

NORTHERN BEACHES COUNCIL

WHALE BEACH NEIGHBOURHOOD CENTRE

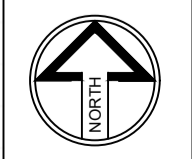
231 WHALE BEACH ROAD, WHALE BEACH, NSW 2107

DEVELOPMENT APPLICATION STORMWATER CONCEPT PLAN



REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified
P1	18.12.19	ISSUED FOR DA	J.S.
P2	13.03.20	ISSUED FOR DA	J.S.
P3	02.10.20	ISSUED FOR DA	J.S.

REVISIONS / AMENDMENTS			
Rev	Date	Description	Verified



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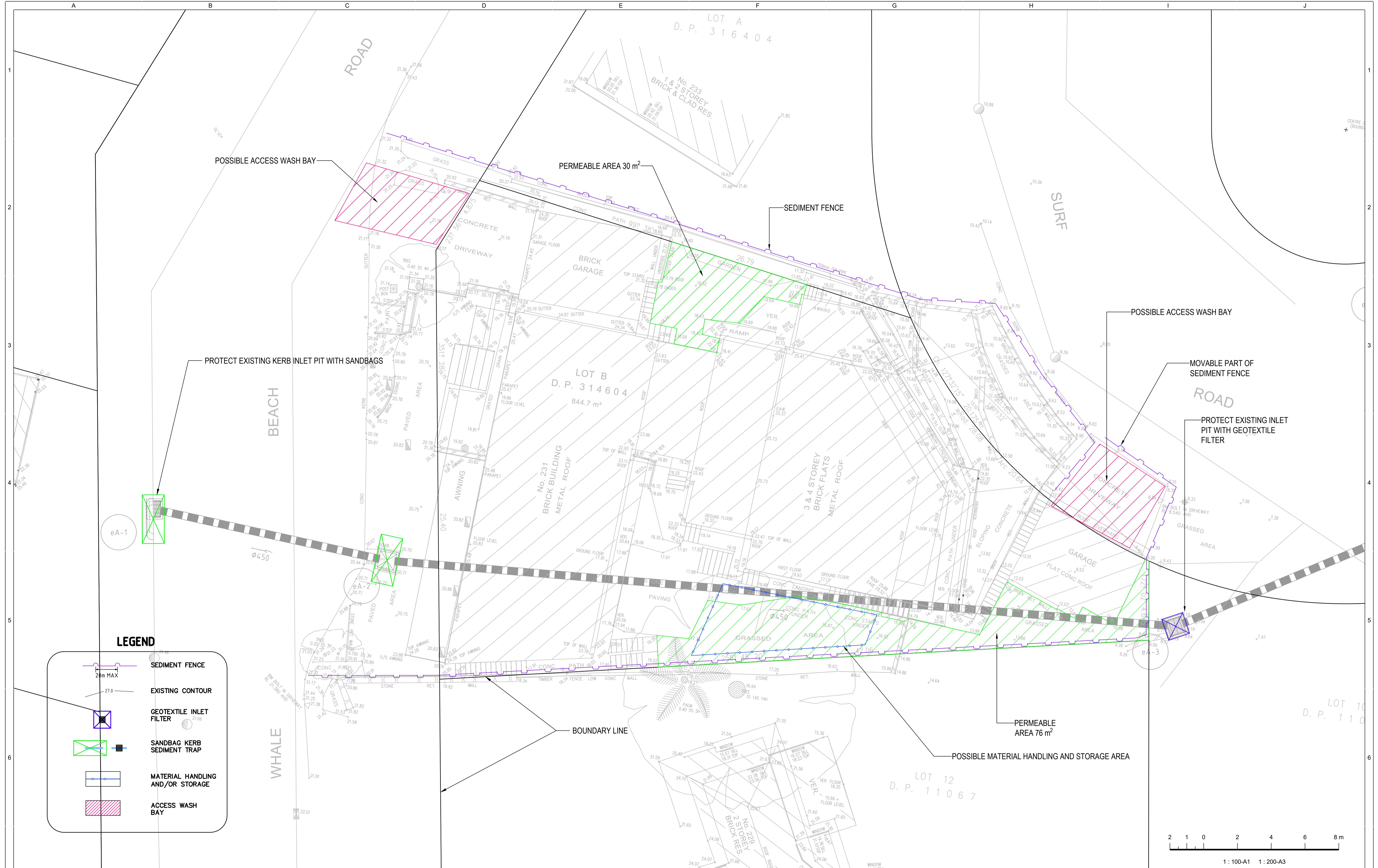


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PROJECT
WHALE BEACH NEIGHBOURHOOD DEVELOPMENT APPLICATION
231 WHALE BEACH ROAD,
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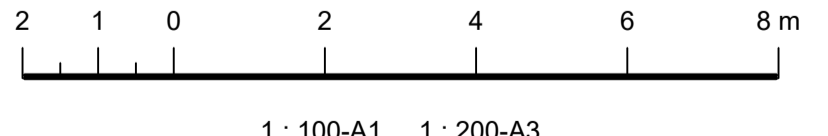
TITLE
STORMWATER SERVICES COVER SHEET

DA ISSUE		
NOT FOR CONSTRUCTION		
DRAWN	J.S.	SCALE @ A1
CHECKED	J.S.	NTS
APPROVED	J.S.	
CREATED	12/19	
JOB No.	DRAWING No.	REV
190351	C000	P3



LEGEND

- SEDIMENT FENCE
- EXISTING CONTOUR
- GEOTEXTILE INLET FILTER
- SANDBAG KERB SEDIMENT TRAP
- MATERIAL HANDLING AND/OR STORAGE
- ACCESS WASH BAY



REVISIONS / AMENDMENTS

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P1	18.12.19	ISSUED FOR DA	J.S.
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REVISIONS / AMENDMENTS

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PROJECT
WHALE BEACH NEIGHBOURHOOD DEVELOPMENT APPLICATION
231 WHALE BEACH ROAD, WHALE BEACH, NSW

TITLE
STORMWATER SERVICES EXISTING GROUND LEVEL SOIL AND EROSION CONTROL LAYOUT PLAN

DA ISSUE
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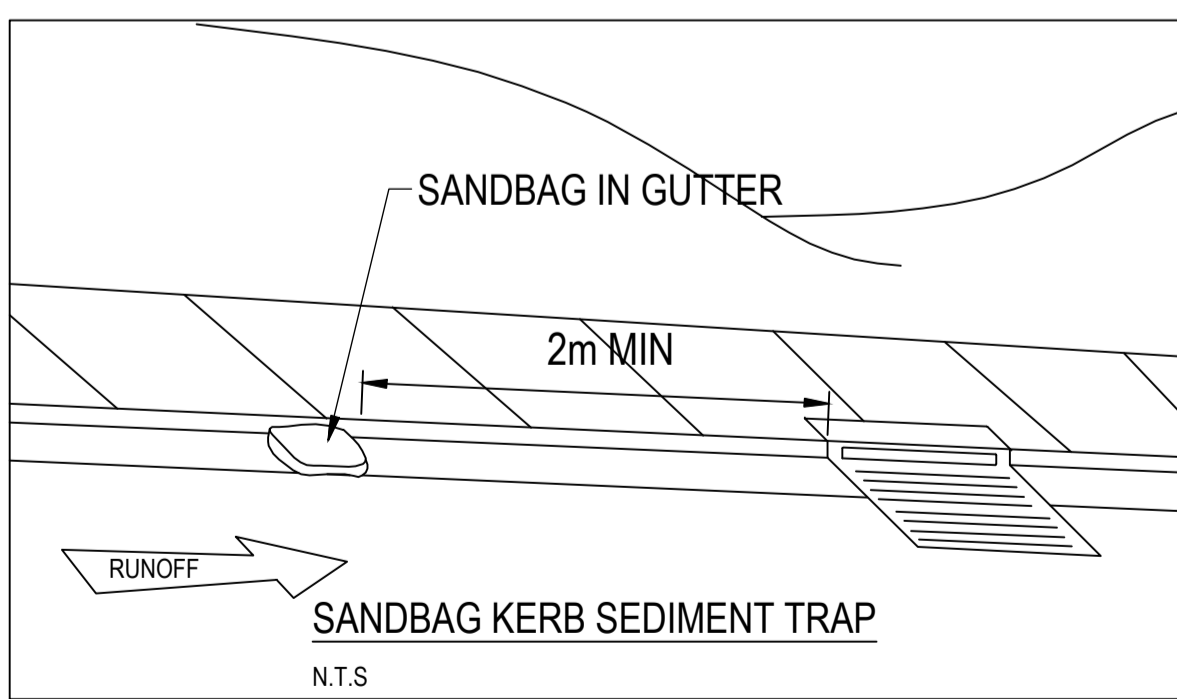
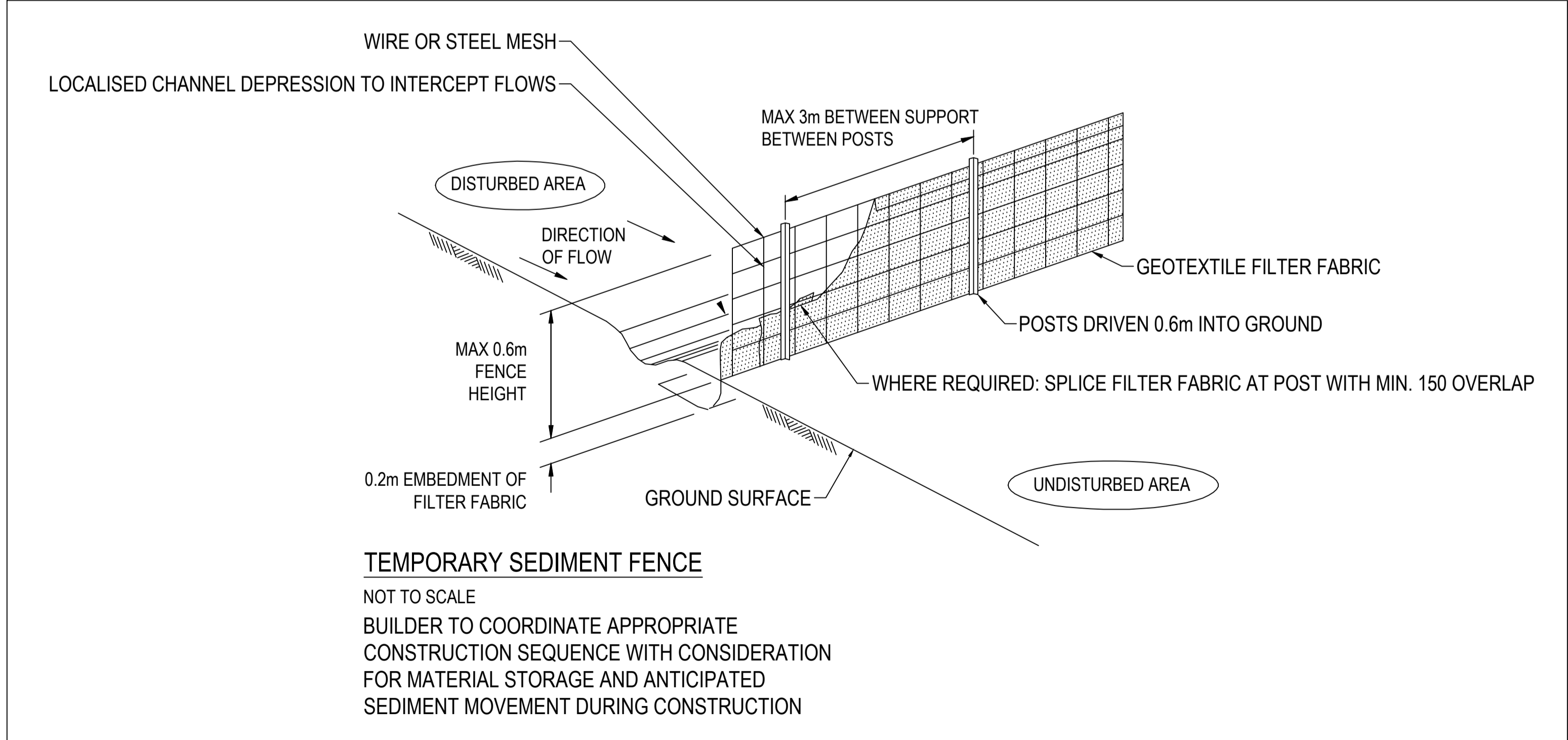
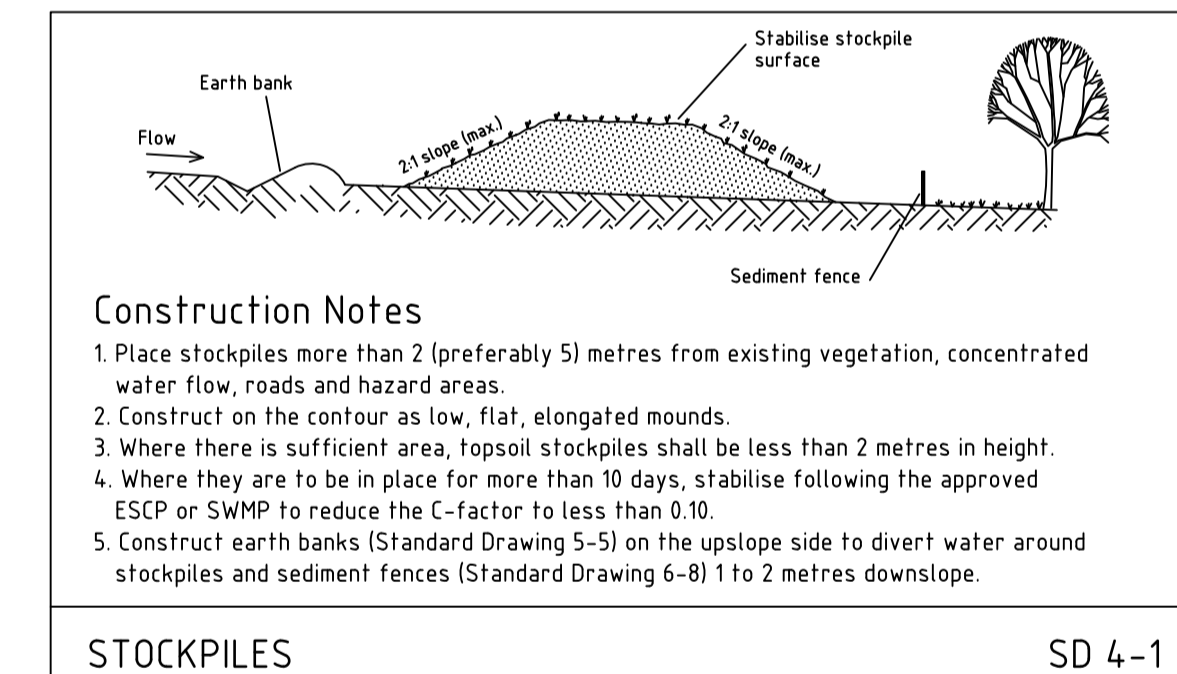
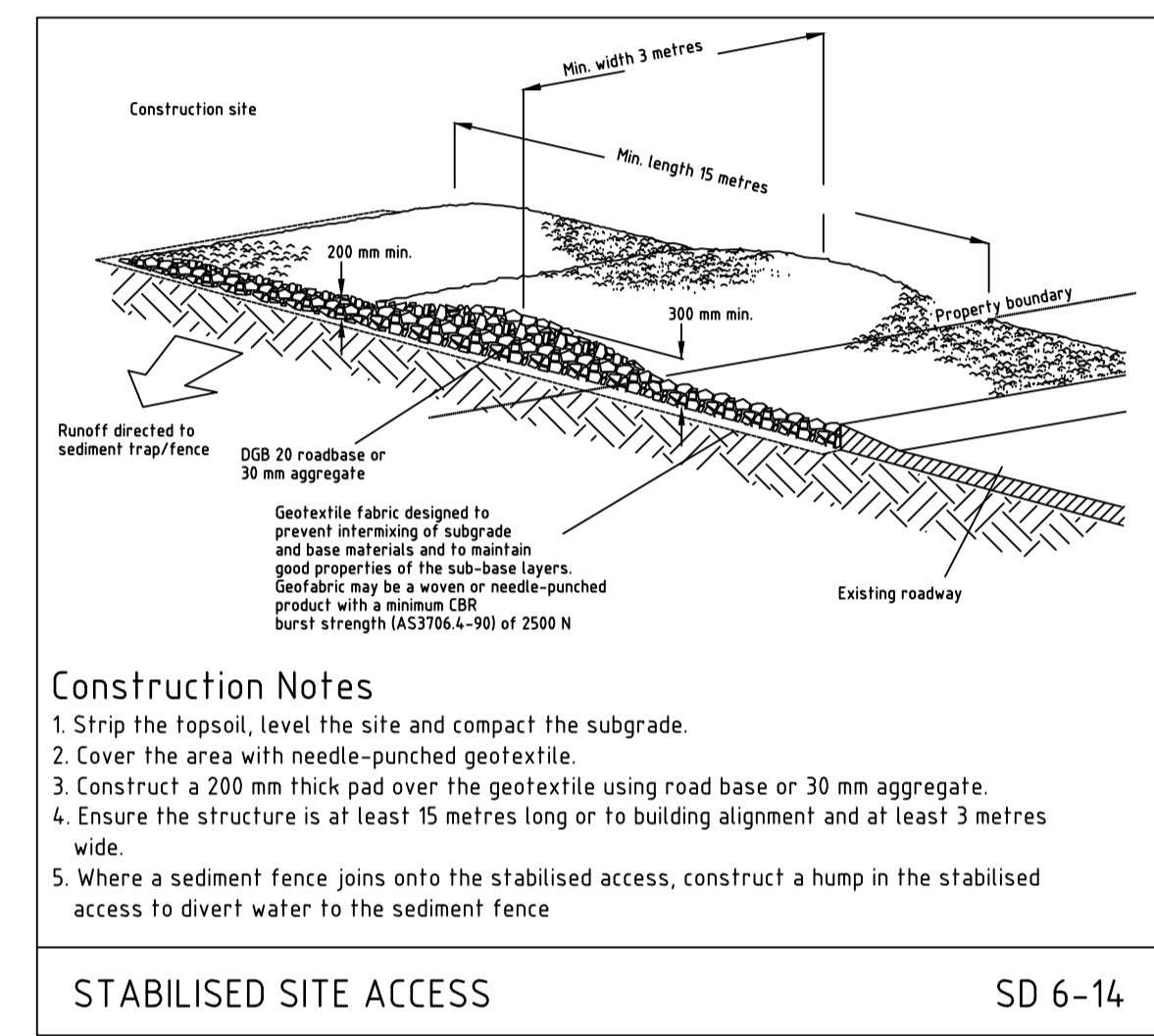
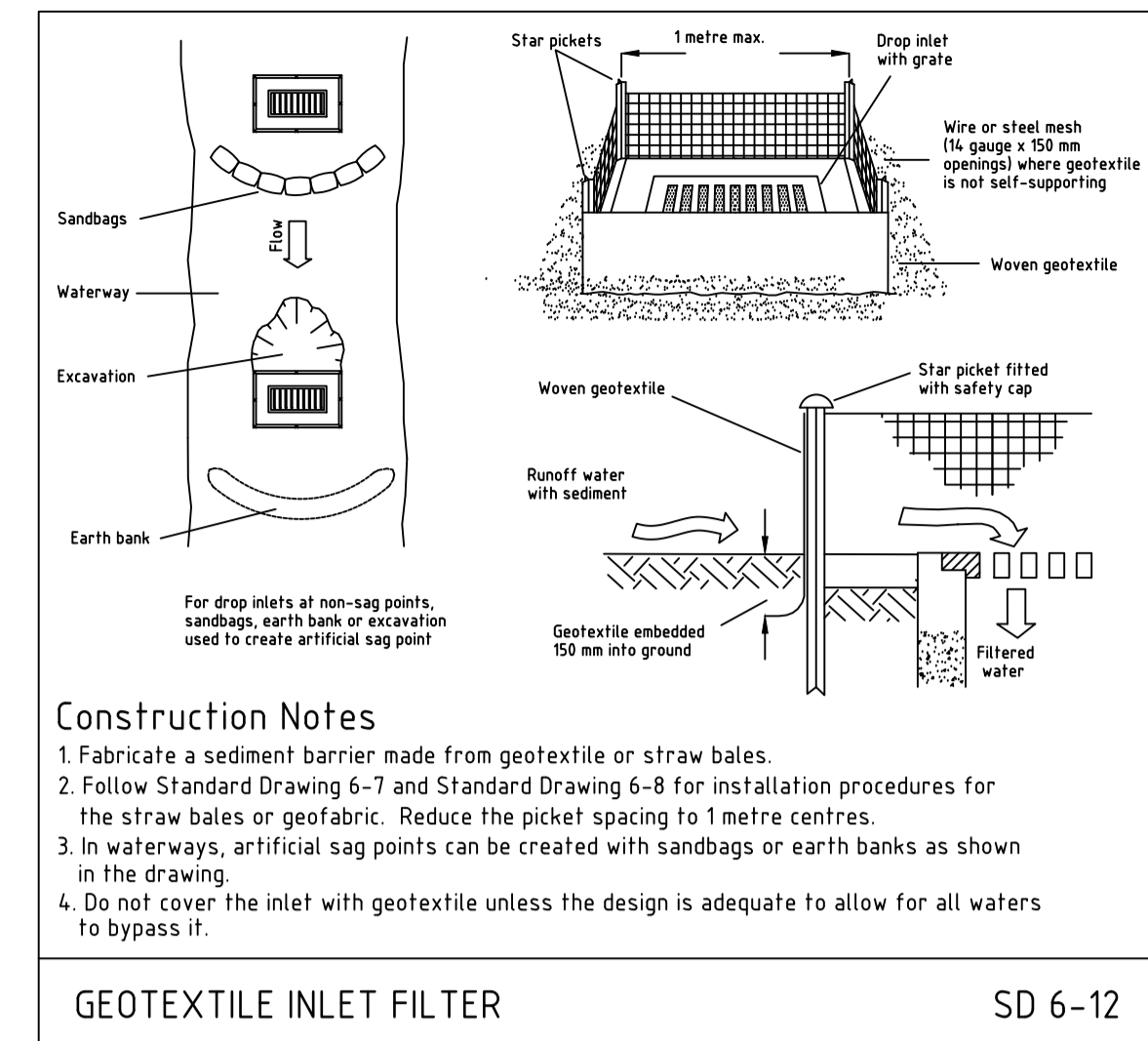
DRAWN	J.S.	SCALE @ A1
CHECKED	J.S.	1:100
APPROVED	J.S.	12/19
CREATED	12/19	
JOB No.	DRAWING No.	REV
190351	C101	P3

SEDIMENT & EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO THE COMMENCEMENT OF ANY WORKS BEING CARRIED OUT. ALL SOIL AND EROSION MEASURES SHALL BE MAINTAINED AND KEPT IN PLACE FOR THE FULL DURATION OF THE WORKS AND SHALL ONLY BE REMOVED AT FINAL STABILISATION OF THE WORKS. WHERE IT IS NECESSARY TO UNDERTAKE STRIPPING IN ORDER TO CONSTRUCT A SEDIMENT CONTROL DEVICE ONLY SUFFICIENT GROUND SHALL BE STRIPPED TO ALLOW CONSTRUCTION.
2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED AS INDICATED ON THESE DRAWINGS. LOCATION AND EXTENT OF SOIL AND WATER MANAGEMENT DEVICES IS DIAGRAMMATIC ONLY AND THE ACTUAL REQUIREMENTS SHALL BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT.
3. CONFORMITY WITH THIS PLAN SHALL IN NO WAY REDUCE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT AGAINST WATER DAMAGE DURING THE COURSE OF THE CONTRACT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ANY NECESSARY CONTROL IS IN PLACE EVEN THOUGH SUCH CONTROL MAY NOT BE SHOWN ON THE PLAN.
4. THE CONTRACTOR SHALL INFORM ALL SUBCONTRACTORS AND ALL EMPLOYEES OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSTREAM AREAS
5. APART FROM SEDIMENT BASINS, THE CONTRACTOR SHALL REGULARLY MAINTAIN SEDIMENT AND EROSION CONTROL STRUCTURES AND DESILT SUCH STRUCTURES PRIOR TO THE REDUCTION IN CAPACITY OF 30% DUE TO ACCUMULATED SEDIMENT. THE SEDIMENT SHALL BE DISPOSED OF ON SITE IN A MANNER APPROVED BY THE ENGINEER.
6. THE CONTRACTOR SHALL TEMPORARILY REHABILITATE WITHIN TEN (10) DAYS ANY DISTURBED AREAS PROVIDING A MINIMUM 60% COVER. FINAL REHABILITATION IS TO BE PROVIDED WITHIN A FURTHER 60 DAYS WITH A MINIMUM 70% COVER.
8. THE CONTRACTOR SHALL PROVIDE WATERING OF THE VEGETATED BATTERS FOR MAINTENANCE PERIOD. PLANT, MACHINERY AND VEHICLES SHALL NOT BE DRIVEN OVER GRASSED AREAS UNLESS ON AN APPROVED HAULAGE ROUTE.
9. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS QUICKLY AS POSSIBLE TO MINIMISE RISK OF EROSION.
10. SITE ACCESS SHALL BE RESTRICTED TO THE NOMINATED POINTS. THE CONTRACTOR SHALL PROVIDE STABILISED SITE ACCESS.
11. DUST AND SITE DISTURBANCE MUST BE KEPT TO A MINIMUM. DURING WINDY WEATHER, LARGE UNPROTECTED AREAS MUST BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO REDUCE WIND EROSION. ERECT BARRIER FENCING TO MINIMISE LAND DISTURBANCE BY PREVENTING VEHICULAR AND PEDESTRIAN ACCESS TO AREAS BEING REHABILITATED AND LANDS THAT DO NOT NEED TO BE DISTURBED BY THIS PROJECT.
12. STOCKPILE TOPSOILS, SUBSOILS AND OTHER MATERIALS SEPARATELY.
13. TOPSOIL SHALL BE STORED IN LOW MOUNDS NO MORE THAN 2 METRES HIGH AND RE-USED WITHIN TWO MONTHS TO MAINTAIN ACTIVE POPULATIONS OF BENEFICIAL SOIL MICROBES AND SEED.
14. PLACE ALL STOCKPILES AT LEAST FIVE METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS, ESPECIALLY EARTH BANKS AND ROADS. IF NECESSARY, EARTH BANKS OR DRAINS WILL BE CONSTRUCTED TO DIVERT LOCALISED RUN-OFF.
15. TURN TOPSOIL STOCKPILES OVER TO AERATE THEM AT MONTHLY INTERVALS. ENSURE VEGETATION IS NOT INCORPORATED INTO THE SOIL.
16. AVOID REVERSING THE SOIL PROFILE MATERIALS DURING FILL OPERATIONS - REPLACE DISTURBED SOILS IN THEIR ORIGINAL ORDER.

17. ON COMPLETION OF MAJOR EARTHWORKS AND BEFORE ADDING TOPSOIL, LEAVE DISTURBED LANDS WITH A LOOSE SURFACE. ALTERNATELY, DISTURBED AREAS PREVIOUSLY COMPACTED BY CONSTRUCTION WORKS WILL BE RIPPED TO MORE THAN 200-MM ALONG THE CONTOUR BEFORE APPLYING TOPSOIL.
18. PROVIDING MATERIALS ARE AVAILABLE, SPREAD TOPSOIL TO A MINIMUM DEPTH OF 75mm IN REVEGETATION AREAS ON SLOPES OF 4(H):1(V) OR LESS AND TO A DEPTH OF 40 TO 60mm IN REVEGETATION AREAS STEEPER THAN 4:1.
19. LEAVE TOPSOIL IN A SCARIFIED OR ROUGH CONDITION ONCE REPLACED TO HELP MOISTURE INFILTRATION AND REDUCE SOIL EROSION.
20. ENSURE SOIL IS THOROUGHLY SOAKED TO A DEPTH OF 75mm (RAIN OR IRRIGATION) IMMEDIATELY BEFORE PLANTING.
21. HANDLE TOPSOIL ONLY WHEN IT IS MOIST (NOT WET OR DRY) TO AVOID DECLINE OF SOIL STRUCTURE
22. SEDIMENT BASINS SHALL BE MAINTAINED FOR THE ENTIRE DURATION OF THE PROJECT OR UNTIL SUCH TIME AS ALL DISTURBED AREAS ARE HYDROMULCHED.
23. WHERE FLOCCULATION OF BASINS IS REQUIRED UNLESS OTHERWISE SPECIFIED THE RECOMMENDED INITIAL DOSING IS 30KG OF GYPSUM PER 100 CUBIC METRES OF BASIN VOLUME. THE CONTRACTOR MAY VARY THIS RATE SUBJECT TO TESTING OF PREVIOUS WATER SAMPLES AND THE ACHIEVEMENTS OF THE REQUIRED WATER QUALITY STANDARDS.
24. ANY DAMS TO BE DESILTED SHALL BE FLOCCULATED TO SETTLE ANY SUSPENDED SOLIDS CLEAR WATER SHALL THEN BE PUMPED OUT IN A MANNER THAT WILL NOT CAUSE DOWNSTREAM EROSION. THE DAM WALL SHALL THEN BE BREACHED AND ANY SILT REMOVED AND PLACED IN A SUITABLY CONSTRUCTED DRYING BASIN. WHEN DRY, THE SILT SHALL BE REMOVED FROM SITE OR MIXED WITH TOP SOIL FOR FUTURE SPREADING.
25. THE CONTRACTOR SHALL MAINTAIN A LOG BOOK DETAILING:
 - RECORDS OF ALL RAINFALL
 - CONDITION OF SOIL AND WATER MANAGEMENT STRUCTURES
 - ANY APPLICATION OF FLOCCULATING AGENTS TO SEDIMENT BASIN
 - VOLUMES OF ALL WATER DISCHARGED FROM SEDIMENT BASINS
 - ANY ADDITIONAL REMEDIAL WORKS REQUIRED.
26. THE LOG BOOK SHALL BE MAINTAINED ON A WEEKLY BASIS AND BE MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. THE ORIGINAL LOG BOOK SHALL BE ISSUED TO THE PROJECT MANAGER AT THE COMPLETION OF WORKS
27. ALL ROAD EMBANKMENTS TO BE STABILISED AS PER LANDSCAPE ARCHITECTS DETAILS.
28. A SELF AUDITING PROGRAM SHOULD BE ESTABLISHED BASED ON A CHECK SHEET DEVELOPED FOR THE SITE. A SITE INSPECTION USING THE CHECK SHEET SHOULD BE MADE BY THE SITE MANAGER AT LEAST WEEKLY, IMMEDIATELY BEFORE SITE CLOSURE AND IMMEDIATELY FOLLOWING RAINFALL EVENTS THAT CAUSE RUNOFF.
29. UNDERTAKE THE SELF AUDIT BY:
 - WALKING AROUND THE SITE SYSTEMATICALLY (E.G. CLOCKWISE)
 - RECORDING THE CONDITION OF EVERY BMP EMPLOYED
 - RECORDING MAINTENANCE REQUIREMENTS (IF ANY) FOR EACH BMP
 - RECORDING THE VOLUMES OF SEDIMENT REMOVED FROM THE SEDIMENT
 - RETENTION SYSTEMS WHERE APPLICABLE
 - RECORDING THE SITE WHERE SEDIMENT IS DISPOSED
 - FORWARDING A SIGNED DUPLICATE OF THE COMPLETED CHECK SHEET TO THE PROJECT MANAGER/DEVELOPER/SITE OPERATOR FOR THEIR INFORMATION

30. IN PARTICULAR, INSPECT:
 - LOCATIONS WHERE VEHICLES ENTER AND LEAVE THE SITE
 - ALL INSTALLED EROSION AND SEDIMENT CONTROL MEASURES, ENSURING THEY
 - ARE OPERATING CORRECTLY
 - AREAS THAT MIGHT SHOW WHETHER SEDIMENT OR OTHER POLLUTANTS ARE
 - LEAVING THE SITE OR HAVE POTENTIAL TO DO SO
 - ALL DISCHARGE POINTS, TO ASSESS WHETHER THE EROSION AND SEDIMENT
 - CONTROL MEASURES ARE EFFECTIVE IN PREVENTING IMPACTS TO THE RECEIVING WATERS
31. A SITE INSPECTION USING THE CHECK SHEET WILL BE MADE BY THE SITE MANAGER AT LEAST WEEKLY, IMMEDIATELY BEFORE SITE CLOSURE, AND IMMEDIATELY FOLLOWING RAINFALL EVENTS GREATER THAN 5mm IN 24 HOURS.



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
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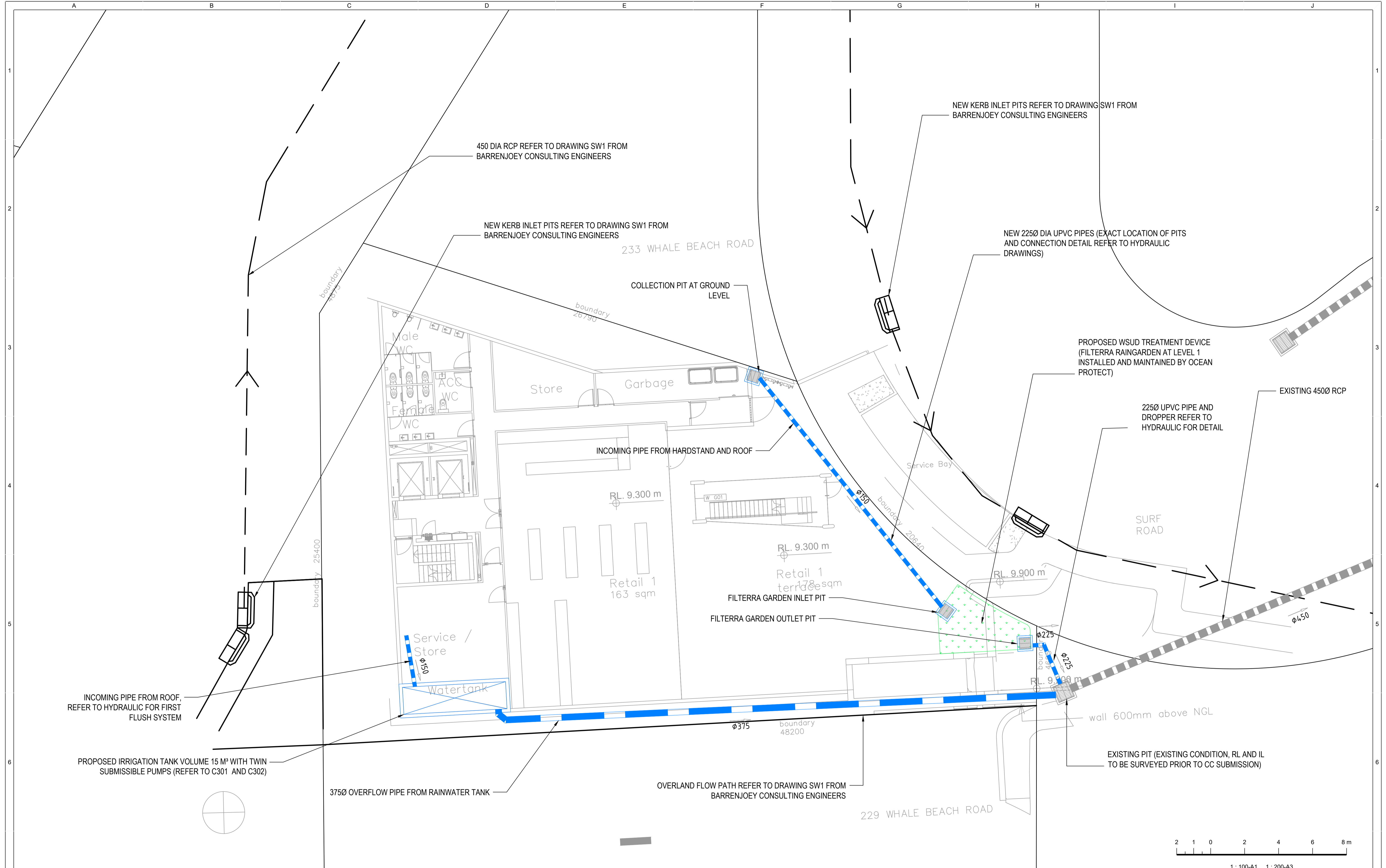
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PROJECT
WHALE BEACH NEIGHBOURHOOD DEVELOPMENT APPLICATION
231 WHALE BEACH ROAD, WHALE BEACH, NSW

TITLE
STORMWATER SERVICES EXISTING GROUND LEVEL SOIL AND EROSION CONTROL DETAIL AND NOTES

DA ISSUE
NOT FOR CONSTRUCTION

DRAWN	J.S.	SCALE @ A1
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190351	C102	P2



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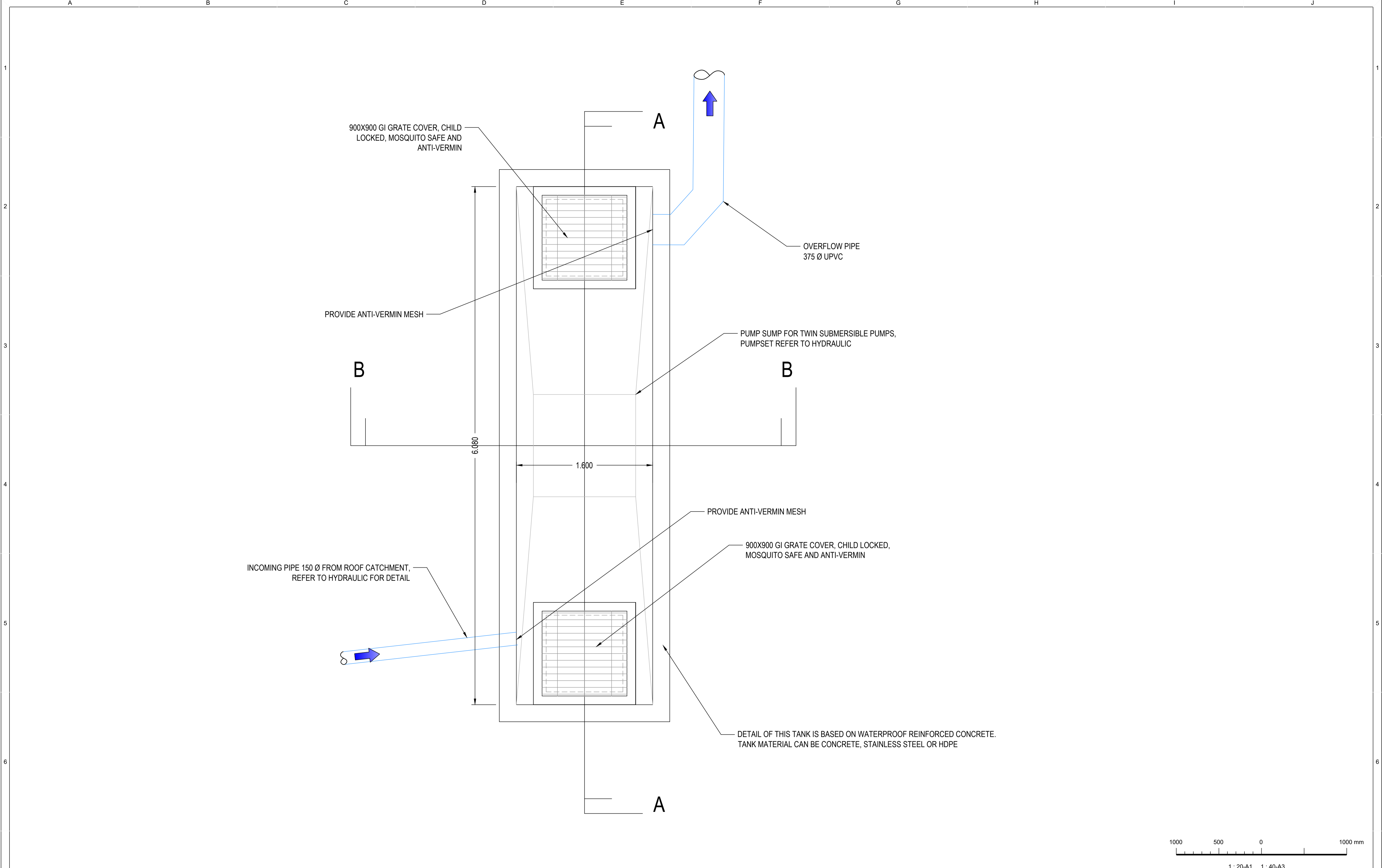


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PROJECT
WHALE BEACH NEIGHBOURHOOD DEVELOPMENT APPLICATION
231 WHALE BEACH ROAD,
WHALE BEACH, NSW

TITLE
STORMWATER SERVICES WATER SENSITIVE URBAN DESIGN LAYOUT PLAN

DA ISSUE		
NOT FOR CONSTRUCTION		
DRAWN	J.S.	SCALE @ A1
CHECKED	J.S.	1:100
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190351	C201	P3



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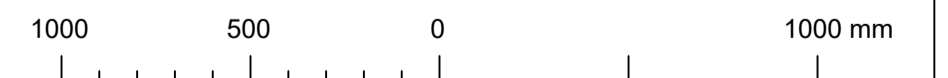
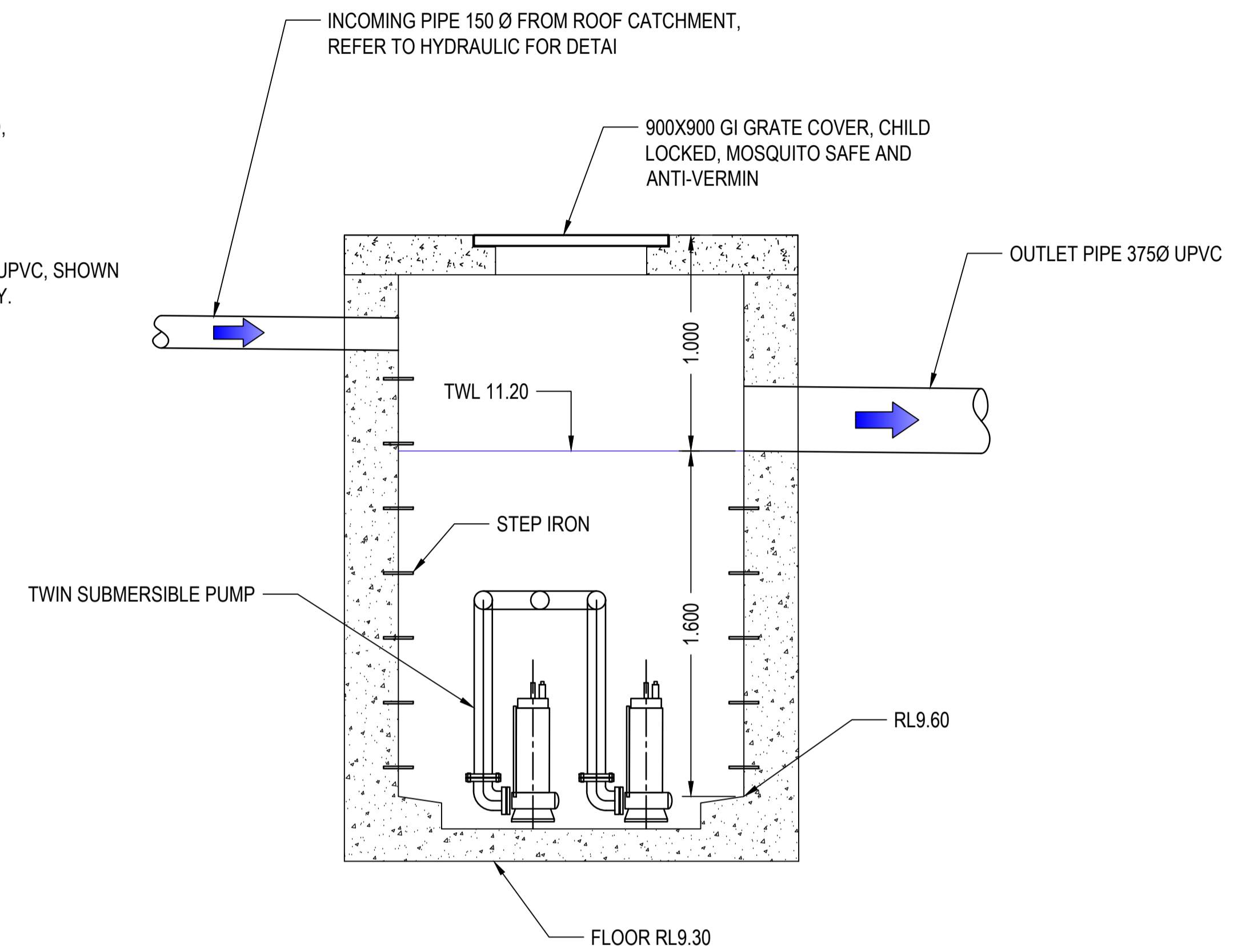
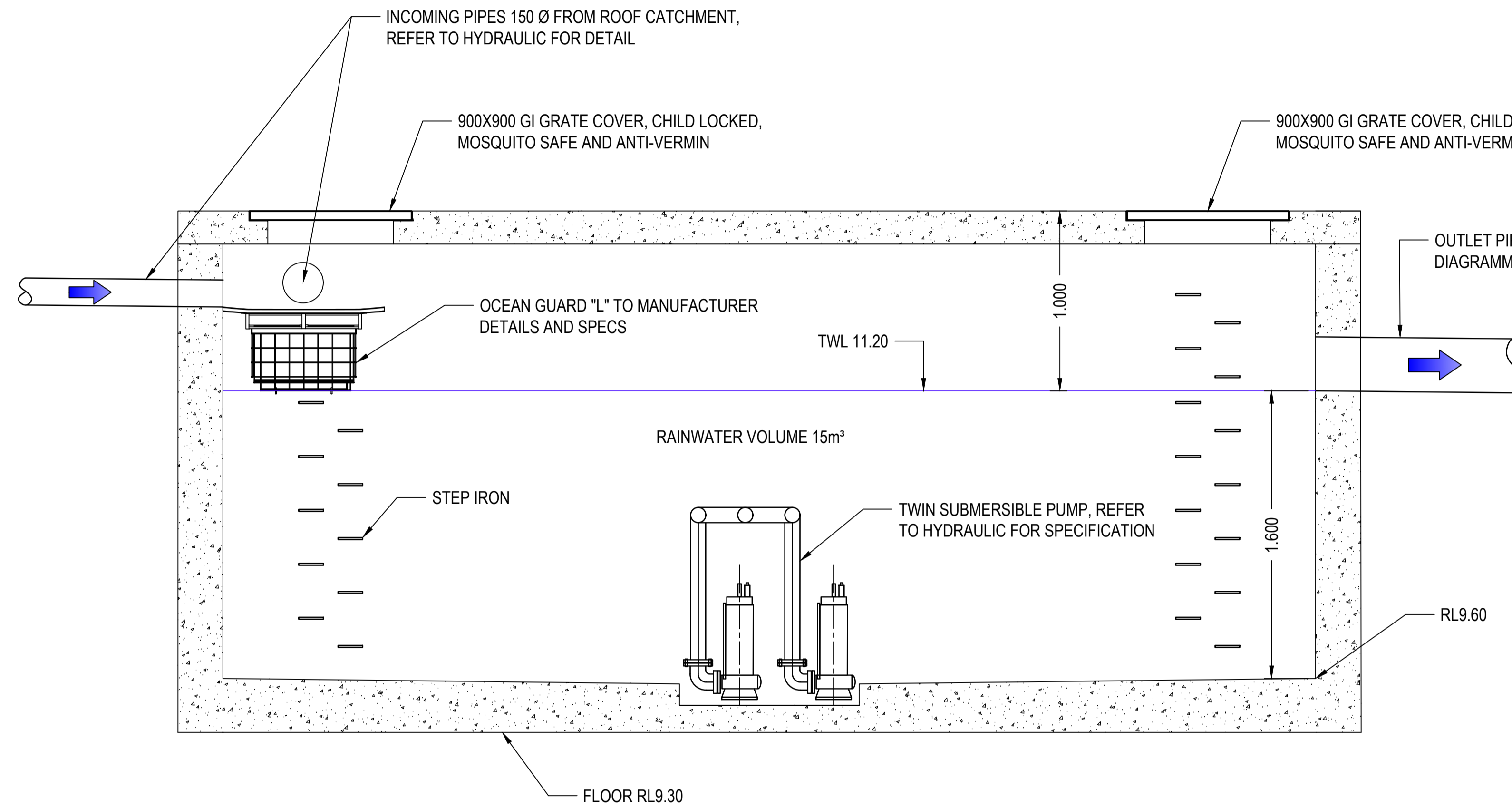
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PROJECT
WHALE BEACH NEIGHBOURHOOD DEVELOPMENT APPLICATION
231 WHALE BEACH ROAD,
WHALE BEACH, NSW

TITLE
STORMWATER SERVICES RAINWATER TANK PLAN VIEW

DA ISSUE
NOT FOR CONSTRUCTION

DRAWN	J.S.	SCALE @ A1
CHECKED	J.S.	1:20
APPROVED	J.S.	
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JOB No.	DRAWING No.	REV
190351	C301	P3



1:20-A1 1:40-A3

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P1	18.12.19	ISSUED FOR DA	J.S.				
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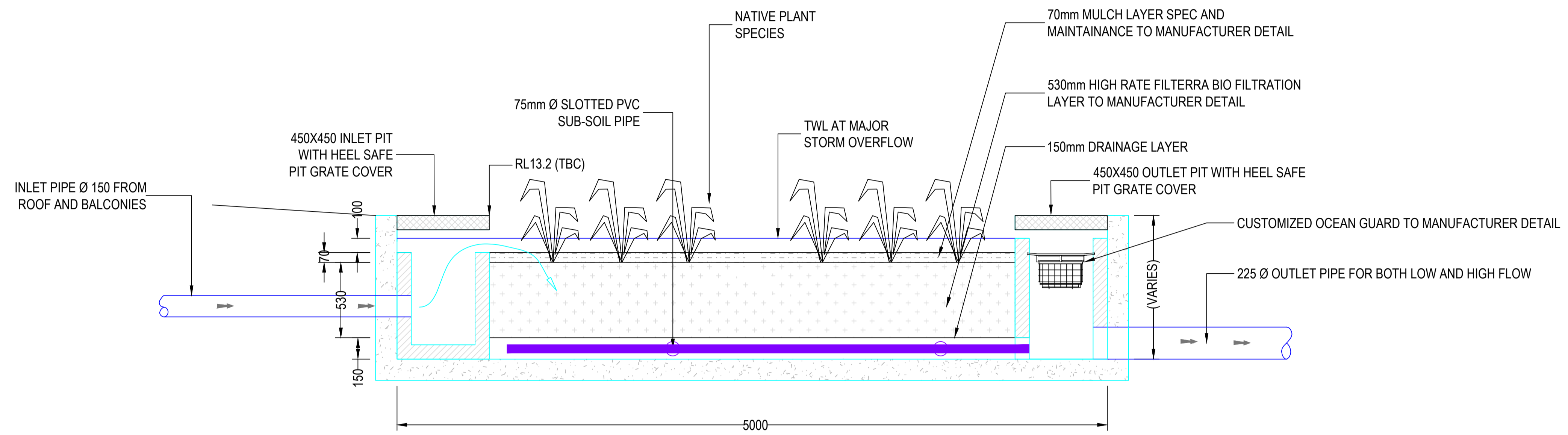
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PROJECT
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DEVELOPMENT APPLICATION**
231 WHALE BEACH ROAD,
WHALE BEACH, NSW

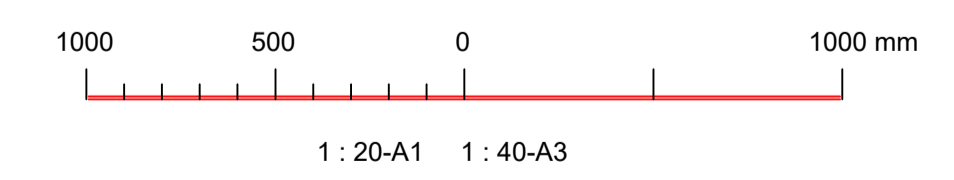
TITLE
**STORMWATER SERVICES
RAINWATER TANK
SECTIONAL VIEWS**

DA ISSUE
NOT FOR CONSTRUCTION

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CHECKED	J.S.	1:20
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190351	C302	P3



TYPICAL FILTERRA RAINGARDEN SCHEMATIC SECTION AT LEVEL 1



REVISIONS / AMENDMENTS				REVISIONS / AMENDMENTS			
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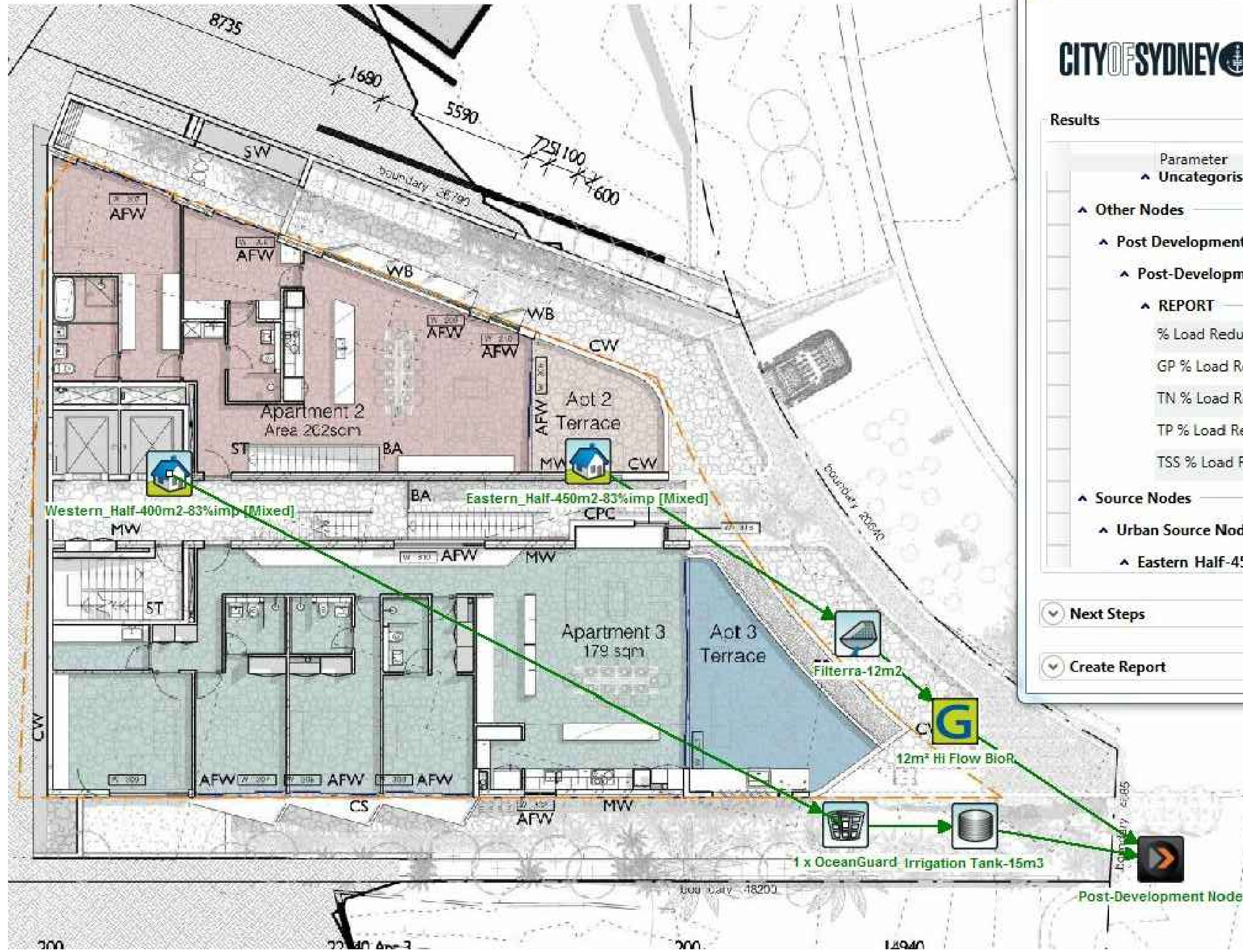
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PROJECT
**WHALE BEACH
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DEVELOPMENT APPLICATION**
231 WHALE BEACH ROAD,
WHALE BEACH, NSW

TITLE
**STORMWATER SERVICES
TYPICAL FILTERRA GARDEN
CROSS SECTION**

DA ISSUE
NOT FOR CONSTRUCTION

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CHECKED	J.S.	1:20
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CREATED		
JOB No.	DRAWING No.	REV
190351	C401	P3



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CITY OF SYDNEY

music link

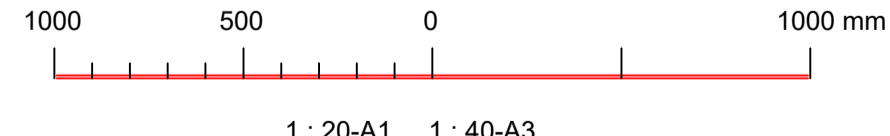
Results

Parameter	Min	Max	Actual	Result
^ Uncategorized Parameters				
^ Other Nodes				
^ Post Development Nodes				
^ Post-Development Node				
^ REPORT				
% Load Reduction	None	None	25.9	
GP % Load Reduction	90	None	100	
TN % Load Reduction	45	None	50.5	
TP % Load Reduction	65	None	66.6	
TSS % Load Reduction	85	None	93.5	
^ Source Nodes				
^ Urban Source Nodes				
^ Eastern Half-450m2-83%imo				

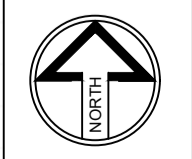
Next Steps

Create Report

- NOTE:
- NORTHERN BEACHES COUNCIL STORMWATER QUALITY TREATMENT TARGETS ARE SIMILAR TO CITY OF SYDNEY COUNCIL TREATMENT TARGETS.
 - IN THIS MUSIC ANALYSIS, WE ARE USING THE LATEST MUSIC LINK DOWNLOADED FROM CITY OF SYDNEY COUNCIL PORTAL.
 - THIS MUSIC MODEL WILL BE PROVIDED DURING CC SUBMISSION STAGE.



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PROJECT
**WHALE BEACH
NEIGHBOURHOOD
DEVELOPMENT APPLICATION**
231 WHALE BEACH ROAD,
WHALE BEACH, NSW

TITLE
**STORMWATER SERVICES
MUSIC ANALYSIS AND
RESULTS**

DA ISSUE
NOT FOR CONSTRUCTION

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190351	C501	P3