

D	ISSUED FOR APPROVAL	10.12.20			
C	ISSUED FOR APPROVAL	11.11.19			
B	ISSUED FOR APPROVAL	01.10.19			
A	EASEMENT NEGOTIATIONS	07.09.19			
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE



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HORNSBY, NSW

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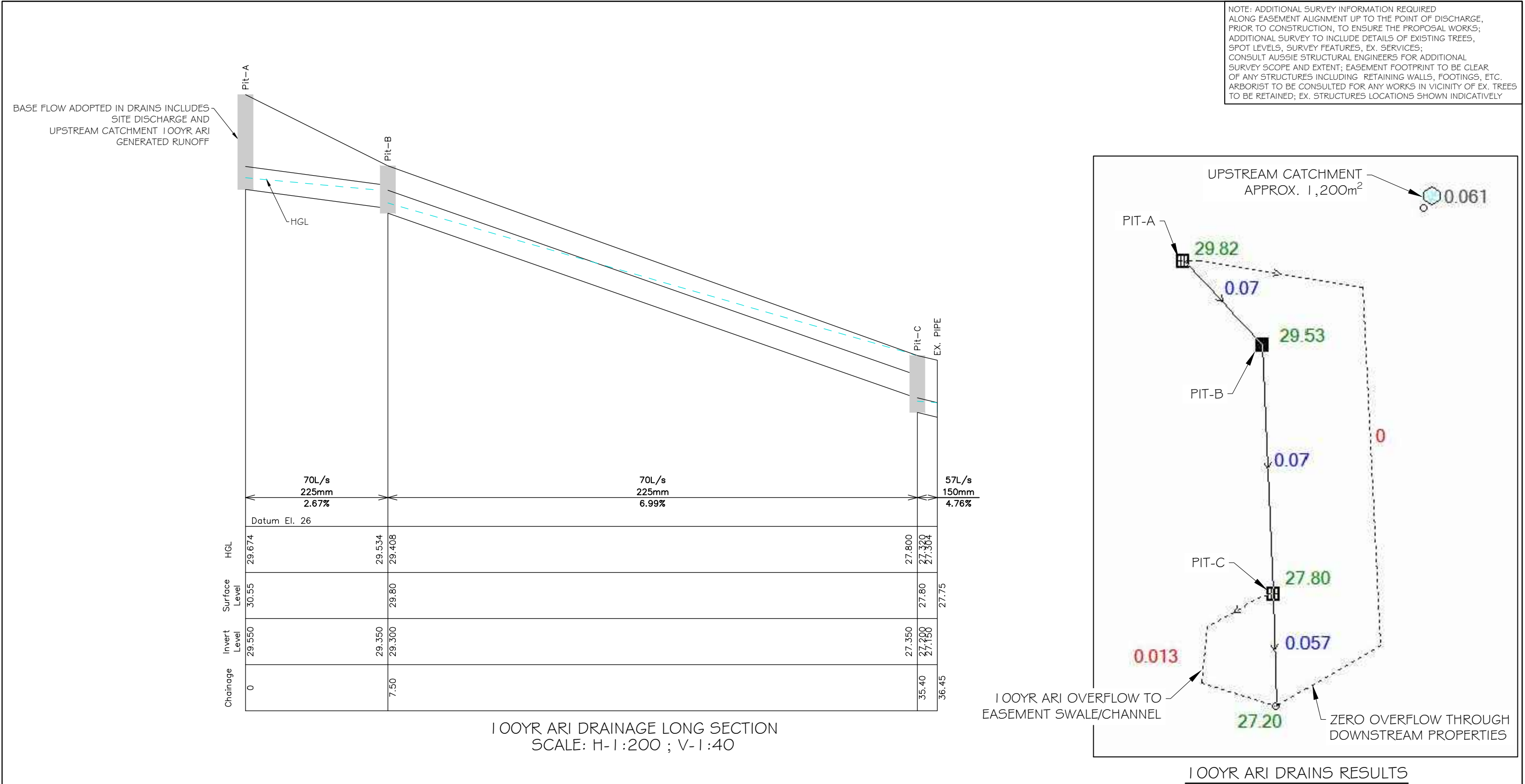


STORMWATER MANAGEMENT – EASEMENT PLAN

SCALE: N.T.S.

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JOB NUMBER: 190474	ISSUE: D
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STORMWATER MANAGEMENT – DRAINS RESULTS

SCALE: N.T.S.

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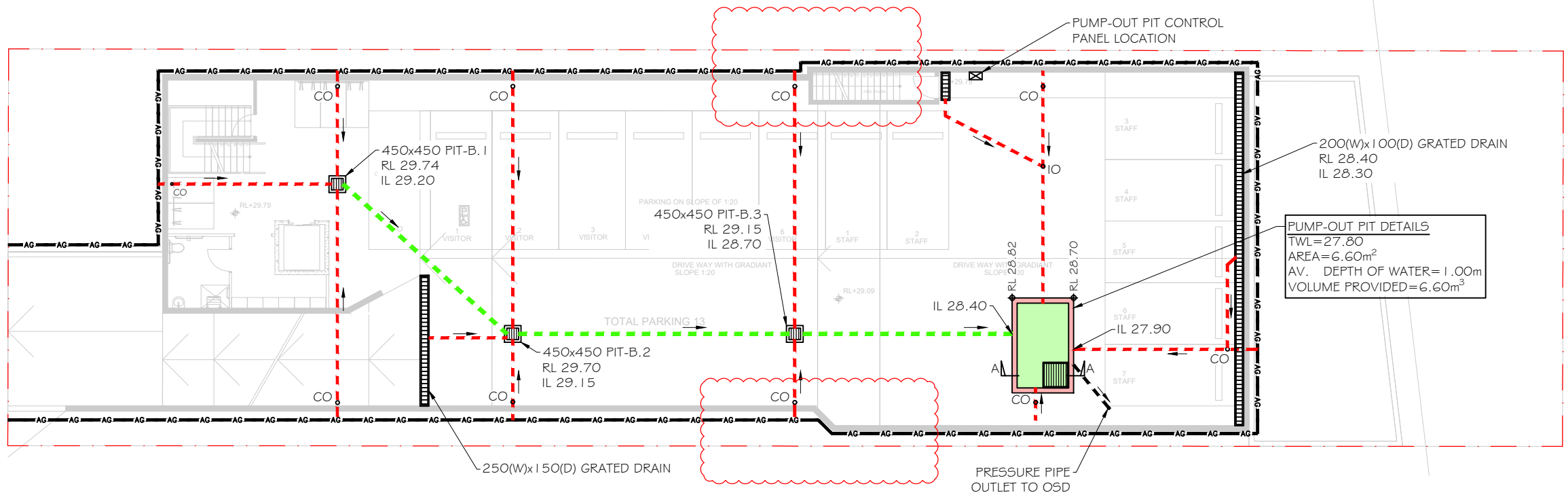
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STREET

BELLEVUE



PUMP-OUT PIT CALCULATIONS

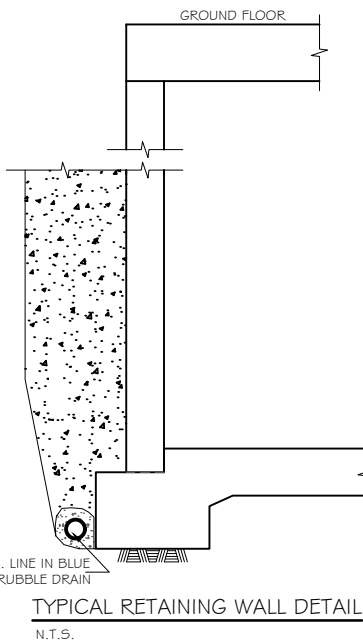
1-STORAGE VOLUME  
AREA DRAINING TO PUMP-OUT PIT=20.30m<sup>2</sup>  
RAINFALL INTENSITY FOR 100YR, 2HOURS STORM EVENT=47.3mm/hr  
VOLUME REQUIRED=CxIxAxD=1x0.0473x20.30x2=1.92m<sup>3</sup>  
VOLUME PROVIDED=6.60m<sup>3</sup>

2-PUMP-OUT RATE  
RAINFALL INTENSITY FOR 100YR, 5 MIN STORM EVENT=224mm/hr  
Q(100YR, 5MIN)=CxIxA/3.6=1x0.224x20.30/3.6=1.26L/s  
PUMP-OUT RATE PER PUMP=5L/s  
TOTAL PUMP-OUT RATE PROVIDED=10L/s

3-PUMPS SELECTION  
PUMP-OUT RATE PROVIDED PER PUMP=5L/s  
HEAD=6m  
PROVIDE TWO AUTO SUBMERSIBLE PUMPS KS-20

PUMP-OUT PIT NOTES AND SPECS

1. PUMPS SHALL WORK ALTERNATIVELY
2. A LOW LEVEL FLOAT TO BE PROVIDED TO MAINTAIN MIN. WATER LEVEL IN THE TANK (OFF SWITCH)
3. A SECOND FLOAT, 300mm HIGHER SHOULD BE PROVIDED TO ACTIVATE ONE PUMP THAT WILL DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT
4. A THIRD FLOAT SHALL BE PROVIDED APPROX. AT THE SOFFIT OF THE TANK; THIS FLOAT WILL ACTIVATE THE SECOND PUMP THAT IS NOT IN OPERATION AND WILL ACTIVATE THE ALARM
5. AN ALARM SYSTEM SHALL BE PROVIDED WITH FLASHING STROBE LIGHT AND A PUMP FAILURE SIGN WHICH ARE TO BE PROVIDED IN A VISIBLE SPOT AT THE DRIVEWAY ENTRANCE.
6. A BACK-UP BATTERY SHALL BE PROVIDED FOR THE ALARM SYSTEM IN CASE OF POWER FAILURE

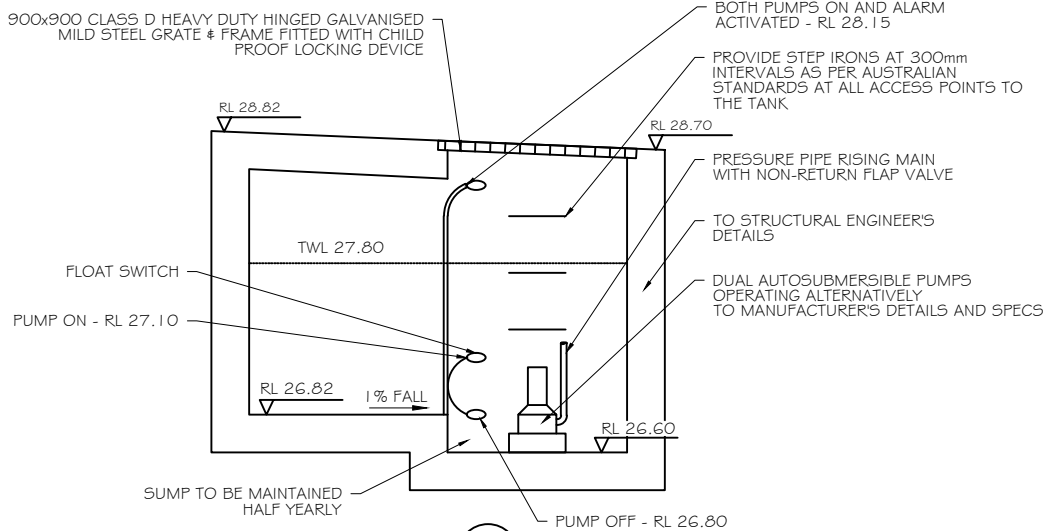


NOTE: WARNING SIGN TO BE PLACED IN CLEAR AND VISIBLE LOCATION

WARNING

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

PUMP-OUT PIT WARNING SIGN  
N.T.S.

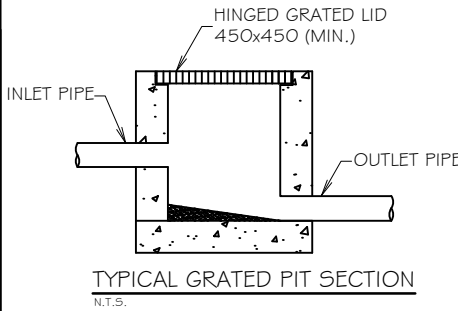
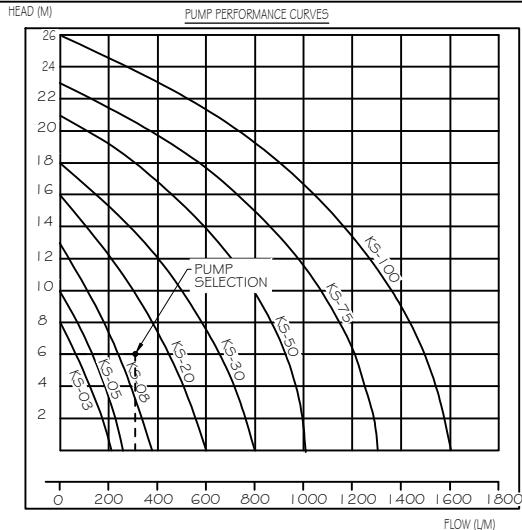


Type	Output		Outlet		Rated Head Capacity		Maximum Head Capacity		Weigh	Dimension		
	HP	kW	mm	Inch	M	LPM	M	LPM		L(mm)	W(mm)	H(mm)
KS-03	1/3	0.25	40	1 1/2"	3	130	8	180	9	188	141	305
KS-04	1/2	0.4	50	2"	5	150	8	220	11	208	140	359
KS-05	1/2	0.4	50	2"	5	160	10	260	14	230	156	375
KS-08	1	0.75	50	2"	6	240	13	380	21	290	180	425
KS-20	2	1.5	80	3"	10	300	16	600	31	278	182	475
KS-30	3	2.2	80	3"	10	500	18	800	42	390	250	450
KS-50	5	3.7	100	4"	10	800	21	1100	48	450	240	530
KS-75	7 1/2	5.6	100	4"	15	800	23	1300	60	550	310	590
KS-100	10	7.5	150	6"	18	900	25	1600	70	550	310	610

PLOT IN COLOUR FOR CLARITY

LEGEND:  
DP: Ø100mm UPVC ROOF DOWNPIPE  
BDP: BALCONY DOWNPIPE  
RL 11.20 PROPOSED LEVEL  
+43.34 EXISTING LEVEL (AHD)  
ex. RL 11.20 EXISTING LEVEL

SYMBOLS:  
PIPE FLOW DIRECTION  
SURFACE FLOW DIRECTION  
FP FLUSHING POINT  
AG Ø100mm SUBSOIL  
Ø100mm ROOF DOWNPIPE RUNNING AT MIN. 1% SLOPE  
Ø225mm PVC AT MIN. 1% SLOPE U.N.O.  
OUTLINE ABOVE  
Ø150mm PVC PIPE AT MIN. 1% SLOPE U.N.O.  
Ø100mm PVC AT MIN. 1% SLOPE U.N.O.



NOTE: A DANGER CONFINED SPACE ENTRY SIGN TO BE PLACED IN A VISIBLE LOCATION IN PROXIMITY TO THE PUMP-OUT PIT ACCESS

D	FOR APPROVAL	16.08.21			
C	FOR APPROVAL	21.11.20			
B	FOR APPROVAL	08.05.20	F	FOR APPROVAL	17.03.22
A	FOR APPROVAL	27.04.20	E	FOR APPROVAL	18.08.21
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE



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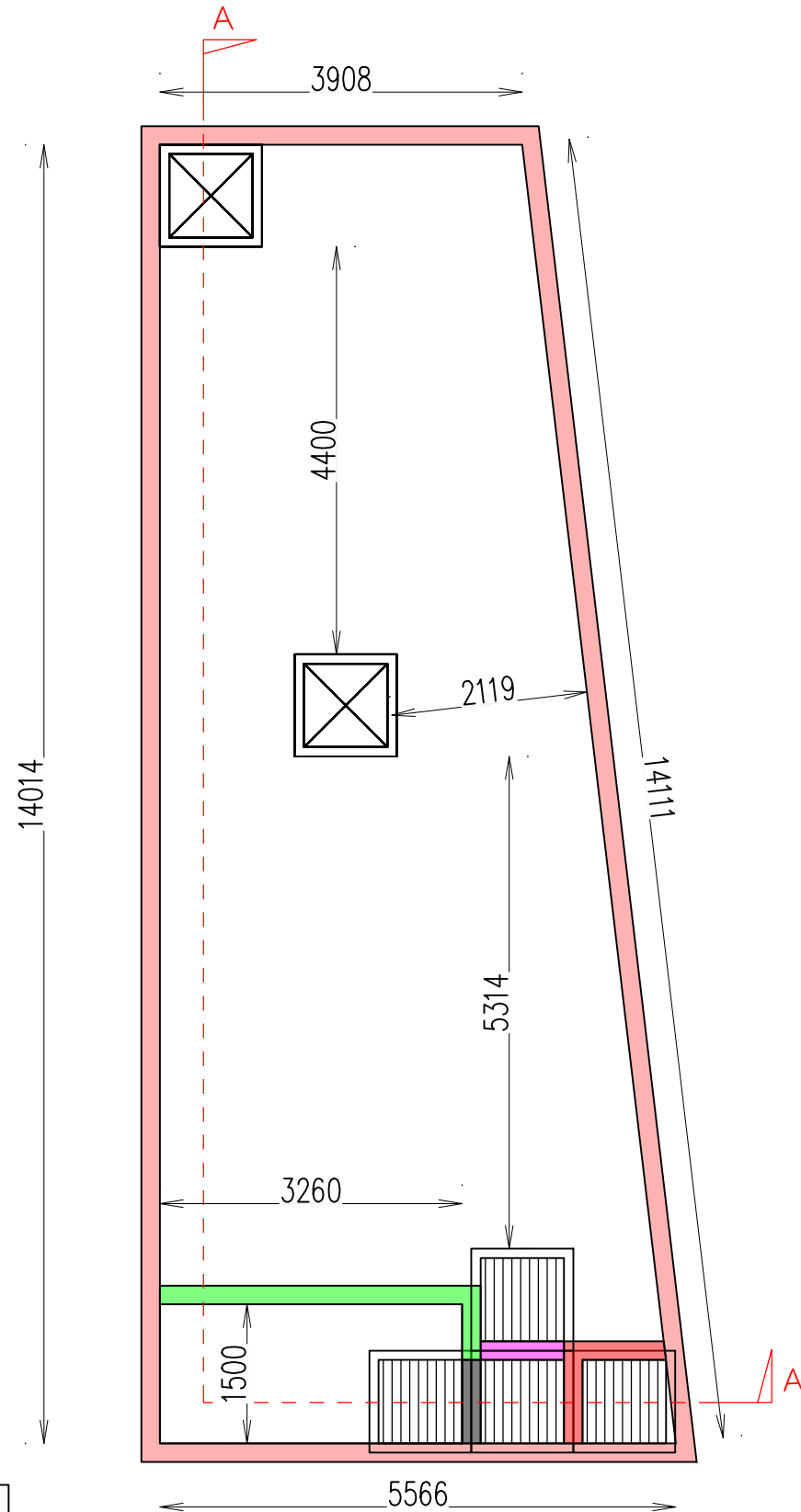
STORMWATER MANAGEMENT - BASEMENT LAYOUT

SCALE: 1:200 U.N.O.

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JOB NUMBER: 190474 ISSUE: F

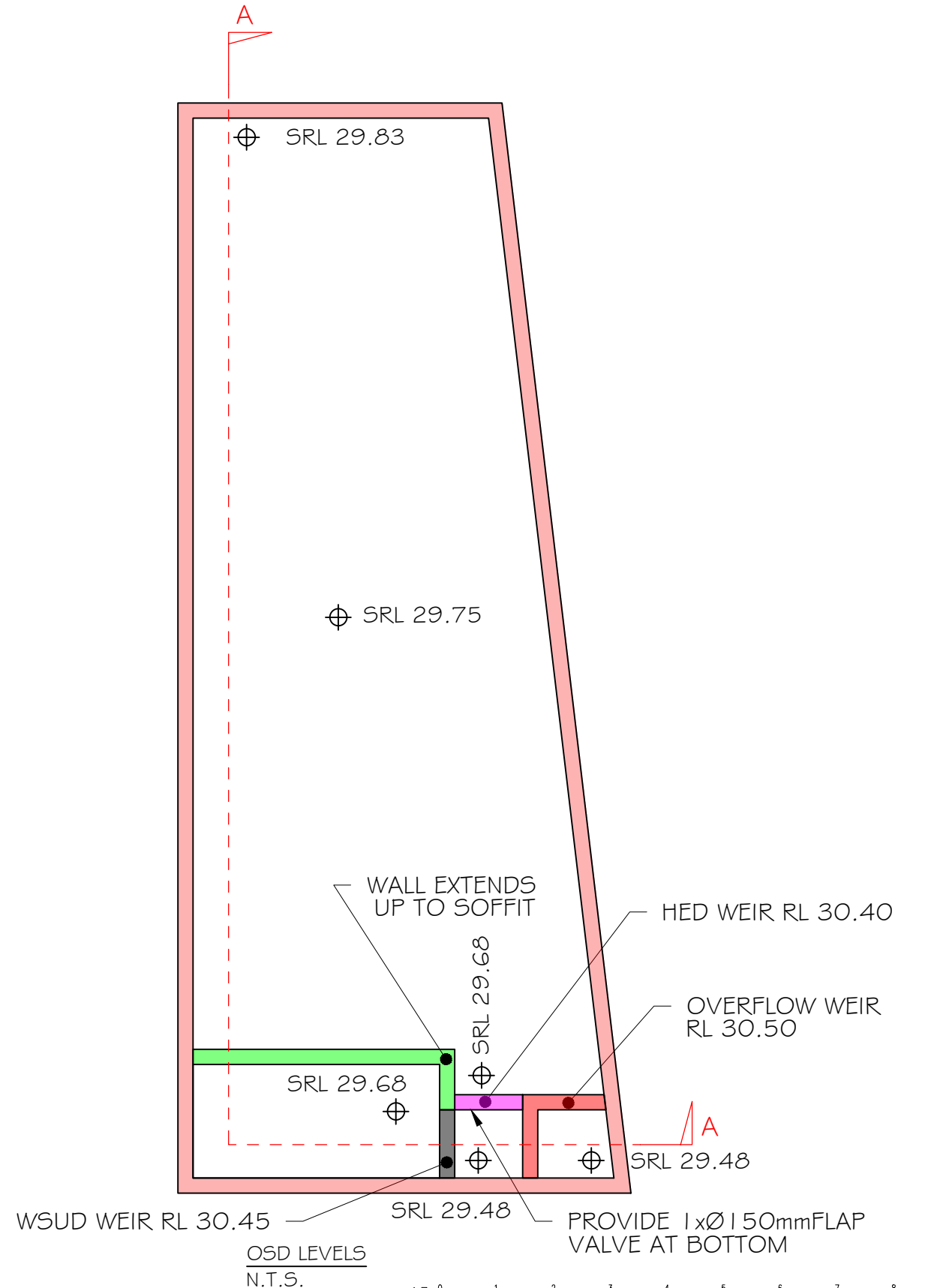




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OSD DIMENSIONS AND DETAILS  
N.T.S.



WSUD WEIR RL 30.45

OSD LEVELS  
N.T.S.

PROVIDE 1xØ150mm FLAP VALVE AT BOTTOM

A3 0 1 2 3 4 5 6 7 8 9 10

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STORMWATER MANAGEMENT - OSD DETAILS - 1

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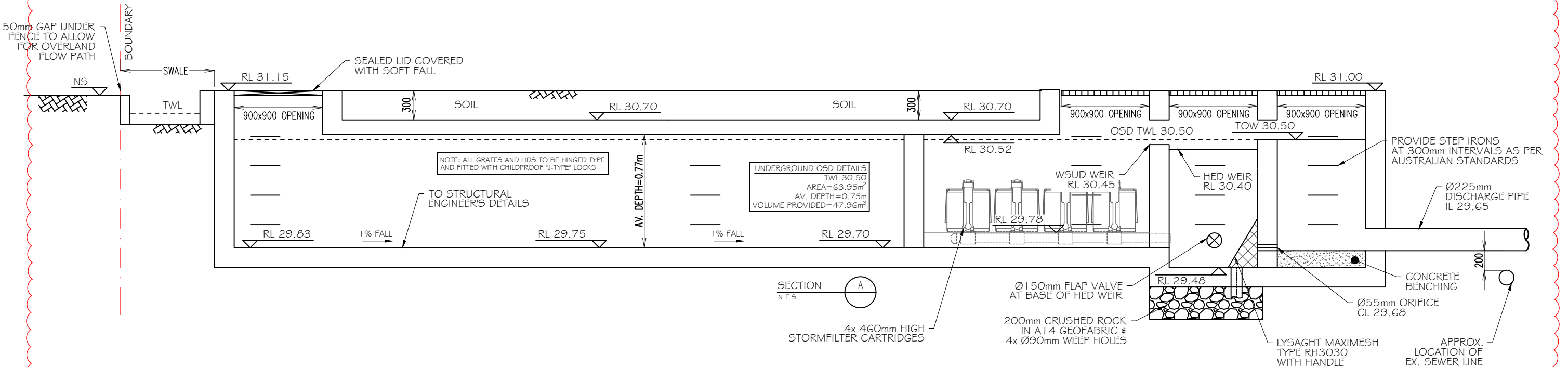
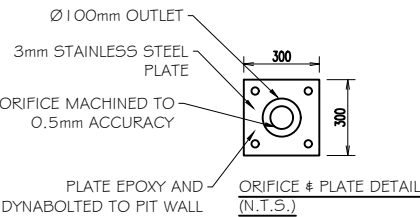
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JOB NUMBER: <b>190474</b>	ISSUE: <b>D</b>
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PARRAMATTA CITY COUNCIL  
On-Site Detention Calculation Sheet

OSD	OSD	UPRCT
Site Area	0.0934	
Basic Storage Volume	43.90	
Basic Discharge	7.47	
Area of Site to Storage	0.0861	
Percentage of Site	92.18	
Storage per ha of contributing area	509.85	
Volume/PSD Adjustment	71.65	
PSD for site	6.17	
Maximum Head to Orifice Centre	0.890	
Calculated Orifice Diameter	0.055	
Maximum discharge	6.166	
Head for high early discharge	0.790	
High Early Discharge	5.809	
Mean Discharge	5.988	
Average Discharge per Hectare	69.545	
Final Site Storage Ratio	524	
Site Storage Volume	45.12	



PLOT IN COLOUR FOR CLARITY

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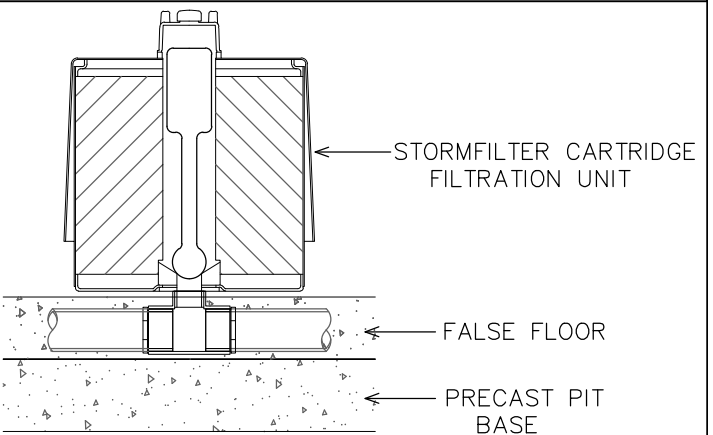
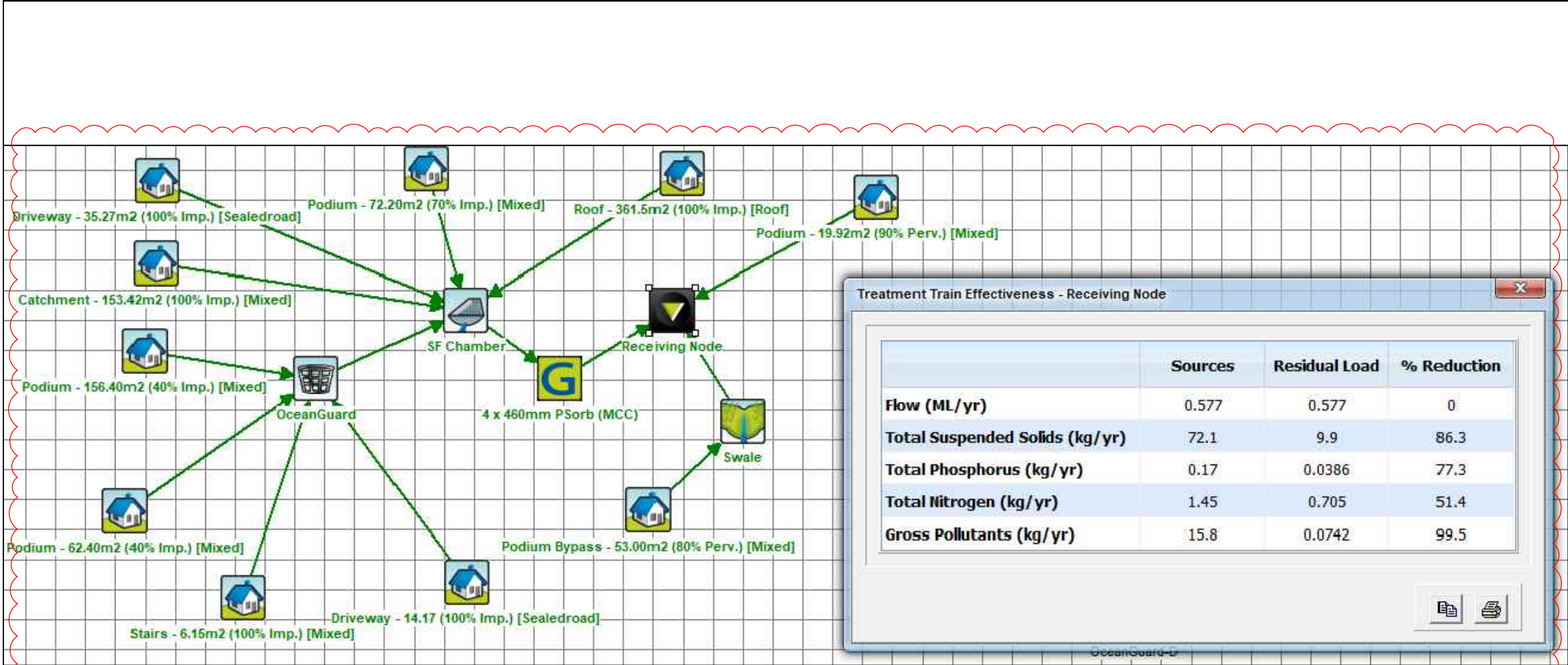
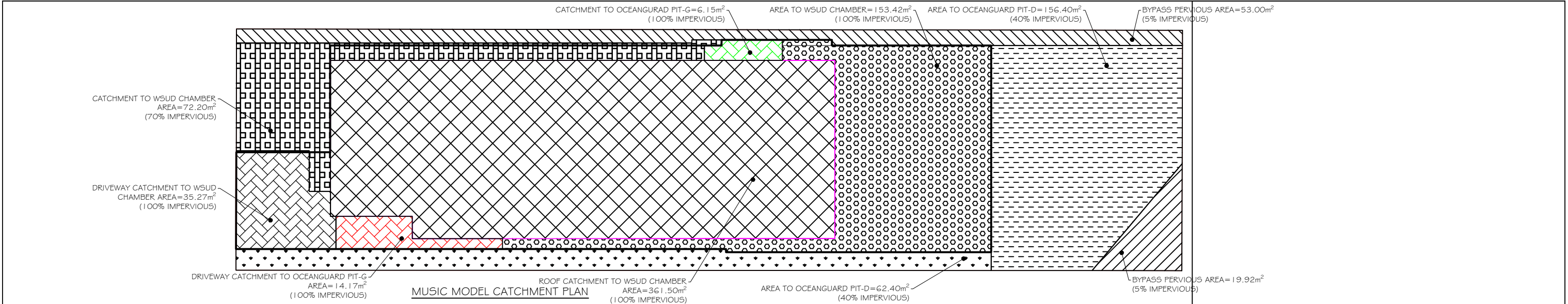
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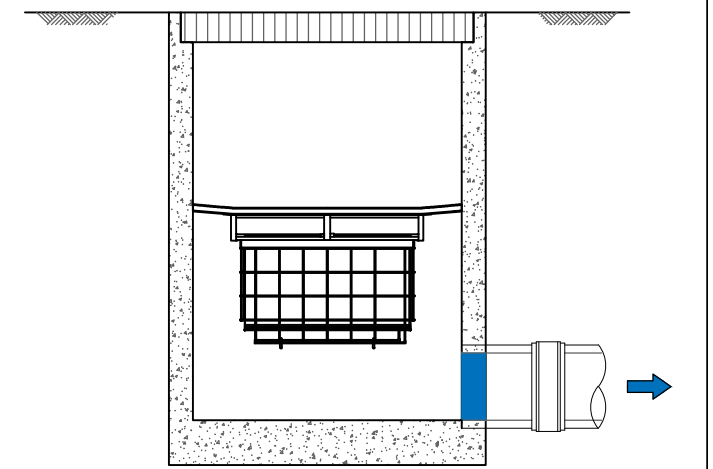
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STORMWATER MANAGEMENT - OSD DETAILS - 2			
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JOB NUMBER: 190474			ISSUE: D




### STORMFILTER CARTRIDGE DETAIL



A3 0 1 2 3 4 5 6 7 8 9 10

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B	ISSUED FOR APPROVAL	08.05.20	F	ISSUED FOR APPROVAL	18.08.21
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STORMWATER MANAGEMENT – MUSIC MODEL DETAILS

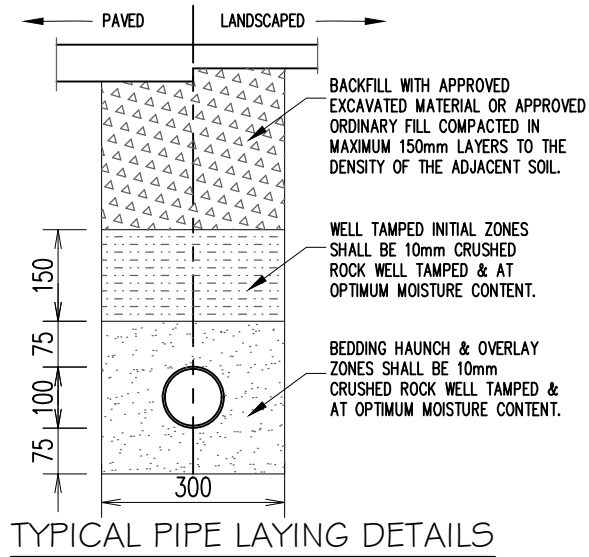
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**190474**

ISSUE:  
**F**





## GENERAL INFORMATION

### GENERAL NOTES

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, LANDSCAPE AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTION AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEERS BEFORE PROCEEDING WITH THE WORK.
- ALL DIMENSIONS ARE IN MILLIMETERS & ALL LEVELS ARE IN METERS, UNO (UNLESS NOTED OTHERWISE).
- NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
- EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF ANY WORKS.
- ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS. ALL EXTERNAL SLABS TO BE WATERPROOFED.
- DURING EXCAVATION WORK, THE STRUCTURE SHALL BE MAINTAINED IN A STABLE AND NO PART SHALL BE OVERSTRESSED.
- ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS & SPECIFICATION.
- EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICE PRIOR TO THE COMMENCEMENT OF WORK.
- ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACK FILLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL COUNCIL.
- ALL TRENCH BACK FILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
- ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.
- CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS UNLESS DIRECTED OTHERWISE.
- LOCATION OF DOWNPIPES AND FLOOR WASTES ARE INDICATIVE ONLY. DOWN PIPE AND FLOOR WASTE SIZE, LOCATION AND QUANTITY TO BE DETERMINED BY BUILDER & IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARD.
- ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR RESOLUTION.
- ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY. ALL GRATES TO HAVE CHILD PROOF LOCKS
- ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES.
- ENSURE ALL DRAINAGE WORKS ARE AWAY FROM TREE ROOTS.

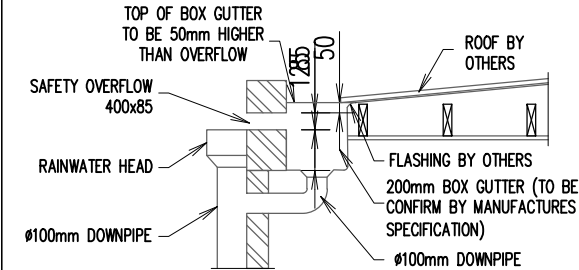
### RAINWATER TANK INFORMATION

- RAINWATER TANK TO COLLECT RAIN RUNOFF FROM AT LEAST AS PER BASIX SQUARE METERS OF ROOF AREA.
- PROPOSED RAINWATER TANK SIZE AS PER SUPPLIERS SPECIFICATIONS
- RAINWATER TANKS SHALL BE CONNECTED TO MAINS WATER SUPPLY AS BACKUP.
- PUMPS SHALL PROVIDE MINIMUM 150kPa PRESSURE.
- RAINWATER TANK TO BE CONNECTED AS PER BASIX REQUIREMENTS.
- A SIGN TO BE INSTALLED STATING "NOT FOR HUMAN CONSUMPTION".
- TANKS TO BE PLUMBED TO TOP-UP FROM THE POTABLE WATER SUPPLY DURING DRY PERIODS WHEN THE TANKS ARE 80% EMPTY.
- NO DIRECT CROSS-CONNECTION WITH THE SYDNEY WATER POTABLE SUPPLY AND AN AIR GAP MAINTAINED ABOVE THE OVERFLOW IN THE TANK.
- ANY OPENINGS SHALL BE MESHED OR SEALED TO PREVENT MOSQUITOS BREEDING AND ENTRY OF ANIMALS OR FOREIGN MATTER.
- RAINWATER TANKS TO BE CLEANED OUT EVERY 6 MONTHS.
- ALL DOWNPIPES TO BE SEALED TO UNDERSIDE OF FIRST FLOOR GUTTER AS DRAINAGE SYSTEM IS CHARGED TO FACILITATE PROPOSED ABOVE GROUND REUSE TANK.
- THIS SYSTEM TO BE DESIGNED WITH A 'FIRST FLUSH' DIVERSION TO REMOVE ROOF CONTAMINANTS.
- REUSE WATER TO BE DIRECTED TO THE FOLLOWING:
  - MINIMUM 1 OUTDOOR GARDEN TAP
  - ALL CISTERNS (TOILETS)
  - COLD WATER SERVICE TO THE CLOTHES WASHER.

## DRAINAGE REQUIREMENTS

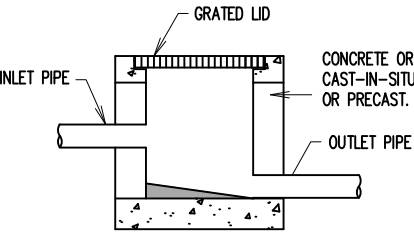
- ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH CURRENT EDITIONS OF AS2870, AS/NZS 2032 INTALL OF PVC PIPES AND AS/NZS 3500 PLUMBING & DRAINAGE.
- PLUMBING TRENCHES SHALL BE SLOPED AWAY FROM THE HOUSE AND SHALL BE BACKFILLED WITH CLAY IN THE OP 300mm WITHIN 1.5m OF THE HOUSE. THE CLAY USED FOR BACKFILLING SHALL BE COMPACTED. WHERE PIPES PASS UNDER THE FOOTING SYSTEM, THE TRENCH SHALL BE BACKFILLED WITH CLAY OR CONCRETE TO RESTRICT THE INGRESS OF WATER BENEATH THE FOOTING SYSTEM.
- DRAINAGE SHALL BE CONSTRUCTED TO AVOID WATER PONDING AGAINST OR NEAR THE FOOTING.
- ECAVATION NEAR THE EDGE OF THE FOOTING SYSTEM SHALL BE BACKFILLED IN SUCH A WAY AS TO PREVENT ACCESS OF WATER TO THE FOUNDATION.
- WATER RUN-OFF SHALL BE COLLECTED AND CHANNELLED AWAY FROM THE HOUSE DURING CONSTRUCTION.
- PENETRATIONS OF THE EDGE BEAMS AND FOOTING BEAMS ARE TO BE AVOIDED, BUT WHERE NECESSARY SHALL BE SLEEVED TO ALLOW FOR MOVEMENT.
- CONNECTION OF STORMWATER DRAINS AND WASTE DRAINS SHALL BE INCLUDED FLEXIBLE CONNECTIONS.

A3 0 1 2 3 4 5 6 7 8 9 10



## RAINWATER OUTLET WITH BOX GUTTER

TO BE USED IF REQUIRED



## TYPICAL GRATED PIT

TO BE USED IF REQUIRED



A	ISSUED FOR APPROVAL	27.04.20			
ISSUE	DESCRIPTION	DATE	ISSUE	DESCRIPTION	DATE



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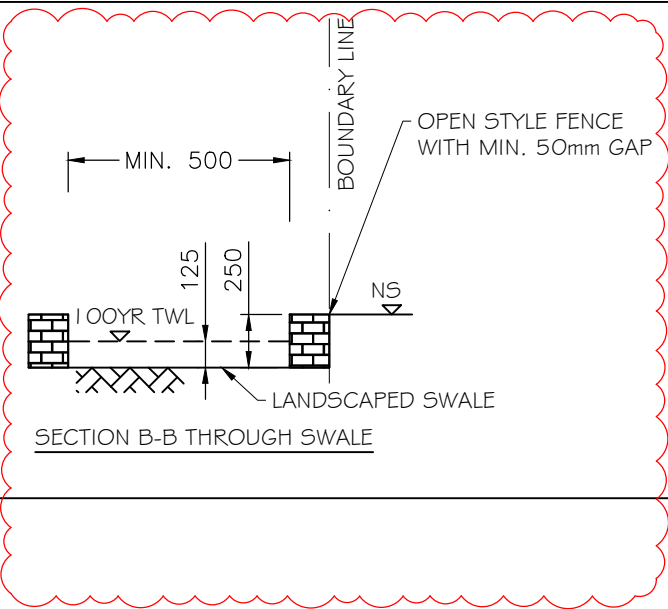
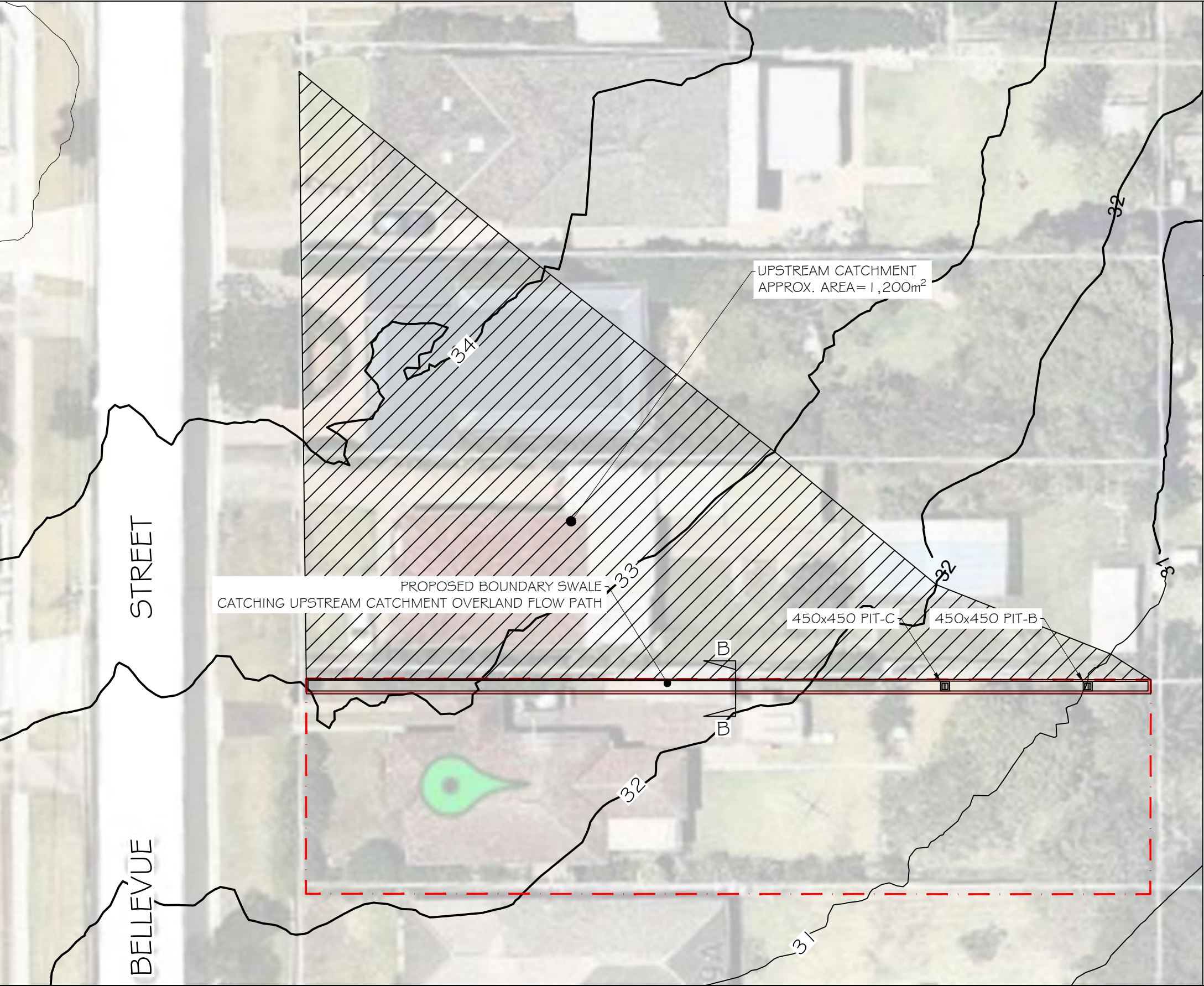
STORMWATER MANAGEMENT – SECTIONS AND DETAILS SHEET 1

SCALE: N.T.S. U.N.O.

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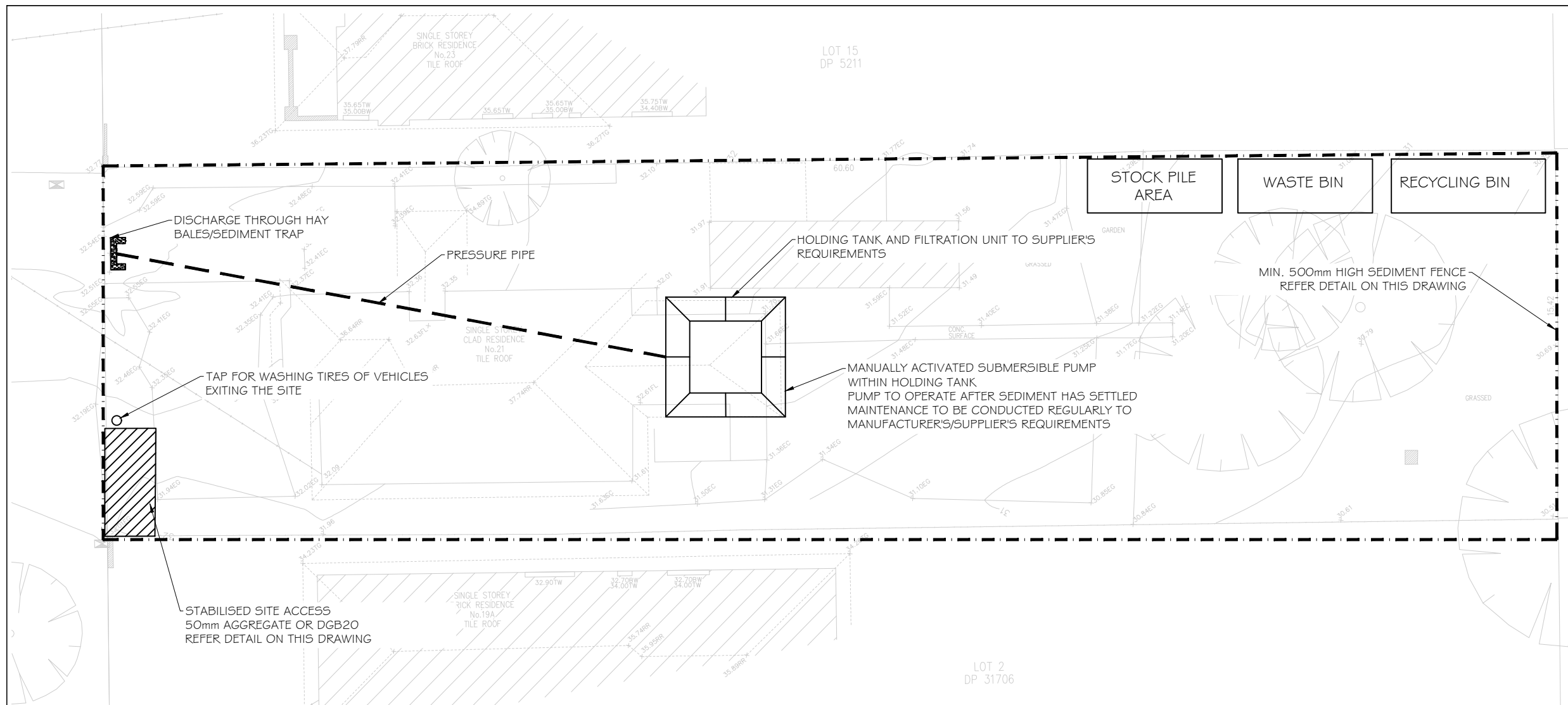
**PROPOSED STORMWATER**  
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STORMWATER MANAGEMENT – UPSTREAM CATCHMENT PLAN				
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## SEDIMENT AND EROSION CONTROL PLAN

SCALE 1:200

### NOTES:

1. DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURALS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT, LEVELS, FALLS ETC.

### EROSION AND SEDIMENT CONTROL NOTES

1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH EROSION AND SEDIMENT CONTROL DETAILS IN THIS DRAWING SET.
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY AND TO THE SATISFACTION OF THE RELEVANT LOCAL AUTHORITY PRIOR TO THE COMMENCEMENT OF AND DURING CONSTRUCTION. NO DISTURBANCE TO THE SITE SHALL BE PERMITTED OTHER THAN IN THE IMMEDIATE AREA OF THE WORKS AND NO MATERIAL SHALL BE REMOVED FROM THE SITE WITHOUT THE RELEVANT LOCAL AUTHORITY APPROVAL. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH STANDARDS OUTLINED IN NSW DEPARTMENT OF HOUSING'S 'MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTIONS'.
3. PLACE STRAW BALES LENGTH WISE IN A ROW AS PARALLEL AS POSSIBLE TO THE SITE CONTOURS. UNO. BALE ENDS TO BE TIGHTLY BUTTED. BALES ARE TO BE PLACED SO THAT STRAWS ARE PARALLEL TO THE ROW. BALES ARE TO BE PLACED 1.5M TO 2M DOWNSLOPE FROM THE TOE OF THE DISTURBED BATTER, UNO.
4. COUNCIL APPROVED FILTER FABRIC TO BE ENTRENCHED 150MM DEEP UPSLOPE TOWARDS DISTURBED SURFACE. FABRIC TO BE A MINIMUM SF2000 OR BETTER. FIX FABRIC TO POSTS WITH WIRE TIES OR AS RECOMMENDED WITH MANUFACTURER'S SPECIFICATIONS. FABRIC JOINTS TO HAVE A MINIMUM OF 150MM OVERLAP. WIRE TO BE STRUNG BETWEEN POSTS WITH FILTER FABRIC OVERLAP TO PREVENT SAGGING.
5. STABILISED ENTRY/EXIT POINTS TO REMAIN INTACT UNTIL FINISHED DRIVEWAY IS COMPLETE. CONSTRUCTION OF ENTRY/EXIT POINTS TO BE MAINTAINED AND REPAIRED AS REQUIRED SO THAT IT'S FUNCTION IS NOT COMPROMISED. CONSTRUCTION OF ENTRY/EXIT POINT TO BE IN ACCORDANCE WITH THE DETAIL CONTAINED WITHIN THIS DRAWING SET.
6. ALL DRAINAGE PIPE INLETS TO BE CAPPED UNTIL: DOWNPIPES CONNECTED & PITS CONSTRUCTED AND PROTECTED WITH SILT BARRIER.
7. PROVIDE AND MAINTAIN SILT TRAPS AROUND ALL SURFACE INLET PITS UNTIL CATCHMENT IS REVEGETATED OR PAVED.
8. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL EROSION AND SEDIMENT CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES SUCH THAT MORE THAN 60% OF THEIR CAPACITY IS LOST. ALL THE SILT IS TO BE PLACED OUTSIDE THE LIMIT OF WORKS. THE PERIOD FOR MAINTAINING THESE DEVICES SHALL BE AT LEAST UNTIL ALL DISTURBED AREAS ARE REVEGETATED AND FURTHER AS MAY BE DIRECTED BY THE SUPERINTENDENT OR COUNCIL.
9. THE CONTRACTOR SHALL IMPLEMENT DUST CONTROL BY REGULARLY WETTING DOWN (BUT NOT SATURATING) DISTURBED AREA.
10. LAY 300 WIDE MINIMUM TURF STRIP ON 100 TOPSOIL BEHIND ALL KERB AND GUTTER WITH 1000 LONG RETURNS EVERY 6000 AND AROUND STRUCTURES IMMEDIATELY AFTER BACKFILLING AS PER THE RELEVANT LOCAL AUTHORITY SPECIFICATION.
11. THE CONTRACTOR SHALL GRASS SEED ALL DISTURBED AREAS WITH AN APPROVED MIX AS SOON AS PRACTICABLE AFTER COMPLETION OF EARTHWORKS AND REGRADING.
12. REVEGETATE ALL TRENCHES IMMEDIATELY UPON COMPLETION OF BACKFILLING. PROVIDE AND MAINTAIN SILT TRAPS AROUND ALL SURFACE INLET PITS UNTIL CATCHMENT IS REVEGETATED OR PAVED. TOPSOIL SHALL BE STRIPPED AND STOCKPILED OUTSIDE HAZARD AREAS SUCH AS DRAINAGE LINES. THIS TOPSOIL SHALL BE RESPREAD LATER ON AREAS TO BE REVEGETATED AND STABILISED ONLY. (I.E. ALL FOOTPATHS, BATTERS, SITE REGARDING AREAS, BASINS AND CATCHDRAINS). TOPSOIL SHALL NOT BE RESPREAD ON ANY OTHER AREAS UNLESS SPECIFICALLY INSTRUCTED BY THE SUPERINTENDENT. IF THEY ARE TO REMAIN FOR LONGER THAN ONE MONTH STOCKPILES SHALL BE PROTECTED FROM EROSION BY COVERING THEM WITH A MULCH AND HYDROSEEDING AND, IF NECESSARY, BY LOCATING BANKS OR DRAINS DOWNSTREAM OF A STOCKPILE TO RETARD SILT LADEN RUNOFF.
14. WHEN ANY DEVICES ARE TO BE HANDED OVER TO COUNCIL THEY SHALL BE IN CLEAN AND STABLE CONDITION.

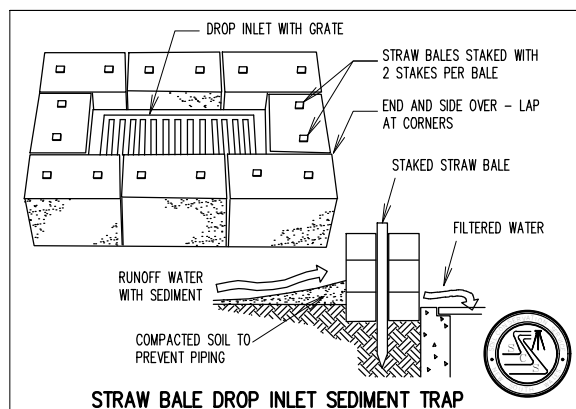


FIGURE 1

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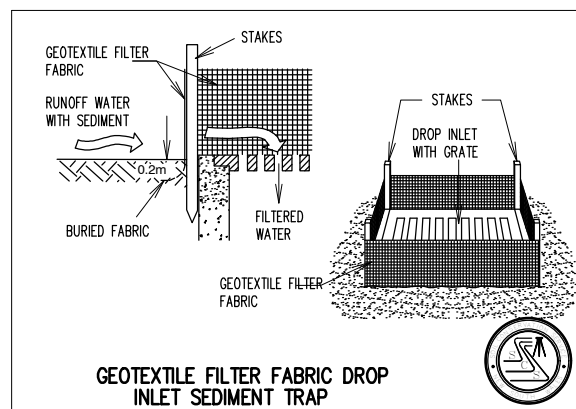


FIGURE 2

SCALE: NTS

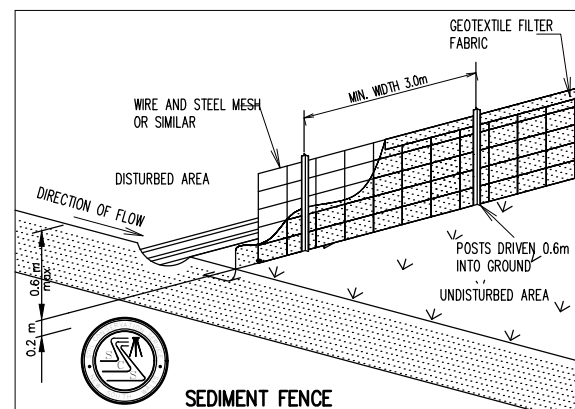


FIGURE 3

SCALE: NTS

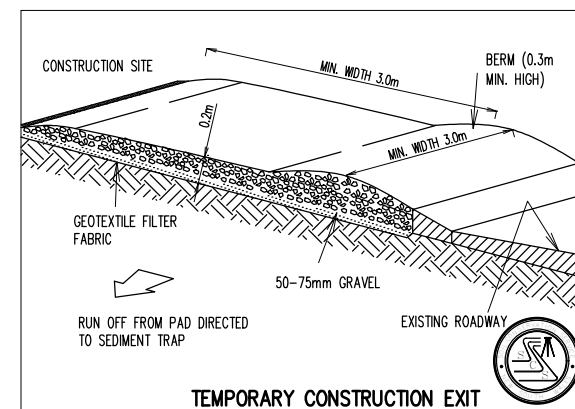


FIGURE 4 SCALE: NTS

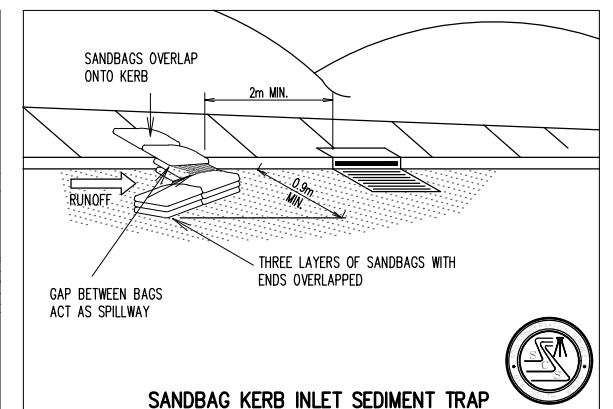


FIGURE 5 SCALE: NTS

SCALE: NTS

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EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

SCALE: AS SHOWN

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JOB NUMBER:	ISSUE:
190474	A