MAINTENANCE. SEAMS AND JOINTS TO BE WATERTIGHT. IF INSPECTION OPENINGS ARE REQUIRED FOR TESTING AND MAINTENANCE PURPOSES, INSPECTION OPENINGS SHALL HAVE A NOMINAL SIZE OF NOT LESS THAT THE NOMINAL DIAMETER OF THE DOWNPIPE.
32. WHERE A DOWNPIPE IS CONNECTED TO A SITE STORMWATER DRAIN LOCATED BELOW A SLAB–ON–GROUND, THE CONNECTION OF A CONCEALED DOWNPIPE SHALL BE LOCATED ABOVE THE LEVEL OF THE FLOOR.
33. SUPPORT SYSTEMS OF DOWNPIPES OR PIPEWORK MUST BE INSTALLED IN ACCORDANCE AUSTRALIAN STANDARDS AS3500.3: 2018 REQUIREMENTS.
34. FOR CONCEALED EAVES GUTTERS, U.N.O THE TOP EDGE OF THE FASCIA SHOULD NOT BE LESS THAN 25mm BELOW THE TOP OF THE BACK OF THE GUTTER, OR INTEGRAL FLASHING (TAIL) WITH THE TOP EDGE OF THE FLASHING NOT LESS THAN 25mm ABOVE THE TOP OF THE FASCIA.
35. THE FOLLOWING ABBREVIATIONS DENOTE:

FSL – FINISHED SURFACE LEVEL OR RL – REDUCED LEVEL
IL – INVERT LEVEL OF PIPE
INV. – INVERT LEVEL OF PIT
CL – CENTRELINE OF ORIFICE
TWL – TOP WATER LEVEL

NOTE:
THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

NOTE:
COUNCIL AND/OR PRIVATE CERTIFYING AUTHORITY APPROVAL FOR ALL WORKS CONTAINED ON THE FOLLOWING DRAWINGS MUST BE OBTAINED (DEVELOPMENT APPLICATION, CONSTRUCTION CERTIFICATE, AND/OR COMPLYING DEVELOPMENT CERTIFICATE) PRIOR TO COMMENCEMENT OF CONSTRUCTION.

ONSITE DRAINAGE CALCULATIONS – NORTHERN BEACHES COUNCIL WATER MANAGEMENT POLICY (2021)

TOTAL SITE AREA	3,071 m^2
COUNCIL ZONE AREA	Region 1
DEVELOPMENT TYPE	RESIDENTIAL FLAT BUILDING
TOAL SITE IMPERVIOUS AREA (EXISTING)	1,610 m^2 (52% IMPERVIOUS)
TOAL SITE IMPERVIOUS AREA (PROPOSED)	1,911 m^2 (62% IMPERVIOUS)
TOTAL INCREASE IN IMPERVIOUS AREA	301 m^2 > 50 m^2
RAINWATER VOLUME (BASIX) REQUIRED	10.0 m^3
RAINWATER VOLUME PROVIDED	16.0 m^3 IN TOTAL

HYDRAULIC ANALYSIS CONFIRMS THAT OSD DELAYS SITE DISCHARGE, RESULTING IN A DETRIMENTAL ALIGNMENT WITH DOWNSTREAM FLOOD PEAKS, CONTRARY TO BEST FLOOD MANAGEMENT PRACTICES. REFER TO DESIGN STATEMENT FOR HYDROGRAPH COMPARISONS FROM THE MCCARRS CREEK, MONA VALE AND BAYVIEW FLOOD STUDY (2017). THEREFORE, OSD IS NOT RECOMMENDED.

WATER SENSITIVE URBAN DESIGN TO NORTHERN BEACHES COUNCIL: WSUD & MUSIC MODELLING GUIDLINES

WSUD MUSIC SUMMARY	% REDUCTION OCEAN PROTECT	% REDUCTION ATLAN	TARGET
TOTAL SUSPENDED SOLIDS (TSS)	88	85 %	85 %
TOTAL PHOSPHOROUS (TP)	68	83 %	65 %
TOTAL NITROGEN (TN)	62	71 %	45 %
GROSS POLUTANTS (GP)	100	100 %	90 %

NOTE:
THE SUBSTITUTION OF AN "EQUIVALENT" DEVICE FOR THE STORMWATER TREATMENT MEASURE APPROVED UNDER THE DEVELOPMENT CONSENT MUST SUBMITTED TO THE PRINCIPAL CERTIFYING AUTHORITY FOR APPROVAL PRIOR TO INSTALLATION.

STORMWATER PUMPOUT (WET WELL PP1) CALCULATIONS TO AS3500.3

PROVIDE TWO CENTRIFUGAL DRAINAGE SUMP PUMPS WITH SINGLE–PHASE ELECTRIC MOTOR CAPABLE OF DISCHARGING 10.0 L/S EACH AGAINST A TOTAL HEAD OF (3.0m) WITH 10 STARTS PER HOUR MAXIMUM. CLASS 1 ZONE 2 CERTIFIED PUMPS FOR HAZARDOUS AREAS ARE REQUIRED SWITCHING SHALL PROVIDE FOR ALTERNATIVE OPERATION OF THE PUMPS, HIGH LEVEL SWITCH ON/OFF, 2ND PUMP, AND A RED LIGHT ALARM PLACED PERMANENTLY IN THE BASEMENT AREA ACTIVATED BY HIGH LEVEL SWITCH ON. FINAL PUMP OUT VOLUME AND PUMP DUTY IS SUBJECT TO DETAILED GEOTECHNICAL INFORMATION OBTAINED DURING EARTHWORKS AND EXCAVATION.

REQUIRED VOLUME:

AREA DRAINING TO THE PUMPOUT PIT = 63 m^2 (DRIVEWAY AREA)
SEEPAGE AREA DRAINING TO THE PUMPOUT PIT: (BASEMENT)
SEEPAGE RATE (WALLS) = 1–5 L/min/m^2
SEEPAGE RATE (SLABS) = 0.5–2 L/min/m^2
BASEMENT SEEPAGE RUNOFF = 0.23 L/s (TBC PRIOR TO CONSTRUCTION)

Q = [C x I (100 YR, 2 HR) x A / 3600] + SEEPAGE RUNOFF
= [(1.08 x 50.6 x 63) / 3600] + 0.23
= 0.96 + 0.23
= 1.19 L/s

VOLUME ACCUMULATED (100 YEAR ARI, 2 HOUR STORM):

$V_{100/120}$ = (1.19L/s x 2hrs x 3600s)/1000
= 8.54 m^3

VOLUME PUMPED IN 30 MINS:

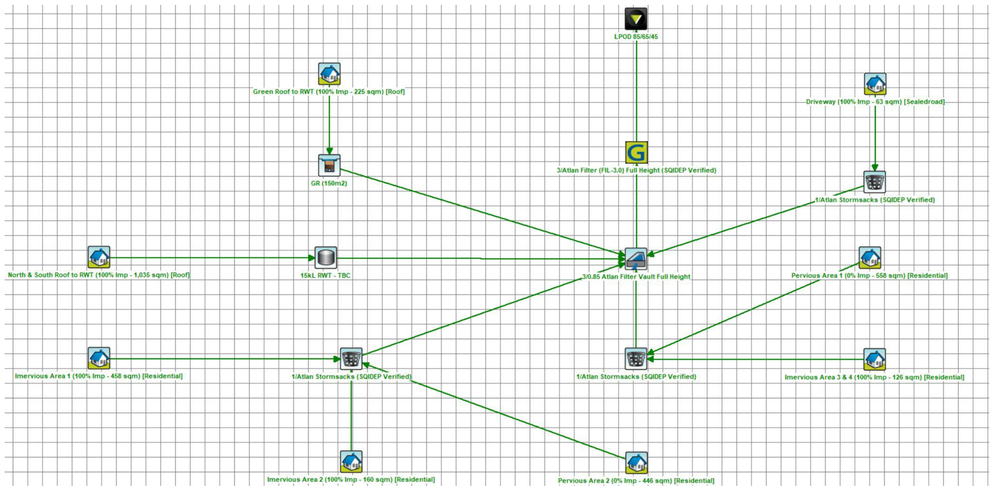
PC_{30} = (10.0L/s x 0.5hrs x 3600s)/1000
= 18.00 m^3

VOLUME PUMPED IN 5 MINS:

PC_5 = (10.0L/s x 0.083hrs x 3600s)/1000
= 3.00 m^3

WET WELL STORAGE CAPACITY
= $V_{100/120}$ – PC_{30} = 0.00 m^3
PROVIDE $V_{100/120}$ = 8.54 m^3

WET–WELL VOLUME AND SPECIFICATIONS TO BE CONFIRMED DURING TO CONSTRUCTION IN ACCORDANCE WITH GEOTECHNICAL AND STRUCTURAL REQUIREMENTS.



MUSIC MODEL SUMMARY

SURVEY NOTES:

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY THE PROJECT SURVEY. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. RTS CIVIL CONSLTING ENGINEERS PTY LTD DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE.
2. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE ENGINEER.
3. REFERENCE SHOULD BE MADE DIRECTLY TO THE SURVEYOR BEFORE SETTING OUT.

EXISTING UNDERGROUND SERVICES NOTES:

1. THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE.
2. RTS CIVIL CONSULTING ENGINEERS PTY LTD CANNOT GUARANTEE THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.
3. CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY.
4. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.
5. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.
6. CONTRACTOR IS TO CONFIRM FINDINGS FOR THE LOCAL COUNCL OR SYDNEY WATER IN RELATION TO THE SEWER OR WATER MAINS LOCATED. CONFIRMATION OF MAINS IS REQUIRED PRIOR TO CONSTRUCTION. POSSIBLE CONFLICT OF SERVICES ARE TO BE REPORTED TO THE SUPERINTENDENT OR ENGINEER FOR FURTHER DIRECTIONS.

EXTERNAL NOTES:

1. ALL ACTIVITIES AND WORKS EXTERNAL TO THE SITE, OR THAT AFFECT PUBLIC ROADS, ARE TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S CODES AND STANDARDS.
2. PUBLIC FOOTPATHS SHALL BE RECONSTRUCTED TO THE SATISFACTION OF COUNCIL'S DIRECTOR OF ENGINEERING SERVICES. A ROAD OPENING PERMIT SHALL BE OBTAINED FOR ALL WORKS CARRIED OUT IN A PUBLIC OR COUNCIL CONTROLLED LAND.
3. RESTORATION OF LANDSCAPING, ROADS AND PATHS SHALL BE TO COUNCIL'S REQUIREMENTS. ALL OTHER RESTORATION SHALL BE TOTHE SATISFACTION OF THE AFFECTED PARTIES.
4. WHERE WORKS ARE UNDERTAKEN ON PUBLIC ROADS, ADEQUATE TRAFFIC CONTROL AND DIRECTIONS TO MOTORISTS SHALL BE PROVIDED BY OTHERS.

DRAWING SCHEDULE:

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

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: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

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. – TEL. 1100

ALL DIMENSIONS MUST BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25

Rhys Mikhail .....
Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

Title:	Initial:	Date:
DESIGN	R.M	15.04.2025
DRAWN	S.M	15.04.2025
CHECKED	R.M	16.05.2025
APPROVED	R.M	16.05.2025

CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
COVERPAGE, NOTES & CALCULATIONS
SHEET 1 OF 2

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW001	A

NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

NOT FOR CONSTRUCTION

STORMWATER PUMP–OUT AND 'WET WELL' NOTES:

1. PUMPED SYSTEMS ARE FOR AREAS NORMALLY LESS THAN 2,000m2 WHERE IT IS NOT POSSIBLE FOR THE STORMWATER TO BE DISCHARGED BY GRAVITY THROUGH THE AVAILABLE GRAVITATIONAL POINT OF CONNECTION. ALL WORKS ARE TO BE IN ACCORDANCE WITH AS3500.3 – PLUMBING AND DRAINAGE: STORMWATER DRAINAGE – SECTION 9 – PUMPED SYSTEMS.
2. TO ENSURE THAT SEEPAGE WATER IS NOT BEING PUMPED CONTINUALLY OUT TO THE STREET, THE PUMPS IN THE BASEMENT OR LOWER LEVEL OF PROPERTY SHALL BE ADJUSTED TO PERMIT STORAGE IN THE SYSTEM PRIOR TO THE PUMPS SWITCHING ON (REFER DETAILS FOR STORAGE VOLUME AND LEVELS). THE PUMPS SHOULD THEN DISCHARGE ALL WATER SO THAT ONLY MINIMAL WATER REMAINS OVER THE PUMP INTAKE, AS REQUIRED BY THE MANUFACTURER.
3. THE PUMPS SHALL OPERATE ALTERNATELY TO LEVELS INDICATED ON THE SUPPLIED ENGINEERING DETAILS WITH BOTH PUMPS OPERATING IN UNISON AT THE LEVELS INDICATED (SYSTEM TO BE FITTED WITH ALARM SYSTEM – BY OTHERS). THE SECOND PUMP WILL BEING TO OPERATE IF THE WATER LEVEL CONTINUES TO RISE ABOVE THE MAXIMUM WATER LEVEL AFTER THE FIRST PUMP HAS COME ON. SIGNAGE IS TO BE DISPLAYED WITHIN THE LOW AREA OF THE BASEMENT INDICATING PERMIT ADDITIONAL STORAGE VOLUME IS EXPECTED (UP TO 200mm IN DEPTH) DURING A MAJOR STORM EVENT.
4. THE REQUIRED PUMPING RATE SHALL BE CALCULATED BASED ON AN ASSESSMENT OF THE EXPECTED INFLOW AND, WHERE APPROPRIATE, THE ALLOWABLE DISCHARGE RATE. HOWEVER, UNLESS NOTED OTHERWISE, THE MINIMUM PUMP CAPACITY OF A BASEMENT (BELOWGROUND) SYSTEM SHOULD NOT BE LESS THAN 10 L/s.
5. 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. IF BOTH PUMPS FAIL TO OPERATE AN AUDIBLE ALARM SHALL BE INITIATED IN ACCORDANCE WITH SECTION 8.3.7 OF AS3500.3. LOCATE HIGH AND LOW LEVEL ALARMS CLEAR OF INLETS TO PREVENT FALSE ALARMS. THE HIGH LEVEL ALARM SHOULD BE SET NO HIGHER THAN 100 MM ABOVE THE INVERT OF THE INLET PIPE, PROVIDED THAT FLOODING OF HABITABLE OR STORAGE AREAS AND VEHICLE GARAGES SHALL BE AVOIDED. WHERE FLOODING COULD OCCUR THE OVERFLOW AND HIGH–LEVEL ALARM SHALL BE LOWERED ACCORDINGLY TO PREVENT FLOODING.
6. THE MINIMUM WET WELL STORAGE BETWEEN THE HIGH AND LOW WORKING LEVELS EXPRESSED IN CUBIC METRES SHALL BE 1% OF THE CATCHMENT AREA IN m2 BUT IN ANY CASE SHALL NOT BE LESS THAN 3 m3, OR AS OTHERWISE DIRECTED OR APPROVED BY THE AUTHORITY HAVING JURISDICTION.
7. THE CAPACITY OF THE PUMPED SYSTEM (WET WELL) SHALL BE ACHIEVED BY A COMBINATION OF PUMP CAPACITY AND WET WELL STORAGE BETWEEN THE HIGH AND LOW WORKING LEVELS OF THE WET WELL. THE COMBINED EFFECTIVE STORAGE COMPRISING THE VOLUME ABLE TO BE PUMPED IN 30 MIN PLUS THE 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 MIN, OR AS OTHERWISE DIRECTED BY THE AUTHORITY HAVING JURISDICTION.
8. PUMPING EQUIPMENT SHALL BE SECURELY FIXED TO THE WET WELL USING CORROSION RESISTANT FIXINGS.
9. PUMPS SHALL BE FITTED WITH A GATE VALVE AND NON–RETURN VALVE ON THE DELIVERY SIDE OF EACH PUMP.
10. PUMPS SHALL HAVE FLANGES OR UNIONS INSTALLED TO FACILITATE REMOVAL.
11. 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.
12. PUMPS ARE TO OPERATE ONLY DURING HOURS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION.
13. VALUE OF HEAD IS TO BE CONFIRMED ONCE EXCAVATION COMPLETE AND PRIOR TO ORDERING PUMPS AND EQUIPMENT.
14. PUMP SPECIFICATIONS AND PRESSUE PIPE DIAMETER ARE TO BE DETERMINED BY THE PUMP MANUFACTURER.
15. PROVIDE LITTER SCREEN ABOVE PUMP SET.
16. ALL ELECTRICAL MOTORS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH AS3000.

INSTALLATION OF PIPEWORK NEAR AND UNDER BUILDINGS NOTES:

THE FOLLOWING APPLY TO A DRAIN IN CLOSE PROXIMITY TO FOOTINGS OR FOUNDATIONS:
1. WHERE THE DRAIN PASSES UNDER A STRIP FOOTING, ITS ANGLE OF INTERSECTION WITH THE FOOTING IN THE HORIZONTAL PLANE SHALL BE NOT LESS THAN 45°, AND THE MINIMUM CLEARANCE BETWEEN THE TOP OF THE DRAIN TO THE UNDERSIDE OF THE FOOTING SHALL BE 25mm.
2. IF THE DRAIN IS LAID THROUGH FOOTINGS OR WALLS, OTHER THAN BELOW–GROUND EXTERNAL WALLS, IT SHALL BE INSTALLED WITH AN ANNULAR SPACE OF NOT LESS THAN 25mm FILLED WITH A LINER OF FLEXIBLE MATERIAL.
3. THE DRAIN MAY BE LAID THROUGH BELOW–GROUND EXTERNAL WALLS, PROVIDED–
   a. TWO FLEXIBLE JOINTS ARE PROVIDED EXTERNALLY WITHIN 800mm OF THE EXTERNAL FACE OF THE WALL, AND SUCH JOINTS ARE NOT LESS THAN 600mm APART; AND
   b.THE PENETRATION OF THE WALL IS MADE WATERTIGHT.
4. WHERE THE DRAIN IS TO BE LAID PARALLEL TO A FOOTING, THE TRENCH SHALL BE LOCATED AS FOLLOWS:
   a. THE DRAIN SHALL BE LAID–
   b. IN ACCORDANCE WITH NCC VOLUME TWO; AND
   c. FOR SINGLE DWELLINGS, AS SHOWN IN FIGURE 6.2.8 OF AS3500.3.

INSPECTIONS BY ENGINEER

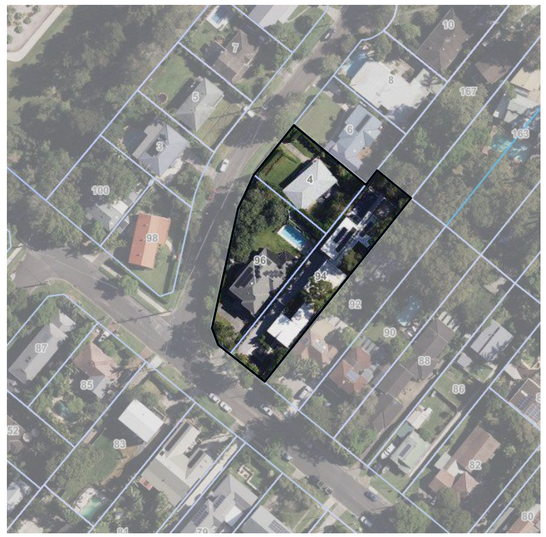
48 HOURS NOTICE IS REQUIRED BEFORE ANY SITE INSPECTION. ANY STRUCTURAL ELEMENT NOT INSPECTED BY RTS CIVIL WILL NOT BE CERTIFIED BY RTS CIVIL CONSULTING ENGINEERS PTY LTD.
1. BEARING STRATA OF ALL FOOTINGS PRIOR TO CONCRETE POUR BY GEOTECHNICAL ENGINEER.
2. ANY REINFORCEMENT PRIOR TO CONCRETE POUR.
3. TIMBER AND STEEL FRAMING PRIOR TO CLADDING OR LINING.
4. STEEL LINTELS AFTER INSTALLATION.
5. CONTACT YOUR PCA (PRINCIPAL CERTIFYING AUTHORITY) AS TO REQUIREMENTS FOR MANDATORY CRITICAL STAGE INSPECTIONS IN ACCORDANCE WITH REVISED EP&A ACT REGULATIONS EFFECTIVE JULY 1, 2004.
6. INSPECTION BY GEOTECHNICAL ENGINEER OVER 1.5m OF VERTICAL CUT THROUGH SANDSTONE BED ROCK TO PERMIT IDENTIFICATION OF DEFECTS AND REMEDIAL MEASURES INITIATED.
7. SCHEDULE OF CONSTRUCTION STAGES REQUIRING INSPECTION:
a. FOLLOWING PLACEMENT OF PIPE BEDDING MATERIAL. CONFIRM TRENCH/PIPE LOCATION, ADEQUACY OF DEPTH OF COVER, BEDDING MATERIAL AND DEPTH.
b. FOLLOWING JOINING OF PIPES AND CONNECTION TO COUNCIL'S STORMWATER SYSTEM.
c. FOR DISPERSION TRENCH SYSTEMS: –
(i) FOLLOWING SET OUT TO CONFIRM LOCATION, LENGTH AND VOLUME OF STORAGE.

INFILTRATION/ABSORPTION TRENCH NOTES (METHOD 1):

1. EXCAVATE THE TRENCH ALONG A LEVEL SITE CONTOUR TO PROVIDE AT LEAST 100mm COVER OVER THE TOP OF THE LINER.
2. THE TRENCH FLOOR SHOULD BE LEVEL, EVENLY RAKED, AND HAVE NO LOW SPOTS WHICH WOULD ALLOW "PONDING".
3. ALLOW AT LEAST 75mm OVERLAP FOR EACH LENGTH OF EVERTRENCH.
4. IDEALLY, THREE SPREADER BARS (OPTIONAL) SHOULD BE FITTED INTO EACH STANDARD EVERTRENCH LINER, THE FIRST 220mm FROM THE INLET END, THEN EQUALLY SPACED ALONG THE EXCAVATION.
5. CUT THE PIPE ENTRY HOLE IN ONE TRENCH LINER END CAP. AN EASYDRAIN™ PIT BOSS MAY BE USED TO ENSURE A SECURE CONNECTION. FIT THE CAPS TO THE LINER AND CONNECT THE PIPING FROM THE SEPTIC TANK OR SULLAGE DISTRIBUTOR.
6. COVER THE EVERTRENCH WITH GEOTEXTILE FABRIC AND PLACE A QUANTITY OF 20–25mm AGGREGATE MATERIAL ALONG THE TRENCH LINER AND AT BOTH ENDS, SO THAT THE TOP OF THE LINER IS JUST COVERED. RAKE LEVEL.
7. LAY GEOTEXTILE OVER THE AGGREGATE FOR THE FULL LENGTH OF THE TRENCH.
8. COVER THE GEOTEXTILE WITH A LAYER OF APPROVED SANDY LOAM AND LEAVE A MOUND FOR NATURAL COMPACTION. TURF MAY BE LAID OVER THE TRENCH AREA. DO NOT COMPACT THE TRENCH AREA OR EXPOSE IT TO TRAFFIC.
9. THESE TRENCHES ARE GENERALLY LIMITED TO SITES WHERE SOIL IS CONSIDERED PERMEABLE ENOUGH TO "SOAK UP" THE EXPECTED AMOUNTS OF WASTE–WATER. THE TRENCH SHOULD BE WIDE ENOUGH TO ACCEPT THE SELECTED EVERTRENCH LINER AND DEEP ENOUGH SO THAT THE TOP OF THE SELECTED LINER IS AT LEAST 100mm BELOW THE SOIL SURFACE LEVEL.
10. TRENCH TO BE HAND DUG AROUND TREE ROOT SYSTEM IN ACCORDANCE WITH ARBORIST AND/OR LOCAL COUNCIL REQUIREMENTS.
11. A GEOTECHNICAL ENGINEERS REPORT OR RECOMMENDATIONS MAY BE REQUIRED FOR AREAS OF LOW SOIL INFILTRATION RATES OR FOR LARGER DEVELOPMENTS. THE ENGINEER SHOULD BE NOTIFIEDDURING CONSTRUCTION AND EXCAVATION OF TRENCHES TO CONFIRM SUITABILITY OF SOILS.
12. WHERE POSSIBLE, INSTALL HIGH LEVEL EMERGENCY OVERFLOW PIPE AND CONNECT TO SITE DRAINAGE SYSTEM OR NEAREST DISCHARGE POINT IN ACCORDANCE WITH AS3500.3.2 AND/OR COUNCIL REQUIREMENTS.
13. DO NOT CONNECT SUB–SOIL DRAINAGE LINES THAT ARE LESS THAN 150mm ABOVE THE SURFACE LEVEL OF THE TRENCH. NOTIFY ENGINEER IF THE DEVELOPMENT HAS LOW LAYING SUB–SOIL DRAINAGE LINES..

TRANSPIRATION/DISPERSION TRENCH NOTES (METHOD 2):

1. EXCAVATE AN AREA 1800mm WIDE AND 300mm DEEP ALONG A LEVEL SITE CONTOUR.
2. EXCAVATE A CENTRAL TRENCH ALONG THE FULL LENGTH OF THE PREPARED AREA FOR THE SELECTED LINER. THE TOP OF THE LINER SHOULD BE LEVEL WITH THE BOTTOM OF THE PREPARED AREA. THE FLOOR SHOULD BE LEVEL, EVENLY RAKED, WITH NO LOW SPOTS.
3. CARRY OUT STEPS 3, 4, 5, 6 & 7 LISTED FOR METHOD 1 (ABSORPTION TRENCH).
4. COVER THE GEOTEXTILE AND FLOOR OF THE WIDER EXCAVATION WITH 100mm OF 10mm AGGREGATE, THEN 100mm OF COARSE SAND, AND FINALLY WITH SANDY LOAM.
5. LEAVE A MOUND FOR NATURAL COMPACTION. TURF MAY BE LAID OVER THE AREA. DO NOT COMPACT THE AREA OR EXPOSE IT TO TRAFFIC.
6. THIS METHOD ARE GENERALLY USED WHERE LOCAL SOIL CONDITIONS CANNOT COPE WITH THE VOLUME OF WASTE–WATER IN THE NORMAL NARROW ABSORPTION TRENCH SYSTEMS. TRANSPIRATION ENCOURAGES TREATED WASTE–WATER TO BE TAKEN UP BY PLANT ROOTS OVER A WIDE AREA, AS WELL AS PERMEATING THE SOIL, OFFERING ADDITIONAL SAFETY FOR SOIL ABSORPTION SYSTEMS. BEDS CONSIST OF STANDARD WIDTH TRENCHES THAT ARE DEEPER THAN NORMAL, WITH THE AREA ABOVE THE SELECTED TRENCH LINER OF MUCHGREATER WIDTH, AND FILLED WITH AGGREGATE TO ALLOW EASIER MOVEMENT OF MOISTURE.



LOCALITY PLAN
NOT TO SCALE

RAINWATER HARVESTING REQUIREMENTS:

1. 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, HCCRENS WATER SMART PRACTICE NOTE (N).4) AND THE NSW HEALTH REQUIRMENTS FOR NON DRINKING USE ONLY AS FOLLOWS:
a) TO WATER GARDEN AREAS b) TO BASIX REQUIREMENTS
2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
3. REFERENCES: COOMBES P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE. PATRICK DUPONT & STEVE SHACKEL, "RAINWATER" AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS".
4. 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 OR FROM LOCAL COUNCIL GUIDLINES.
5. 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 AND AS3500.1.
6. 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.
7. 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.
8. FIRST FLUSH DEVICES, OR APPROVED ALTERATIVE, 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. THIS SHOULD CATER FOR THE FIRST 1mm OF RAINFALL.
9. 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.
10. 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.
11. RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230–2008
12. BUILDER OR 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.
13. NOISE EMISSIONS FROM ANY PUMPS DO NOT EXCEED 5dB(A) ABOVE AMBIENT BACKGROUND NOISE LEVEL MEASURED AT THE ALLOTMENT BOUNDARY.
14. AT THE COMPLETION OF THE WATER SERVICE INSTALLATION AND PRIOR TO HYDROSTATIC TESTING, THE SYSTEM SHALL BE THOROUGHLY FLUSHED TO REMOVE ANY FOREIGN MATTER. THE FLUSHING SHALL BE UNDERTAKEN IN ACCORDANCE WITH AS3500.1 REQUIREMENTS – APPENDIX I, PARAGRAPH I3 AND CONTINUE UNTIL THE FLUSHED WATER RUNS COMPLETELY CLEAR. THE SYSTEM SHALL THEN BE PRESSURE TESTED IN ACCORDANCE WITH CLAUSE 16.3.1.
15. AT THE COMPLETION OF THE WATER SERVICE INSTALLATION THE RAINWATER STORAGE TANKS ARE TO BE TESTED IN ACCORDANCE WITH SECTION 16 OF AS3500.1.

SEDIMENT BASIN CALCULATIONS ACCORDING TO INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) 2008 AND BEST PRACTICE EROSION REQUIREMENTS

SEDIMENT BASIN SELECTION — TYPE C

MINIMUM SETTLING AREA (As)
$As = Ks\ He\ Q$
$= 3410 \times 1.2 \times (0.5 \times 0.026)$
$= 92.1\ m^2$

TOTAL SETTLING VOLUME
$V = 92.1 \times 0.6$
$= 53.2\ m^3$

WHERE:
As = AVERAGE SURFACE AREA OF SETTLING ZONE
Ks = SEDIMENT SETTLENT COEFFICIENT = 3410
He = HYDRAULIC EFFICIENCY CORRECTION FACTOR = 1.2
Q = DESIGN DISCHARGE = 0.5 x Q1
Q1 = 1 in 1 YEAR ARI DISCHARGE FOR SITE = 26 L/s

REDUCED SETTLING VOLUME DUE TO PUMP–OUT (DRAWDOWN):

$V_{in} = C \times I \times A$
$= 0.7 \times 0.093 \times 3071$
$= 200\ m^3/hr$

$Q_{pump} = V_{in} / T_{drawdown}$
$= 200 / 72$
$= 2.78\ m^3/hr$
$= 0.77\ L/s$ (PROVIDE MIN. PUMP OUT RATE WITH 3.0m PRESSUE HEAD)

$V_{settling} = \frac{(g \times (\text{FINE SILT PARTICLE SIZE}^2)(\text{SEDIMENT DENSITY} \times \text{WATER DENSITY})}{18 \times \text{DYNAMIC VISCOSITY OF WATER}}$
$= \frac{(9.81 \times (0.0002^2)(2650 \times 1000)}{18 \times 0.001}$
$= 0.094\ m/hr$

$V_{basin\_reduced} = (V_{in} \times T_{retention}) / T_{drawdown}$
$= (200 \times 6) / 72$
$= 16.7m^3$ (PROVIDE MIN. VOLUME FOR 0.6m DEPTH)

SEDIMENT AND EROSION CONTROL NOTES:

1. SILT FENCE AND ASSOCIATED WORKS INCLUDING INTERCEPTOR DRAIN IS TO BE INSTALLED BEFORE THE COMMENCEMENT OF ANY EXCAVATION.
2. GEOTECHNICAL ENGINEER IS TO PROVIDE SITE STABILITY REQUIREMENTS. CUTS ARE TO BE EXECUTED TO THE REQUIRED LEVEL USING CONVENTIONAL EXCAVATION MACHINERY. AS A GUIDE, INITIALLY THE DEPTH OF FILL/CLAY IS TO BE ESTABLISHED TO ENSURE NEIGHBOURING PROPERTIES ARE NOT ADVERSELY AFFECTED. EARTH BATTERS TO BE A MAXIMUM SLOPE OF 1.0m VERT. TO 1.7m HORIZ. (AS PER GEOTECHNICAL REPORT). ANY BATTERS GREATER THAN 1.0m VERT. TO 1.7m HORIZ. ARE TO BE ADEQUATELY SHORED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS DETAILS AND INSTRUCTIONS.
3. ANY PERMANENT RETAINING STRUCTURE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
4. ALL PERMANENT RETAINING STRUCTURES ARE TO BE COMPLETED WITH MINIMUM DELAY FOLLOWING EXCAVATION.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER.
6. CONTRCTOR TO MINIMISE DISTURBED AREAS.
7. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
8. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
9. ROADS AND FOOTPATH TO BE SWEPT DAILY.
10. CONSTRUCTION VEHICLES ARE TO LEAVE AND ENTER THE SITE OVER AN ALL WEATHER SURFACE CONSISTING OF COURSE CRUSHED STONE OR BLUE METAL CONSTRUCTED WITHIN THE FRONT SETBACK AREA OPPOSITE THE EXISTING FOOTPATH CROSSING UNLESS NOTED OTHERWISE.
11. EXCAVATION MACHINERY ARE TO BE UNLOADED AND LOADED UPON THIS ALL WEATHER SURFACE. CONCRETE PUMPS AND TRUCKS WILL ALSO UTILISE THE ALL WEATHER SURFACE FOR THEIR OPERATIONS.
12. MATERIALS WILL BE UNLOADED UPON THE ALL WEATHER SURFACE WITHIN THE FRONT SETBACK AREA BY MEANS OF CRANES MOUNTED ON THE BACK OF DELIVERY TRUCKS OR UNLOADED BY HAND. A MOBILE CRANE MAY BE REQUIRED DURING THE CONSTRUCTION PROCESS.
13. SOME STOCKPILING OF TOPSOIL REMOVED FROM THE BUILDING AREA MAY BE STORED ON THE SITE DURING THE CONSTRUCTION WITHIN THE PROPERTY IN AN AREA ENCLOSED WITHIN THE SEDIMENT CONTROL FENCING.
14. ALL EXCAVATED & CONSTRUCTION MATERIALS, SHED, SKIP BINS, TEMPORARY WATER CLOSETS, SPOIL AND EQUIPMENT, ETC SHALL BE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINES SHALL BE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINES SHALL STAND ON COUNICIL FOOTPATHS FOR LARGE LENGTHS OF TIME.
15. ALL RUBBISH & RECYCLABLE MATERIAL SHALL BE STOCKPILED IN WASTE BINS IN THE AREA NOMINATED ON THE SITE PLAN WITHIN THE SITE BOUNDARY. PUBLIC PROPERTY SHALL BE KEPT FREE OF RUBBISH AND RECYCLABLES AT ALL TIMES ANY WASTE MATERIALS SHALL BE REGULARLY COLLECTED FROM THE SITE AND DISPOSED OF IN AN APPROPRIATE FASHION.
16. ANY BUILDING OR DEMOLITION WORKS INVOLVING ASBESTOS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELAVANT STANDARDS.
17. VEHICLES LEAVING THE SITE WILL DO SO VIA THE ALL WEATHER BALLAST DRIVEWAY MADE OF COURSE AGGREGATE OR SIMILLAR LOCATED WITHIN THE FRONT SETBACK AREA OF THE DEVELOPMENT. ANY DIRT OR MATERIAL DEPOSITED ON THE ROAD RESERVE OR ROADWAY IS TO BE PROMPTLY CLEANED.
18. ANY EXCAVATED AREA REQUIRING SUPPORT WILL BE UNDERTAKEN BY THE OWNER USING STRUCTURALLY APPROVED RETAINING STRUCTURES.
19. ADEQUATE SAFETY SIGNAGE MUST BE ERECTED IN A PROMINENT POSITION ON THE WORK SITE, WARNING OF UNAUTHORISED ENTRY TO WORK SITE AND INTENDING DANGERS.
20. SAFETY FENCES SHALL BE PROVIDED AROUND ALL BOUNDARIES UNLESS A CONTINUOUS STRUCTURALLY ADEQUATE FENCE PRESENTLY EXISTS. THE FENCING SHALL BE ADEQUATE TO RESTRICT PUBLIC ACCESS TO THE SITE WHEN BUILDING WORK IS NOT IN PROGRESS OR THE SITE IS UNOCCUPIED.
21. NOISE LEVELS SHALL NOT EXCEED COUNCIL REGULATION LEVELS. BUILDING AND DEMOLITION WORKS SHALL ONLY BE CARRIED OUT BETWEEN HOURS AND DAYS SPECIFIED BY COUNCIL.
22. GEOTEXTILE FABRIC SHALL BE PLACED ON THE INSIDE OF THE SITE FENCING PRIOR TO SITE DISTURBANCE TO PREVENT SEDIMENT WASHING FROM CLEARED AND DISTURBED AREAS OF THE SITE INTO THE STORMWATER SYSTEM. DURING CONSTRUCTION, UNLESS OTHERWSIE NOTED, UNCONTAMINATED RUNOFF FROM CLEARED OR DISTURBED AREAS ARE TO BE DIRECTED TO A TEMPORARY SILT ARRESTOR PIT THAT SHALL BE PROVIDED WITHIN THE SITE AT THE STREET BOUNDARY PROCESSING SITE STORMWATER BEFORE IT IS DISCHARGED TO THE STREET DRAINAGE SYSTEM OR WATERCOURSE.
23. ALL TOP SOIL STRIPPED & STOCKPILED ONSITE IS TO BE BE PLACED IN NOMINATED AREAS ON PLAN OR TO COUNCIL REQUIREMENTS. ALL DISTURBED AREAS ARE TO BE STABILISED UPON THE COMPLETION OF BUILDING WORKS.
24. ALL SEDIMENT CONTROL STRUCTURES ARE TO BE CONTINUALLY MAINTAINED DURING CONSTRUCTION AND INSPECTED FOR STRUCTURAL DAMAGE AFTER EACH RAINFALL EVENT, WITH TRAPPED SEDIMENT BEING REMOVED TO THE TOPSOIL STOCKPILE.
25. WHERE THERE IS THE POTENTIAL OF SITE EROSION TO PRODUCE EXCESSIVE SEDIMENT RUNOFF, SUITABLE GEOTEXTILE BARRIERS SHALL BE PLACED TO ALLEVIATE THE RISK ACCORDINGLY. BARE SURFACES SHALL BE KEPT MOIST TO REDUCE DUST LEVELS. GEOTEXTILE FABRIC LOCATED ON THE INSIDE OF FENCES SHALL ALSO BE UTILISED FOR DUST CONTROL WHERE NECESSARY.
26. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH:
a) LOCAL AUTHORITY REQUIREMENTS
b) EPA – POLLUTION CONTROL MANUAL FOR URBAN STORMWATER
c) LANDCOM NSW – MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION ("BLUE BOOK")
27. PRIOR TO DISCHARGE OF SITE STORMWATER, GROUNDWATER AND SEEPAGE WATER INTO COUNCIL'S STORMWATER SYSTEM, CONTRACTORS MUST UNDERTAKE WATER QUALITY TESTS IN CONJUNCTION WITH A SUITABLY QUALIFIED ENVIRONMENT CONSULTANT OUTLING THE FOLLOWING:
a) COMPLIANCE WITH THE CRITERIA OF THE AUSTRALIAN AND NEW ZEALAND GUIDELINES FOR FRESH AND MARINE WATER QUALITY (2000)
b) IF SUBJECT TO THE ENVIRONMENTAL CONSULTANTS ADVICE, PROVIDE REMEDIAL MEASURES TO IMPROVE THE QUALITY OF WATER THAT IS TO BE DISCHARGED INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. THIS SHOULD INCLUDE COMMENTS FROM A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT CONFIRMING THE SUITABILITY OF THESE REMEDIAL MEASURES TO MANAGE THE WATER DISCHARGED FROM THE SITE INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. OUTLINING THE PROPOSED, ONGOING MONITORING, CONTINGENCY PLANS AND VALIDATION PROGRAM THAT WILL BE IN PLACE TO CONTINUALLY MONITOR THE QUALITY OF WATER DISCHARGED FROM THE SITE. THIS SHOULD OUTLINE THE FREQUENCY OF WATER QUALITY TESTING THAT WILL BE UNDERTAKEN BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT.

MINIMUM INTERNAL DIMENSIONS FOR STORMWATER AND INLET PITS AS3500.3 – TABLE 7.5.2.1

DEPTH TO INVERT OF OUTLET	MINIMUM INTERNAL DIMENSIONS (mm)		
	RECTANGULAR		CIRCULAR
	Width	Length	Diameter ø
≤ 450	350	350	–
≤ 600	450	450	600
> 600 ≤ 900	600	600	900
> 900 ≤ 1200	600	900	1000
> 1200	900	900	1000

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NOTE:
THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

NOTE:
COUNCIL AND/OR PRIVATE CERTIFYING AUTHORITY APPROVAL FOR ALL WORKS CONTAINED ON THE FOLLOWING DRAWINGS MUST BE OBTAINED (DEVELOPMENT APPLICATION, CONSTRUCTION CERTIFICATE, AND/OR COMPLYING DEVELOPMENT CERTIFICATE) PRIOR TO COMMENCEMENT OF CONSTRUCTION.

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION
Approved by:
Date : 16.05.25
Rhys Mikhail
Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

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APPROVED	R.M	16.05.2025

RTS CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

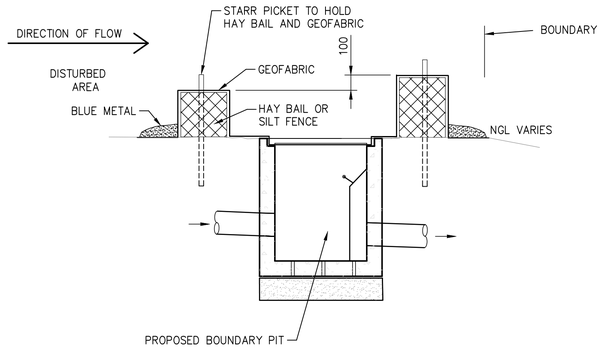
Architect: WALSH ARCHITECTS
Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
COVERPAGE, NOTES & CALCULATIONS
SHEET 2 OF 2

Local Council: NORTHERN BEACHES
Project Number: 250302
Drawing ID: SW002
Issue: A

NOT FOR CONSTRUCTION

NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.



SEDIMENT TRAP CONSTRUCTION SPECIFICATION:

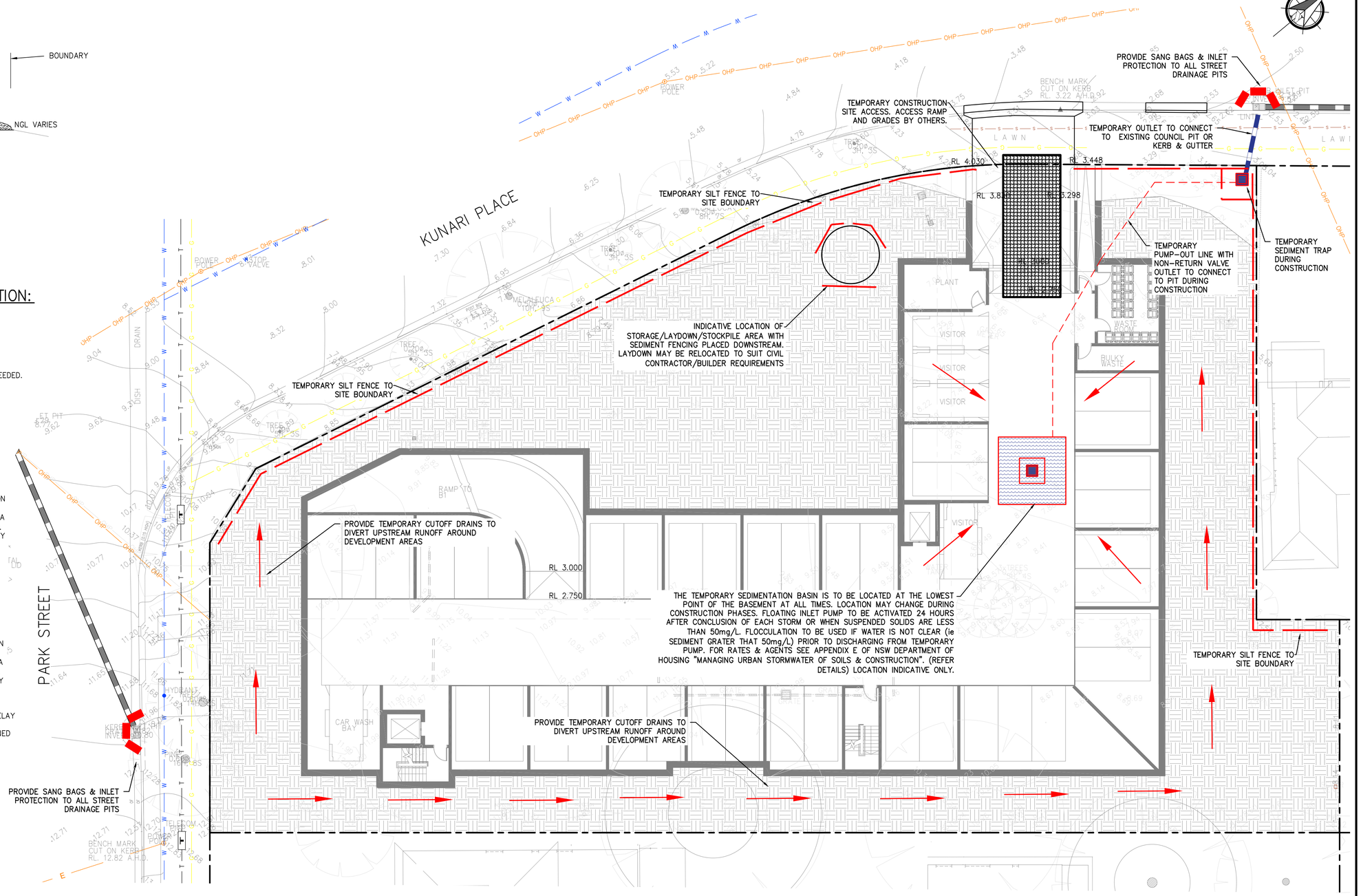
1 – SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
2 – THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRED AS NEEDED.
3 – CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN A MANNER, THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
4 – THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONSTRUCTED DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

SCHEDULE OF WORKS:

1. SILT FENCE AND ASSOCIATED WORKS INCLUDING INTERCEPTOR DRAIN IS TO BE INSTALLED BEFORE THE COMMENCEMENT OF ANY EXCAVATION.
2. CUTS TO BE EXECUTED TO THE REQUIRED LEVEL USING CONVENTIONAL EXCAVATION MACHINERY. INITIALLY THE DEPTH OF FILL/CLAY IS TO BE ESTABLISHED TO ENSURE NEIGHBOURING PROPERTIES ARE NOT ADVERSELY AFFECTED. EARTH BATTERS TO BE A MAXIMUM SLOPE OF 1.0 m VERT. TO 1.7 m HORIZ. (AS PER GEOTECHNICAL REPORT). ANY BATTERS GREATER THAN 1.0 m VERT. TO 1.7 m HORIZ. ARE TO BE ADEQUATELY SHORED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
3. ANY PERMANENT RETAINING STRUCTURE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
4. ALL PERMANENT RETAINING STRUCTURES ARE TO BE COMPLETED WITH MINIMUM DELAY FOLLOWING EXCAVATION.

EROSION CONTROL NOTES:

1. SILT FENCE AND ASSOCIATED WORKS INCLUDING INTERCEPTOR DRAIN IS TO BE INSTALLED BEFORE THE COMMENCEMENT OF ANY EXCAVATION.
2. CUTS TO BE EXECUTED TO THE REQUIRED LEVEL USING CONVENTIONAL EXCAVATION MACHINERY. INITIALLY THE DEPTH OF FILL/CLAY IS TO BE ESTABLISHED TO ENSURE NEIGHBOURING PROPERTIES ARE NOT ADVERSELY AFFECTED. EARTH BATTERS TO BE A MAXIMUM SLOPE OF 1.0 m VERT. TO 1.7 m HORIZ. (AS PER GEOTECHNICAL REPORT). ANY BATTERS GREATER THAN 1.0 m VERT. TO 1.7 m HORIZ. ARE TO BE ADEQUATELY SHORED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
3. ANY PERMANENT RETAINING STRUCTURE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERS DETAILS AND INSTRUCTIONS.
4. ALL PERMANENT RETAINING STRUCTURES ARE TO BE COMPLETED WITH MINIMUM DELAY FOLLOWING EXCAVATION.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER.
6. CONTROTOR TO MINIMISE DISTURBED AREAS.
7. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
8. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
9. ROADS AND FOOTPATH TO BE SWEPT DAILY.



SITE SEDIMENT & EROSION CONTROL PLAN

SCALE = 1 : 150

NOTE: THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

NOTE: PIT, PIPE & DOWNPIPE LOCATIONS ARE INDICATIVE ONLY & MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT, ASK!

WARNING! CARE WHEN DIGGING AROUND TREE ROOTS. HAND DIGGING ONLY! MAY REQUIRE ARBORIST SUPERVISION.

DIAL 1100 BEFORE YOU DIG

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25

Rhys Mikhail

Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

Title:	Initial:	Date:
DESIGN	R.M	15.04.2025
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CHECKED	R.M	16.05.2025
APPROVED	R.M	16.05.2025

RTS CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title: 94–96 PARK STREET & 4 KUNARI PLACE, MONA VALE SEDIMENT & EROSION CONTROL PLAN

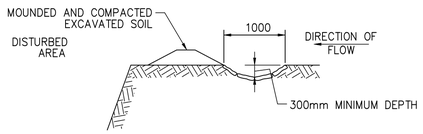
Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SE100	A

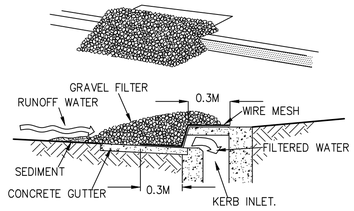
NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

NOT FOR CONSTRUCTION

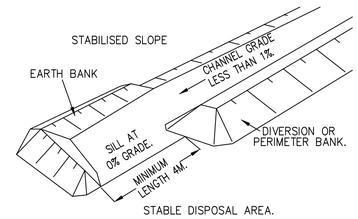
NOTE:
ROCK LINE DISH DRAIN, JOINTS BETWEEN ROCKS TO BE FILLED WITH MORTAR.



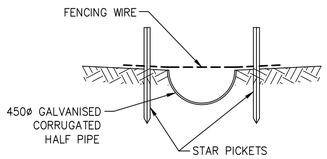
CATCH DRAIN – ROCK LINED
SCALE = N.T.S.



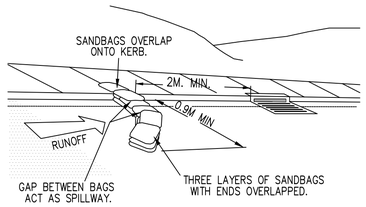
GRAVEL KERB INLET SEDIMENT TRAP
SCALE = N.T.S.



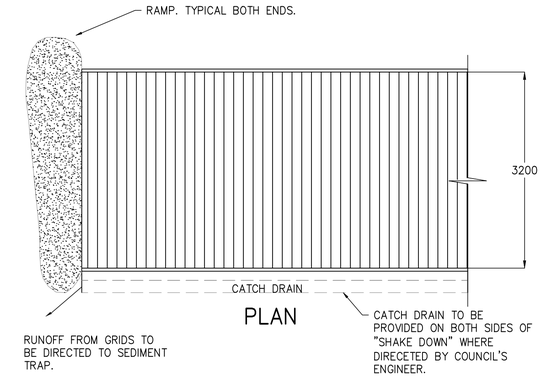
TYPICAL SPREADER DETAIL
SCALE = N.T.S.

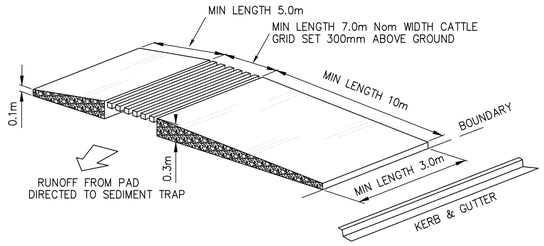


TEMPORARY DISH DRAIN
SCALE = N.T.S.



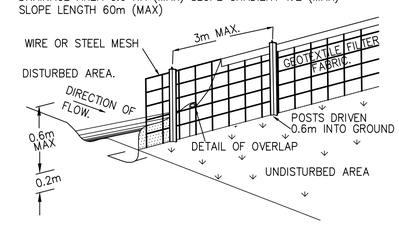
SEDIMENT TRAP SANDBAGS AT KERB INLETS
SCALE = N.T.S.





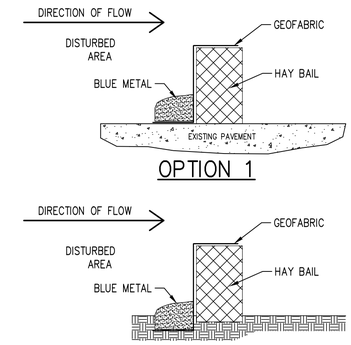
NOTE: WHEEL WASH OR SPRAY MAY BE REQUIRED DURING WET WEATHER

TYPICAL TEMPORARY CONSTRUCTION ENTRY & EXIT DETAIL (TYPE 2)



TYPICAL TEMPORARY SEDIMENT (SILT) FENCE

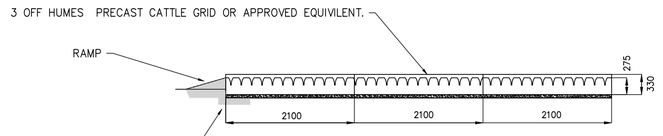
NOTE:
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF–SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES or AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.



OPTION 1

OPTION 2

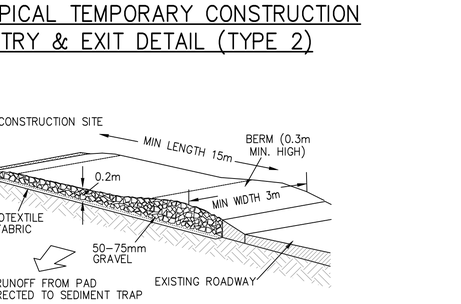
REMOVABLE HAY BAIL DETAIL
SCALE = N.T.S.



SECTION

CATTLE GRID ENTRY & EXIT ALTERNATIVE
SCALE = 1:20

NOTES:
1. EXCAVATE AREA APPROX. 3.3m WIDE BY 2.2m LENGTH. THE FLOOR OF THE EXCAVATION MUST BE FLAT, WITHOUT HIGH POINTS. AN EXCAVATED DEPTH OF 100mm ACCOMODATES A BEDDING LAYER 50mm THICK AND GRID SET DOWN OF 50mm. THE LATTER MINIMISES SILT UP OF GRID AND SLOWS DOWN TRAFFIC.
2. BEDDING MATERIAL SHALL BE SAND OR OTHER SUITABLE APPROVED MATERIAL. BEDDING MATERIAL SHALL BE EVENLY RAKED OVER FLOOR OR EXCAVATION TO A DEPTH SLIGHTLY MORE THAN 50mm. ENSURE BEDDING IS LEVEL IN BOTH DIRECTIONS.
3. LOWER CATTLE GRID ONTO THE PREPARED BASE. ENSURE THAT NO PART OF THE UNIT IS SITTING ON ANY HIGH POINTS.
4. BACKFILL AND COMPACT AROUND GRID. GRADE EXCAVATED ROAD MATERIAL UP TO GRID EACH SIDE TO FORM A RAMP. IF DEPRESSIONS OCCUR ON THESE RAMPS WITH USE, ADD ADDITIONAL MATERIAL.



NOTE: WHEEL WASH OR SPRAY MAY BE REQUIRED DURING WET WEATHER. GRAVEL SHALL BE CLEANED/REMOVED WHEN THE EXPOSED HEIGHT OF THE GRAVEL IS LESS THAN 30mm.

TYPICAL TEMPORARY CONSTRUCTION ENTRY & EXIT DETAIL (TYPE 1)

NOTE:
1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE AS REQUIRED.
3. COVER AREA WITH NEEDLE–PUNCHED GEOTEXTILE.
4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM LENGTH 15 METRES OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3m.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP.
6. OR CONSTRUCT A CATTLE GRID LOCATED AT ANY POINT WHERE TRAFFIC ENTERS OF LEAVES THE SITE.

NOTE:
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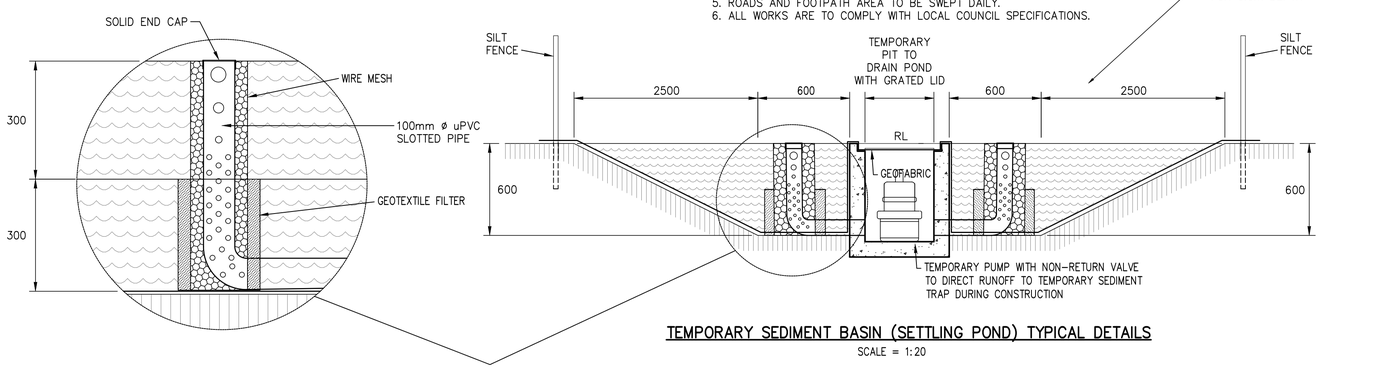
NOTE:
1. ALL EROSION AND SEDIMENT CONTROL ARE MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER.
2. CONTRACTOR TO MINIMISE DISTURBED AREAS WHERE POSSIBLE.
3. ALL STOCKPILES ARE TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
4. DRAINAGE IS TO BE CONNECTED TO SITE STORMWATER DRAINAGE SYSTEM AS SOON AS POSSIBLE.
5. ROADS AND FOOTPATH AREA TO BE SWEPT DAILY.
6. ALL WORKS ARE TO COMPLY WITH LOCAL COUNCIL SPECIFICATIONS.



TEMPORARY SEDIMENT BASIN (SETTLING POND) TYPICAL DETAILS
SCALE = 1:20

DIAL 1100 BEFORE YOU DIG

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25 R. Mikhail

Rhys Mikhail
Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

Title:	Initial:	Date:
DESIGN	R.M	15.04.2025
DRAWN	S.M	15.04.2025
CHECKED	R.M	16.05.2025
APPROVED	R.M	16.05.2025

RTS CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title: 94–96 PARK STREET & 4 KUNARI PLACE, MONA VALE SEDIMENT & EROSION CONTROL PLAN DETAILS

Local Council: NORTHERN BEACHES

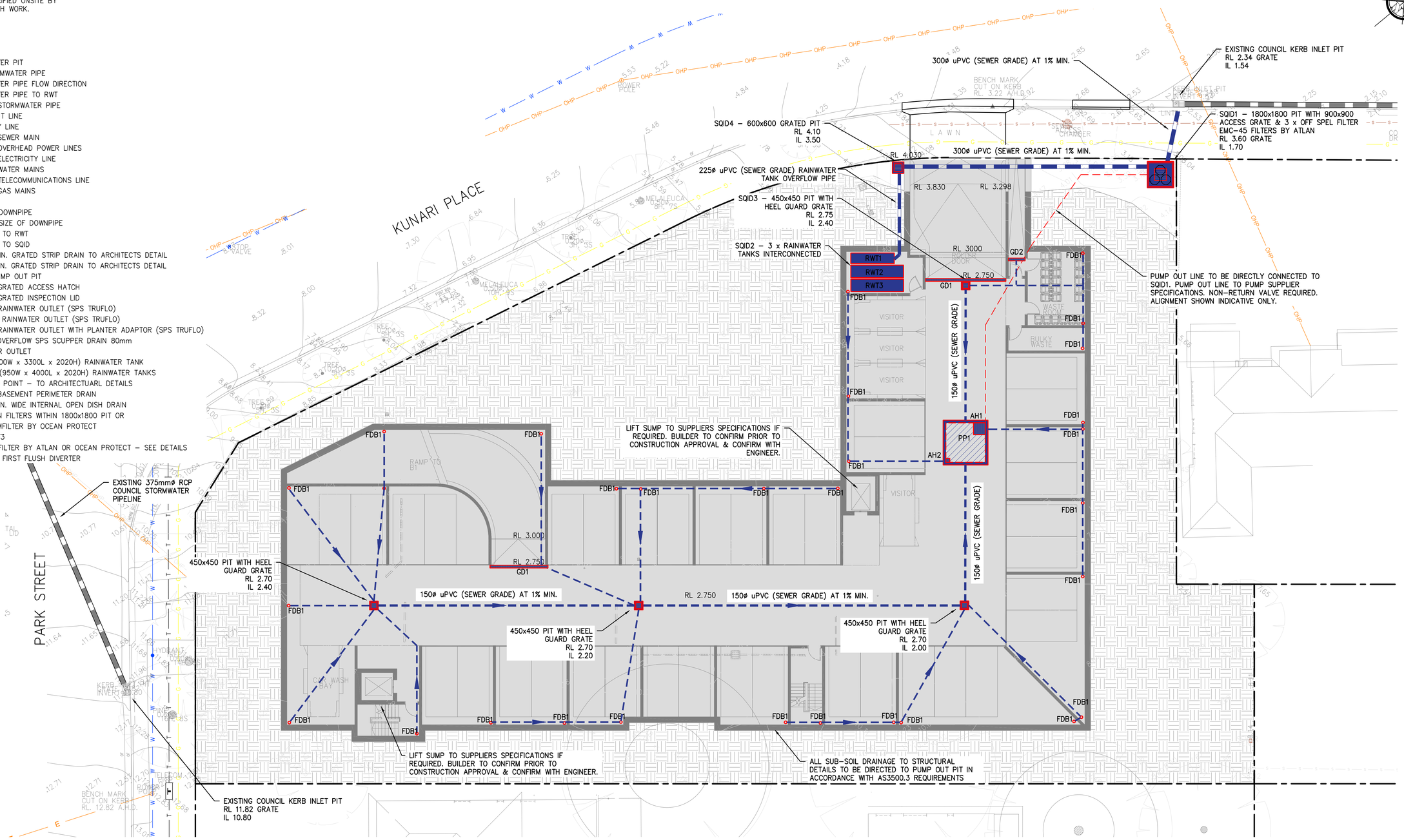
Project Number:	Drawing ID:	Issue:
250302	SE200	A

NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

NOT FOR CONSTRUCTION

LEGEND

	STORMWATER PIT
	NEW STORMWATER PIPE
	STORMWATER PIPE FLOW DIRECTION
	STORMWATER PIPE TO RWT
	EXISTING STORMWATER PIPE
	FLUSH–OUT LINE
	BOUNDARY LINE
S	EXISTING SEWER MAIN
OHP	EXISTING OVERHEAD POWER LINES
E	EXISTING ELECTRICITY LINE
W	EXISTING WATER MAINS
T	EXISTING TELECOMMUNICATIONS LINE
G	EXISTING GAS MAINS
DP1 100ø	DENOTES DOWNPIPE
	DENOTES SIZE OF DOWNPIPE
DP1	DOWNPIPE TO RWT
DP2	DOWNPIPE TO SQID
GD1	200mm MIN. GRATED STRIP DRAIN TO ARCHITECTS DETAIL
GD2	100mm MIN. GRATED STRIP DRAIN TO ARCHITECTS DETAIL
PP1	9,000L PUMP OUT PIT
AH1	900x900 GRATED ACCESS HATCH
AH2	300x300 GRATED INSPECTION LID
BD1	100ø/80 RAINWATER OUTLET (SPS TRUFLO)
FD1	250ø/100 RAINWATER OUTLET (SPS TRUFLO)
PD1	100ø/80 RAINWATER OUTLET WITH PLANTER ADAPTOR (SPS TRUFLO)
O/F	PROVIDE OVERFLOW SPS SCUPPER DRAIN 80mm
RWO	RAINWATER OUTLET
RWT1	4,300L (800W x 3300L x 2020H) RAINWATER TANK
RWT2–RWT3	2x6,000L (950W x 4000L x 2020H) RAINWATER TANKS
O/F	OVERFLOW POINT – TO ARCHITECTUARL DETAILS
FDB1	100ømm BASEMENT PERIMETER DRAIN
DR1	100mm MIN. WIDE INTERNAL OPEN DISH DRAIN
SQID1	3 x ATLAN FILTERS WITHIN 1800x1800 PIT OR 1 x STORMFILTER BY OCEAN PROTECT
SQID	RWT1–RWT3
SQID3–SQID5	PIT WITH FILTER BY ATLAN OR OCEAN PROTECT – SEE DETAILS
FFD	INGROUND FIRST FLUSH DIVERTER



BASEMENT 2 STORMWATER MANAGEMENT PLAN

SCALE = 1 : 150

NOTE:
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DIAL 1100 BEFORE YOU DIG

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25

Rhys Mikhail

Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
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Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title: 94–96 PARK STREET & 4 KUNARI PLACE, MONA VALE BASEMENT 2 STORMWATER MANAGEMENT PLAN

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW100	A

NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

NOT FOR CONSTRUCTION

LEGEND

	STORMWATER PIT
	NEW STORMWATER PIPE
	STORMWATER PIPE FLOW DIRECTION
	STORMWATER PIPE TO RWT
	EXISTING STORMWATER PIPE
	FLUSH–OUT LINE
	BOUNDARY LINE
S	EXISTING SEWER MAIN
OHP	EXISTING OVERHEAD POWER LINES
E	EXISTING ELECTRICITY LINE
W	EXISTING WATER MAINS
T	EXISTING TELECOMMUNICATIONS LINE
G	EXISTING GAS MAINS
DP1 100ø	DENOTES DOWNPIPE
	DENOTES SIZE OF DOWNPIPE
DP1	DOWNPIPE TO RWT
DP2	DOWNPIPE TO SQID
GD1	200mm MIN. GRATED STRIP DRAIN TO ARCHITECTS DETAIL
GD2	100mm MIN. GRATED STRIP DRAIN TO ARCHITECTS DETAIL
PP1	9,000L PUMP OUT PIT
AH1	900x900 GRATED ACCESS HATCH
AH2	300x300 GRATED INSPECTION LID
BD1	100ø/80 RAINWATER OUTLET (SPS TRUFLO)
FD1	250ø/100 RAINWATER OUTLET (SPS TRUFLO)
PD1	100ø/80 RAINWATER OUTLET WITH PLANTER ADAPTOR (SPS TRUFLO)
O/F	PROVIDE OVERFLOW SPS SCUPPER DRAIN 80mm
RWO	RAINWATER OUTLET
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DR1	100mm MIN. WIDE INTERNAL OPEN DISH DRAIN
SQID1	3 x ATLAN FILTERS WITHIN 1800x1800 PIT OR 1 x STORMFILTER BY OCEAN PROTECT
SQID	RWT1–RWT3
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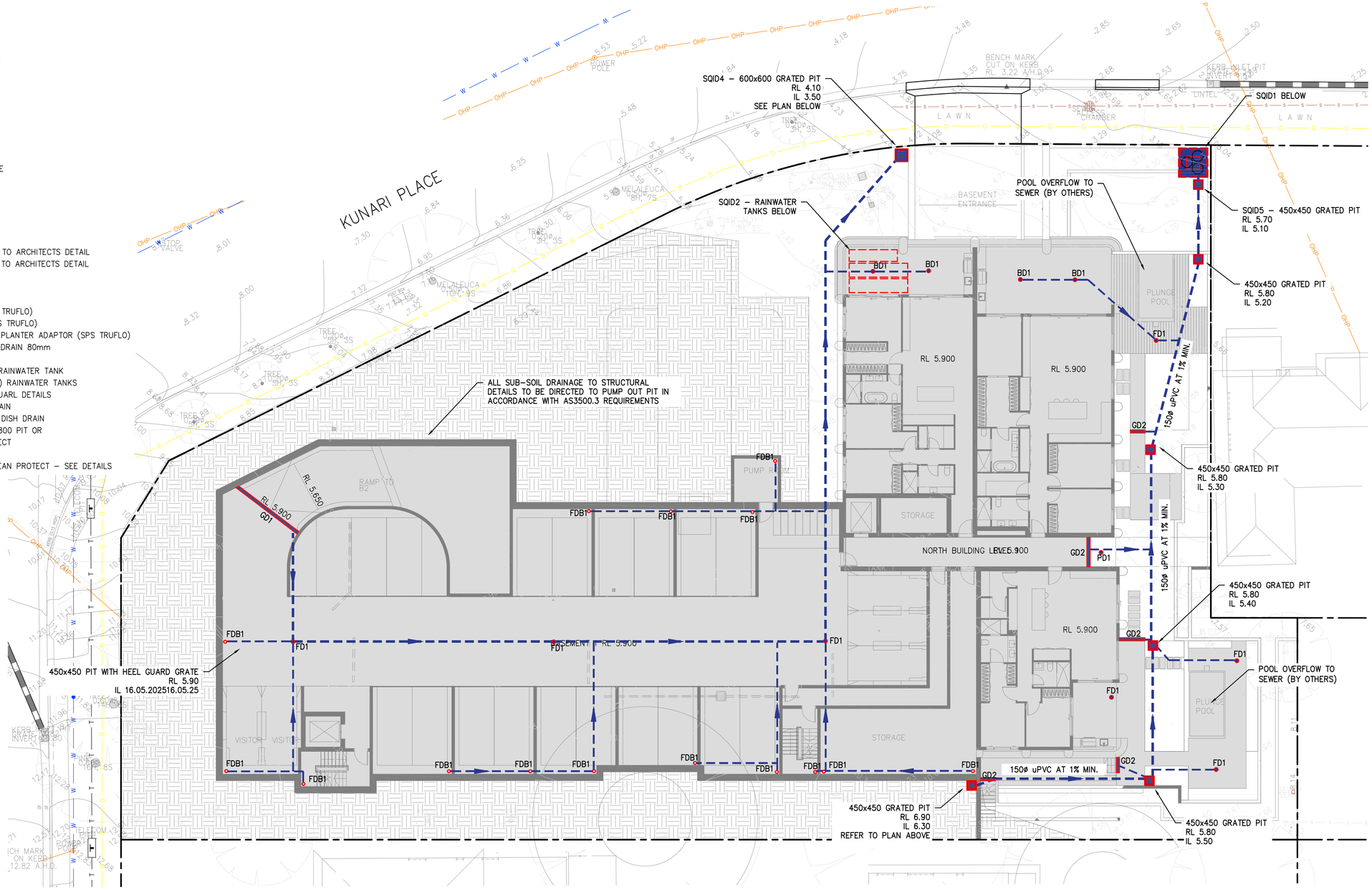

BASEMENT 1 STORMWATER MANAGEMENT PLAN

SCALE = 1 : 150

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A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25

Rhys Mikhail

Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

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Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
BASEMENT 1
STORMWATER MANAGEMENT PLAN

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW101	A

NOTES:
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NOT FOR CONSTRUCTION

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- NEW STORMWATER PIPE
- STORMWATER PIPE FLOW DIRECTION
- STORMWATER PIPE TO RWT
- EXISTING STORMWATER PIPE
- FLUSH–OUT LINE
- BOUNDARY LINE
- S — EXISTING SEWER MAIN
- OHP — EXISTING OVERHEAD POWER LINES
- E — EXISTING ELECTRICITY LINE
- W — EXISTING WATER MAINS
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- G — EXISTING GAS MAINS

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DP1	DENOTES SIZE OF DOWNPIPE
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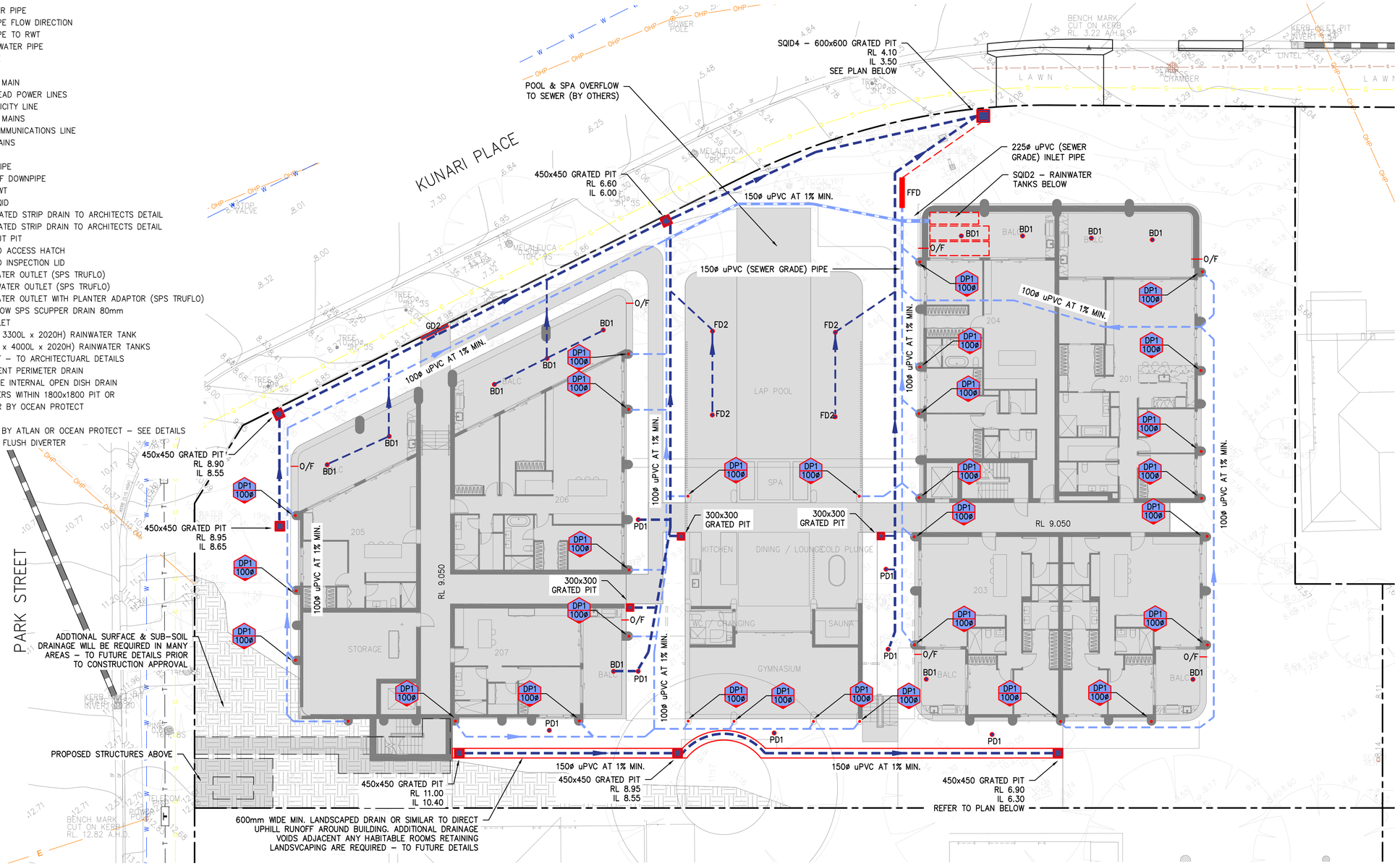

LEVEL 2 STORMWATER MANAGEMENT PLAN

SCALE = 1 : 150

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A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

Approved by:

Date : 16.05.25

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Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

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ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
LEVEL 2
STORMWATER MANAGEMENT PLAN

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW102	A

NOTES:
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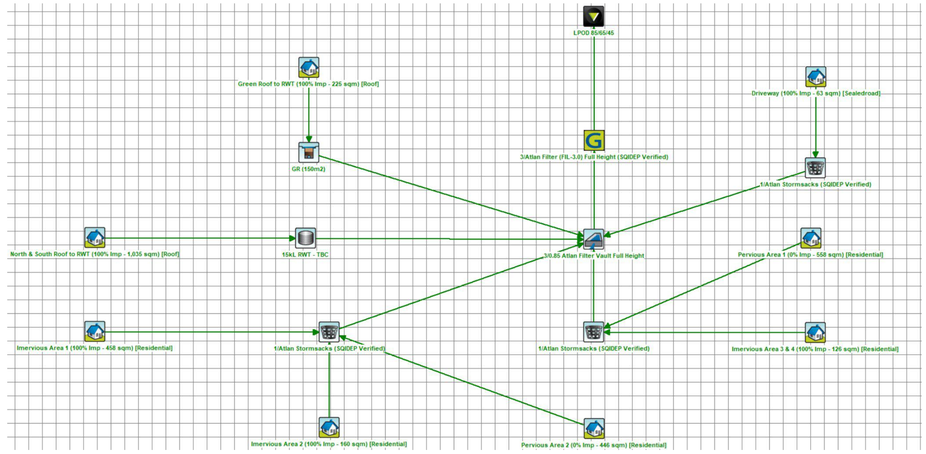
FDB1	100ømm BASEMENT PERIMETER DRAIN
DR1	100mm MIN. WIDE INTERNAL OPEN DISH DRAIN
SQID1	3 x ATLAN FILTERS WITHIN 1800x1800 PIT OR 1 x STORMFILTER BY OCEAN PROTECT
SQID	RWT1–RWT3
SQID3–SQID5	PIT WITH FILTER BY ATLAN OR OCEAN PROTECT – SEE DETAILS
FFD	INGROUND FIRST FLUSH DIVERTER



WSUD MUSIC MODELLING CATCHMENT DETAILS		
CATCHMENT	TREATMENT DEVICE	AREA
IA1 – IMPERVIOUS AREA 1	SQID4	458 m²
IA2 – IMPERVIOUS AREA 2	SQID4	160 m²
IA3 – IMPERVIOUS AREA 3	SQID5	121 m²
IA4 – IMPERVIOUS AREA 4	SQID3	5 m²
PA1 – PERVIOUS AREA 1	SQID5	558 m²
PA2 – IMPERVIOUS AREA 2	SQID4	446 m²
RA1 – ROOF AREA 1	SQID2	438 m²
RA2 – ROOF AREA 2	SQID2	225 m²
RA3 – ROOF AREA 3	SQID2	597 m²
DA1 – DRIVEWAY AREA 1	SQID3	63 m²
RA2 – ROOF AREA 2	SQID2	225 m²

MUSIC MODEL SUMMARY

Treatment Train Effectiveness - LPOD 85/65/45

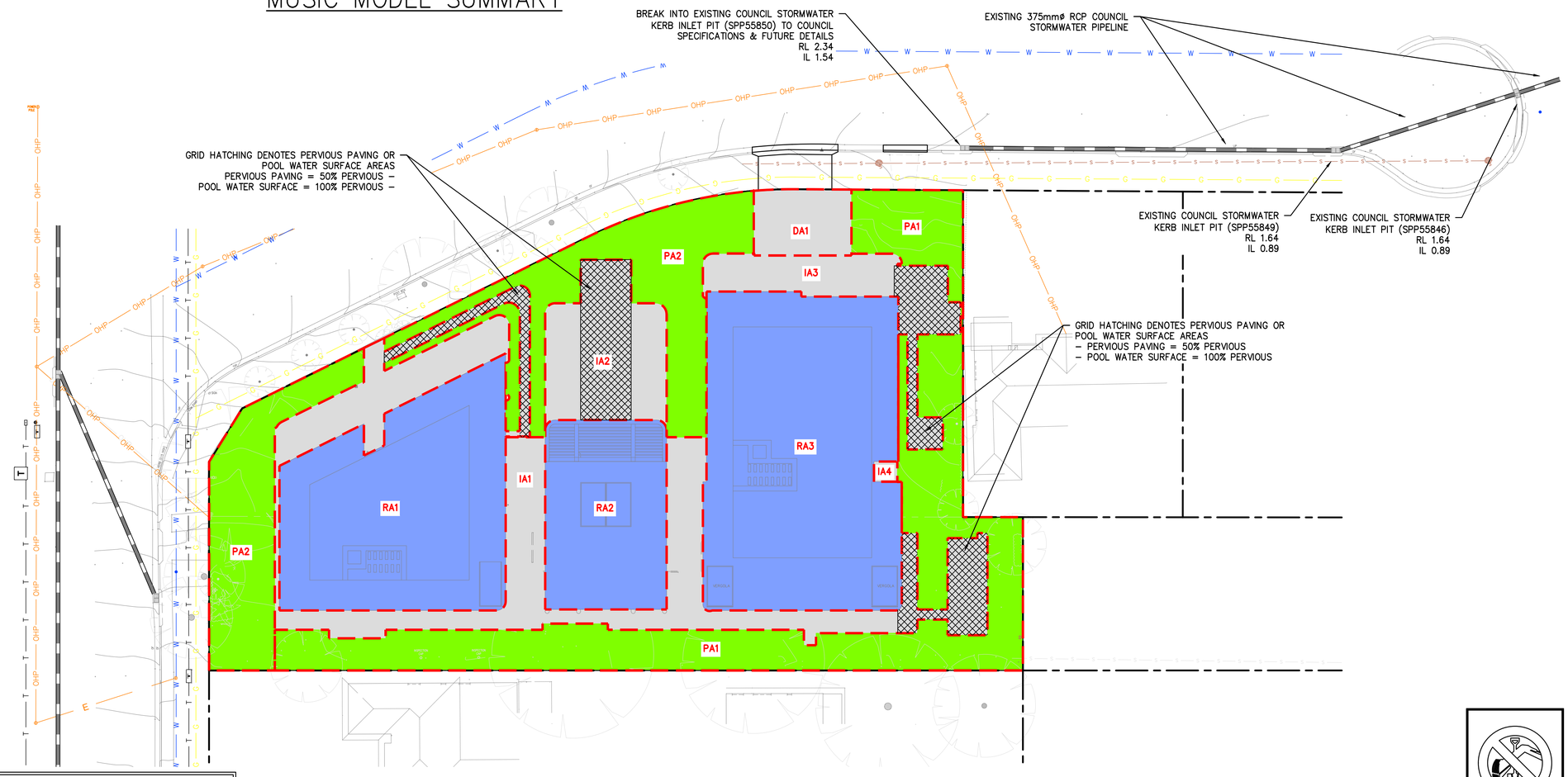
	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.29	1.84	19.4
Total Suspended Solids (kg/yr)	264	37.4	85.9
Total Phosphorus (kg/yr)	0.545	0.0927	83
Total Nitrogen (kg/yr)	4.94	1.39	71.8
Gross Pollutants (kg/yr)	47.4	0	100

MUSIC MODEL RESULTS (ATLAN)

Treatment Train Effectiveness - LPOD 85/65/45

	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.33	1.89	19
Total Suspended Solids (kg/yr)	236	28.5	87.9
Total Phosphorus (kg/yr)	0.529	0.17	67.9
Total Nitrogen (kg/yr)	4.86	1.83	62.3
Gross Pollutants (kg/yr)	47.4	0	100

MUSIC MODEL RESULTS (O.P)



SITE STORMWATER CATCHMENT PLAN

SCALE = 1 : 150

NOTE: THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

NOTE: PIT, PIPE & DOWNPIPE LOCATIONS ARE INDICATIVE ONLY & MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT, ASK!

WARNING! CARE WHEN DIGGING AROUND TREE ROOTS. HAND DIGGING ONLY! MAY REQUIRE ARBORIST SUPERVISION.

DIAL 1100 BEFORE YOU DIG

A1 ORIGINAL

Rev:	Date:	Description:	Reviewed:
A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

Issued for: DEVELOPEMENT APPLICATION

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RTS CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

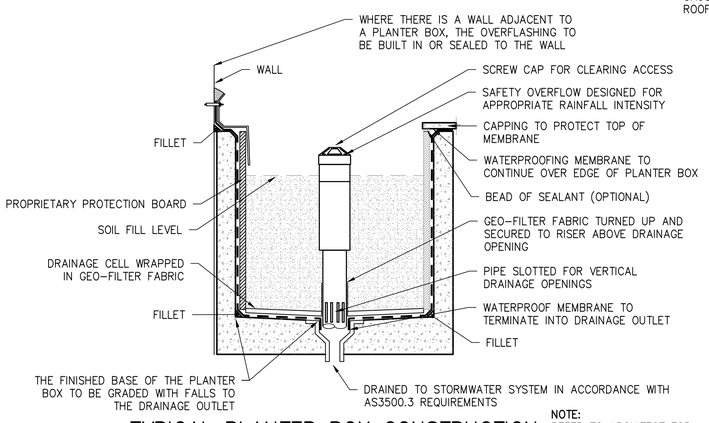
Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
SITE STORMWATER CATCHMENT PLAN

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW103	A

NOTES:
1. U.N.O REFER TO THE COVERPAGE 001 SERIES FOR DETAILED NOTES AND CALCULATIONS.
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

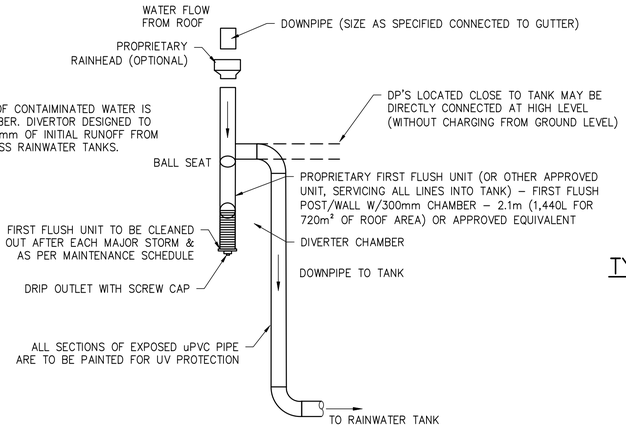
NOT FOR CONSTRUCTION



TYPICAL PLANTER BOX CONSTRUCTION

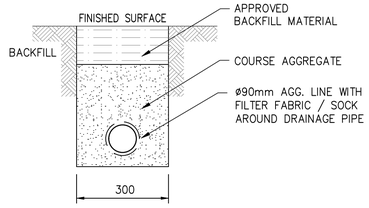
SCALE = NTS

NOTE:
REFER TO ARCHITECT FOR SITE SPECIFIC DETAILS.



TYPICAL WALL MOUNTED FIRST FLUSH DETAIL

NOT TO SCALE

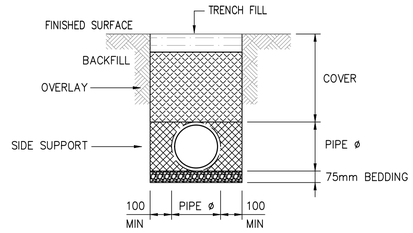


TYPICAL SUB-SOIL TRENCH DETAIL

SCALE = N.T.S.

NOTE:
PRECAST OR CAST INSITU PIT. REFER STORMWATER NOTES OR PROVIDE ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER IF APPROVED BY ENGINEER

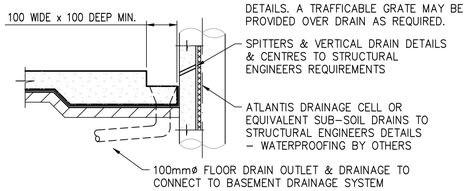
NOTE:
THIS CAN BE ANY TYPICAL PIT PROVIDED OR IF NEEDED TO BE FITTED AT LOW POINT OF SITE AND THERE IS NO ADEQUATE DISCHARGE POINT NEARBY, PROVIDE 300mm SUMP. CONTACT ENGINEER IF IN DOUBT.



TYPICAL uPVC PIPE TRENCH DETAIL

SCALE = N.T.S.

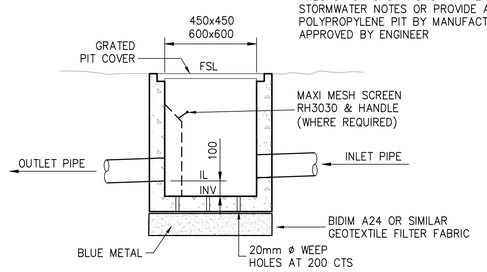
NOTE – STANDARD uPVC PIPE TRENCH:
SUITABLE BEDDING TO AS2032:
1. SAND FREE FROM ROCK OR OTHER HARD AND SHARP OBJECTS THAT WOULD BE RETAINED ON 13.2 SIEVE.
2. CRUSHED ROCK OR GRAVEL OF APPROVED GRADING UP TO MAXIMUM SIZE OF 14mm.
3. THE EXCAVATED MATERIAL MAY BE USED IF IT IS FREE FROM ROCK OR HARD MATTER AND BROKEN UP SO THAT IT CONTAINS NO SOIL LUMPS HAVING ANY DIMENSIONS GREATER THAN 75mm WHICH WOULD PREVENT ADEQUATE COMPACTION OF THE BEDDING.
SIDE SUPPORT: MATERIAL FOR PIPE SUPPORT SHOULD BE ADEQUATELY TAMPED IN LAYERS OF NOT MORE THAN 150mm.
OVERLAY: PIPE OVERLAY MATERIAL SHOULD BE LEVELED AND TAMPED IN LAYERS TO A MINIMUM HEIGHT OF 150mm ABOVE THE CROWN OF PIPE.
COVER: FOR MIN COVER REFER TO AS3500.3.



NOTE:
REFER TO STRUCTURAL ENGINEERS DETAILS. A TRAFFICABLE GRATE MAY BE PROVIDED OVER DRAIN AS REQUIRED.

BASEMENT DRAIN (DR1) DETAIL

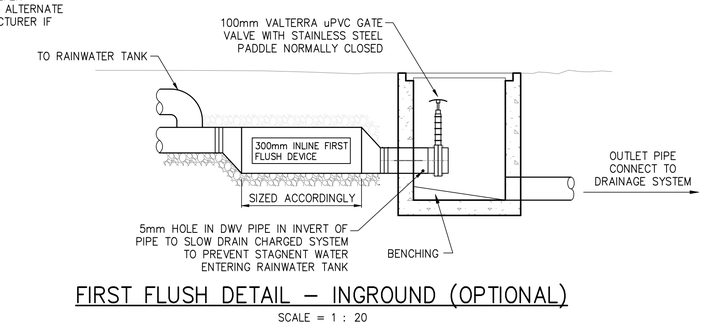
SCALE = 1 : 20



NOTE:
PRECAST OR CAST INSITU PIT. REFER STORMWATER NOTES OR PROVIDE ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER IF APPROVED BY ENGINEER

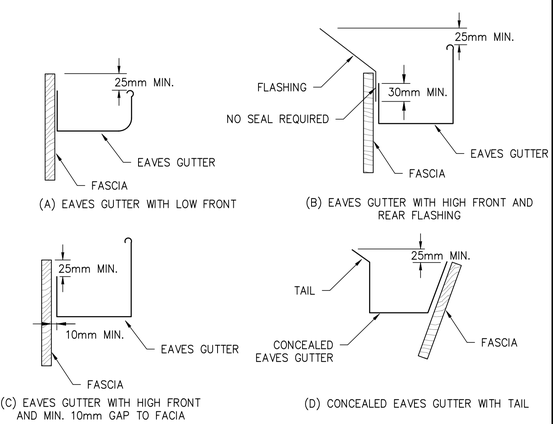
TYPICAL PIT DETAIL

SCALE = 1 : 20



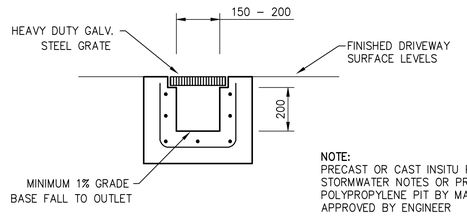
FIRST FLUSH DETAIL – INGROUND (OPTIONAL)

SCALE = 1 : 20



EAVES GUTTER OVERFLOW METHODS

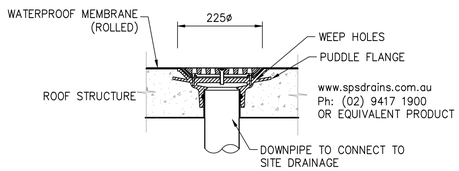
SCALE: 1:20



NOTE:
PRECAST OR CAST INSITU PIT. REFER STORMWATER NOTES OR PROVIDE ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER IF APPROVED BY ENGINEER

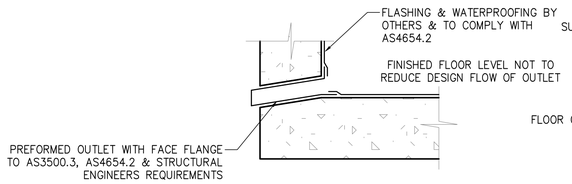
TYPICAL DRIVEWAY GRATED DRAIN (GD)

SCALE = 1 : 20



TYPICAL RAINWATER OUTLET (RWO) DETAIL

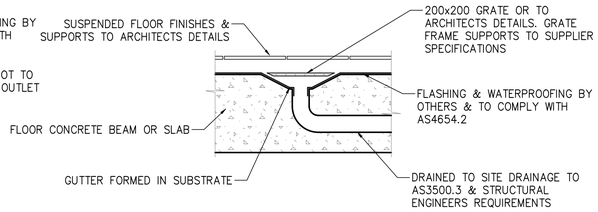
SCALE = 1 : 20



PREFORMED OUTLET TO PARAPET OR BALCONY OVERFLOW

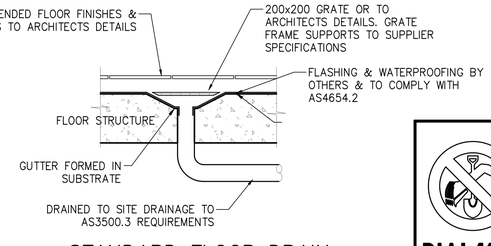
NOT TO SCALE

NOTE:
REFER TO ARCHITECT DETAILS FOR PLANTER & BALCONY DRAINAGE & WATERPROOFING REQUIREMENTS



STANDARD FLOOR PATIO DRAIN

SCALE = 1 : 20



STANDARD FLOOR DRAIN (OPTION FOR BALCONIES ONLY)

SCALE = 1 : 20

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NOTE:
FLOOR DRAINS TO BE INSTALLED WITHIN ALL PLANTERS AND PATIOS TO ARCHITECTS DETAILS AND AS3500.3 REQUIREMENTS. FLOOR DRAINS ARE TO DRAIN BY GRAVITY TO THE NEAREST DRAINAGE STRUCTURE AND MUST BE LOCATED AT LEAST 500mm ABOVE CONNECTION POINT. BALCONY HOB TO ARCHITECT DETAILS. ENSURE ALL BALCONIES ARE FITTED WITH 2 x 50mmø SPITTER PIPES TO ACT AS OVERFLOW POINT IN ACCORDANCE WITH AS4564.2:2012 REQUIREMENTS.
IF IN DOUBT, CONTACT THE ENGINEER.

DIAL 1100 BEFORE YOU DIG

A1 ORIGINAL

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A	16.05.25	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M

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Rhys Mikhail

Director | Principal Engineer | NER: 2570082 | RPEQ: 17480
BEng (Civil) Hons MIEAust CPEng NER RPEQ APEC IntPE(Aus)

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CIVIL CONSULTING ENGINEERS
STORMWATER • CIVIL • FLOOD MITIGATION
ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
4 KUNARI PLACE, MONA VALE
STORMWATER DRAINAGE DETAILS
SHEET 1 OF 3

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW200	A

NOTES:
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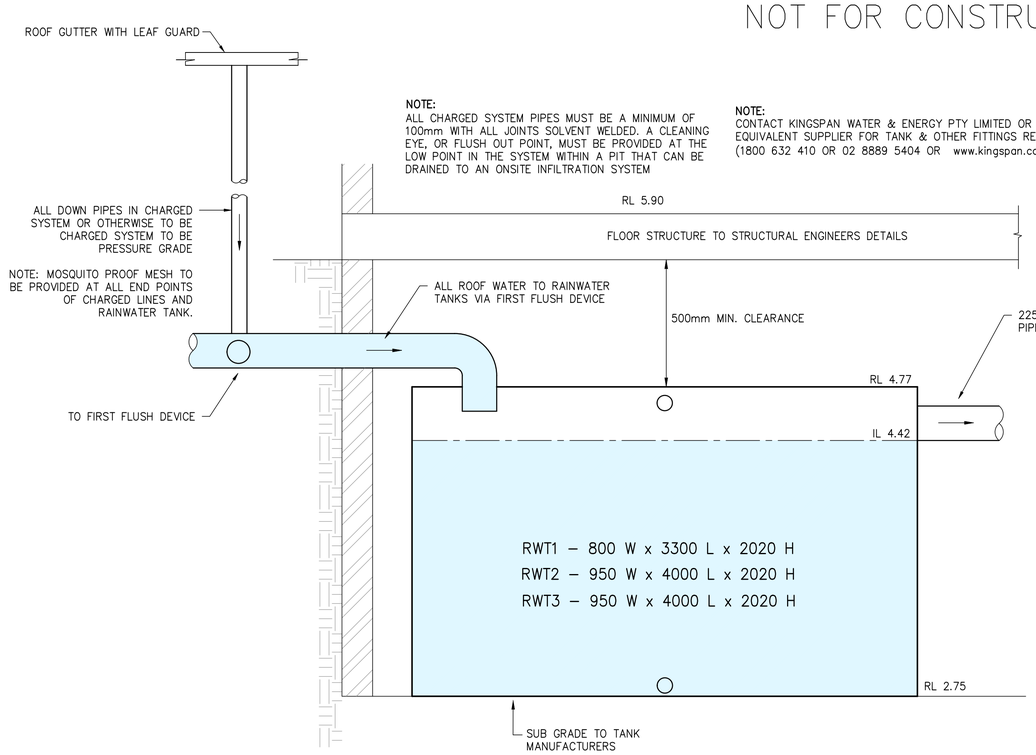
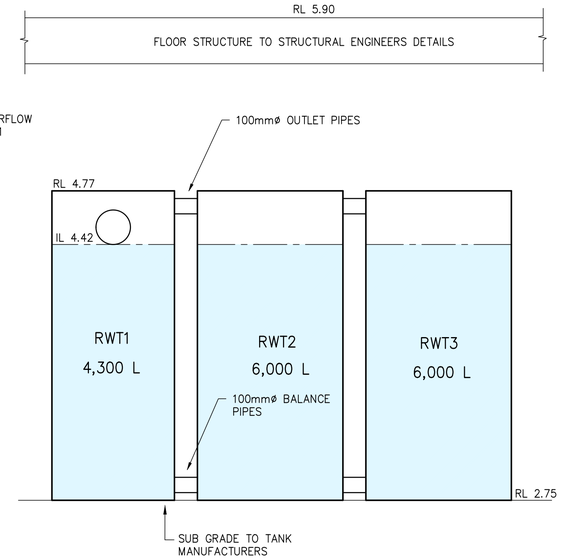


NOTE:
ALL CHARGED SYSTEM PIPES MUST BE A MINIMUM OF 100mm WITH ALL JOINTS SOLVENT WELDED. A CLEANING EYE, OR FLUSH OUT POINT, MUST BE PROVIDED AT THE LOW POINT IN THE SYSTEM WITHIN A PIT THAT CAN BE DRAINED TO AN ONSITE INFILTRATION SYSTEM

NOTE:
CONTACT KINGSPAN WATER & ENERGY PTY LIMITED OR EQUIVALENT SUPPLIER FOR TANK & OTHER FITTINGS REQUIRED (1800 632 410 OR 02 8889 5404 OR www.kingspan.com)

TYPICAL SECTION RAINWATER RWT 1 TANK

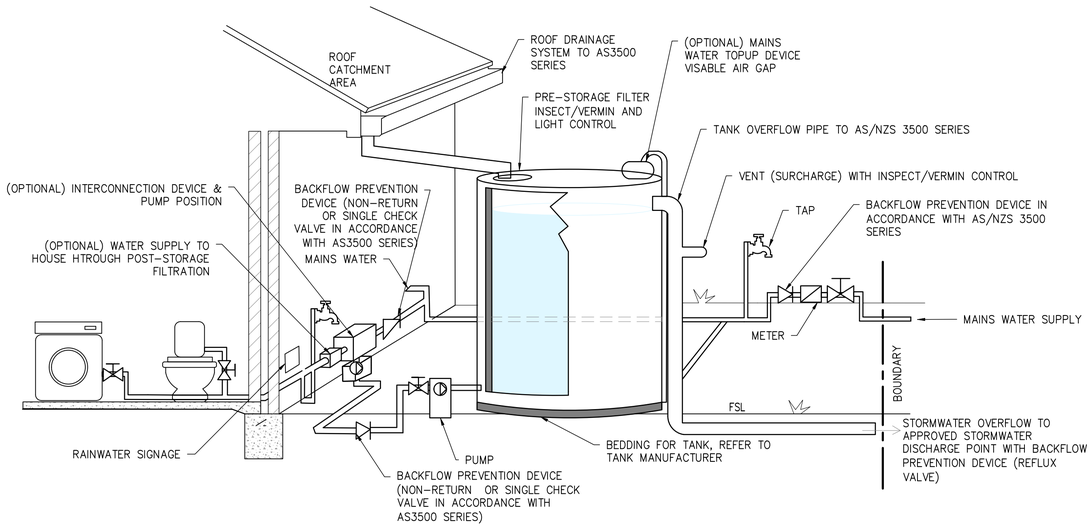
NOT TO SCALE



TYPICAL SECTION RAINWATER TANK

NOT TO SCALE

ø	DIAMETER
FSL	FINISHED SURFACE LEVEL
	REFLUX VALVE
	NON–RETURN VALVE
	PUMP
	MAINS PIPEWORK (POTABLE OR DRINKING WATER)
	RAINWATER PIPEWORK
	STOP TAP (ISOLATION VALVE)
	STORMWATER DRAINAGE PIPEWORK



TYPICAL ABOVE–GROUND RAINWATER TANK INSTALLATION WITH MAINS WATER TOP–UP AND RAINWATER SUPPLIED TO APPLIANCES IN THE HOUSEHOLD (HB 230–2008)

NOTE TO SCALE

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ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au

Architect: WALSH ARCHITECTS

Client: MONA VALE CENTRAL PTY LTD

Project and Drawing Title:
94–96 PARK STREET &
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STORMWATER DRAINAGE DETAILS
SHEET 2 OF 3

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW201	A

NOTES:
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NOT FOR CONSTRUCTION

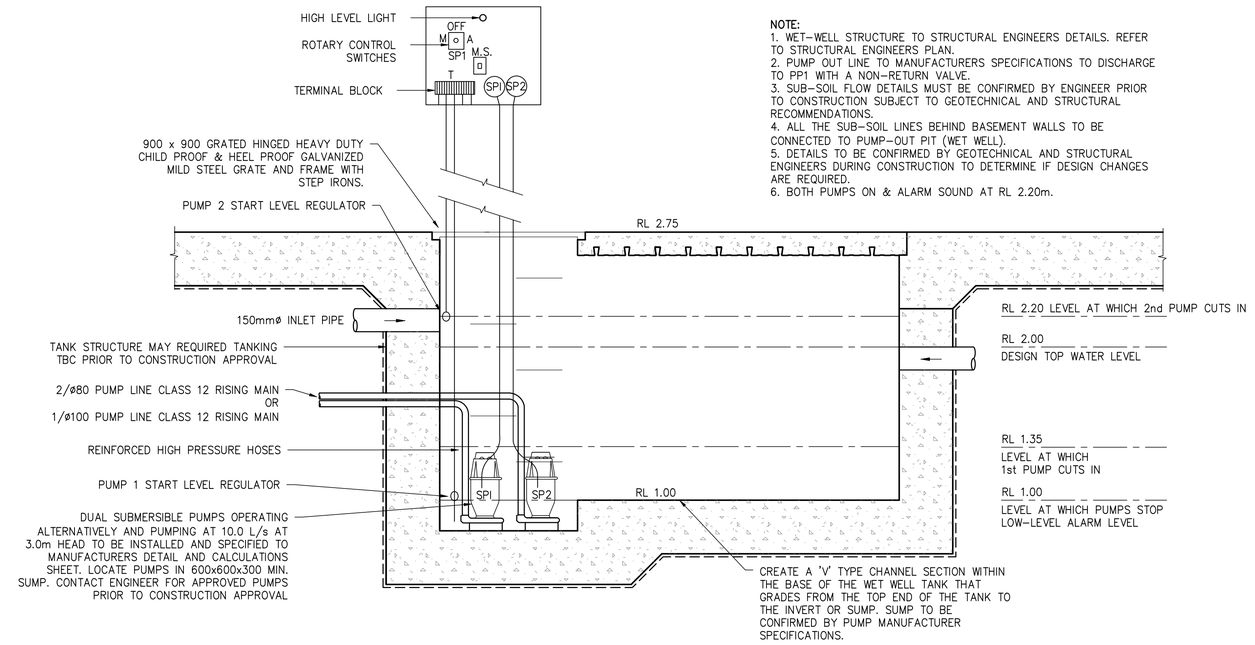
WARNING

PUMP OUT SYSTEM FAILURE IN BASEMENT WHEN LIGHT IS FLASHING AND SIREN SOUNDING

DANGER

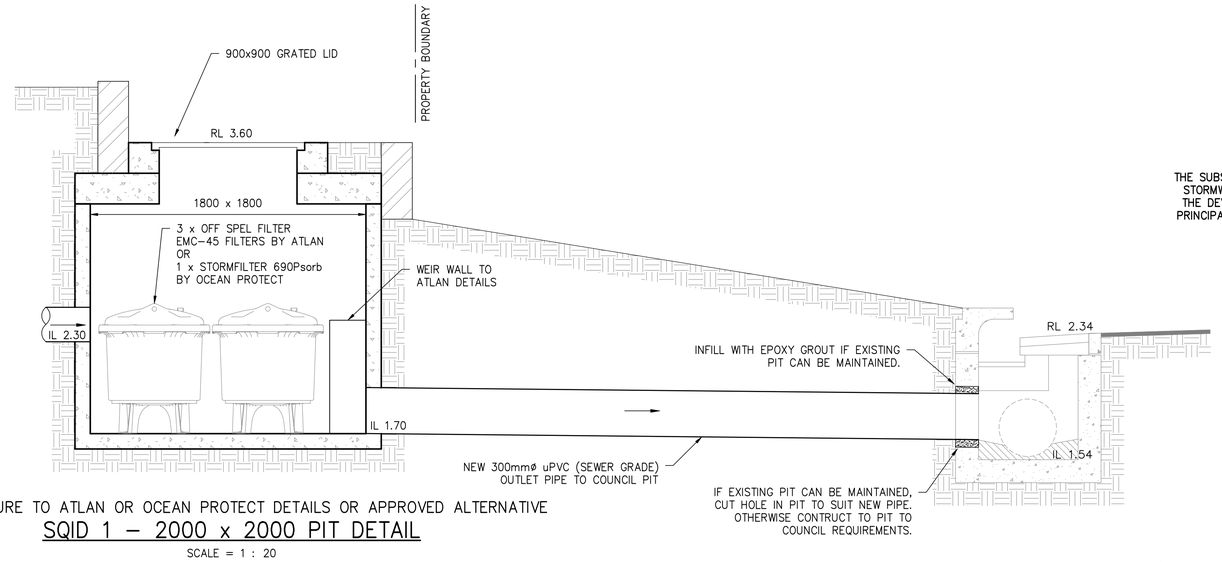
CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

TYPICAL TANK SIGNAGE
N.T.S



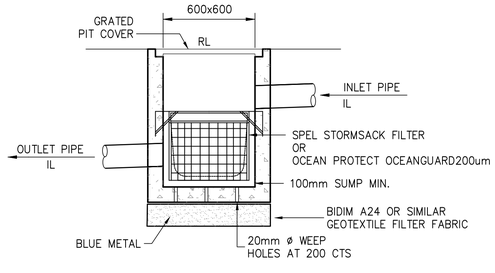
NOTE:
1. WET-WELL STRUCTURE TO STRUCTURAL ENGINEERS DETAILS. REFER TO STRUCTURAL ENGINEERS PLAN.
2. PUMP OUT LINE TO MANUFACTURERS SPECIFICATIONS TO DISCHARGE TO PP1 WITH A NON-RETURN VALVE.
3. SUB-SOIL FLOW DETAILS MUST BE CONFIRMED BY ENGINEER PRIOR TO CONSTRUCTION SUBJECT TO GEOTECHNICAL AND STRUCTURAL RECOMMENDATIONS.
4. ALL THE SUB-SOIL LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT PIT (WET WELL).
5. DETAILS TO BE CONFIRMED BY GEOTECHNICAL AND STRUCTURAL ENGINEERS DURING CONSTRUCTION TO DETERMINE IF DESIGN CHANGES ARE REQUIRED.
6. BOTH PUMPS ON & ALARM SOUND AT RL 2.20m.

TANK STRUCTURE TO STRUCTURAL ENGINEERS DETAILS
BASEMENT WET WELL (PP1 PUMP-OUT TANK) DETAIL
SCALE = 1 : 20



PIT STRUCTURE TO ATLAN OR OCEAN PROTECT DETAILS OR APPROVED ALTERNATIVE
SQID 1 – 2000 x 2000 PIT DETAIL
SCALE = 1 : 20

NOTE:
THE SUBSTITUTION OF AN "EQUIVALENT" DEVICE FOR THE STORMWATER TREATMENT MEASURE APPROVED UNDER THE DEVELOPMENT CONSENT MUST SUBMITTED TO THE PRINCIPAL CERTIFYING AUTHORITY FOR APPROVAL PRIOR TO INSTALLATION.



NOTE:
PRECAST OR CAST INSITU PIT. REFER STORMWATER NOTES OR PROVIDE ALTERNATE POLYPROPYLENE PIT BY MANUFACTURER IF APPROVED BY ENGINEER

EXISTING KERB INLET SECTION (TYP.)
SCALE = 1 : 20

PITS WITH SQID FILTER DETAIL
SCALE = 1 : 20

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STORMWATER DRAINAGE DETAILS
SHEET 3 OF 3

Local Council: NORTHERN BEACHES

Project Number:	Drawing ID:	Issue:
250302	SW202	A