

PROPOSED RESIDENTIAL DEVELOPMENT 96-98 LETHBRIDGE STREET & 42-46 EVAN STREET, PENRITH STORMWATER CONCEPT DESIGN



LOCALITY PLAN
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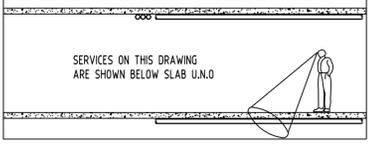
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DRAWINGS LIST			
SHEET No.	DWG No.	TITLE	REV
1	SW100	COVER SHEET	A
2	SW200	STORMWATER CONCEPT DESIGN - BASEMENT 2 PLAN	A
3	SW201	STORMWATER CONCEPT DESIGN - BASEMENT 1 PLAN	A
4	SW202	STORMWATER CONCEPT DESIGN - GROUND FLOOR PLAN	A
5	SW203	STORMWATER CONCEPT DESIGN - ROOF PLAN	A
6	SW300	STORMWATER CONCEPT DESIGN - DETAILS SHEET - SHEET 1 OF 2	A
7	SW301	STORMWATER CONCEPT DESIGN - DETAILS SHEET - SHEET 2 OF 2	A
8	SW400	EROSION AND SEDIMENT CONTROL - PLAN AND DETAILS	A
9	SW500	STORMWATER CONCEPT DESIGN - MUSIC CATCHMENT PLAN AND RESULT	A



PREPARED BY:

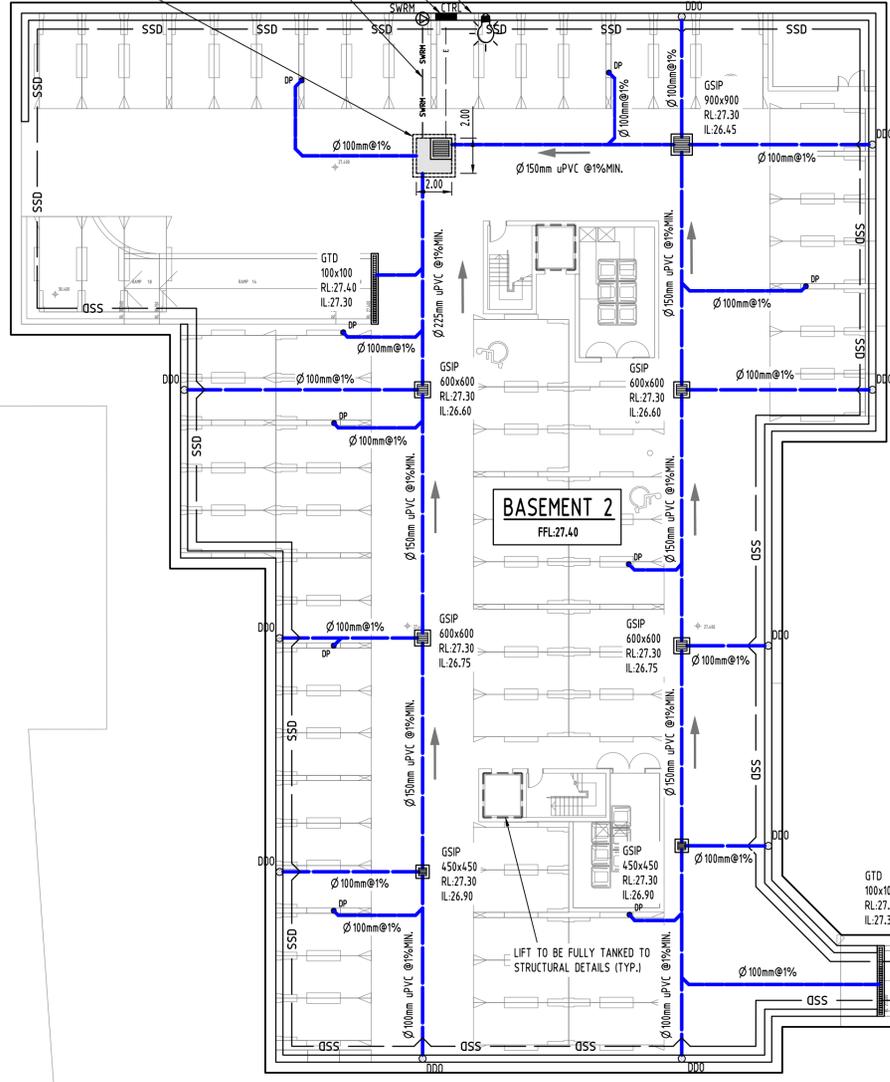
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Email: office@sgce.com.au
Web: www.sgce.com.au



PUMP OUT PIT 1:
 RL:27.30
 TWL:27.00
 IL:25.50
 HEIGHT:1.5m
 AREA:4.0m²
 VOLUME REQUIRED:1.77m³
 VOLUME PROVIDED:6.0m³

INSTALL WARNING FLASH LIGHT TO PROVIDE INDICATION OF PUMP FAILURE. (TYP.)
 PUMP OUT PIT CONTROL BOX TO MANUFACTURER'S SPECIFICATIONS. (TYP.)

STORMWATER RISING MAIN.



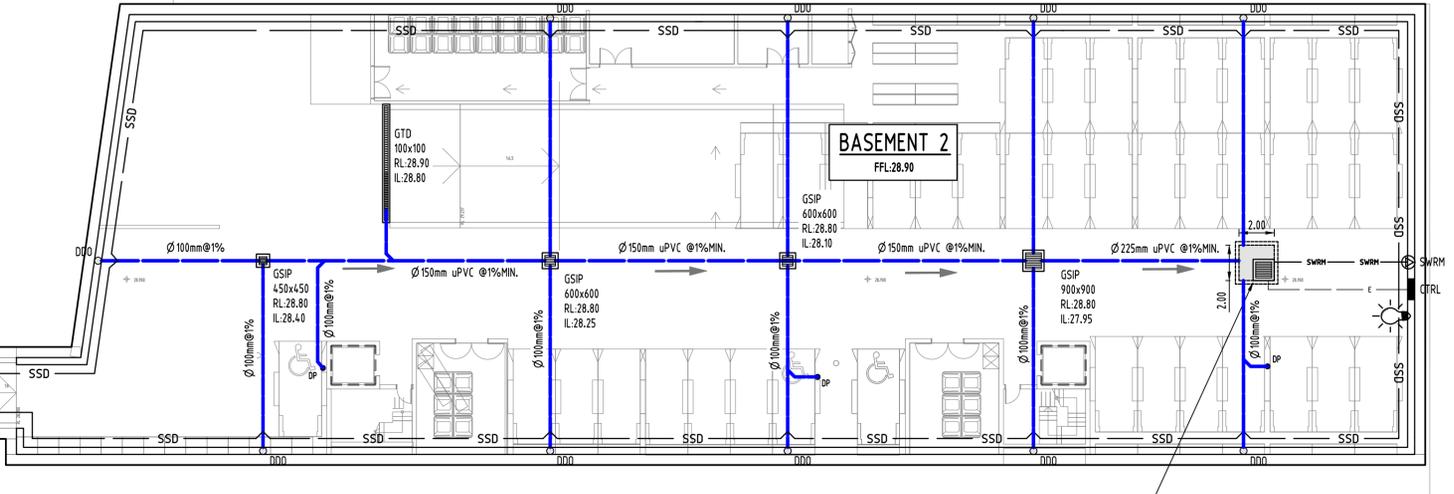
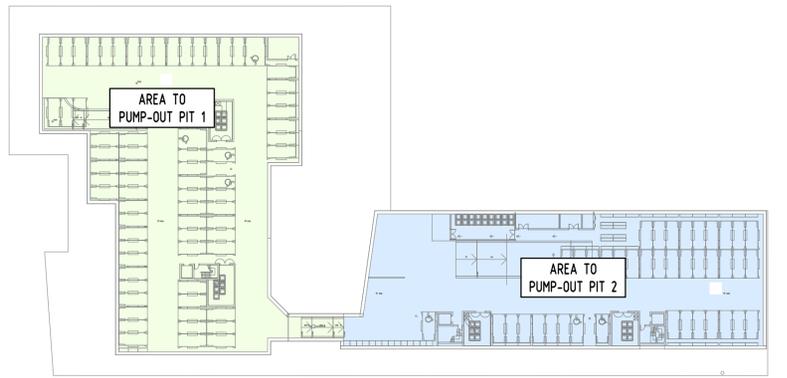
SUBSOIL DESIGN CALCS:
 100yr 2hr ARI STORM: 41.8mm/hr
 AR_h:2=83.6mm
 AREA OF DRIVEWAY
 RAMP UNCOVERED: 21.2m²
 V=Axd
 =21.2x(83.6/1000)
 =1.77m³
 THEREFORE PROVIDE 2x 6.0m³ PUMP-OUT TANKS.

PUMP-OUT PIT NOTE:
 INSTALL WITH THE FOLLOWING ITEMS:
 - 900SD HEAVY DUTY STEEL GRATED LID FOR ACCESS AND MAINTENANCE PURPOSES.
 - CONFINED SPACE SIGN ABOVE PUMP OUT PIT FOR PUBLIC AWARENESS AND WARNING.
 - STEP IRONS. REFER TO DETAILS.
 - PUMP-OUT PIT CONTROL BOX (CTRL) TO MANUFACTURER'S SPECIFICATIONS. LOCATIONS TO BE CONFIRMED WITH ARCHITECT.
 - PUMPS TO OPERATE IN ALTERNATE MODE TO INCREASE LIFESPAN
 - INSTALL VISIBLE FLASHING LIGHT SYSTEM IN CASE OF PUMP FAILURE
 - INSTALL 2x MAN 550/2/80 A1P/50 FROM ZENIT WATER SOLUTIONS OR SIMILAR 3 PHASE PUMPS WITH 10L/s OUTFLOW FOR 15m HEAD FOR EACH PUMP-OUT TANK.

PUMP NOTE
 ALL STORMWATER PUMPS TO BE CLASS 1 ZONE 2 FLAME SAFE TO ELECTRICAL CONSULTANT'S REQUIREMENTS.

GEO-TECHNICAL NOTE:
 BASEMENT DRAINAGE DESIGN SUBJECT TO GEOTECHNICAL INVESTIGATION AND STRUCTURAL DESIGN OF WALLS AND SLABS AT C.C.

GRADING NOTE:
 SLAB TO BE GRADED TO RWOS & GSPs AT 1% GARDE MINIMUM TO AS 2890 REQUIREMENTS.



PUMP OUT PIT 2:
 RL:28.80
 TWL:28.50
 IL:27.00
 HEIGHT:1.5m
 AREA:4.0m²
 VOLUME REQUIRED:1.77m³
 VOLUME PROVIDED:6.0m³

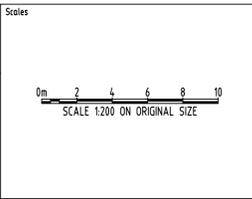
Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MCH			
ELEC			
AA			
HYD			
FRS			
LANDS			
CIVIL			
SURVEY			

Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MCH			
ELEC			
AA			
HYD			
FRS			
LANDS			
CIVIL			
SURVEY			

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Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MCH			
ELEC			
AA			
HYD			
FRS			
LANDS			
CIVIL			
SURVEY			

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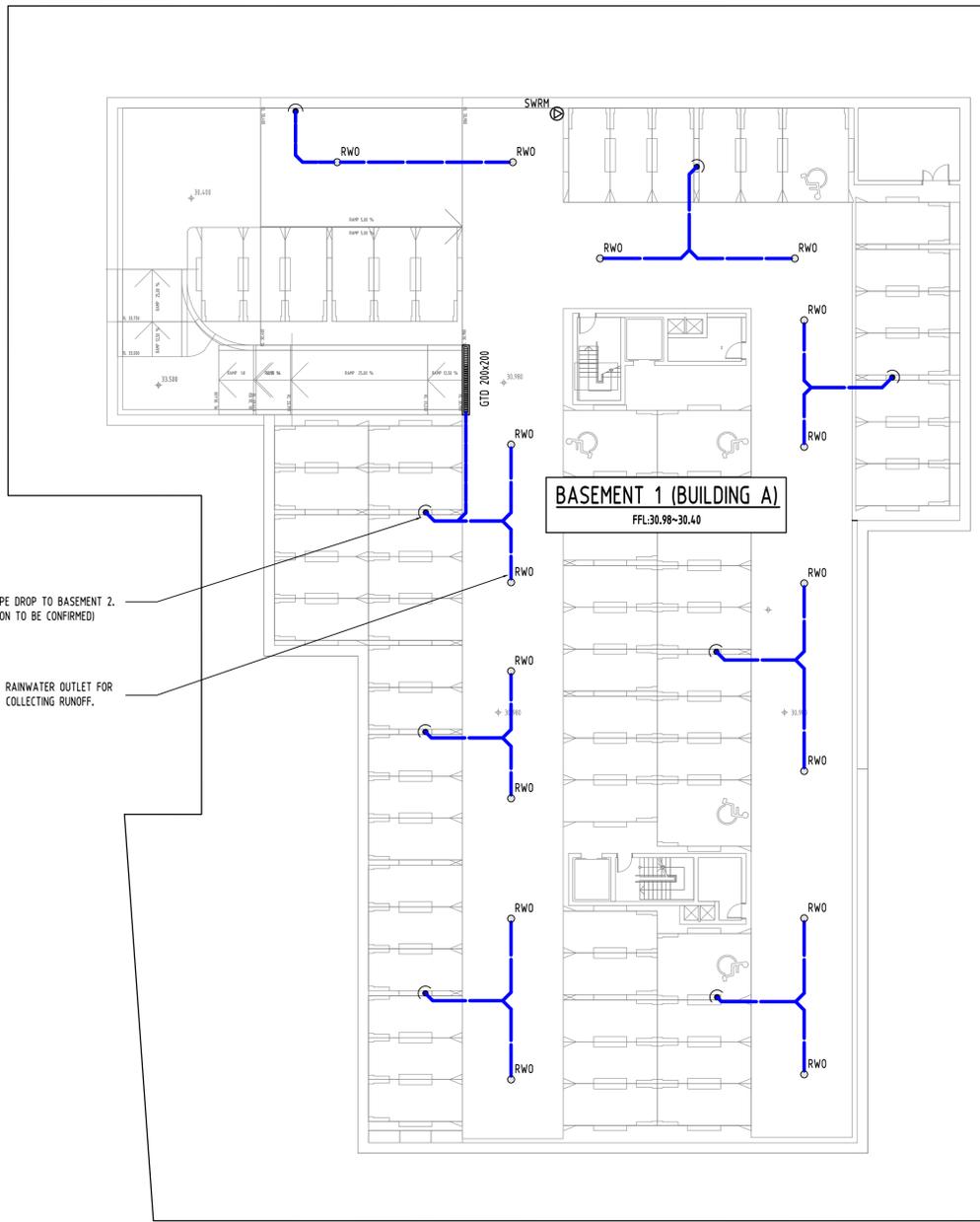


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PROJECT
 PROPOSED RESIDENTIAL DEVELOPMENT
 96-98 LETHBRIDGE STREET &
 42-46 EVAN STREET, PENRITH

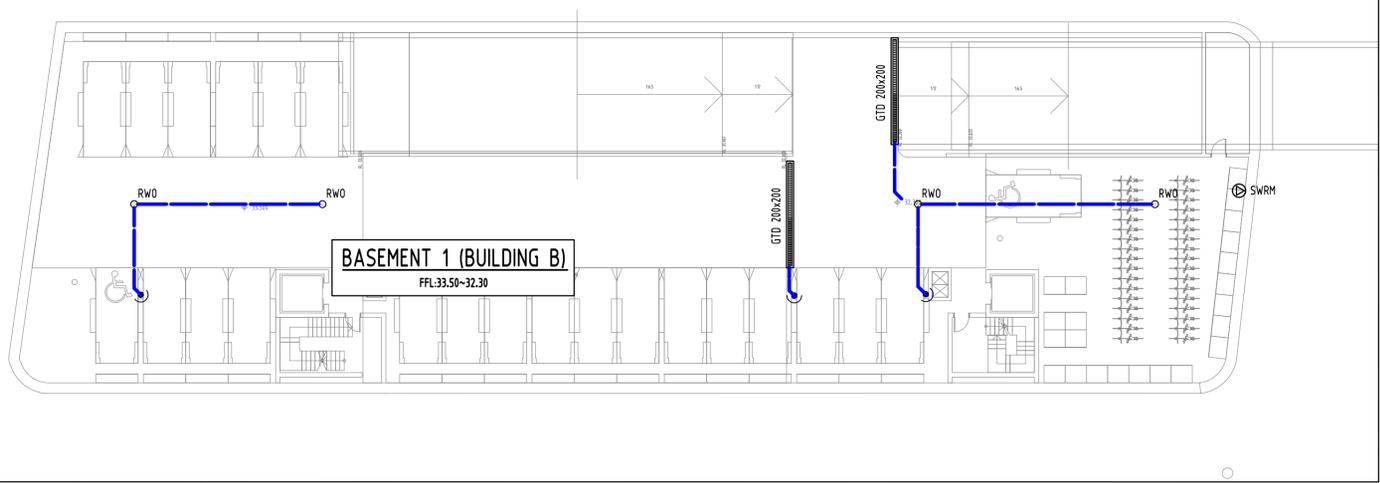
Project No	Drawing No	Revision No
20200222	SW200	A

SERVICES ON THIS DRAWING
ARE SHOWN BELOW SLAB U.N.O



GRADING NOTE:
SLAB TO BE GRADED TO RWOs & GSIPs AT 1%
GRADE MINIMUM TO AS 2890 REQUIREMENTS.

NOTE:
ALL STORMWATER PIPES ARE Ø100mm uPVC
@1% MIN. U.N.O.



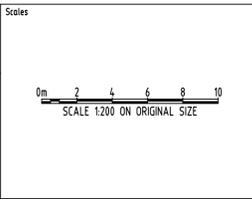
C:\Users\sgc\Documents\2020\20200222_4246_Evan Street_Pennith\Civil\SW0101.dwg

Reference Coordination Drawing			
Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MN	03.12.20	2	
MN	20.11.20	1	
AA	09.03.20	1	
HYD			
FIRE			
LANDS			
CIVIL			
SURVEY			

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QUALITY CONTROL			
DRAWN	DATE	CHECKED	DATE
MN	03.12.20	SH	03.12.20
MN	03.12.20	SH	03.12.20
SH	03.12.20	SH	03.12.20
SH	03.12.20	SH	03.12.20

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PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Drawing Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Drawing Title STORMWATER CONCEPT DESIGN BASEMENT 1 PLAN		
Project No 20200222	Drawing No SW200	Revision No A
Grid	Datum	Sheet
-	A.H.D.	3 OF 9
Scale (at original size) 1:200 @ A1		

SERVICES ON THIS DRAWING ARE SHOWN BELOW SLAB U.L.O.

POST-DEVELOPMENT OSD CALCULATIONS TABLE:

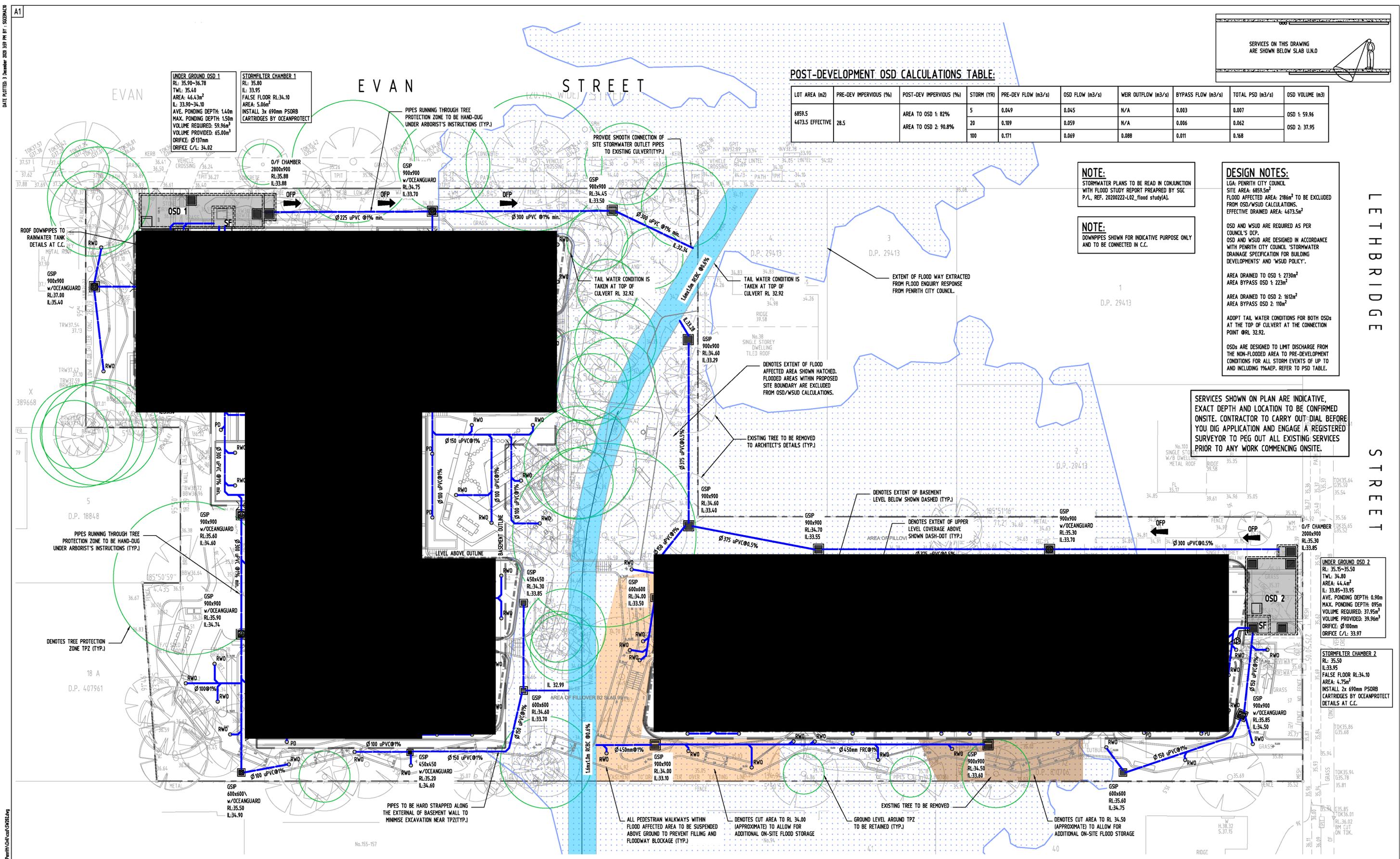
LOT AREA (m2)	PRE-DEV IMPERVIOUS (%)	POST-DEV IMPERVIOUS (%)	STORM (YR)	PRE-DEV FLOW (m3/s)	OSD FLOW (m3/s)	WEIR OUTFLOW (m3/s)	BYPASS FLOW (m3/s)	TOTAL PSD (m3/s)	OSD VOLUME (m3)
6859.5		AREA TO OSD 1: 82%	5	0.049	0.045	N/A	0.003	0.007	OSD 1: 59.96
4673.5 EFFECTIVE	28.5	AREA TO OSD 2: 90.8%	20	0.109	0.059	N/A	0.006	0.062	OSD 2: 37.95
			100	0.171	0.069	0.088	0.011	0.168	

NOTE:
STORMWATER PLANS TO BE READ IN CONJUNCTION WITH FLOOD STUDY REPORT PREPARED BY SGC P/L, REF. 20200222-L02_flood study(A).

NOTE:
DOWNPIPES SHOWN FOR INDICATIVE PURPOSE ONLY AND TO BE CONNECTED IN C.C.

DESIGN NOTES:
LGA: PENRITH CITY COUNCIL
SITE AREA: 6859.5m²
FLOOD AFFECTED AREA: 2186m² TO BE EXCLUDED FROM OSD/WSUD CALCULATIONS.
EFFECTIVE DRAINED AREA: 4673.5m²
OSD AND WSUD ARE REQUIRED AS PER COUNCIL'S DEP.
OSD AND WSUD ARE DESIGNED IN ACCORDANCE WITH PENRITH CITY COUNCIL 'STORMWATER DRAINAGE SPECIFICATION FOR BUILDING DEVELOPMENTS' AND 'WSUD POLICY'.
AREA DRAINED TO OSD 1: 2730m²
AREA BYPASS OSD 1: 223m²
AREA DRAINED TO OSD 2: 1612m²
AREA BYPASS OSD 2: 110m²
ADOPT TAIL WATER CONDITIONS FOR BOTH OSDs AT THE TOP OF CULVERT AT THE CONNECTION POINT @ RL 32.92.
OSDs ARE DESIGNED TO LIMIT DISCHARGE FROM THE NON-FLOODED AREA TO PRE-DEVELOPMENT CONDITIONS FOR ALL STORM EVENTS OF UP TO AND INCLUDING 1% AEP. REFER TO PSD TABLE.

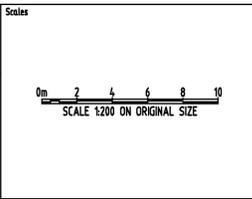
SERVICES SHOWN ON PLAN ARE INDICATIVE, EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT-DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.



Discipline	Drawing Title and Number	Date	Rev.
ARCH	ARCH		
MECH	MECH		
ELEC	ELEC		
HYD	HYD		
FPF	FPF		
LANDS	LANDS		
CIVIL	CIVIL		
SURVEY	SURVEY		

Discipline	Checked	SH	DATE
DRAWN	MN	DATE	03.12.20
CHECKED	SH	DATE	03.12.20
DESIGNED	MN	DATE	03.12.20
VERIFIED	SH	DATE	03.12.20
APPROVED	SH	DATE	03.12.20

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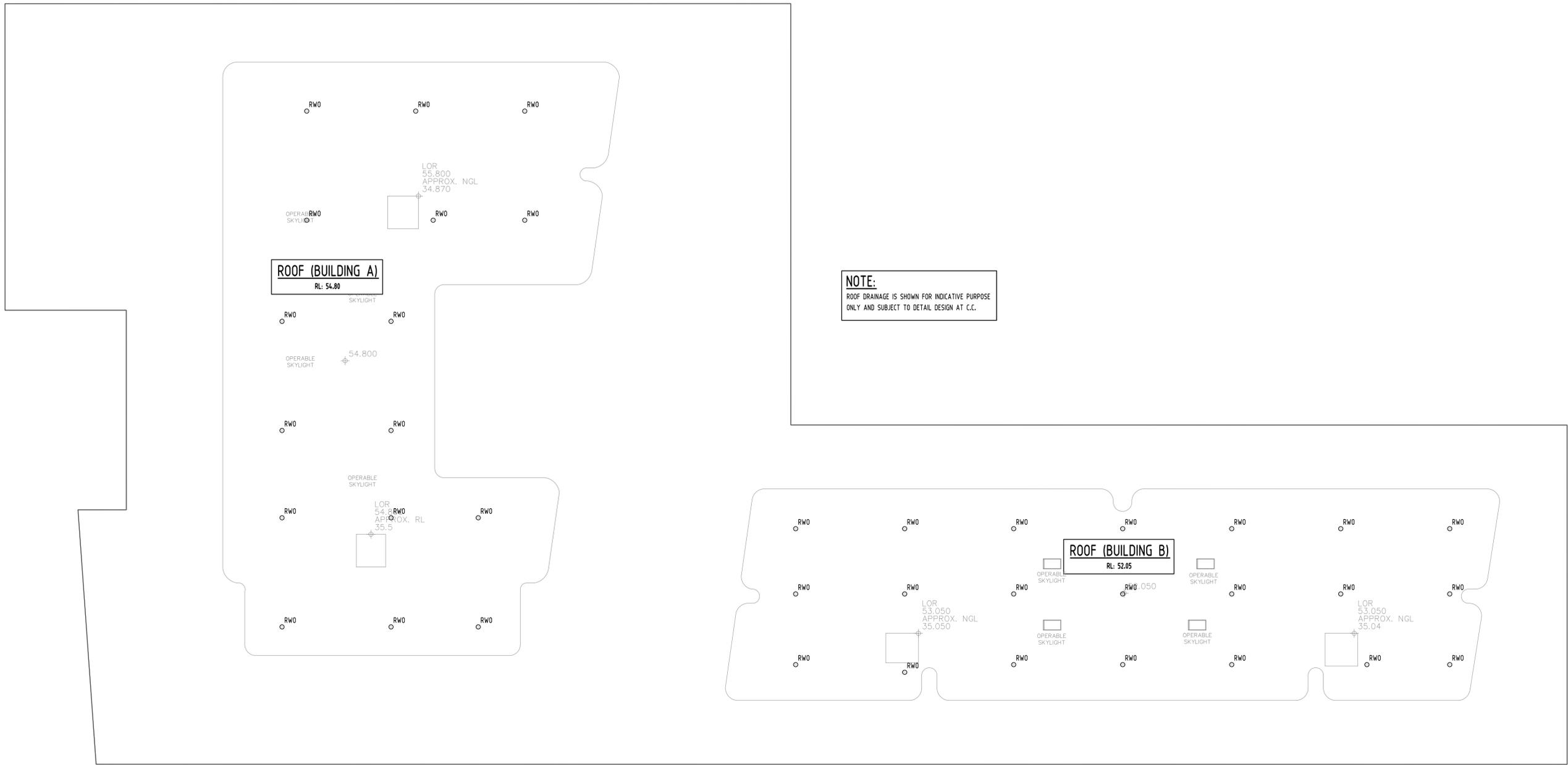
ARCHITECT
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PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Project No	Drawing No	Revision No
20200222	SW202	A

SERVICES ON THIS DRAWING
ARE SHOWN BELOW SLAB U.N.D

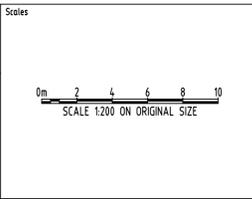



Reference Coordination Drawing		Discipline	Drawing Title and Number	Date	Rev.
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		ARCH			
		STRUCT			
A	PRELIMINARY ISSUE	MN	03.12.20	2	
P2	PRELIMINARY ISSUE	MN	20.11.20	1	
P1	PRELIMINARY ISSUE	AA	09.03.20	1	
Issue	Last revision title	by	Date	Status	

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QUALITY CONTROL		Checked	Date
DRAWN	MN	DATE	03.12.20
CHECKED	SH	DATE	03.12.20
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VERIFIED	SH	DATE	03.12.20
APPROVED	SH	DATE	03.12.20

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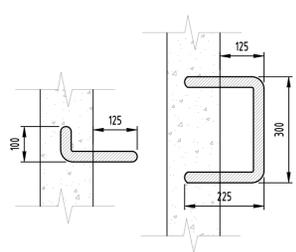
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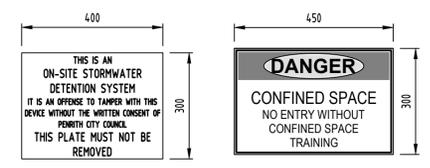
PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Drawing Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Drawing Title STORMWATER CONCEPT DESIGN ROOF PLAN		
Project No 20200222	Drawing No SW203	Revision No A

DATE PLOTTED: 3 December 2020 3:39 PM BY: SGC/EM/CO
 A1
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 20200222_42-46 Evan Street, Penrith (Civil) SW301.dwg
 Version: 1, Version Date: 08/12/2020

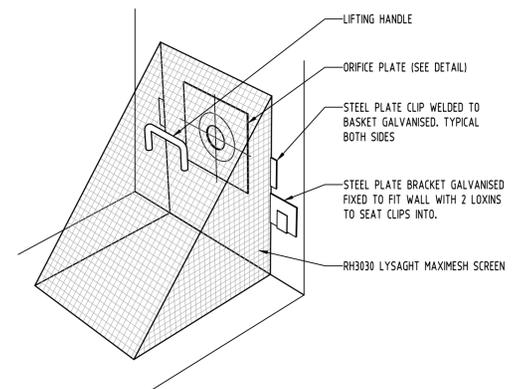


STEP IRONS
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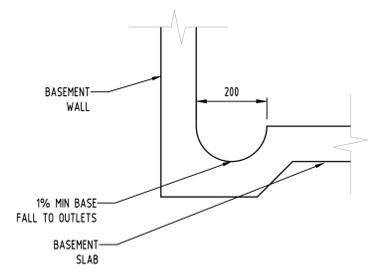


OSD SIGN
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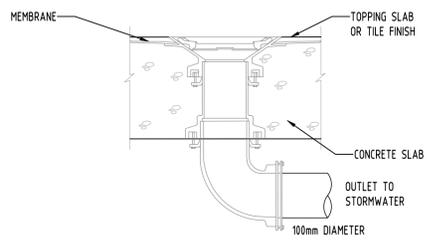
CONFINED SPACE SIGN
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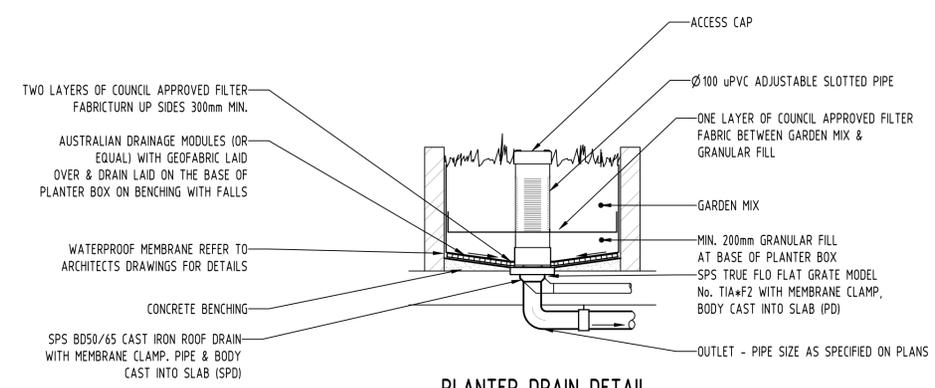
DEBRIS SCREEN
NTS



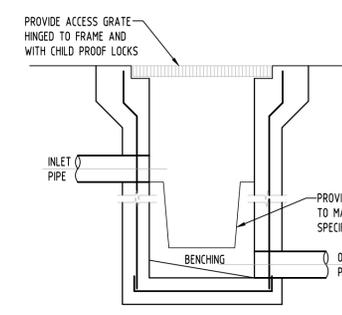
DISH DRAIN
SCALE 1:10



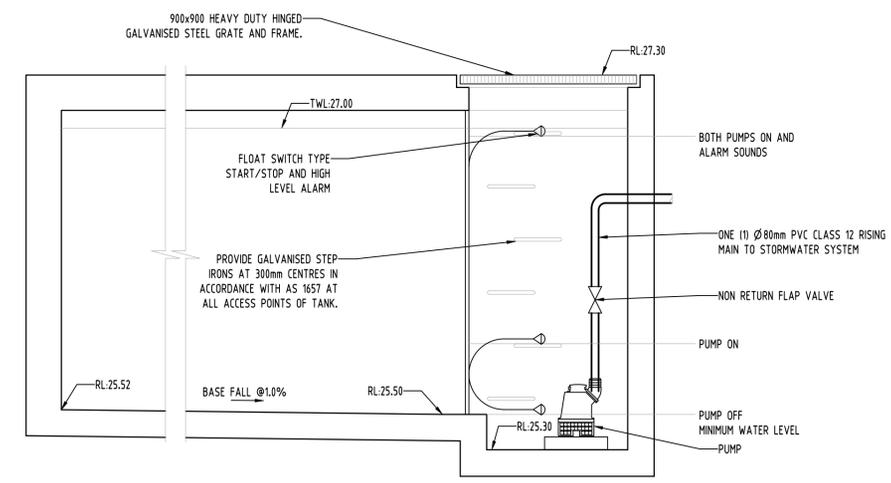
RAINWATER OUTLET
NTS



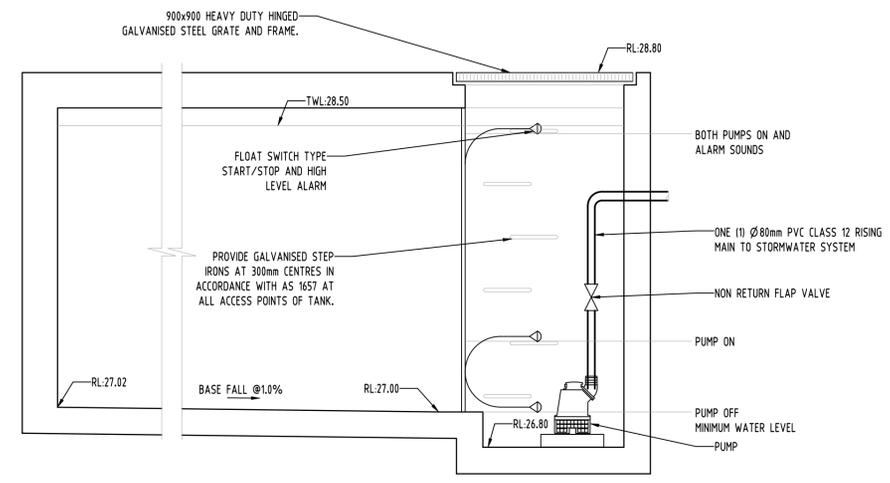
PLANTER DRAIN DETAIL
SCALE 1:20



DETAIL
STORMWATER PIT WITH OCEANGUARD BASKET
SCALE 1:20

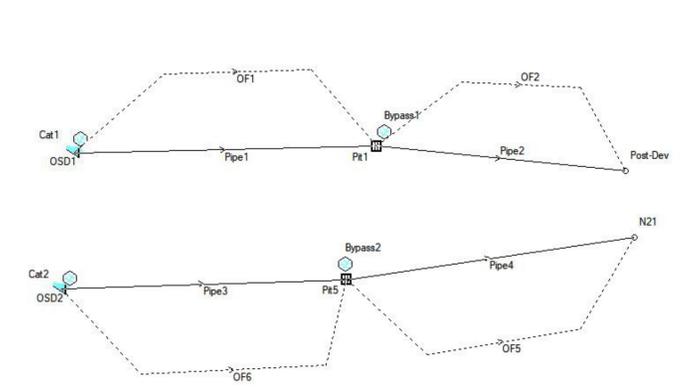


SUBSOIL PUMP OUT PIT 1
SCALE 1:20



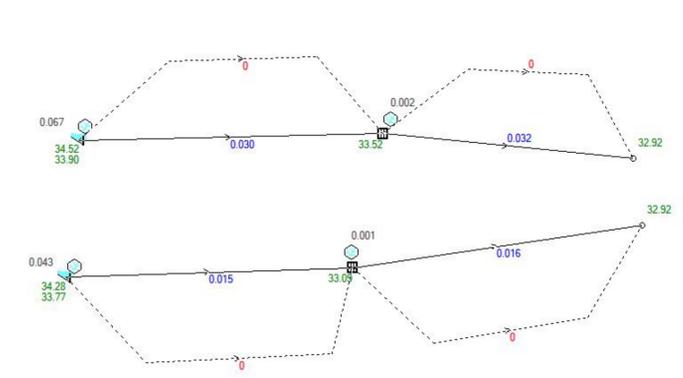
SUBSOIL PUMP OUT PIT 2
SCALE 1:20

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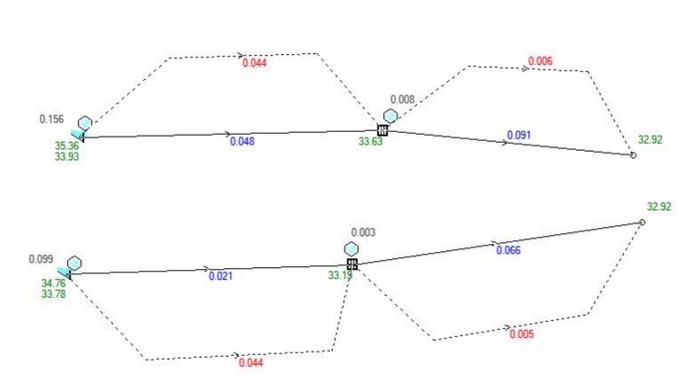
DRAINS MODEL

Results for median storm in critical 20% AEP ensembles using Standard hydraulic model.



DRAINS RESULT - 20% AEP

Results for median storm in critical 1% AEP ensembles using Standard hydraulic model.

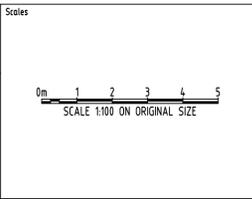


DRAINS RESULT - 1% AEP

Reference Coordination Drawing		Discipline		Drawing Title and Number		Date	Rev.
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		ARCH					
		STRUCT					
		MCH					
		ELEC					
		AA					
		HYD					
		FRS					
		LANDS					
		CIVIL					
		SURVEY					

QUALITY CONTROL		DATE	
DRAWN	MN	03.12.20	
CHECKED	SH	03.12.20	
DESIGNED	MN	03.12.20	
VERIFIED	SH	03.12.20	
APPROVED	SH	03.12.20	

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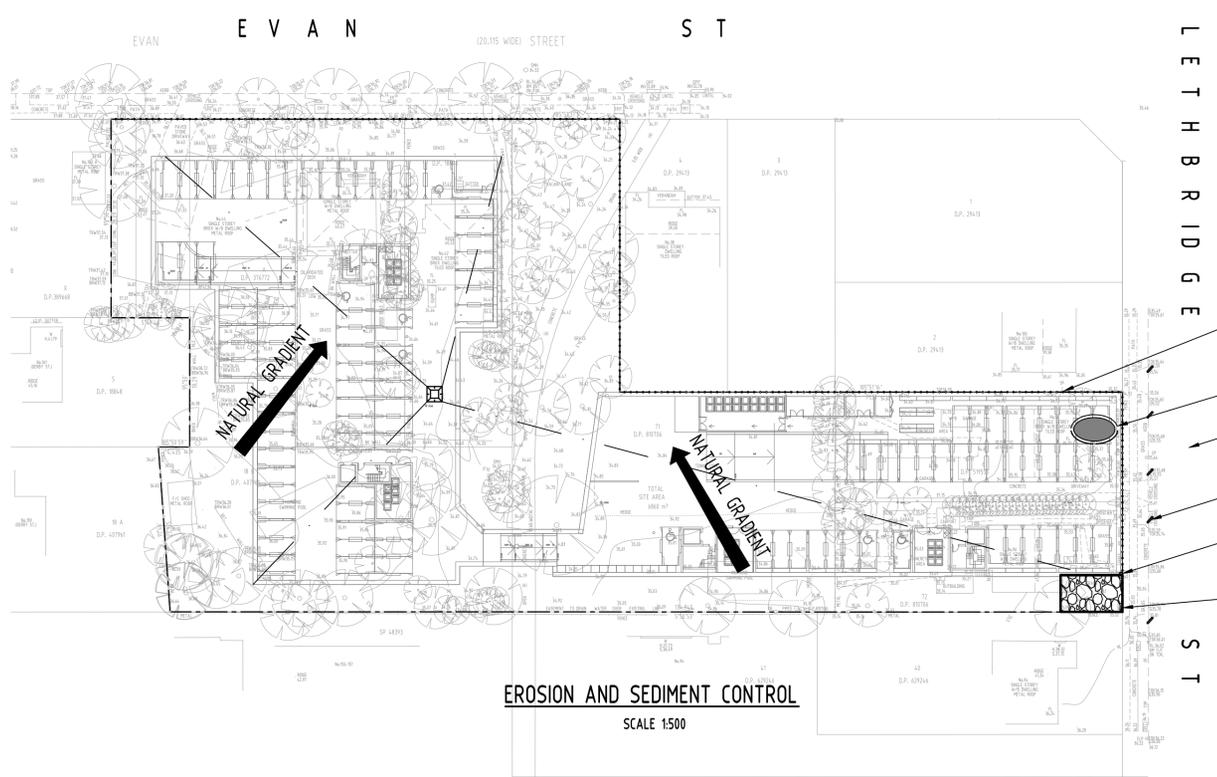
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Email: office@sgce.com.au
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PROJECT
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96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Drawing Status	FOR APPROVAL		
	NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Drawing Title	STORMWATER CONCEPT DESIGN DETAILS SHEET 2 OF 2		
Project No	Drawing No	Revision No	
20200222	SW301	A	
Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	7 OF 9	AS SHOWN

A.B.N. 21 118 222 530

DATE PLOTTED: 3 December 2020 3:39 PM BY: SSC/EM/CO
 A1
 2020 File Path: C:\Production\2020\20200222_42-46 Evan Street - Penrith\Civil\SW400.dwg
 Document Set ID: 9406102
 Version: 1, Version Date: 08/12/2020



EROSION AND SEDIMENT CONTROL
SCALE 1500

- EROSION AND SEDIMENT CONTROL FENCE TO BE INSTALLED AROUND THE LOWER SIDES OF PROPERTY BOUNDARY WHERE REQUIRED (REFER TO DETAIL).
- LOCATION OF STOCKPILES
- CONTRACTOR TO ENSURE THAT LETHBRIDGE STREET STAYS CLEAN FROM SEDIMENT AT ALL TIMES AND DURING VEHICULAR TRAFFIC.
- INSTALL SAND BAGS TO PREVENT STORMWATER POLLUTION AFFECTING LETHBRIDGE STREET.
- PROVIDE TAP AND HOSE BEHIND FENCE LINE. ALL TRUCK TIRES MUST BE WASHED DOWN BEFORE DEPARTING.
- SITE ENTRY FROM LETHBRIDGE STREET. RUBBLE ENTRY TO BE TEMPORARILY INSTALLED (REFER TO DETAIL). LOCATION TO BE CONFIRMED BY ARCHITECT.

EROSION & SEDIMENTATION CONTROL NOTES

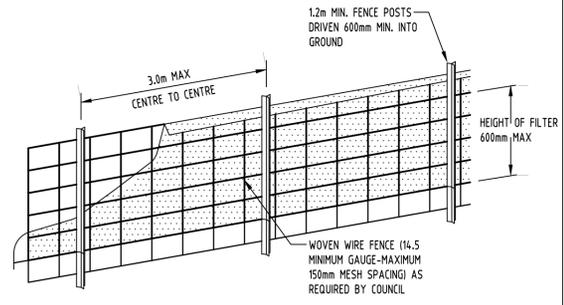
1. CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. THE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.
2. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.
3. NO PARKING OR STOCKPILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
4. GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
5. CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

GENERAL NOTES

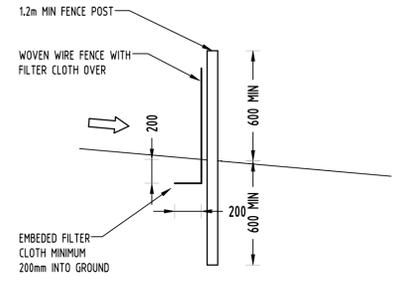
1. THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSION CONTROL. IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURING DEMOLITION, EXCAVATION & CONSTRUCTION PHASES TO ENSURE ADEQUATE PERFORMANCE.
2. ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAMMATIC & INDICATIVE ONLY. ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY ALTER WHEN DETAIL DESIGN WORKS ARE DOCUMENTED.

CLAY SOILS

- A SYSTEM SHALL BE INSTALLED TO EITHER:
1. TRANSPORT STORMWATER RUNOFF WITH SUSPENDED SOLIDS FROM SITE VIA PUMP TRUCKS.
 2. TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997) AND SHALL BE APPROVED BY LOCAL COUNCIL

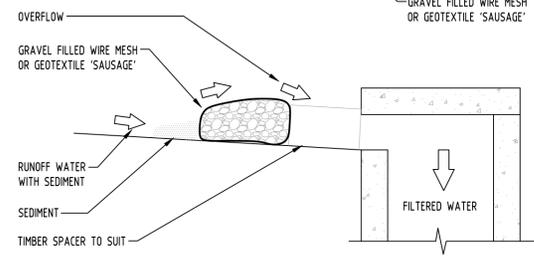
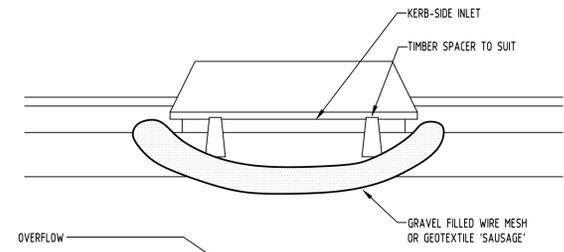


DIAGRAMMATIC VIEW



TYPICAL SECTION

SEDIMENT FENCE
NOT TO SCALE



- CONSTRUCTION NOTES:**
- FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT
 - FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL
 - FORM AN ELLIPTICAL CROSS-SECTION OF THE KERB INLET LEAVING A 100mm GAP AT THE TOP TO ACT AS AN EMERGENCY SPILLWAY
 - MAINTAIN THE OPENING WITH SPACER BLOCKS
 - FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER
 - FIT TO ALL KERB INLETS AT SAG POINTS

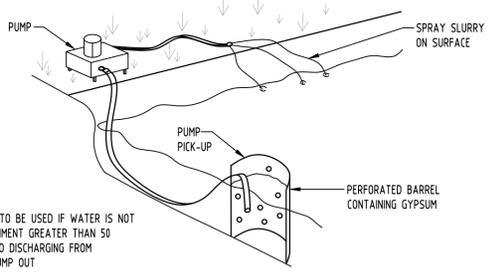
GRAVEL INLET FILTER (SAUSAGE)
NOT TO SCALE

GEOTEXTILE INLET FILTER

GEOTEXTILE INLET FILTER IS PLACED IN EVERY PIT WITHIN THE SITE TO ENSURE THE RUNOFF WATER DURING CONSTRUCTION NOT ENTER THE PITS.

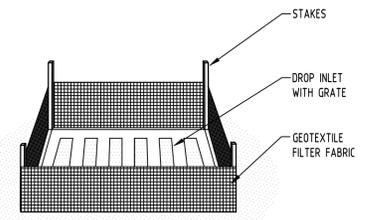
LEGEND

- SEDIMENT FENCE
- STABILISED SITE ACCESS
- SANDBAGS

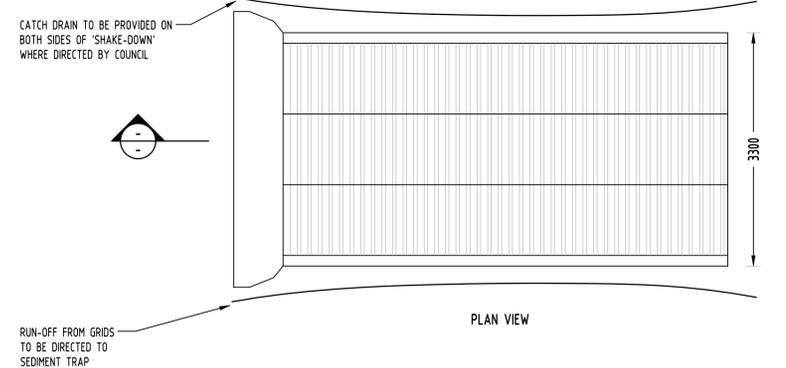
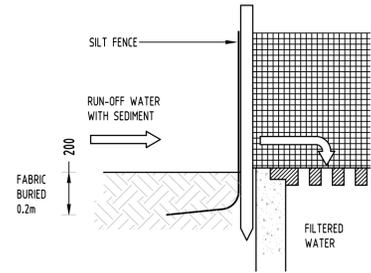


- NOTE:**
1. FLOCCULATION TO BE USED IF WATER IS NOT CLEAR (ie. SEDIMENT GREATER THAN 50 mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP OUT
 2. FOR RATES & AGENTS SEE APPENDIX E OF NEW SOUTH WALES DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER SOILS & CONSTRUCTION".

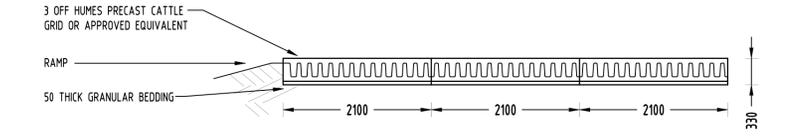
FLOCCULATION DETAIL
NOT TO SCALE



GEOTEXTILE INLET FILTER
NOT TO SCALE



PLAN VIEW



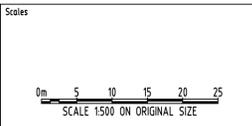
TYPICAL SECTION

'CATTLE GRID' ALTERNATIVE
TEMPORARY CONSTRUCTION EXIT
NOT TO SCALE

Reference Coordination Drawing			
Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MECH			
ELEC			
HYD			
FRG			
LANDS			
CIVIL			
SURVEY			

QUALITY CONTROL			
DRAWN	DATE	CHECKED	DATE
MN	03.12.20	SH	03.12.20
MN	03.12.20	SH	03.12.20
SH	03.12.20	SH	03.12.20
SH	03.12.20	SH	03.12.20

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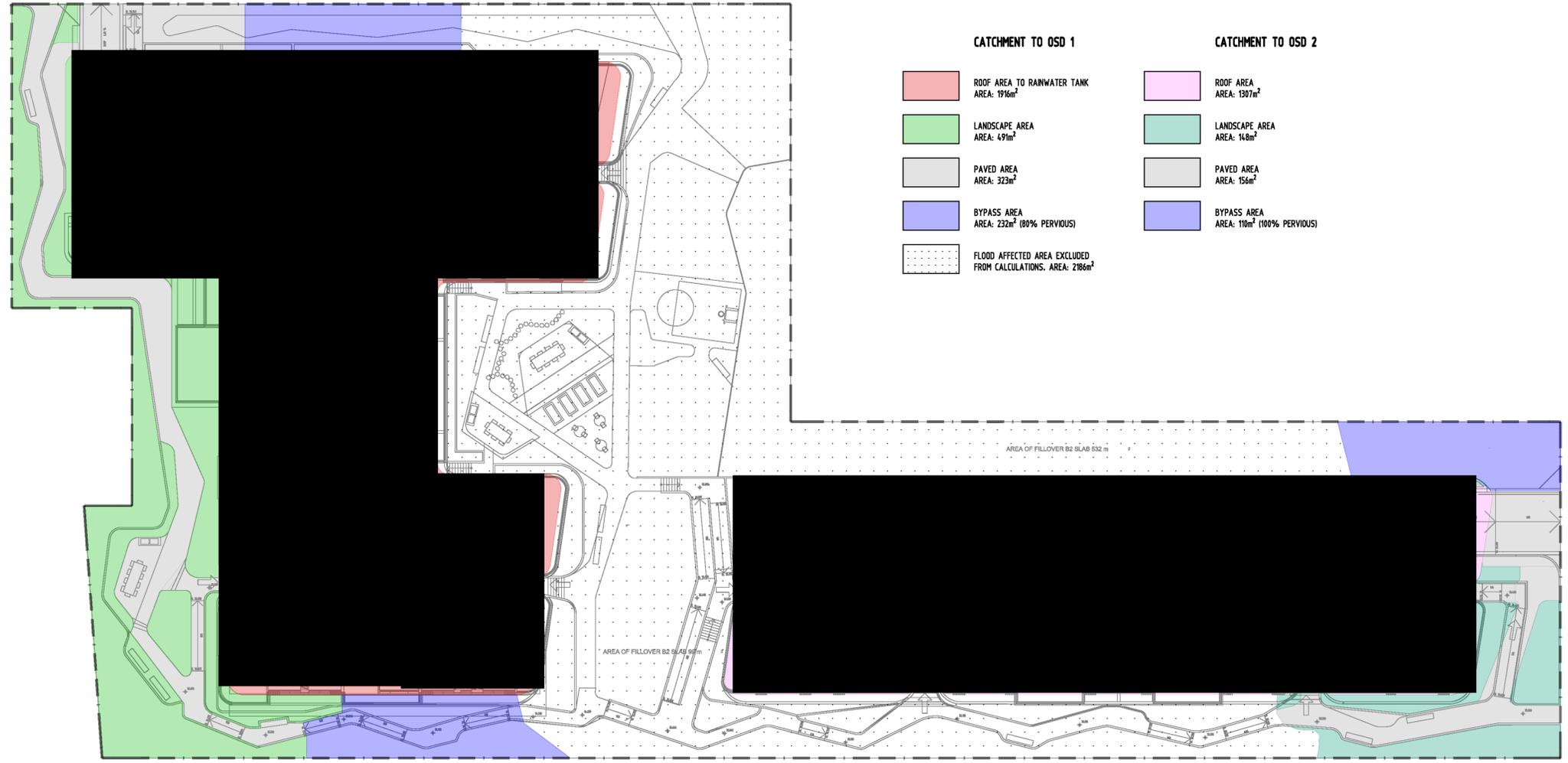
PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Drawing Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Drawing Title EROSION AND SEDIMENT CONTROL PLAN AND DETAILS		
Project No 20200222	Drawing No SW400	Revision No A

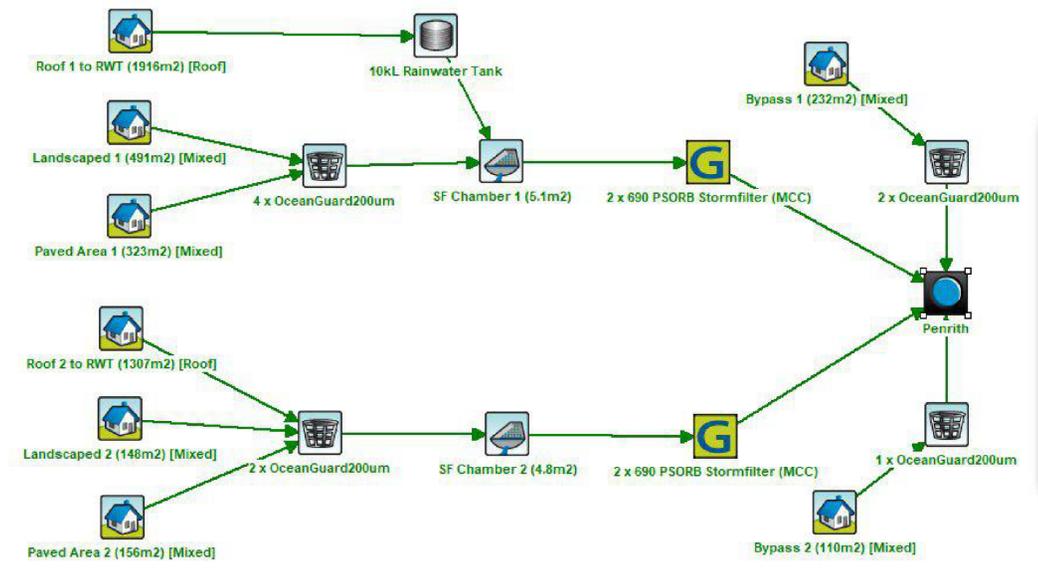
Grid	Datum	Sheet	Scale (at original size)
-	A.H.D.	8 OF 9	1500 @ A1

A.B.N. 21.118.222.530

SERVICES ON THIS DRAWING
ARE SHOWN BELOW SLAB U.L.O



CATCHMENT TO OSD 1		CATCHMENT TO OSD 2	
	ROOF AREA TO RAINWATER TANK AREA: 1916m ²		ROOF AREA AREA: 1307m ²
	LANDSCAPE AREA AREA: 491m ²		LANDSCAPE AREA AREA: 148m ²
	PAVED AREA AREA: 323m ²		PAVED AREA AREA: 156m ²
	BYPASS AREA AREA: 232m ² (80% PERVIOUS)		BYPASS AREA AREA: 110m ² (100% PERVIOUS)
	FLOOD AFFECTED AREA EXCLUDED FROM CALCULATIONS. AREA: 2186m ²		

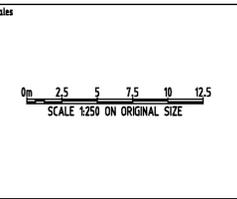


	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.39	2.35	1.8
Total Suspended Solids (kg/yr)	117	16.5	85.9
Total Phosphorus (kg/yr)	0.409	0.126	69.3
Total Nitrogen (kg/yr)	5.22	2.65	49.1
Gross Pollutants (kg/yr)	65.9	0	100

Discipline	Drawing Title and Number	Date	Rev.
ARCH			
ARCH			
STRUCT			
MECH			
ELEC			
HYD			
FFR			
LANDS			
CIVIL			
SURVEY			

Discipline	Checked	SH	DATE
DRAWN	MN	DATE	03.12.20
CHECKED	SH	DATE	03.12.20
DESIGNED	MN	DATE	03.12.20
VERIFIED	SH	DATE	03.12.20
APPROVED	SH	DATE	03.12.20

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Web: www.sgce.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
96-98 LETHBRIDGE STREET &
42-46 EVAN STREET, PENRITH

Drawing Status	FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES	
Drawing Title	STORMWATER CONCEPT DESIGN MUSIC CATCHMENT PLAN AND RESULT
Project No	20200222
Drawing No	SW500
Revision No	A