

16 - 24 HOPE STREET, PENRITH

PROPOSED MULTI-UNIT DEVELOPMENT

STORMWATER CONCEPT PLANS

LEGEND

- PROPOSED STORMWATER
- PIPE OVERCROSSING
MINIMUM 150mm CLEARANCE
- DP
GUTTER DOWNPIPE
- DP
DOWNPIPE WITH VERTICAL BEND
- DP1
DOWNPIPE NUMBER AND SIZE
- HP
ROOF GUTTER HIGH POINT
- ROOF SLOPE
- PG
PLANTER GRATE
- FG
FLOOR GRATE
- RWO
RAINWATER OUTLET
- BREAK / OPEN VOID IN RAIL /
BALLUSTRADE FOR STORMWATER
EMERGENCY OVERFLOW
- SURFACE FLOW ARROWS
- X RL 47.00
DESIGN SURFACE LEVEL
- + NS 26.45
EXISTING SURFACE LEVEL
- IL 47.00
INVERT LEVEL OF PIPE JUNCTION
- CLOSED STYLE FENCING
- PROPOSED OSD STORAGE
- UNDERGROUND
RAINWATER TANK
- PROPOSED WSUD / BIO-RETENTION
AREA / POND
- TILED AREA
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- Ø80 RISER WITH
NON-RETURN VALVE



LOCALITY PLAN

N.T.S

PIPES NOTE:

Ø65 PVC @ MIN 1.0%
 Ø90 PVC @ MIN 1.0%
 Ø100 PVC @ MIN 1.0%
 Ø150 PVC @ MIN 1.0%
 Ø225 PVC @ MIN 0.5%
 Ø300 PVC @ MIN 0.4%
 UNLESS NOTED OTHERWISE

DRAWING INDEX

Drawing No.	DESCRIPTION
000	COVER SHEET PLAN
101	STORMWATER CONCEPT PLAN BASEMENT LEVEL 2 SHEET 1 OF 2
102	STORMWATER CONCEPT PLAN BASEMENT LEVEL 2 SHEET 2 OF 2
103	STORMWATER CONCEPT PLAN BASEMENT LEVEL 1
104	STORMWATER CONCEPT PLAN GROUND LEVEL
105	ON-SITE DETENTION DETAILS AND CALCULATION SHEETS
106	MISCELLANEOUS DETAILS SHEET

GENERAL NOTES

1. ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
2. EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
3. ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
4. ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450 PLASTIC.
5. PITS LESS THAN 600mm DEEP MAY BE BRICK, PRECAST OR CONCRETE.
6. ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
7. ALL EXTERNAL SLABS TO BE WATERPROOFED.
8. ALL GRATES TO HAVE CHILD PROOF LOCKS.
9. ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
10. ALL DPs TO HAVE LEAF GUARDS.
11. ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
12. ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
13. COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
14. ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
15. REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.
16. CARE TO BE TAKEN AROUND EXISTING SEWER. STRUCTURAL ADVICE IS REQUIRED FOR SEWER PROTECTION AGAINST ADDITIONAL LOADING FROM NEW PITS, PIPES, RETAINING WALLS AND OSD BASIN WATER LEVELS.
17. ALL WALLS FORMING THE DETENTION BASINS SHALL BE CONSTRUCTED WHOLLY WITHIN THE PROPERTY BOUNDARIES OF THE SITE BEING DEVELOPED.
18. OSD WARNING SIGN AND SAFETY FENCING SHALL BE PROVIDED TO ABOVE GROUND OSD STORAGE AREA IN ACCORDANCE WITH COUNCIL REQUIREMENTS.
19. ENSURE THAT NON FLOATABLE MULCH IS USED IN DETENTION BASINS, ie, USE DECORATIVE ROCK MULCH OR EQUIVALENT.
20. ALL PIPES IN BALCONIES TO BE Ø65 uPVC CAST IN CONCRETE SLAB. CONTRACTOR TO PROVIDE A BREAK / OPEN VOID IN RAIL / BALLUSTRADE FOR STORMWATER EMERGENCY OVERFLOW. ALL ENCLOSED AREAS/PLANTER BOXES TO BE FITTED WITH FLOOR WASTES & DRAINED TO OSD DOWNPIPES TO BE CHECKED BY ARCHITECT & PLUMBER PRIOR TO CONSTRUCTION
21. THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER CONSULTATION FROM OUR OFFICE ONLY. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE CONTRACTOR'S EXPENSES.

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Verification By: Dr. Anthony Hasham (NFER)

Architect
Morson Group
 P.O Box 170,
 Potts Point, NSW 1335
 EMAIL : info@ad-s.com.au
 PHONE : 02 9380 4946

Client
Prestige Developments Group (NSW) Pty Ltd
 Council
Penrith City Council

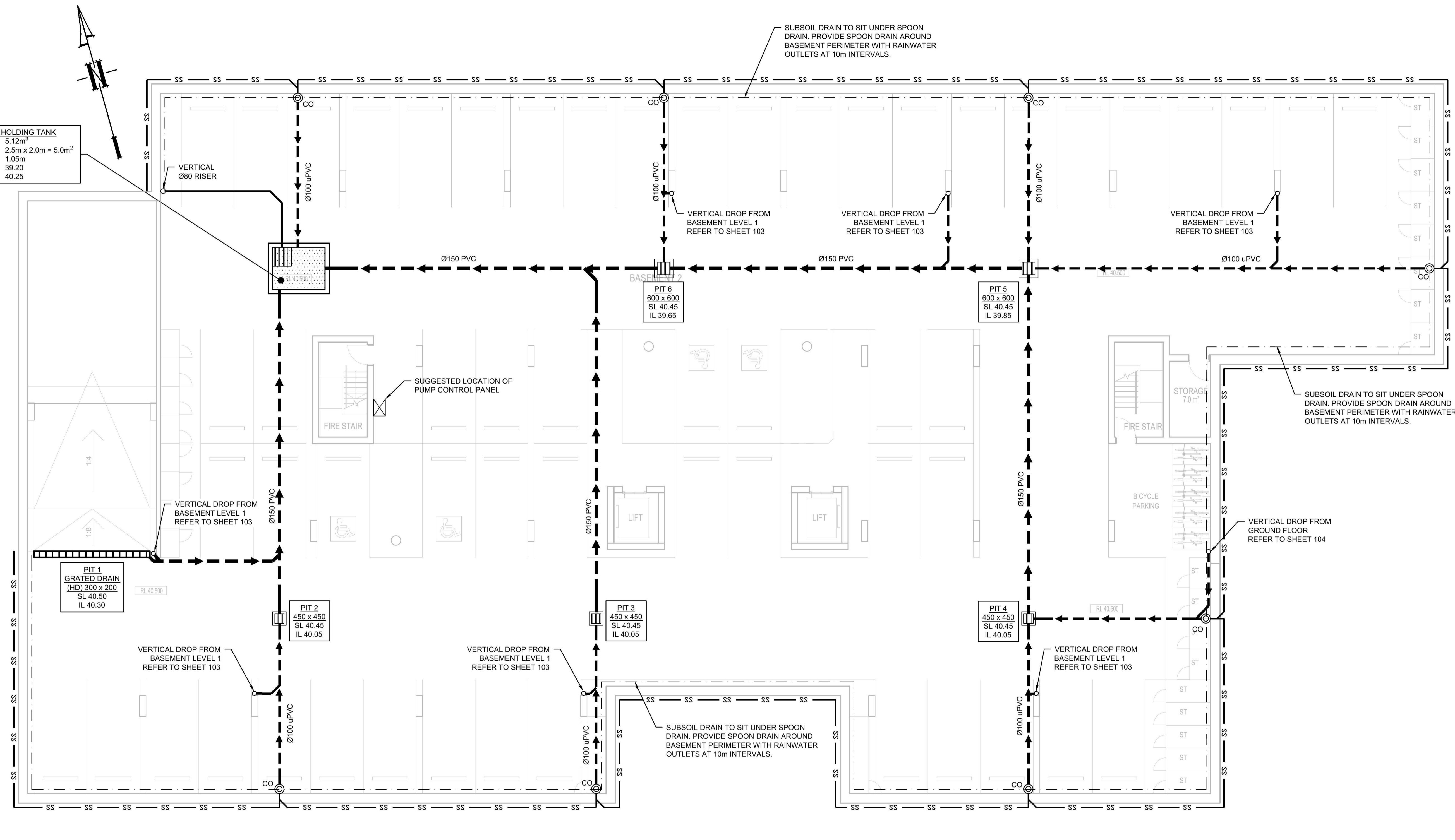
Scale

AUSTRALIAN CONSULTING ENGINEERS.
 AUSTRALIAN CONSULTING ENGINEERS.
 PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9763 1500 FX: (02) 9763 1515
 EMAIL: info@acoeng.com.au

Project
**16 - 24 HOPE STREET, PENRITH
 PROPOSED MULTI-UNIT DEVELOPMENT
 STORMWATER CONCEPT PLANS
 DEVELOPMENT APPLICATION**

Drawing Title
COVER SHEET PLAN
 Scale A1 Project No. 180919 Dwg. No. 000 Issue B

PUMP HOLDING TANK
 CAPACITY 5.12m³
 AREA 2.5m x 2.0m = 5.0m²
 MAX DEPTH 1.05m
 IL 39.20
 TWL 40.25



LEGEND

- PROPOSED STORMWATER
- SURFACE FLOW ARROWS
- SUBSOIL DRAINAGE
- CLEANING EYE (OR INSPECTION EYE)
- PROPOSED STORAGE AREA
- FINISHED SURFACE LEVEL
- GRATED DRAIN
- FLOOR GRATE

STANDARD PUMP OUT DESIGN NOTES

- THE PUMP OUT SYSTEM SHALL BE DESIGN TO BE OPERATED IN THE FOLLOWING MANNER:
- 1 - THE PUMP SHALL BE PROGRAMMED TO WORK ALTERNATELY TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
 - 2 - A FLOAT SHALL BE PROVIDED TO ENSURE OF THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS AT THE MINIMUM WATER LEVEL. THE SAME FLOAT SHALL BE SET TO TURN ONE OF THE PUMPS ON UPON THE WATER LEVEL IN THE TANK RISING TO APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL. THE PUMP SHALL OPERATE UNTIL THE TANK IS DRAINED TO THE MINIMUM WATER LEVEL.
 - 3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
 - 4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.
 - 5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.

DANGER

WHEN EXCAVATING WITHIN ANY SITE, FOOTPATH AND ROADWAY, ALL SERVICES SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE EXCAVATION WORKS.

CONTACT "DIAL BEFORE YOU DIG" ON PHONE No. 1100 OR GO TO THE WEB SITE

"www.1100.com.au"

WARNING

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

BASEMENT PUMP OUT FAILURE WARNING SIGN

SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT

COLOURS:
 "WARNING" = RED
 BORDER AND OTHER LETTERING = BLACK

DANGER

CONFINED SPACE
 NO ENTRY WITHOUT TRAINING

CONFINED SPACE DANGER SIGN

A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK'S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) - 250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:
 "DANGER" & BACKGROUND = WHITE
 ELLIPTICAL AREA = RED
 RECTANGLE CONTAINING ELLIPSE = BLACK
 BORDER AND OTHER LETTERING = BLACK

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Verification By: Dr. Anthony Hasham (NFER)

Morson Group
 P.O Box 170,
 Potts Point, NSW 1335
 EMAIL : info@ad-s.com.au
 PHONE : 02 9380 4946

Client: **Prestige Developments Group (NSW) Pty Ltd**

Council: **Penrith City Council**

Scale: 1:100 @ A1

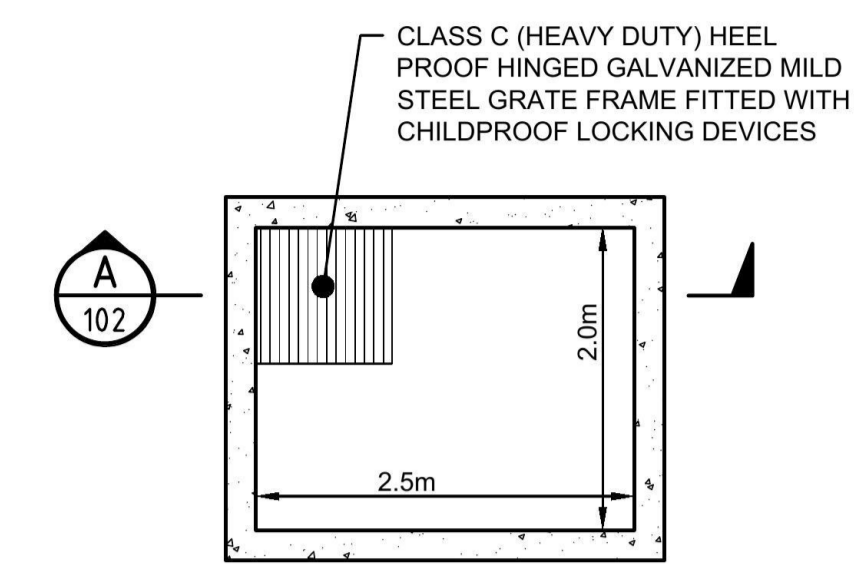
AUSTRALIAN CONSULTING ENGINEERS.

PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9763 1500 FX: (02) 9763 1515
 EMAIL: info@acoenz.com.au

Project: **16 - 24 HOPE STREET, PENRITH PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION**

Drawing Title: **STORMWATER CONCEPT PLAN BASEMENT LEVEL 2 SHEET 1 OF 2**

Scale: A1 Project No. 180919 Dwg. No. 101 Issue B

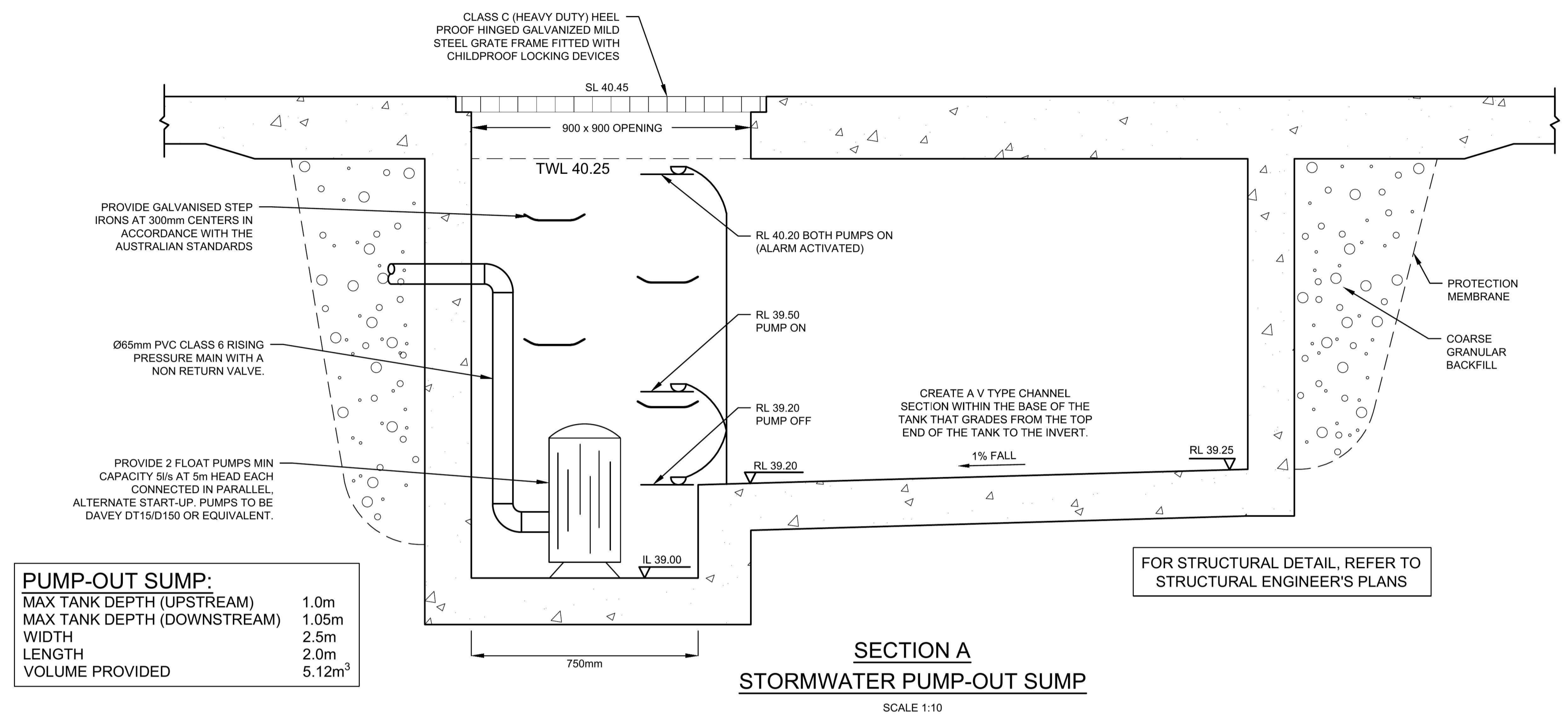


NOTE:
 1- FOR ALL THE STRUCTURAL DETAILS, REFER TO STRUCTURAL ENGINEER'S PLAN.
 2- ALL THE AG LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT SUMP.

PUMP-OUT SUMP DETAIL PLAN VIEW
 SCALE 1:50

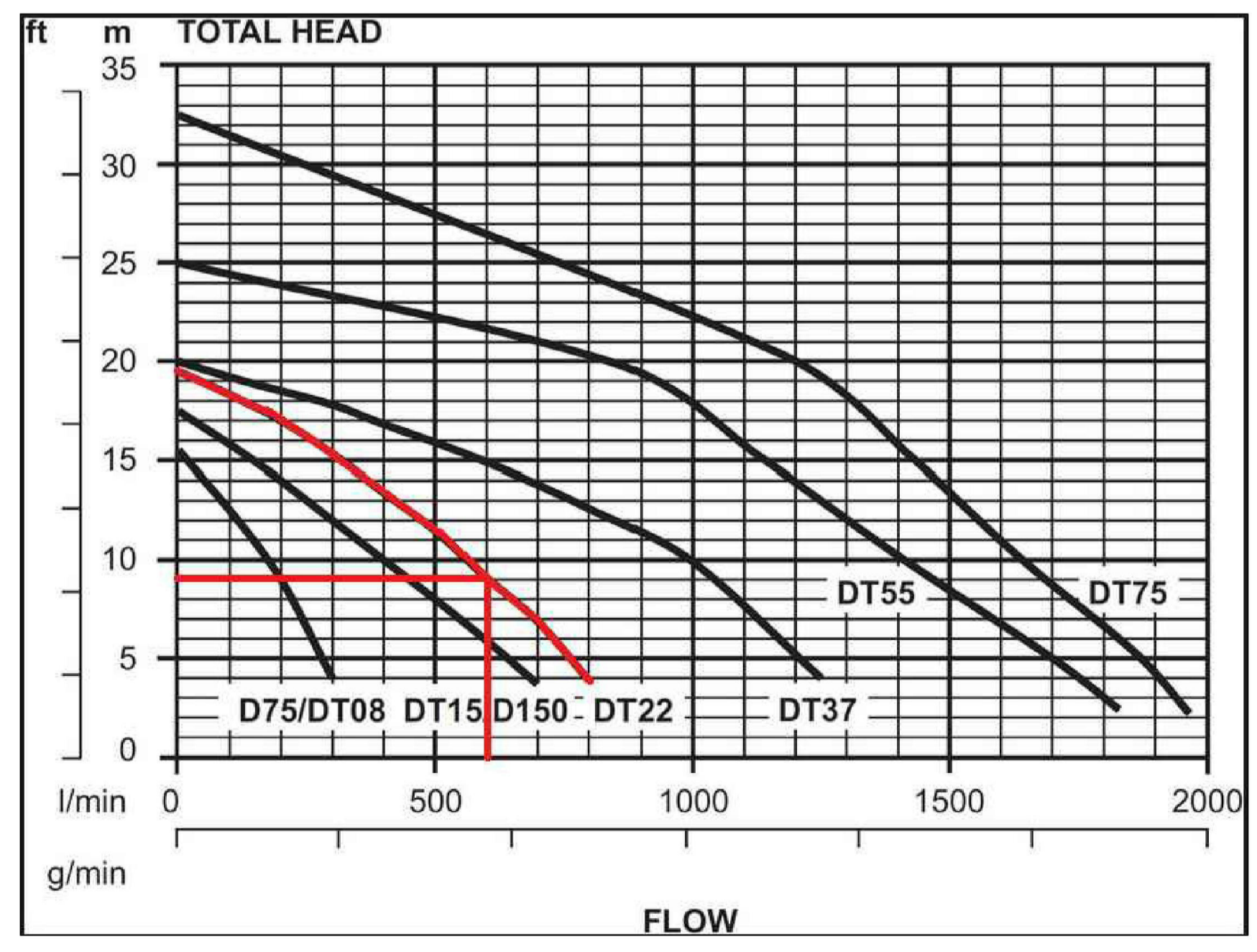
PUMP STORAGE VOLUME CALCULATION

- $I_{100, 90 \text{ min}} = 55.7 \text{ mm/hour}$
- PUMP STORAGE CATCHMENT AREA: $A = 50.3 \text{ m}^2 = 0.0053 \text{ ha}$
- $Q = C \times I \times A / 360$ WHERE $C = 1.0$ (REFER TO AS3500.3.5.4.6 (a))
 $= 1.0 \times 55.7 \times 0.0053 / 360$
 $= 0.00082 \text{ m}^3/\text{s}$
 $= 0.82 \text{ L/s}$
- THEREFORE, THE PUMP HOLDING TANK VOLUME IS:
 $V = 0.82 \times 1.5 \times 3600$
 $= 4.43 \text{ m}^3$



PUMP-OUT SUMP:
 MAX TANK DEPTH (UPSTREAM) 1.0m
 MAX TANK DEPTH (DOWNSTREAM) 1.05m
 WIDTH 2.5m
 LENGTH 2.0m
 VOLUME PROVIDED 5.12m³

SECTION A STORMWATER PUMP-OUT SUMP
 SCALE 1:10



PUMP CALCULATIONS

Project Address: 16-24 Hope Street Penrith

$HL = (3.35 \times 10e6 \times Q / (d^2 \cdot 63 \times C))^{1.852}$
 $HL(m/100m), Q(L/s), d(mm)$

$h1 = kv^2 / 2g$
 $k(cum), v(m/s), g=9.8(m/s^2)$

H(total head) = Hf + h1 + Elevation Head (static head)

Elevation Head(m) = 7 Pipe Length(m) = 16

Hazen - Williams C = 145 Hazen-Williams Constant

	125-140 Commercial steel pipe
	135-140 Bitumen Lined Cast iron pipe
	140-145 Copper Tube
	145-150 PVC

Bend Losses, $K_b = 3.06$
 Valve Losses, $K_v = 2.13$
 Entry/Exit Losses, $K_e = 5.00$
 Cum Losses, $K = 10.19$

$d(mm) = 80$

$v(m/s) = 0.00$

Start Flow = 0
 Increment = 1

Q(L/s)	0	1	2	3	4	5	6	7	8	9	10
HL(m/100m)	0.00	0.06	0.23	0.50	0.85	1.28	1.79	2.38	3.05	3.80	4.61
Hf(m)	0.00	0.01	0.04	0.08	0.14	0.20	0.29	0.38	0.49	0.61	0.74
v(m/s)	0.00	0.20	0.40	0.60	0.80	0.99	1.19	1.39	1.59	1.79	1.99
h1(m)	0.00	0.02	0.08	0.19	0.33	0.51	0.74	1.01	1.32	1.67	2.06
H(m)	7.00	7.03	7.12	7.26	7.46	7.72	8.03	8.39	8.81	9.27	9.80

UNDERGROUND PUMP - OUT SUMP STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m ²)	CUMULATIVE VOLUME (m ³)
0	5.0	0
100	5.0	0.375
200	5.0	0.875
300	5.0	1.375
400	5.0	1.875
500	5.0	2.375
600	5.0	2.875
700	5.0	3.375
800	5.0	3.875
900	5.0	4.375
1000	5.0	4.875
1050	5.0	5.125

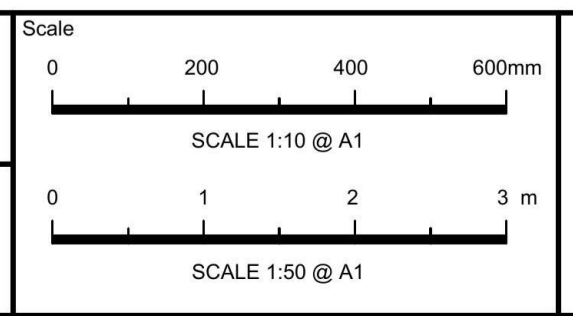
NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Certification By Dr. Anthony Hasham (NFER)

Morson Group
 P.O Box 170,
 Potts Point, NSW 1335
 EMAIL: info@ad-s.com.au
 PHONE: 02 9380 4946

Prestige Developments Group (NSW) Pty Ltd
 Council
Penrith City Council

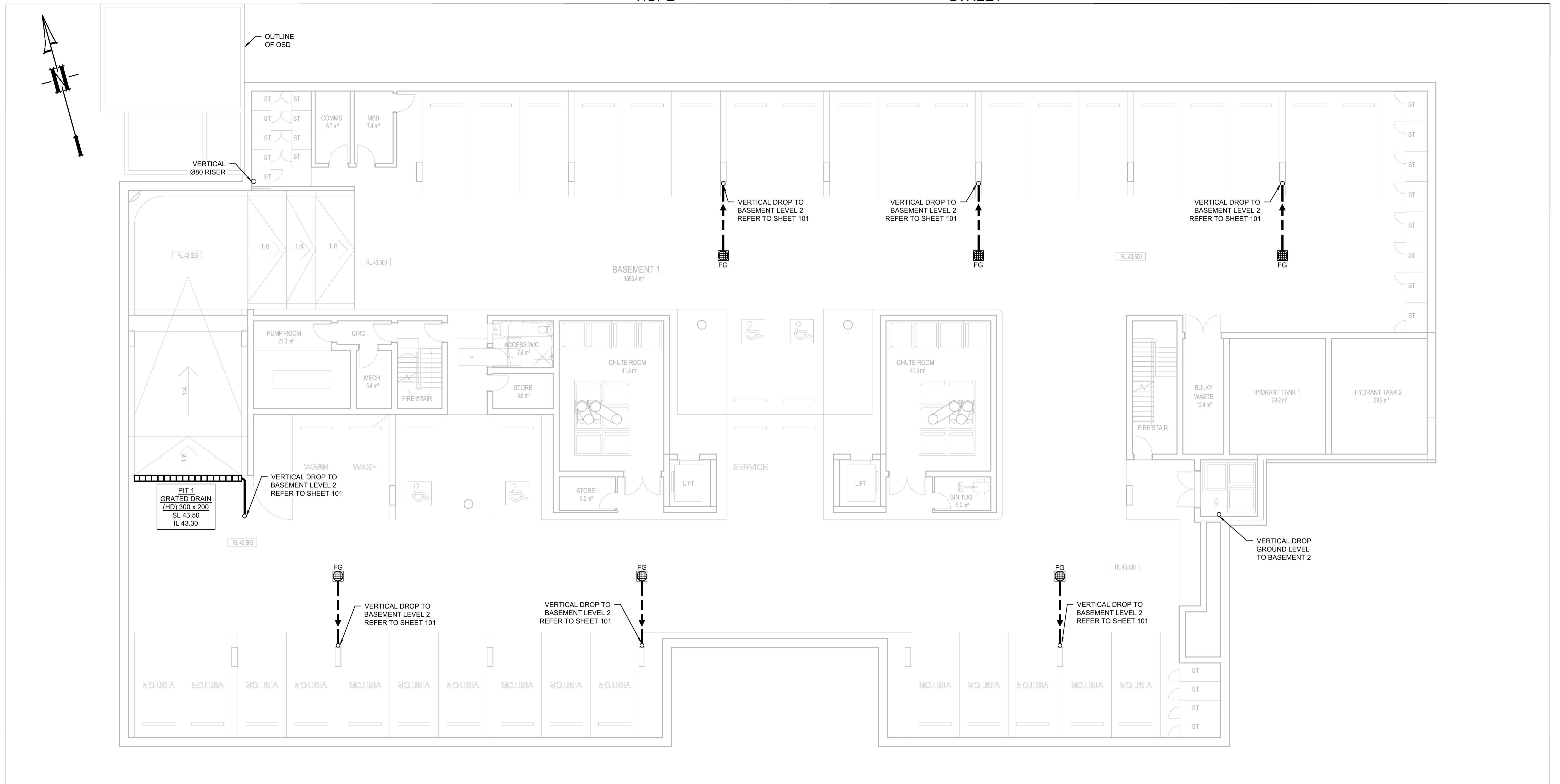


AUSTRALIAN CONSULTING ENGINEERS.
 PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9763 1500 FX: (02) 9763 1515
 EMAIL: info@acoeng.com.au

Project
16 - 24 HOPE STREET, PENRITH PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN BASEMENT LEVEL 2 SHEET 2 OF 2

Scale As Shown Project No. 180919 Dwg. No. 102 Issue 1

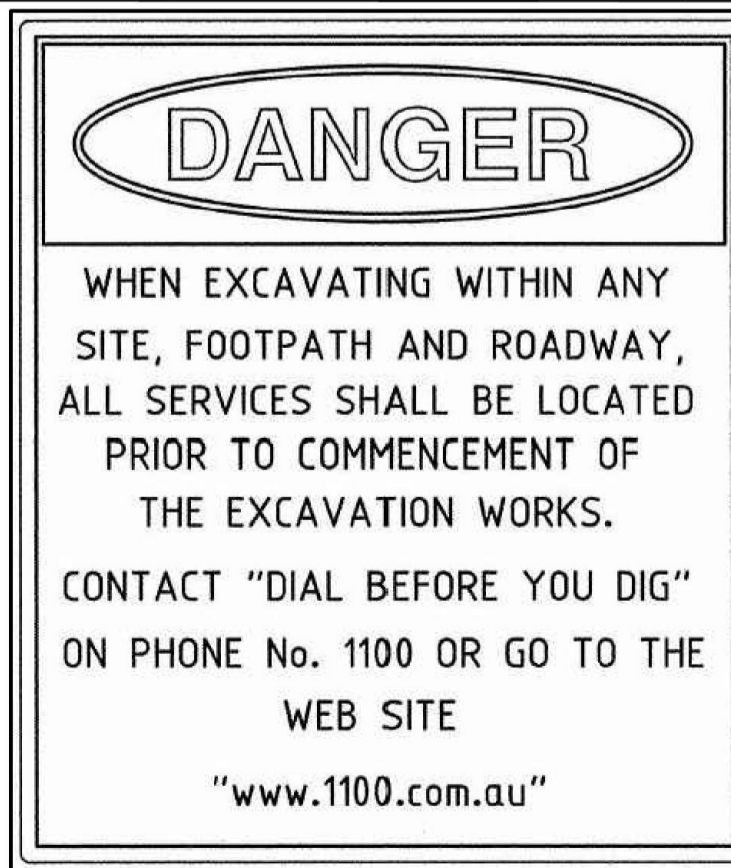


LEGEND

- PROPOSED STORMWATER
- SURFACE FLOW ARROWS
- SUBSOIL DRAINAGE
- CLEANING EYE (OR INSPECTION EYE)
- PROPOSED STORAGE AREA
- FINISHED SURFACE LEVEL
- GRATED DRAIN
- FLOOR GRATE

STANDARD PUMP OUT DESIGN NOTES

- THE PUMP OUT SYSTEM SHALL BE DESIGN TO BE OPERATED IN THE FOLLOWING MANNER:
- 1 - THE PUMP SHALL BE PROGRAMMED TO WORK ALTERNATELY TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
 - 2 - A FLOAT SHALL BE PROVIDED TO ENSURE OF THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS AT THE MINIMUM WATER LEVEL. THE SAME FLOAT SHALL BE SET TO TURN ONE OF THE PUMPS ON UPON THE WATER LEVEL IN THE TANK RISING TO APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL. THE PUMP SHALL OPERATE UNTIL THE TANK IS DRAINED TO THE MINIMUM WATER LEVEL.
 - 3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
 - 4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.
 - 5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.



CONFINED SPACE DANGER SIGN

A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK'S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) - 250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:
 "DANGER" & BACKGROUND = WHITE
 ELLIPTICAL AREA = RED
 RECTANGLE CONTAINING ELLIPSE = BLACK
 BORDER AND OTHER LETTERING = BLACK

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Verification By: Dr. Anthony Hasham (NFER)

Architect
Morson Group
 P.O Box 170,
 Potts Point, NSW 1335
 EMAIL : info@ad-s.com.au
 PHONE : 02 9380 4946

Client
Prestige Developments Group (NSW) Pty Ltd

Council
Penrith City Council

Scale
 0 2 4 6 m
 SCALE 1:100 @ A1

AUSTRALIAN CONSULTING ENGINEERS.
 PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9763 1500 FX: (02) 9763 1515
 EMAIL: info@acoeng.com.au

Project
**16 - 24 HOPE STREET, PENRITH
 PROPOSED MULTI-UNIT DEVELOPMENT
 STORMWATER CONCEPT PLANS
 DEVELOPMENT APPLICATION**

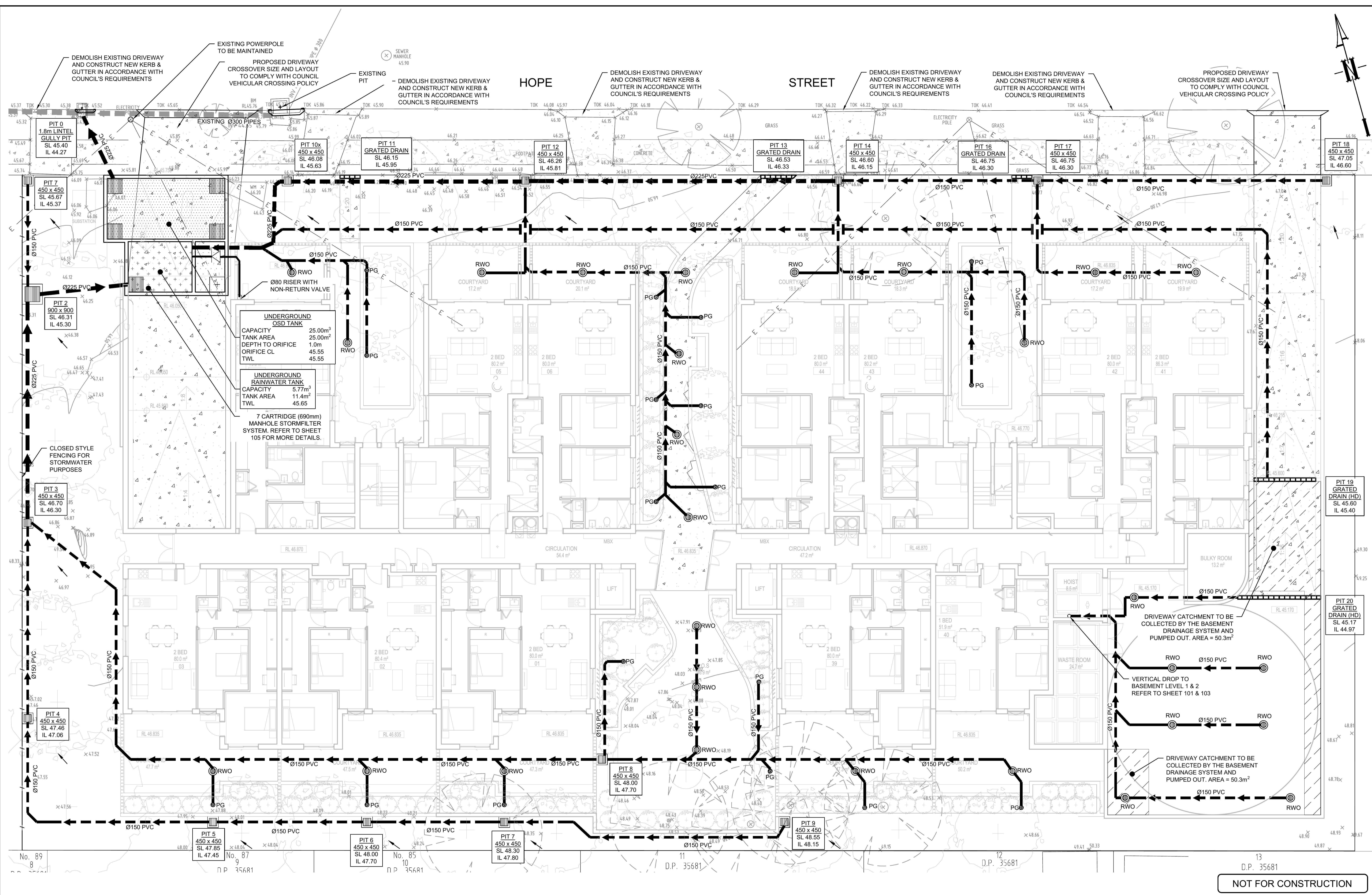
Drawing Title
**STORMWATER CONCEPT PLAN
 BASEMENT LEVEL 1**

Scale
 1:100

Project No.
 180919

Dwg. No.
 103

Issue
 B



NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Certification By Dr. Anthony Hasham (NFER)

Morson Group
 P.O. Box 170,
 Potts Point, NSW 1335
 EMAIL: info@ad-s.com.au
 PHONE: 02 9380 4946

Client: **Prestige Developments Group (NSW) Pty Ltd**
 Council: **Penrith City Council**

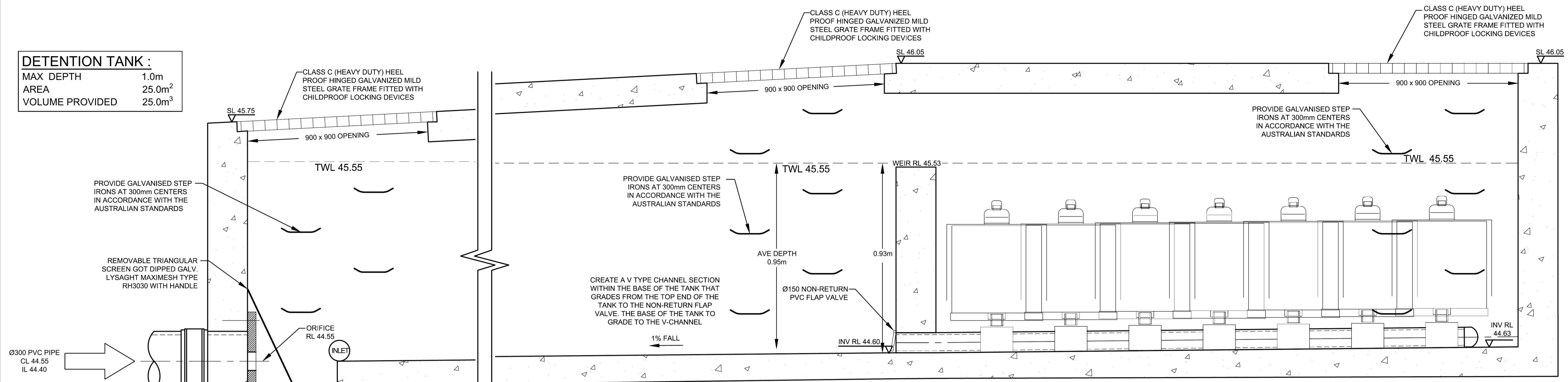
Scale: 1:100 @ A1

AUSTRALIAN CONSULTING ENGINEERS.
 PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9743 1500 FX: (02) 9763 1515
 EMAIL: info@aceng.com.au

Project: **16 - 24 HOPE STREET, PENRITH PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION**

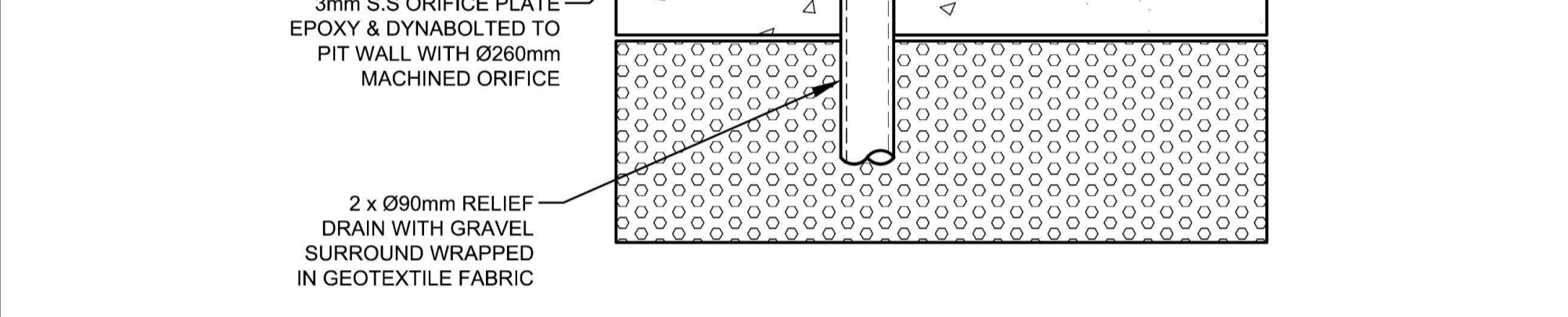
Drawing Title: **STORMWATER CONCEPT PLAN**
 Scale: 1:100 Project No: 180919 Dwg. No: 104 Issue: B

DETENTION TANK :
 MAX DEPTH 1.0m
 AREA 25.0m²
 VOLUME PROVIDED 25.0m³

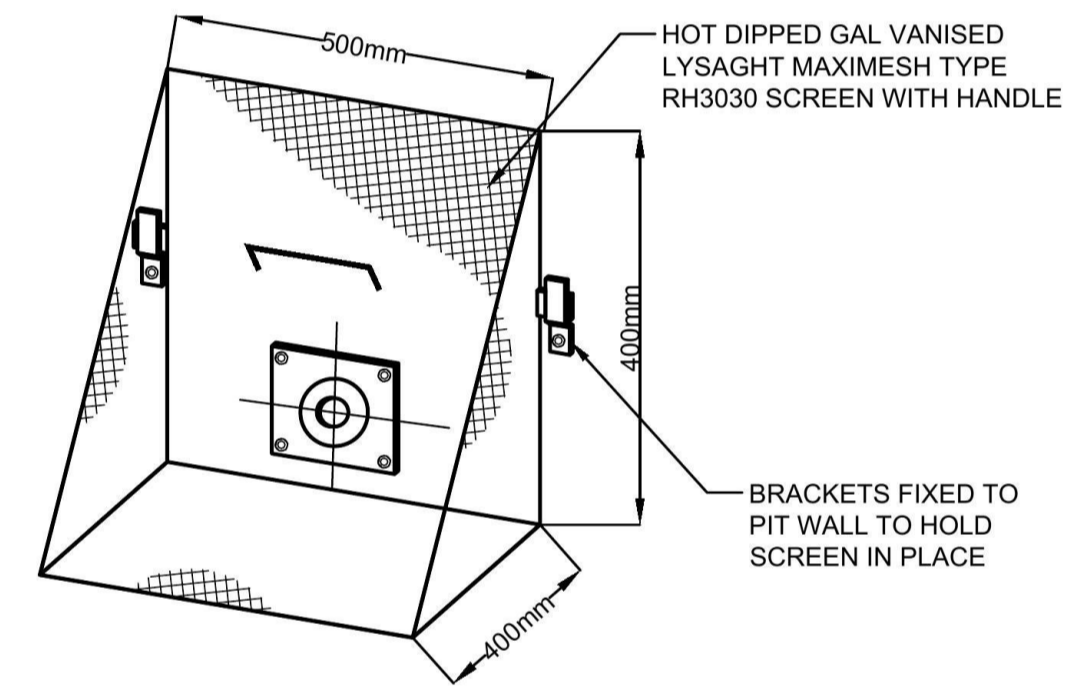


UNDERGROUND OSD TANK DETAIL
 SCALE 1:10

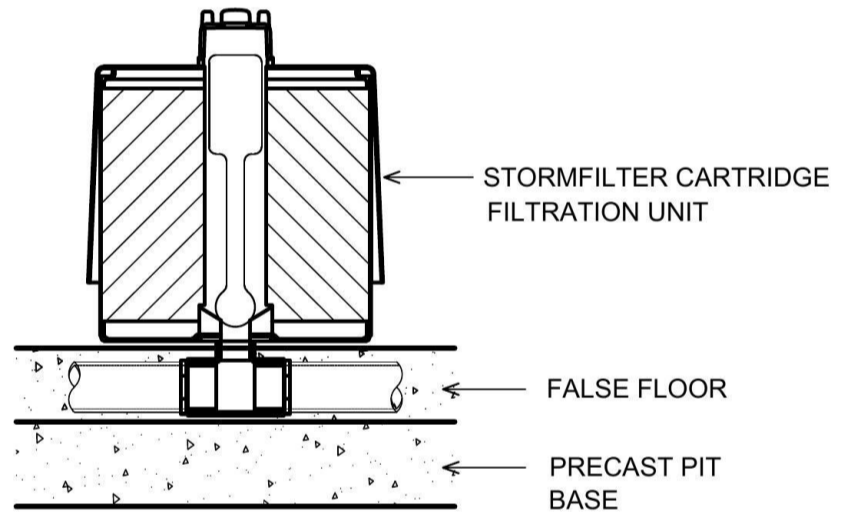
FOR OSD TANK STRUCTURAL DETAIL REFER TO STRUCTURAL ENGINEER'S DETAILS



ORIFICE PLATE DETAIL
 N.T.S.



TRASH SCREEN DETAIL
 N.T.S.



STORMFILTER DESIGN TABLE

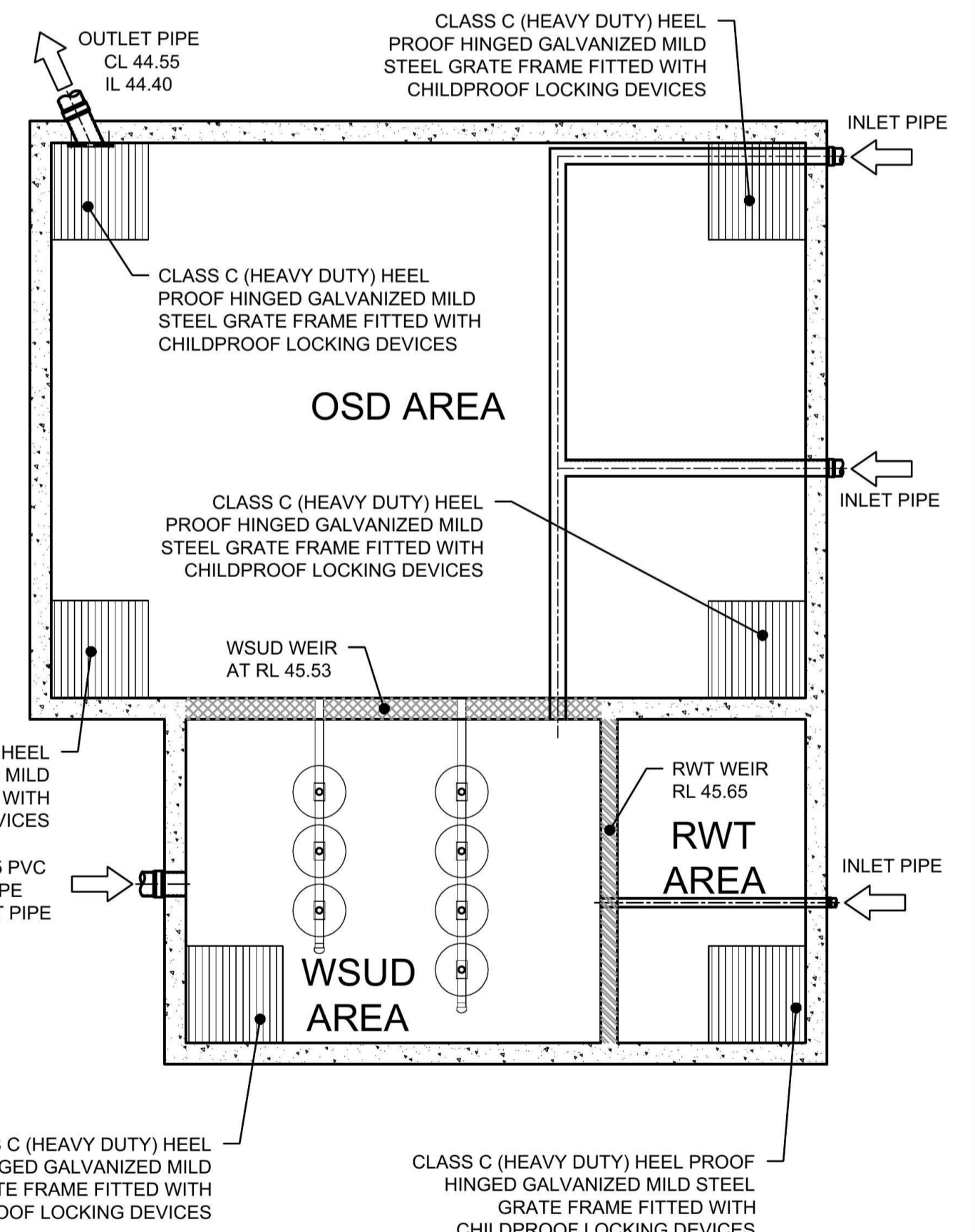
YEAR (event)	PRE DEVELOP FLOWS (l/s)	OSD DISCHARGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	86	83	0	83	44.94
10	104	93	0	93	45.03
20	123	102	0	103	45.15
50	132	110	0	110	45.24
100	149	120	0	120	45.39

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. CONVEYANCE CAPACITY IS RATED AT 80L/S.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 AUSTRALIA UNLESS OTHERWISE NOTED.

CARTRIDGE HEIGHT	690	460	310
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930	700	550
TREATMENT BY MEDIA SURFACE AREA L/S/m ²	1.4	0.7	1.4
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95

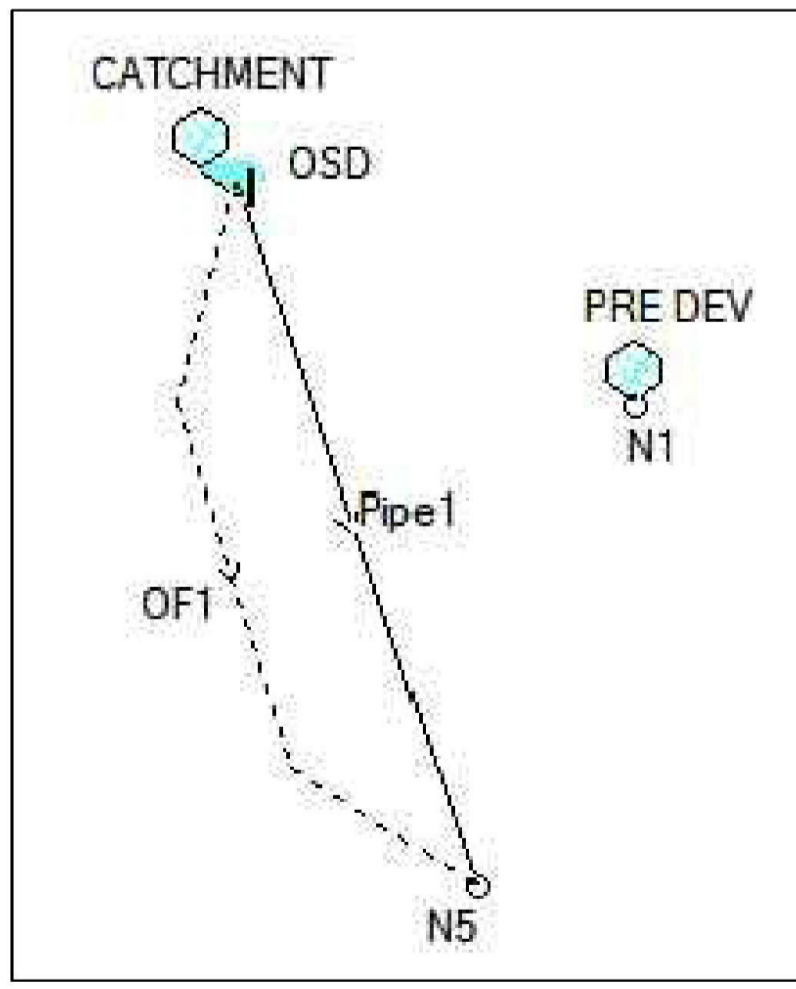
GENERAL NOTES

1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE. PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3600.
4. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTRROADS T44 LOAD RATING WITH 0.2m FILL MAXIMUM.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. STORMFILTER BY STORMWATER360: SYDNEY (AU) PHONE: (02) 9525 5833, BRISBANE (AU) PHONE: (07) 3272 1872.

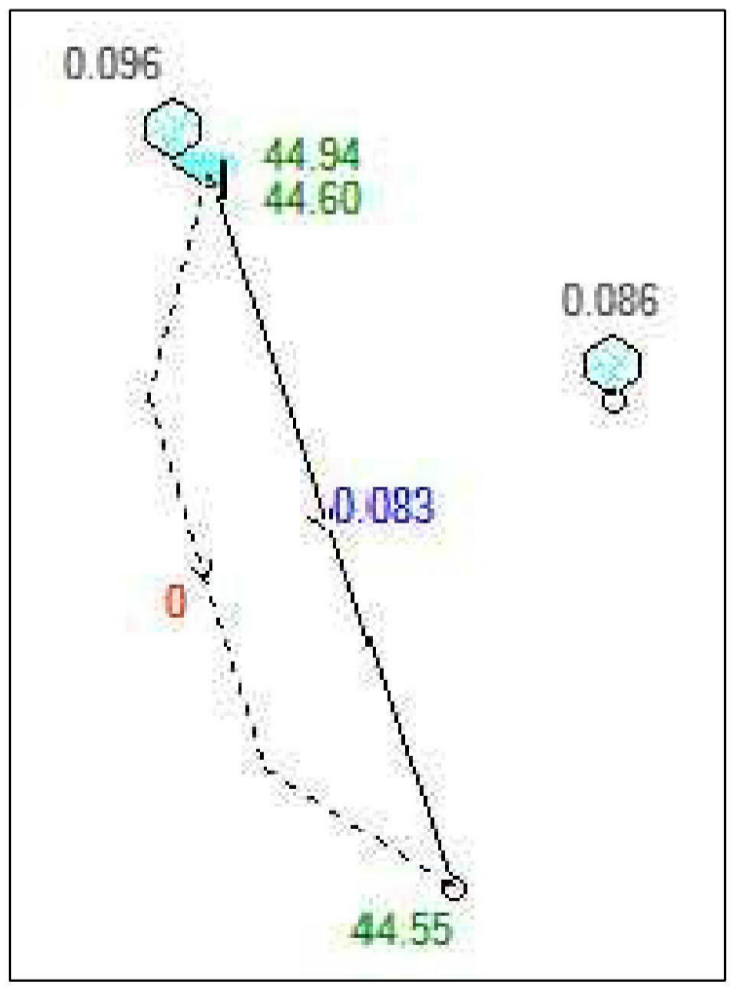


UNDERGROUND COMBINED OSD & WSUD TANK PLAN VIEW
 SCALE 1:50

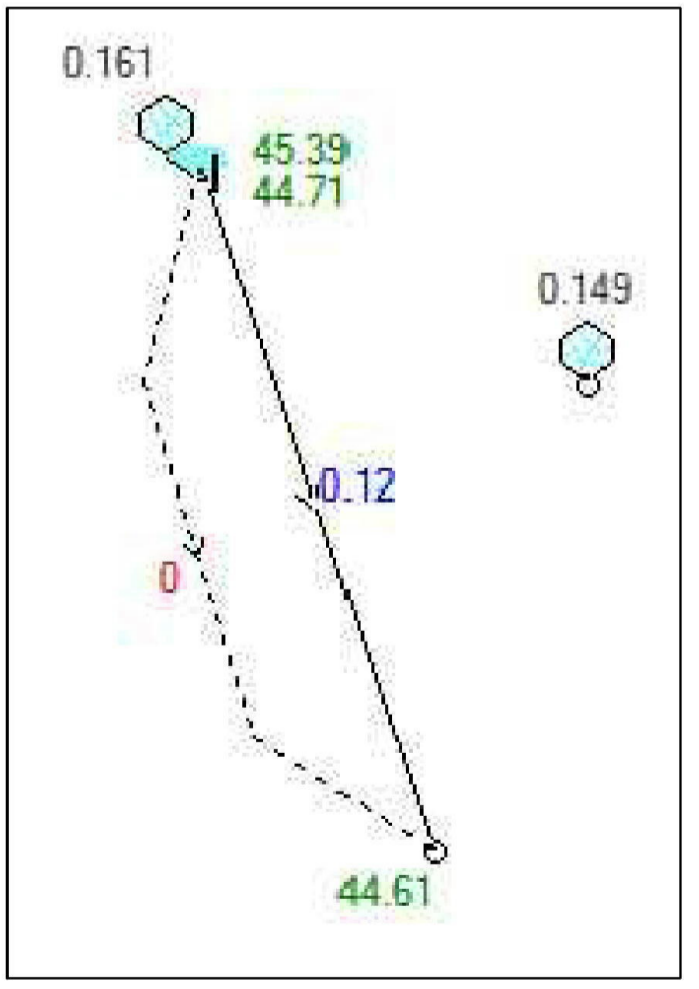
NOT FOR CONSTRUCTION



DRAINS WITHOUT RESULTS
 N.T.S.



DRAINS RESULTS 5yr
 N.T.S.

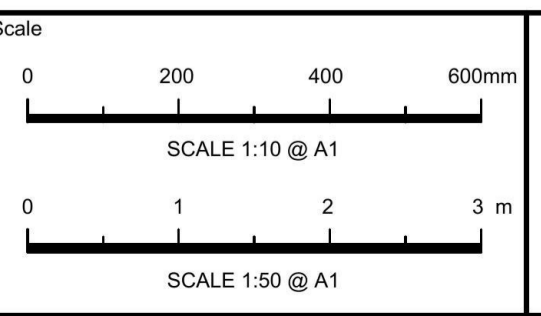


DRAINS RESULTS 100yr
 N.T.S.

Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Architect
Morson Group
 P.O Box 170,
 Potts Point, NSW 1335
 EMAIL: info@ad-s.com.au
 PHONE: 02 9380 4946

Client
Prestige Developments Group (NSW) Pty Ltd
 Council
Penrith City Council



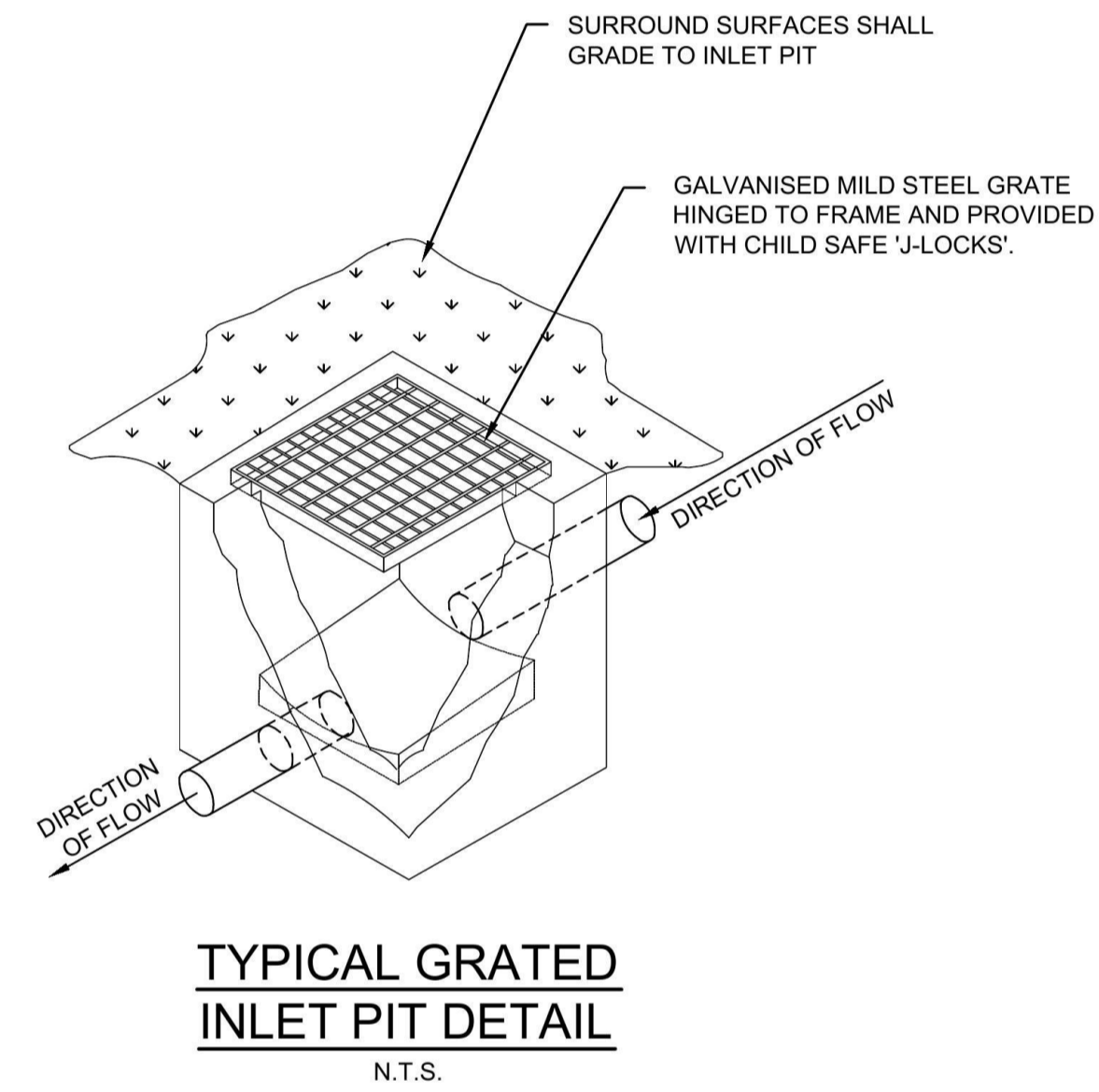
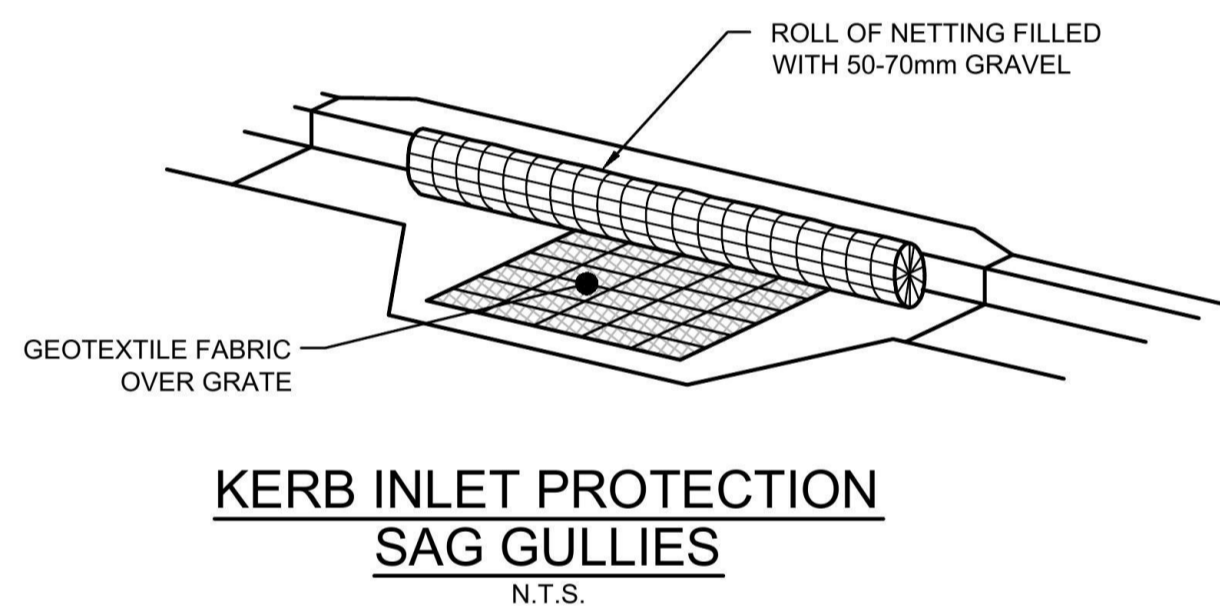
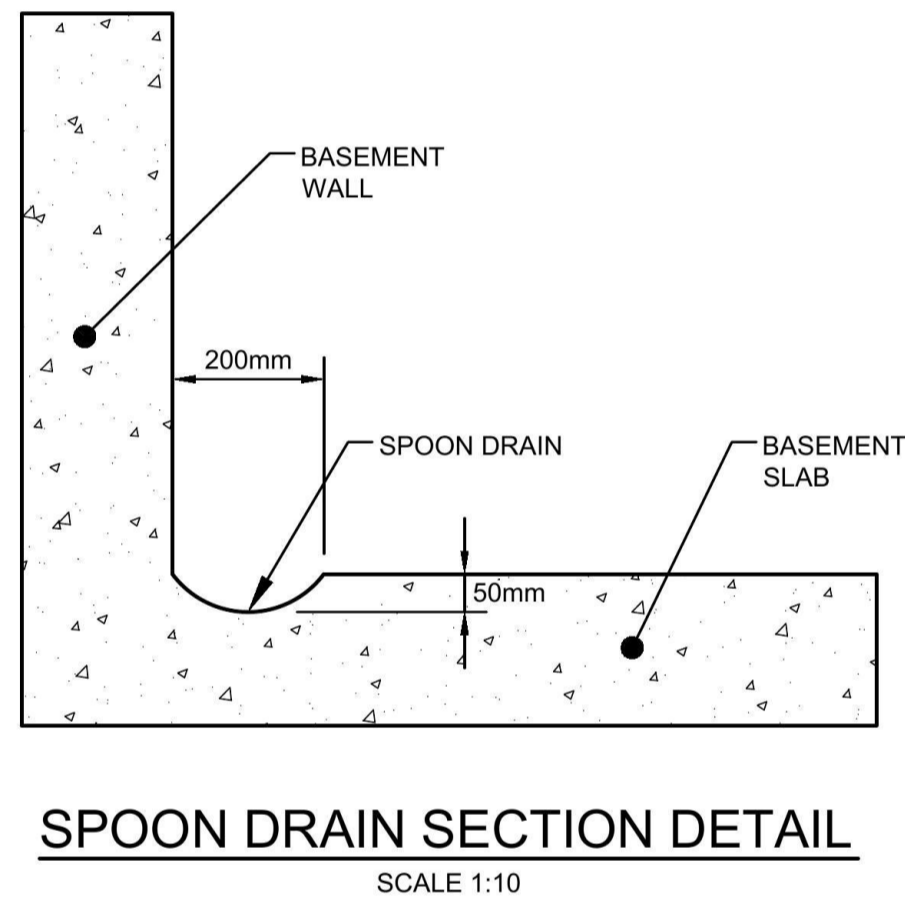
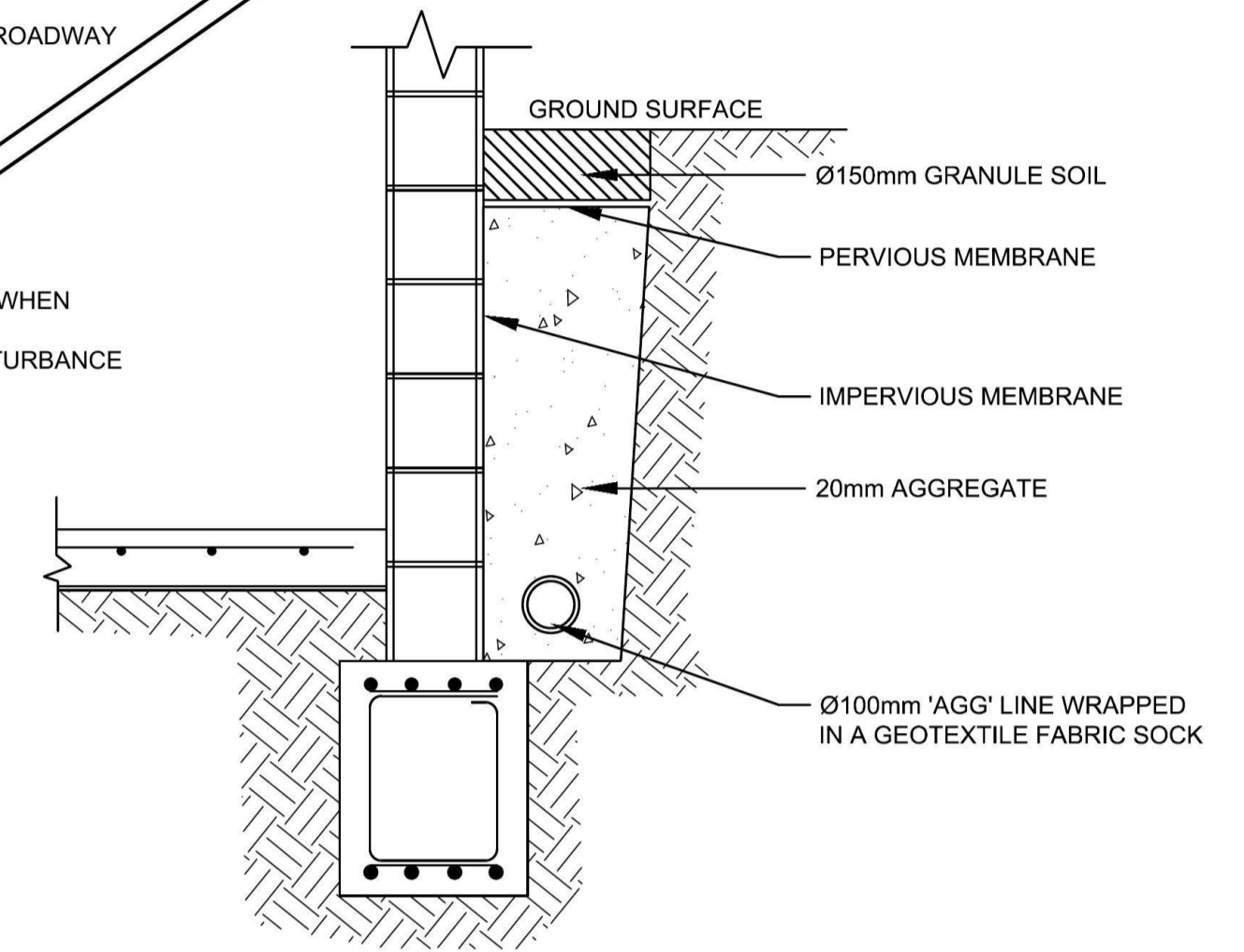
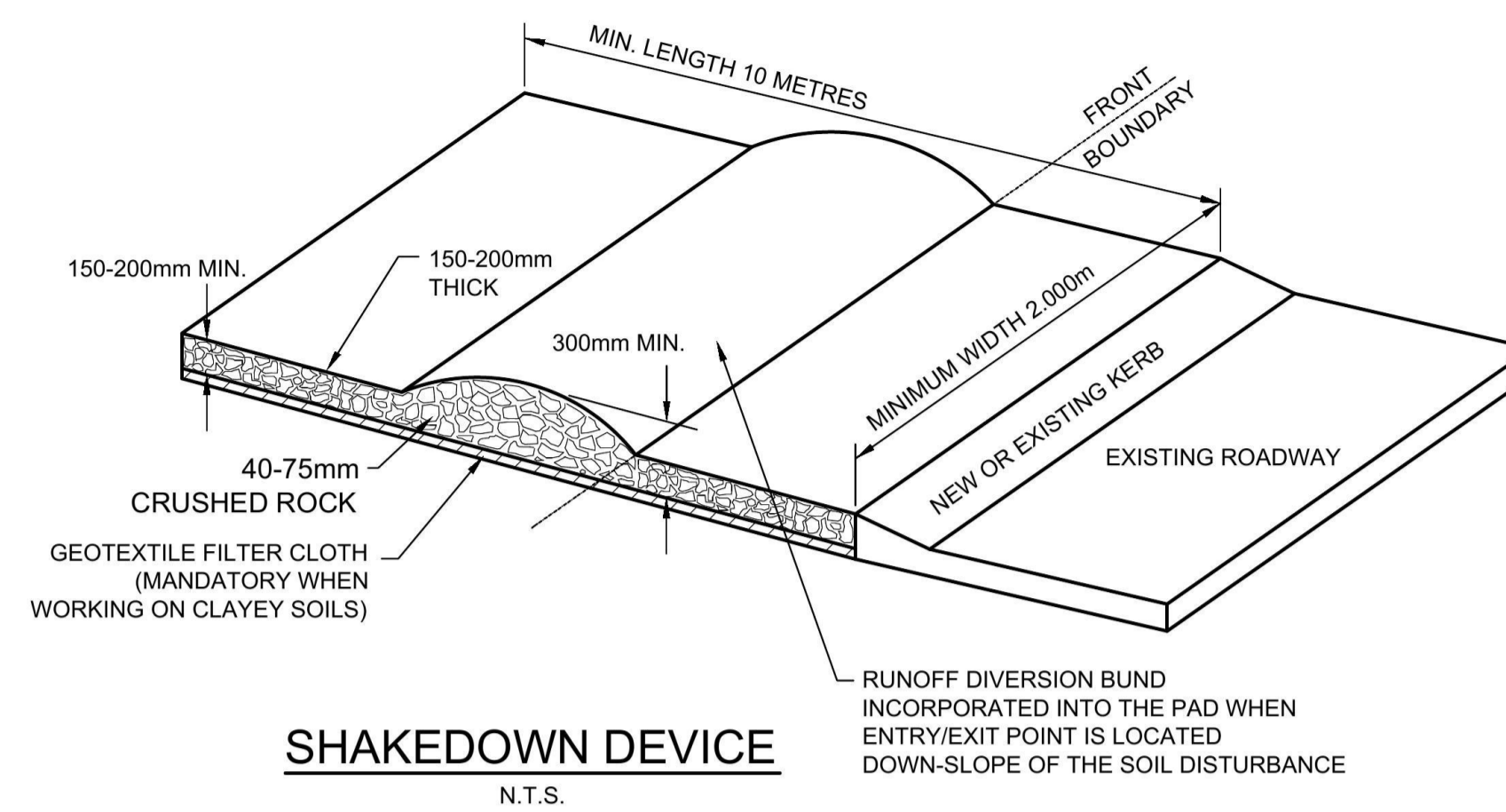
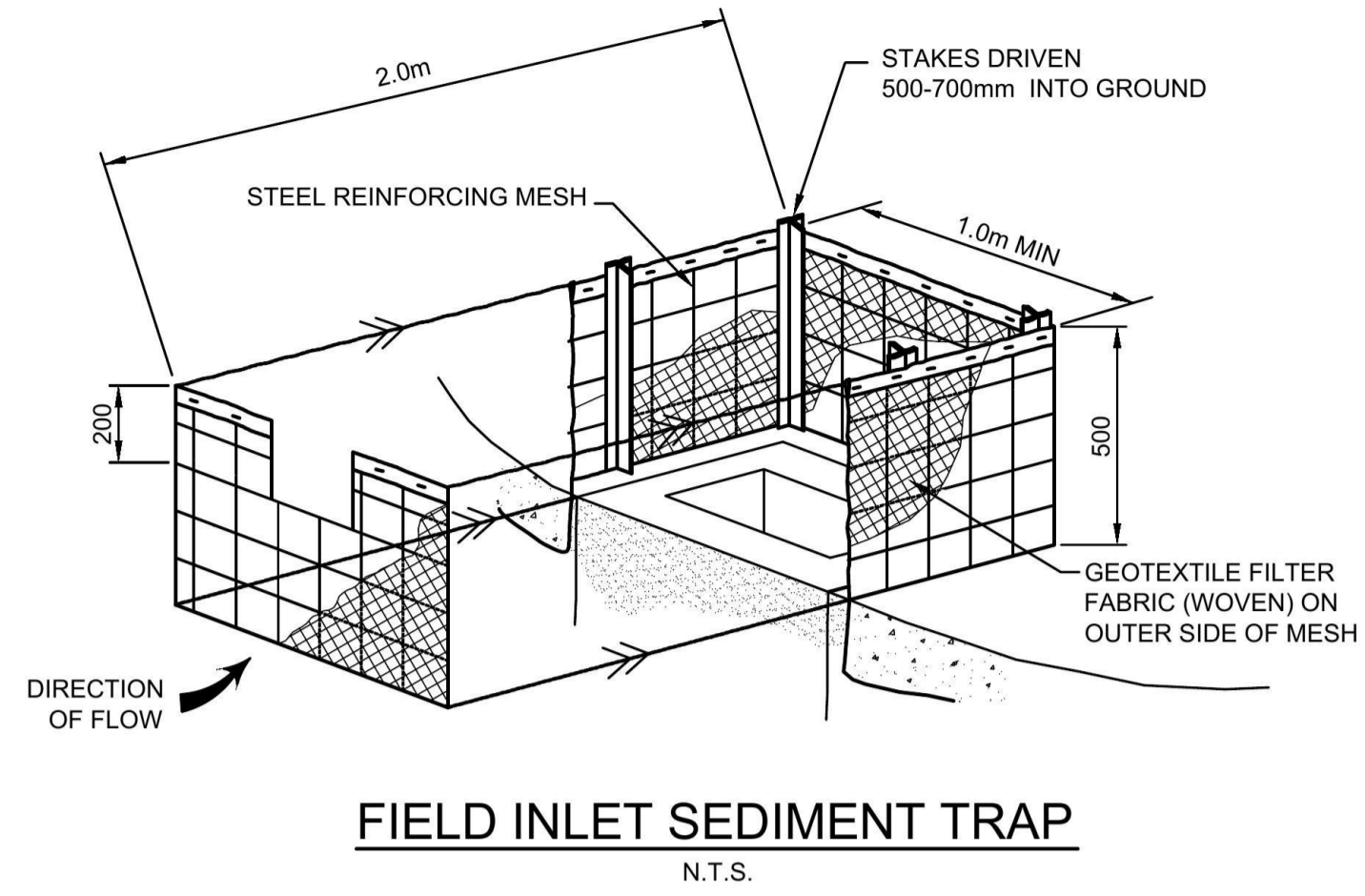
AUSTRALIAN CONSULTING ENGINEERS.
 PTY LTD - A.C.N. 084 059 941
 SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
 PH: (02) 9763 1500 FX: (02) 9763 1515
 EMAIL: info@aceng.com.au

Project
16 - 24 HOPE STREET, PENRITH PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION

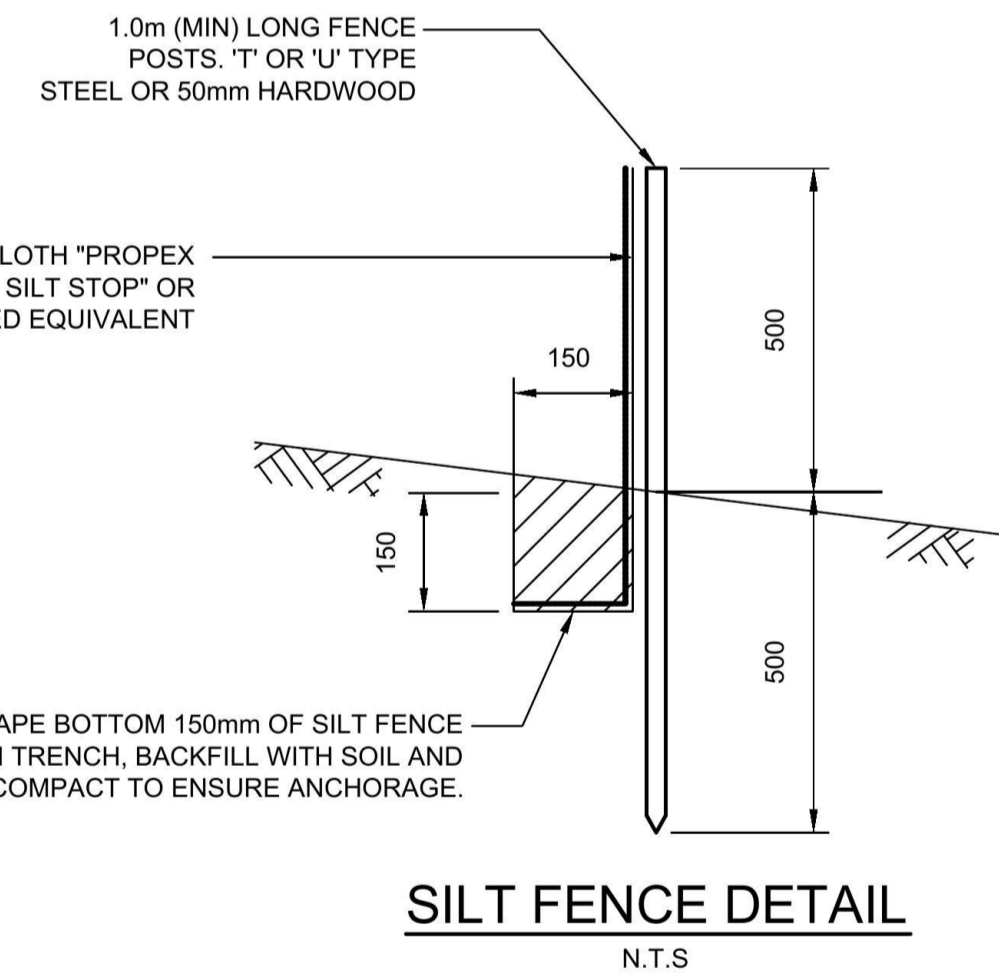
Scale	Project No.	Dwg. No.	Issue
As Shown	180919	105	B

SEDIMENT & EROSION NOTES

1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CLEARING OR EARTHWORKS AND MAINTAINED UNTIL THE WORKS ARE COMPLETED AND NO LONGER POSE AN EROSION HAZARD, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
2. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO IDENTIFY AND MARK TREES WHICH ARE TO BE PRESERVED. NOTWITHSTANDING THE ABOVE, THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO MINIMISE DISTURBANCE TO EXISTING VEGETATION AND GROUND COVER OUTSIDE THE MINIMUM AREAS REQUIRED TO COMPLETE THE WORKS AND SHALL BE RESPONSIBLE FOR RECTIFICATION, AT ITS OWN COST, OF ANY DISTURBANCE BEYOND THOSE AREAS.
3. PROVIDE GULLY GRATE INLET SEDIMENT TRAPS AT ALL GULLY PITS.
4. PROVIDE SILT FENCING ALONG PROPERTY LINE AS DIRECTED BY SUPERINTENDENT.
5. ADDITIONAL CONTROL DEVICES TO BE PLACED WHERE DIRECTED BY THE PRINCIPLE.
6. ALTERNATIVE DESIGNS TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION.
7. WASH DOWN/RUMBLE AREA TO BE CONSTRUCTED WITH PROVISIONS RESTRICTING ALL SILT AND TRAFFICKED DEBRIS FROM ENTERING THE STORMWATER SYSTEM.
8. NO WORK OR STOCKPILING OF MATERIALS TO BE PLACED OUTSIDE OF SITE WORK BOUNDARY.
9. APPROPRIATE EROSION AND SEDIMENT CONTROLS TO BE USED TO PROTECT STOCKPILES AND MAINTAINED THROUGH OUT CONSTRUCTION.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE DUE CARE OF NATURAL VEGETATION. NO CLEARING IS TO BE UNDERTAKEN WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT.
11. TO AVOID DISTURBANCE TO EXISTING TREES, EARTHWORKS WILL BE MODIFIED AS DIRECTED ON-SITE BY THE SUPERINTENDENT.
12. THE LOCATION OF EROSION AND SEDIMENTATION CONTROLS WILL BE DETERMINED ON SITE BY THE SUPERINTENDENT.
13. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.
14. ALL SETTING OUT IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO WORKS COMMENCING ON SITE. THE SUPERINTENDENT'S SURVEYOR SHALL PEG ALL ALLOTMENT BOUNDARIES, PROVIDE COORDINATE INFORMATION TO THESE PEGS AND PLACE BENCH MARKS. THE CONTRACTOR SHALL SET OUT THE WORKS FROM AND MAINTAIN THESE PEGS.
15. PLANS ARE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. EXACT MEASURES USED SHALL BE DETERMINED ON SITE IN CONJUNCTION WITH PROGRAM OF CONTRACTORS WORKS etc.



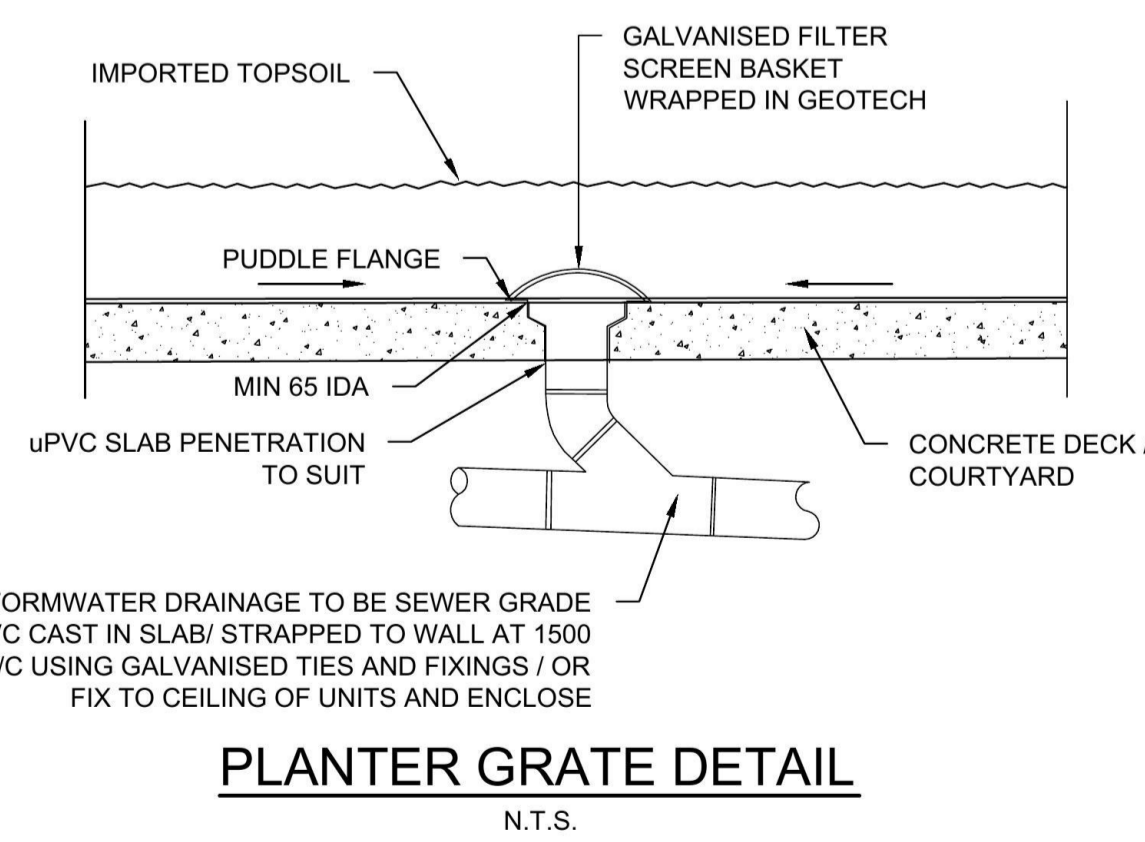
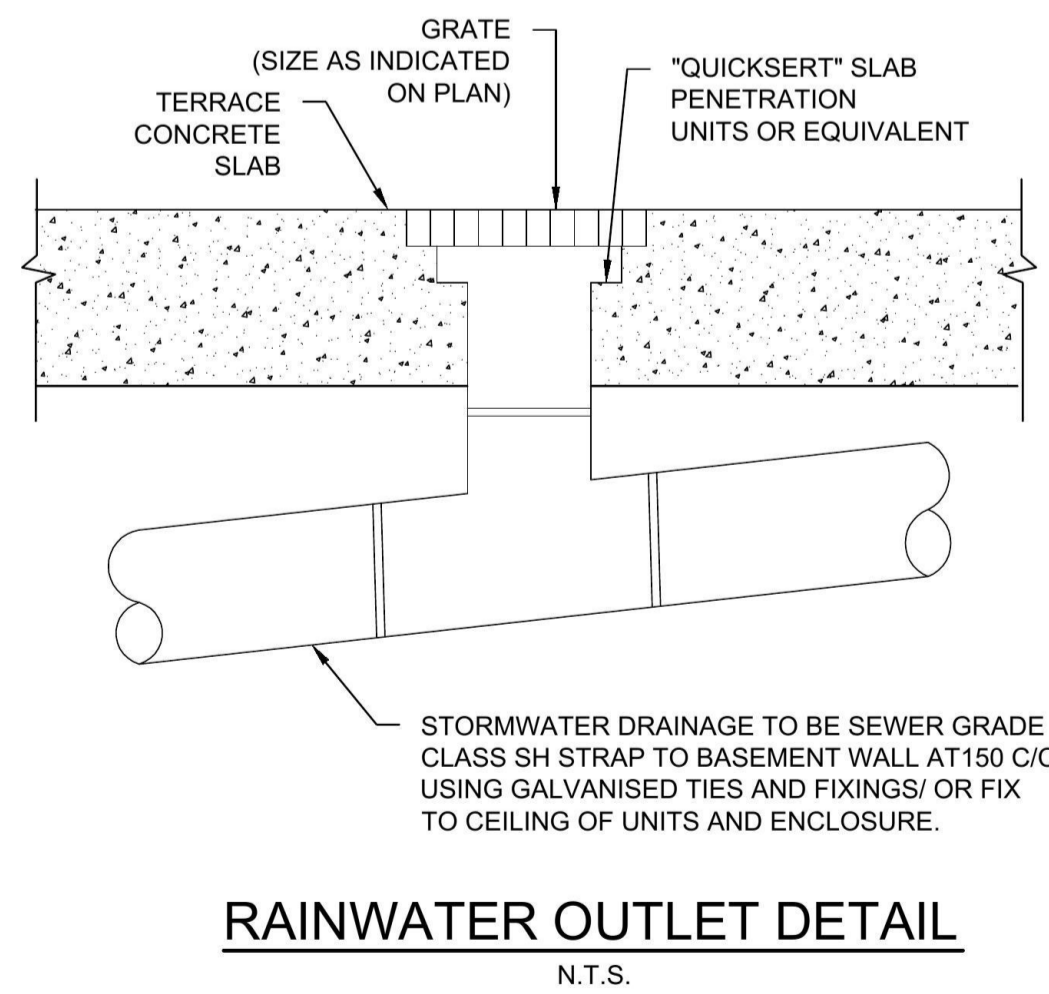
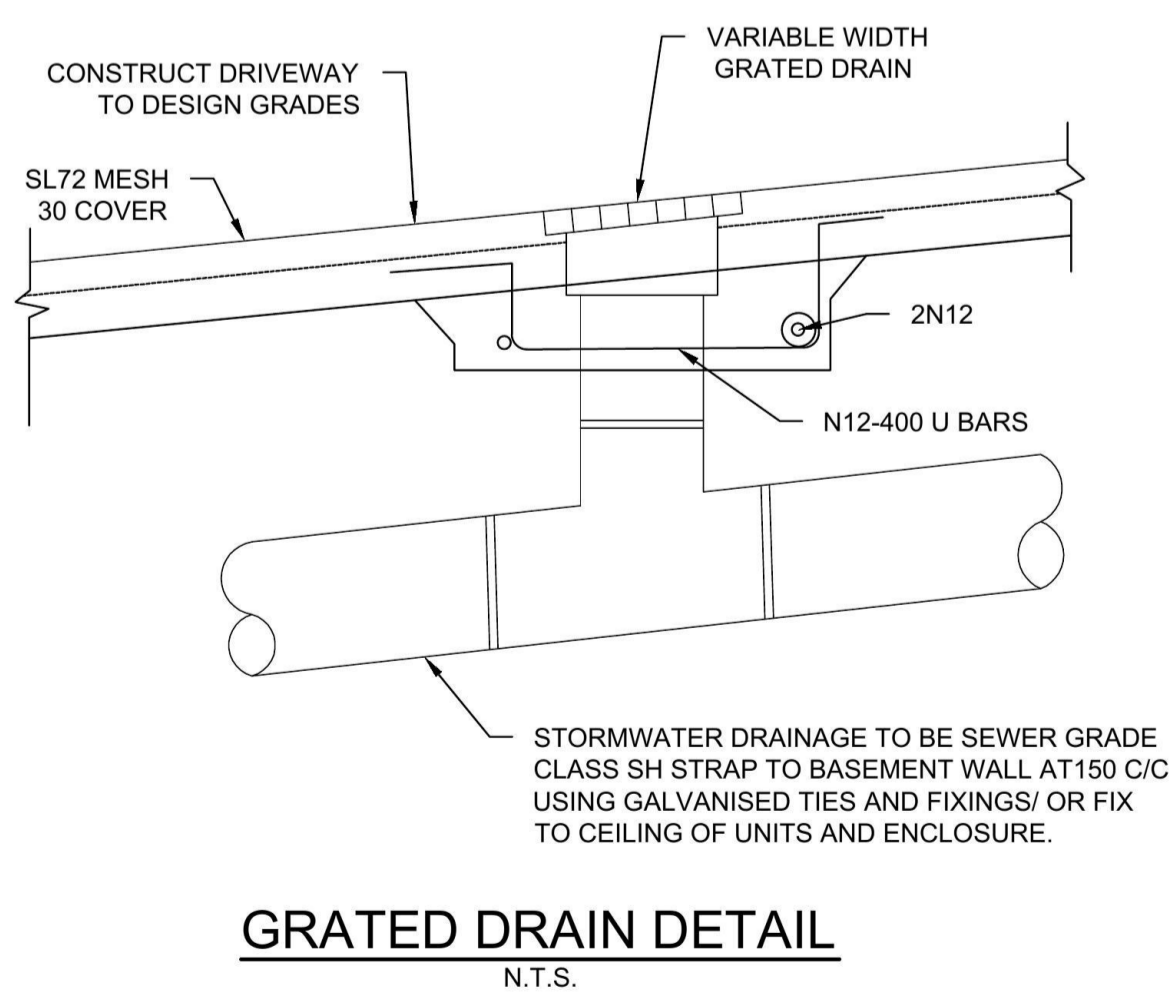
TYPICAL SUBSOIL DRAIN
N.T.S.



SILT FENCE NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN 'BULGES' DEVELOP IN SILT FENCE.
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.

NOT FOR CONSTRUCTION

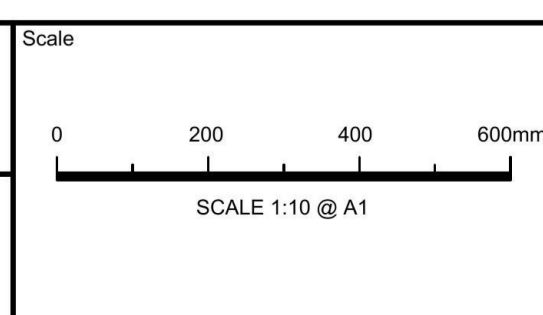


Issue	Description	Date	Design	Checked
B	ISSUE FOR DEVELOPMENT APPLICATION	30/07/2018	JH	OC
A	ISSUE FOR DEVELOPMENT APPLICATION	27/07/2018	XNT	OC

Verification By: Dr. Anthony Hasham (NFER)
Anthony Hasham

Morson Group
P.O Box 170,
Potts Point, NSW 1335
EMAIL : info@ad-s.com.au
PHONE : 02 9380 4946

Client
Prestige Developments Group (NSW) Pty Ltd
Council
Penrith City Council



AUSTRALIAN CONSULTING ENGINEERS.
PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2157
PH: (02) 9743 1500 FX: (02) 9743 1515
EMAIL: info@acoeng.com.au

Project
16 - 24 HOPE STREET, PENRITH PROPOSED MULTI-UNIT DEVELOPMENT STORMWATER CONCEPT PLANS DEVELOPMENT APPLICATION

Scale	Project No.	Dwg. No.	Issue
N.T.S.	180919	106	B