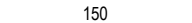


PROPOSED DEVELOPMENT

No.'s 21- 25 McINTOSH STREET & No. 55 WERONA AVENUE, GORDON

STORMWATER MANAGEMENT PLANS

LEGEND	
	DENOTES ON-SITE DETENTION TANK
	DENOTES ON-SITE RETENTION TANK
	DENOTES DWELLING FOOTPRINT
	DENOTES 100mm DIA. STORMWATER/SURFACE WATER SYSTEM PIPE AT 1% MIN. GRADE U.N.O.
	DENOTES 100mm DIA. FULLY SEALED RAINWATER SYSTEM PIPE U.N.O.
	DENOTES RAINWATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
	DENOTES STORMWATER/SURFACE WATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
	DENOTES RISING MAIN AND PIPE DIA. U.N.O.
	DENOTES SUBSOIL DRAINAGE LINE AND DIA. WRAPPED IN GEOFABRIC U.N.O.
	DENOTES DOWNPIPE
	DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL
	DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL FOR SYSTEM FLUSHING PURPOSES
	STORMWATER PIT - SOLID COVER
	STORMWATER PIT - GRATED INLET
	DENOTES GRATED DRAIN
	DENOTES ABSORPTION TRENCH
	NON RETURN VALVE
	PUMP
	STOP VALVE (ISOLATION VALVE)
	240v REQUIRED
	DENOTES LEVEL OF INLET /OUTLET OF STORMWATER PIPE. NOTE: UNLESS NOTED OTHERWISE, THE BASE OF THE PIT IS THE SAME AS THE PIPE INLET/OUTLET.

DIAL BEFORE YOU DIG



IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

GENERAL NOTES	
1.	THESE PLANS SHALL BE READ IN CONJUNCTION WITH OTHER RELEVANT CONSULTANTS' PLANS, SPECIFICATIONS, CONDITIONS OF DEVELOPMENT CONSENT AND CONSTRUCTION CERTIFICATE REQUIREMENTS. WHERE DISCREPANCIES ARE FOUND HYDRACOR CONSULTING ENGINEERS PTY LTD MUST BE CONTACTED IMMEDIATELY FOR VERIFICATION
2.	WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE NOR USED FOR CONSTRUCTION PURPOSES
3.	SUBSOIL DRAINAGE SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL ENGINEER. SUBSOIL DRAINAGE SHALL NOT BE CONNECTED INTO THE STORMWATER SYSTEM IDENTIFIED ON THESE PLANS UNLESS APPROVED BY HYDRACOR CONSULTING ENGINEERS PTY LTD.

STORMWATER CONSTRUCTION NOTES	
1.	ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500 (CURRENT EDITION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL'S POLICIES AND CODES
2.	THE MINIMUM SIZES OF THE STORMWATER DRAINS SHALL NOT BE LESS THAN DN90 FOR CLASS 1 BUILDINGS AND DN100 FOR OTHER CLASSES OF BUILDING OR AS REQUIRED BY THE REGULATORY AUTHORITY
3.	THE MINIMUM GRADIENT OF STORMWATER DRAINS SHALL BE 1%, UNLESS NOTED OTHERWISE
4.	COUNCIL'S TREE PRESERVATION ORDER IS TO BE STRICTLY ADHERED TO. NO TREES SHALL BE REMOVED UNTIL PERMIT IS OBTAINED
5.	PUBLIC UTILITY SERVICES ARE TO BE ADJUSTED AS NECESSARY AT THE CLIENT'S EXPENSE
6.	ALL PITS TO BE BENCHED AND STREAMLINED. PROVIDE STEP IRONS FOR ALL PITS OVER 1.2m DEEP
7.	MAKE SMOOTH JUNCTION WITH ALL EXISTING WORK
8.	VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION
9.	SERVICES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE NOR CORRECT. IT IS THE CLIENT & CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL PRIOR TO CONSTRUCTION
10.	ANY VARIATION TO THE WORKS AS SHOWN ON THE APPROVED DRAWINGS ARE TO BE CONFIRMED BY HYDRACOR CONSULTING ENGINEERS PTY LTD PRIOR TO THEIR COMMENCEMENT

RAINWATER RE-USE SYSTEM NOTES	
1.	RAINWATER SUPPLY PLUMBING TO BE CONNECTED TO OUTLETS WHERE REQUIRED BY BASIX CERTIFICATE (BY OTHERS)
2.	TOWN WATER CONNECTION TO RAINWATER TANK TO BE TO THE SATISFACTION OF THE REGULATORY AUTHORITY. THIS MAY REQUIRE PROVISION OF: 2.1. PERMANENT AIR GAP 2.2. BACKFLOW PREVENTION DEVICE
3.	NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE RAIN WATER SUPPLY
4.	AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK
5.	PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
6.	ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE
7.	PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN
8.	ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK. SURFACE WATER INLETS ARE NOT TO BE CONNECTED
9.	PIPE MATERIALS FOR RAINWATER SUPPLY PLUMBING ARE TO BE APPROVED MATERIALS TO AS/NZS3500 PART 1 SECTION 2 AND TO BE CLEARLY AND PERMANENTLY IDENTIFIED AS 'RAINWATER'. THIS MAY BE ACHIEVED FOR BELOW GROUND PIPES USING IDENTIFICATION TAPE (MADE IN ACCORDANCE WITH AS2648) OR FOR ABOVE GROUND PIPES BY USING ADHESIVE PIPE MARKERS (MADE IN ACCORDANCE WITH AS1345)
10.	EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELED 'RAINWATER' ON A METALLIC SIGN IN ACCORDANCE WITH AS1319
11.	ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY

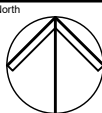
SHEET INDEX	
COVER SHEET & NOTES	SHEET C1
STORMWATER DRAINAGE SUMMARY	SHEET C2
STORMWATER MANAGEMENT PLAN - BASEMENT 2	SHEET C3
STORMWATER MANAGEMENT PLAN - BASEMENT 1	SHEET C4
STORMWATER MANAGEMENT PLAN - GROUND FLOOR SHEET No. 1	SHEET C5
STORMWATER MANAGEMENT PLAN - GROUND FLOOR SHEET No. 2	SHEET C6
ROAD DRAINAGE PLAN	SHEET C7
STORMWATER PIPE LONG SECTION	SHEET C8
ON-SITE DETENTION/RETENTION TANK ROOF PLAN	SHEET C9
ON-SITE DETENTION/RETENTION TANK BASE PLAN	SHEET C10
STORMWATER MANAGEMENT DETAILS SHEET No. 1	SHEET C11
STORMWATER MANAGEMENT DETAILS SHEET No. 1	SHEET C12
STORMWATER QUALITY REPORT SHEET No. 1	SHEET C13
STORMWATER QUALITY REPORT SHEET No. 2	SHEET C14
STORMWATER QUALITY REPORT SHEET No. 3	SHEET C15
EROSION & SEDIMENT CONTROL PLAN	SHEET C16
EROSION & SEDIMENT CONTROL NOTES & DETAILS	SHEET C17



DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION

DRAWINGS MUST BE PRINTED IN COLOUR

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										PROPOSED RESIDENTIAL DEVELOPMENT			
										No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON			
										ENGINEERS CIVIL FLOOD STUDIES STORMWATER HYDRAULIC			

KU-RING-GAI DCP PART 24 STORMWATER DRAINAGE SUMMARY

SITE AREA 7776 m²

PRE-DEVELOPED IMPERVIOUS AREA N/A m²

POST DEVELOPED IMPERVIOUS AREA 4133 m²

DESIGN SUMMARY IN RESPONSE TO THE KU-RING-GAI DCP PART 24 - WATER MANAGEMENT:

- STORMWATER DISCHARGE (24B.5)

ON-SITE DETENTION / RAINWATER TANK OVERFLOW AND SURFACE PITS TO DISCHARGE TO ROSEDALE ROAD
- STREAM FLOW CONTROLS PART 24 CLAUSE 24.C3

PROPOSAL

PROVISION OF 80,000 LITRE MIN. RAINWATER TANK.

REFER TO SHEET C4, C5, C9, C10 & C11
- ON-SITE DETENTION PART 24 CLAUSE 24.C5

REFER TO CALCULATION SHEET.

PROPOSAL

PROVISION OF 161,000 LITRE MIN. ON-SITE DETENTION TANK

REFER TO SHEETC4, C5, C9, C10 & C11
- WATER QUALITY PART 24 CLAUSE 24.C6

PROPOSAL

PROVISION OF: 80,000 LITRE MINIMUM RAINWATER TANK

 8 X OCEAN PROTECT STORMFILTERS (FULL HEIGHT)

 4 X OCEAN PROTECT OCEANGUARD INSERTS

REFER TO SHEETS C4, C5, C9, C10 & C11

CATCHMENT DETAIL ON-SITE DETENTION CALCULATION SHEET - 24R.4

1. CATCHMENT NAME _____ RC1
2. CATCHMENT DISCHARGE RATE _____ 0.0124 _____ l/sec/m² **A**
3. CATCHMENT STORAGE RATE _____ 0.0345 _____ m³/m² **B**

SITE DETAILS

4. SITE AREA (m²) _____ 7776 _____ 60% OF SITE AREA m² _____ 4666 _____ **C**
5. AREA(S) NOT DRAINING TO THE DETENTION SYSTEM _____ N/A _____ m²
6. TOTAL IMPERVIOUS AREA (ROOFS, DRIVEWAYS, PAVING, FUTURE DEV.) _____ 4133 _____ m² **D**
7. IMPERVIOUS AREA BYPASSING DETENTION SYSTEM _____ 0 _____ m² **E**

PERMITTED SITE DISCHARGE

8. C [_____ 4666 _____ m²] x A [_____ 0.0124 _____ l/sec/m²] = _____ 57.9 _____ l/sec **Flow 1**
9. ADJUSTMENT FOR ANY UNCONTROLLED IMPERVIOUS FLOW E / D= _____ N/A _____ (<0.25) **F**
10. FLOW 1 [_____ - _____ l/sec x F [_____ - _____] = _____ - _____ l/sec **Flow 2**
11. FLOW 1 [_____ 57.9 _____] - FLOW 2 [_____ N/A _____] = _____ 57.9 _____ l/sec **PSD**

SITE STORAGE REQUIREMENT

12. C [_____ 4666 _____ m²] x B [_____ 0.0345 _____ m³/m²] = _____ 161 _____ m³ **SSR1**
13. IF THE STORAGE IS IN A LANDSCAPED BASIN, SSR1 x 1.2 = _____ m³ _____ N/A _____ **SSR2**

- RAINWATER TANK OFFSET APPLIED (10% OF THE ON SITE RETENTION TO BE DISCOUNTED)

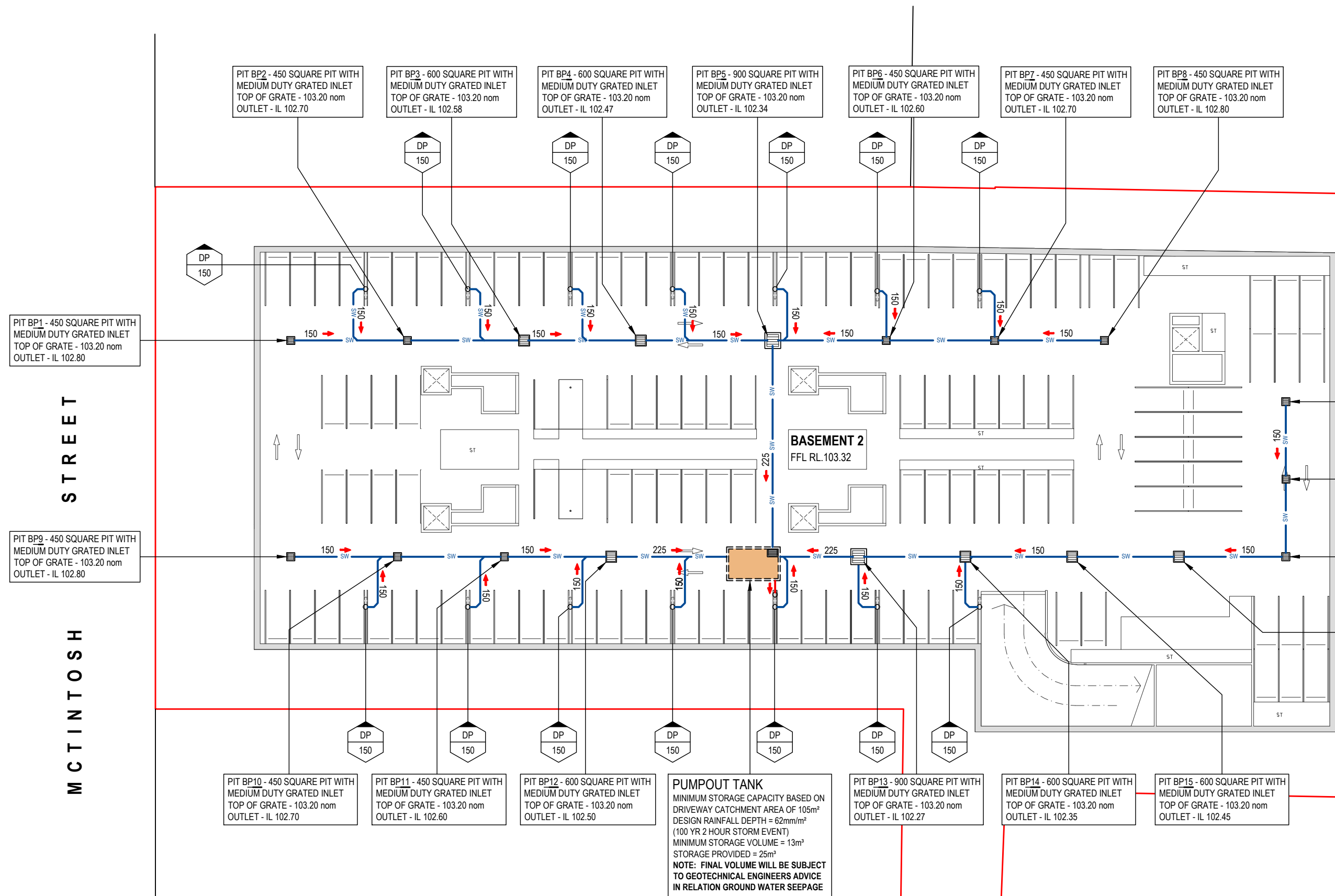
- ADJUSTED ON SITE DETENTION VOLUME = 161m³ REQUIRED

- 154m³ PROVIDED

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											PROPOSED RESIDENTIAL DEVELOPMENT No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON			
											STORMWATER DRAINAGE SUMMARY			

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO BE
INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORK



STORMWATER MANAGEMENT PLAN - BASEMENT 2

SCALE - 1:200/A1, 1:400/A3



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												ENGINEERS CIVIL FLOOD STUDIES STORMWATER HYDRAULIC		No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON		No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON	
														Project No. CC250085		Dwg. No. C3	
														Issue A		Issue A	

TANK NOTE
THE ON SITE DETENTION / RETENTION TANK IS SHOWN BASED ON FINISHED SURFACE LEVELS AND A STRUCTURAL SLAB THICKNESS OF 200mm AS DETAILED BY THE ARCHITECT. SHOULD ANY OF THESE PARAMETERS CHANGE, THE OSD TANK SHOULD BE RE-ASSESSED TO ENSURE SITE STORAGE VOLUMES ARE ACHIEVED. REFER TO SHEET C2 FOR SITE STORAGE REQUIREMENT AND COUNCIL'S ON SITE DETENTION CALCULATION.

WARNING
LOCATION AND DEPTH OF ALL UNDERGROUND SERVICES TO BE INVESTIGATED WITH THE RELEVANT AUTHORITIES PRIOR TO COMMENCING WORK

STREET

CONSTRUCT 200 WIDE GRATED BOX DRAIN MIN 150 DEEP INVERT TO GRADE TO OUTLET AT A MINIMUM GRADE OF 2%. TOP OF GRATE 106.47 nom

MCINTOSH

ON-SITE DETENTION (OSD) / RAINWATER RE-USE TANK (OSR)
UNDER BASEMENT DRIVEWAY
REFER TO DETAILS ON SHEET C4 & C9 - C11.
REFER TO TANK NOTE ON THIS SHEET.



STORMWATER MANAGEMENT PLAN - BASEMENT 1
SCALE - 1:200/A1, 1:400/A3

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A						ISSUED FOR DEVELOPMENT APPROVAL		21.05.25		IK		BK		PROPOSED RESIDENTIAL DEVELOPMENT							
Issue		Description				Date		Drawn		Approved				No.25, 23 & 21 MCINTOSH STREET No. 55 WERONA AVENUE GORDON		G.A. Check		Date			
		10m at full size												Designed BK		Project No. CC250085		Dwg. No. C4		Issue A	

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO BE
INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORK

STREET

LOCATE STORMWATER PIPES AS
CLOSE AS PRACTICABLE TO
BUILDING TO MINIMISE ROOT
DISTURBANCE OF EXISTING TREES.

PIT P2
KERB INLET PIT WITH 2.4m
LINTEL
TOP OF GRATE - 107.80 nom
OUTLET - IL 104.85

PIPE EXTENSION WITHIN ROAD IS SUBJECT TO
FINAL APPROVAL & ROADWORKS APPLICATION
REFER TO SHEET C7 FOR PROPOSED DRAINAGE
ALIGNMENT

PIT P1
1200 SQUARE PIT WITH BOLT
DOWN/WATER TIGHT SOLID COVER
TOP OF COVER - 108.50 nom
OUTLET - IL 104.69

CROSSOVER AND DRIVEWAY TO BE IN
ACCORDANCE WITH COUNCIL REQUIREMENTS.
THE LEVELS AND DESIGN OF THE CROSSOVER
AND DRIVEWAY SHALL BE BY OTHERS.

COMBINED OSD / OSR TANK
ON SITE DETENTION - OSD
TOP STORED WATER LEVEL - RL 108.20
MAX DEPTH - 3.45m
STORAGE VOLUME PROVIDED - 154m³

ON SITE RETENTION - OSR
TOP STORED WATER LEVEL - RL 104.75
MAX DEPTH - 1.6m
STORAGE VOLUME PROVIDED - 80m³

DESIGN NOTES:

- TOP OF GRATE LEVELS HAVE BEEN DETERMINED FROM THE SURVEY DETAIL PROVIDED. FOLLOWING EARTHWORKS AND BENCHING, VALIDITY OF GRATE LEVELS SHOULD BE ASSESSED AND ADJUSTED AS REQUIRED TO MEET THE INTENT OF THE DESIGN. WHERE IN DOUBT CONTACT THE DESIGN ENGINEER.
- DOWNPINES CONVEYING ROOF WATER TO DISCHARGE TO RAINWATER TANK INDEPENDENT OF ANY OTHER STORMWATER SYSTEM ON SITE. REFER TO HYDRAULIC SERVICES PLANS AT CC STAGE FOR LOCATION OF ALL BUILDING DOWNPINES. THE HYDRAULIC ENGINEER SHOULD ALLOW TO TIE IN AS REQUIRED TO THE STORMWATER CONCEPT SHOWN ON THESE PLANS. TYP UNO.
- FULLY SEALED ROOF DRAINAGE SYSTEM SHOWN THUS:
RW
DENOTES DRAINAGE SYSTEM TO BE FULLY SEALED FROM ROOF GUTTERS TO OSR TANK. SEAL ALL PIPEWORK FROM TANK TO ROOF USING SOLVENT WELDED JOINTS. RAINWATER SYSTEM SHALL COLLECT ROOF WATER ONLY. NO ADDITIONAL PITS FOR COLLECTION OF SURFACE WATER WILL BE PERMITTED FOR THE ROOF WATER SYSTEM TYP.
- DOWNPINES, PIPES & STORMWATER FEATURES LOCATED WITHIN THE BUILDING ENVELOPE ARE SHOWN ON THIS PLAN FOR APPROVAL PURPOSES ONLY. FINAL PIPE ALIGNMENTS LOCATED WITHIN THE BUILDING ENVELOPE WITH THE EXCEPTION OF THE BASEMENT DRAINAGE IS TO BE COORDINATED & DOCUMENTED AT CC STAGE BY THE BUILDING SERVICES HYDRAULIC ENGINEER AND SHOULD ALLOW TO TIE IN WITH THE STORMWATER CONCEPT SHOWN ON THESE PLANS.
- CONSTRUCT PIPES AS CLOSE AS PRACTICABLE TO BUILDING TO MINIMISE DISTURBANCE ON EXISTING TREE ROOTS. HAND DIG TRENCH UNDER THE SUPERVISION OF THE CONSULTING ARBORIST. DO NOT SEVER ROOTS >30mm WITHIN CANOPY OF TREES TO BE RETAINED. TREE PROTECTION MEASURES TO BE CARRIED OUT IN ACCORDANCE WITH KU-RING-GAI COUNCIL SPECIFICATIONS. FINAL ALIGNMENT TO BE CONFIRMED ON SITE BY ARBORIST.

OUTLINE OF BASEMENT BELOW
SHOWN DASHED

900 SQ SWP WITH
OCEANGUARD INSERT
RL 108.50
IL 107.80

ROOF WATER LINE TO OSR
TANK. REFER TO NOTE 2 & 3
TYP UNO

SURFACE STORMWATER
LINE TO OSD TANK.

600 SQ SWP
RL 108.95
IL 108.25

DP 666515

600 SQ SWP
RL 109.50
IL 108.85

600 SQ SWP
RL 109.70
IL 109.10

LANDSCAPE DRAINAGE OVER BASEMENT
SUBJECT TO BE COORDINATED WITH THE
LANDSCAPE ARCHITECT, SERVICES AND
STRUCTURE AT CC STAGE.

FINAL ALIGNMENT OF PIPE TO
BE VERIFIED BY ARBORIST.

**BUILDING A
GROUND FLOOR**
FFL RL. 109.970

**BUILDING B
GROUND FLOOR**
FFL RL. 110.970

IL 107.50
NOM

IL 108.70
NOM

900 SQ SWP
RL 109.50
IL 107.45

900 SQ SWP WITH
OCEANGUARD INSERT
RL 109.95
IL 107.50

900 SQ SWP WITH
OCEANGUARD INSERT
RL 109.95
IL 108.75

900 SQ SWP
RL 110.15
IL 109.35

900 SQ SWP
RL 111.35
IL 110.55

900 SQ SWP
RL 112.30
IL 110.65

900 SQ SWP WITH
OCEANGUARD INSERT
RL 112.60
IL 110.70

STORMWATER MANAGEMENT PLAN - GROUND FLOOR SHEET No. 1

SCALE - 1:150/A1, 1:300/A3

0 1 2 4 6 8 10m

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A	ISSUED FOR DEVELOPMENT APPROVAL			21.05.25	IK	BK
Issue	Description			Date	Drawn	Approved
1	10m at full price					

North

Client
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RESIDENCE HOLDING
PTY LTD**

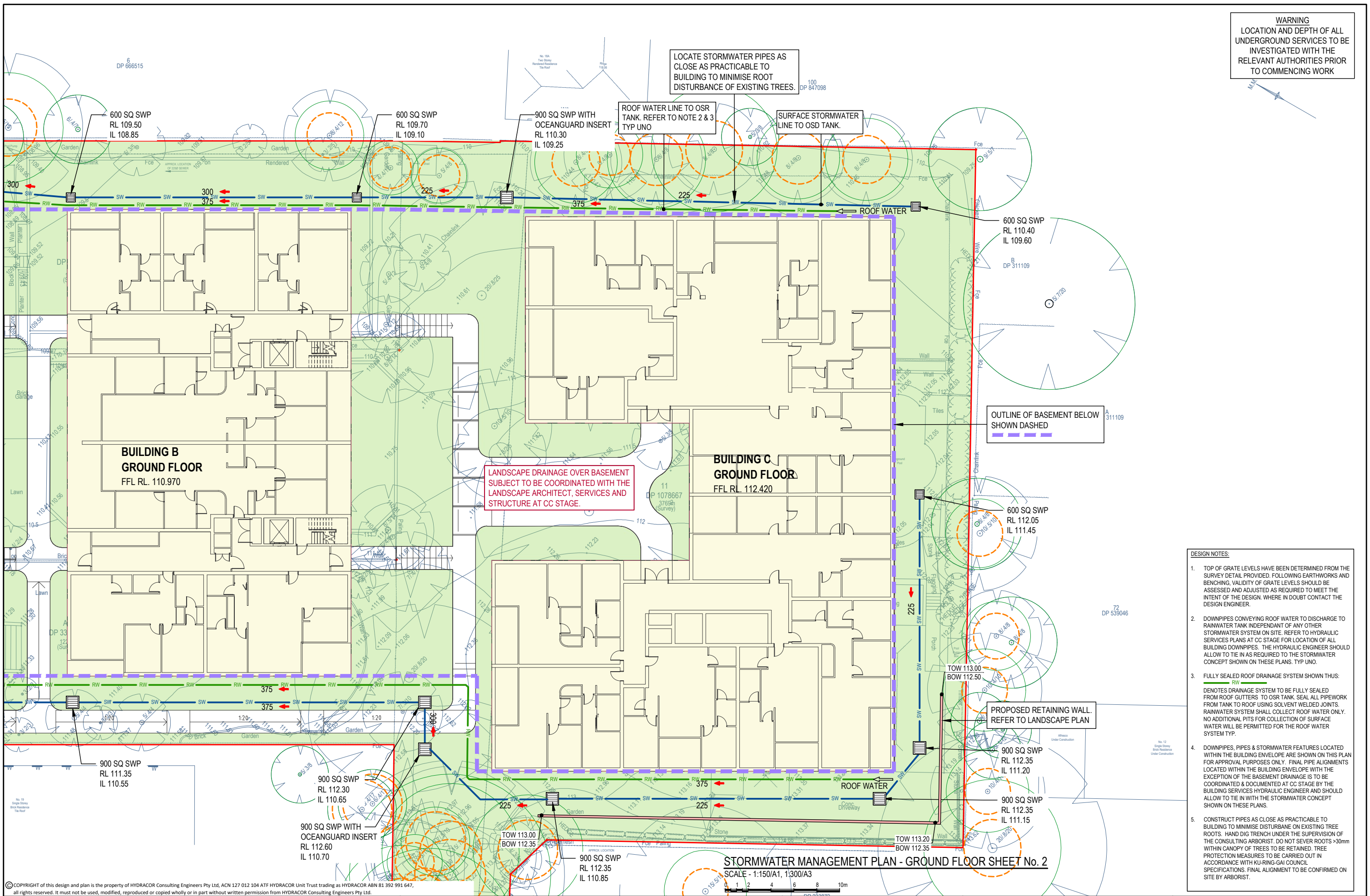
Architect
PMDL

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Project
**PROPOSED RESIDENTIAL
DEVELOPMENT**
No.25, 23 & 21 MCINTOSH STREET
No.55 WERONA AVENUE
GORDON

Drawing Title STORMWATER MANAGEMENT PLAN - GROUND SHEET No. 1					
Drawn	Date	Scale	A1	Q.A. Check	Date
IK	MAY 2025	AS SHOWN	A1	BK	21.05.2025
Designed	Project No.	Dwg. No.	Issue		
BK	CC250085	C5	A		



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Issue	Description	Date	Drawn	Approved	
1	10m at full scale				

Client	WERONA AVE RESIDENCE HOLDING PTY LTD
Architect	PMDL

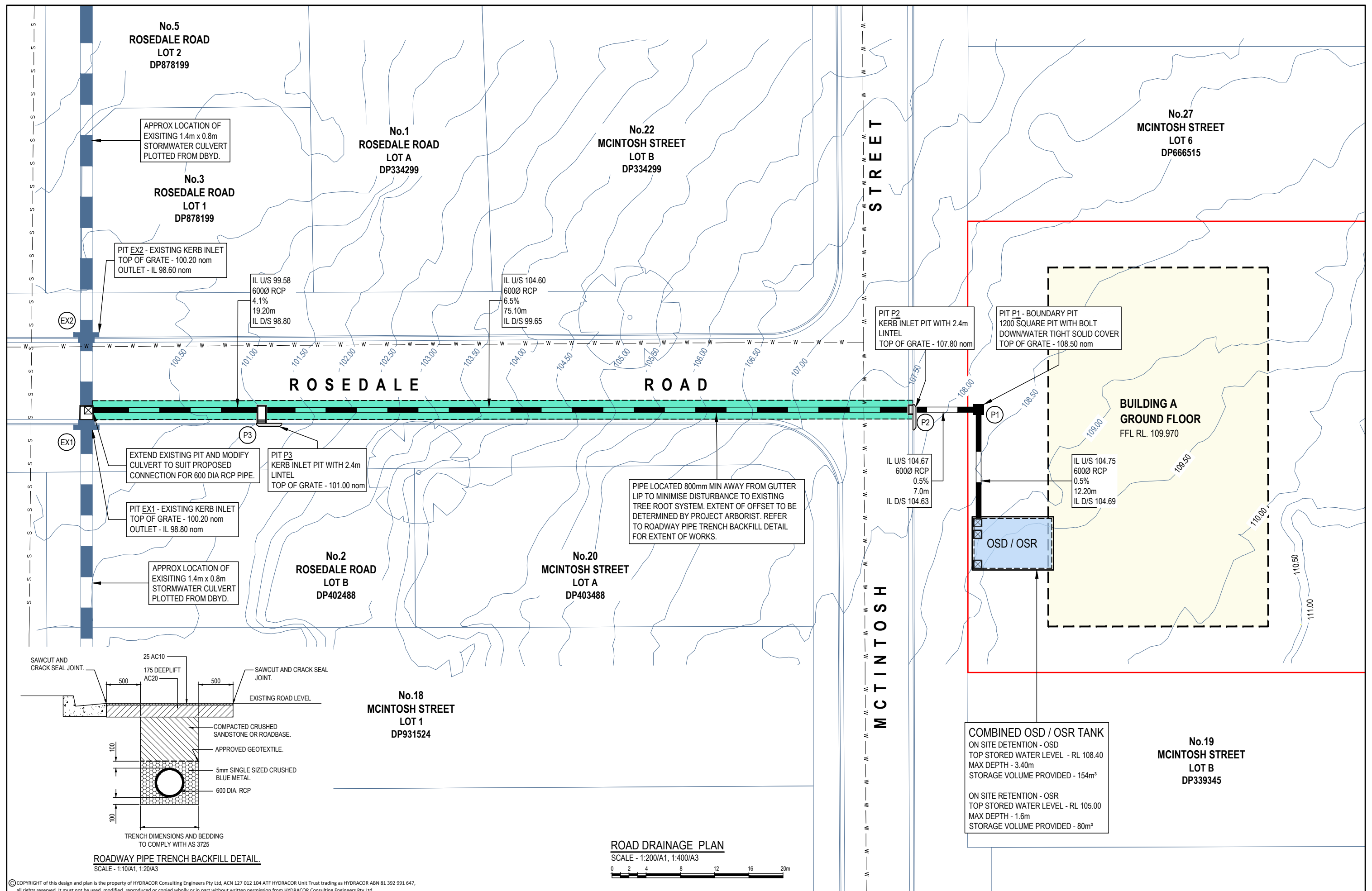
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Project	PROPOSED RESIDENTIAL DEVELOPMENT No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON
---------	--

Drawn	Date	Scale	A1	Q.A. Check	Date
IK	MAY 2025	AS SHOWN		BK	21.05.2025
Designed	Project No.	Dwg. No.		Issue	
BK	CC250085	C6		A	

Drawing Title	STORMWATER MANAGEMENT PLAN - GROUND SHEET No. 2
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[illegible]

Client

WERONA AVE
RESIDENCE HOLDING
PTY LTD

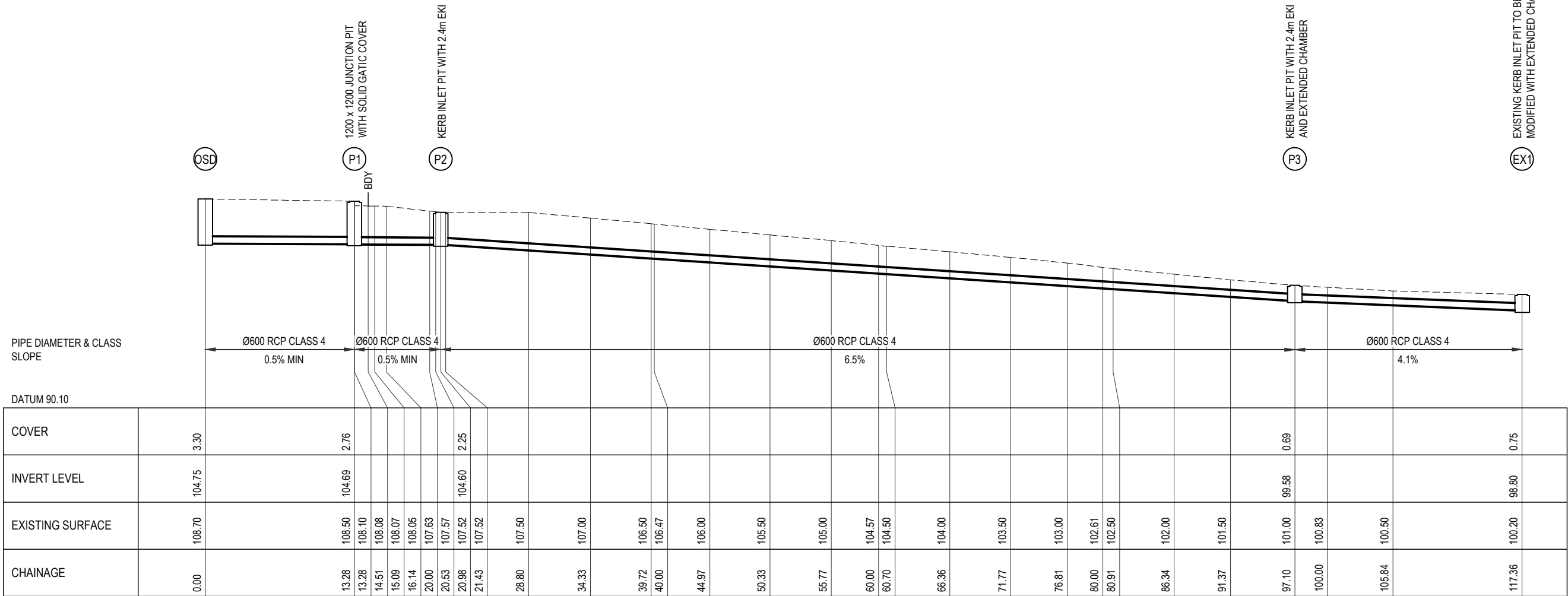
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Project

**PROPOSED RESIDENTIAL
DEVELOPMENT**

No.25, 23 & 21 MCINTOSH STREET
No.55 WERONA AVENUE
GORDON

Drawing Title
ROAD DRAINAGE PLAN



STORMWATER PIPE LONG SECTION

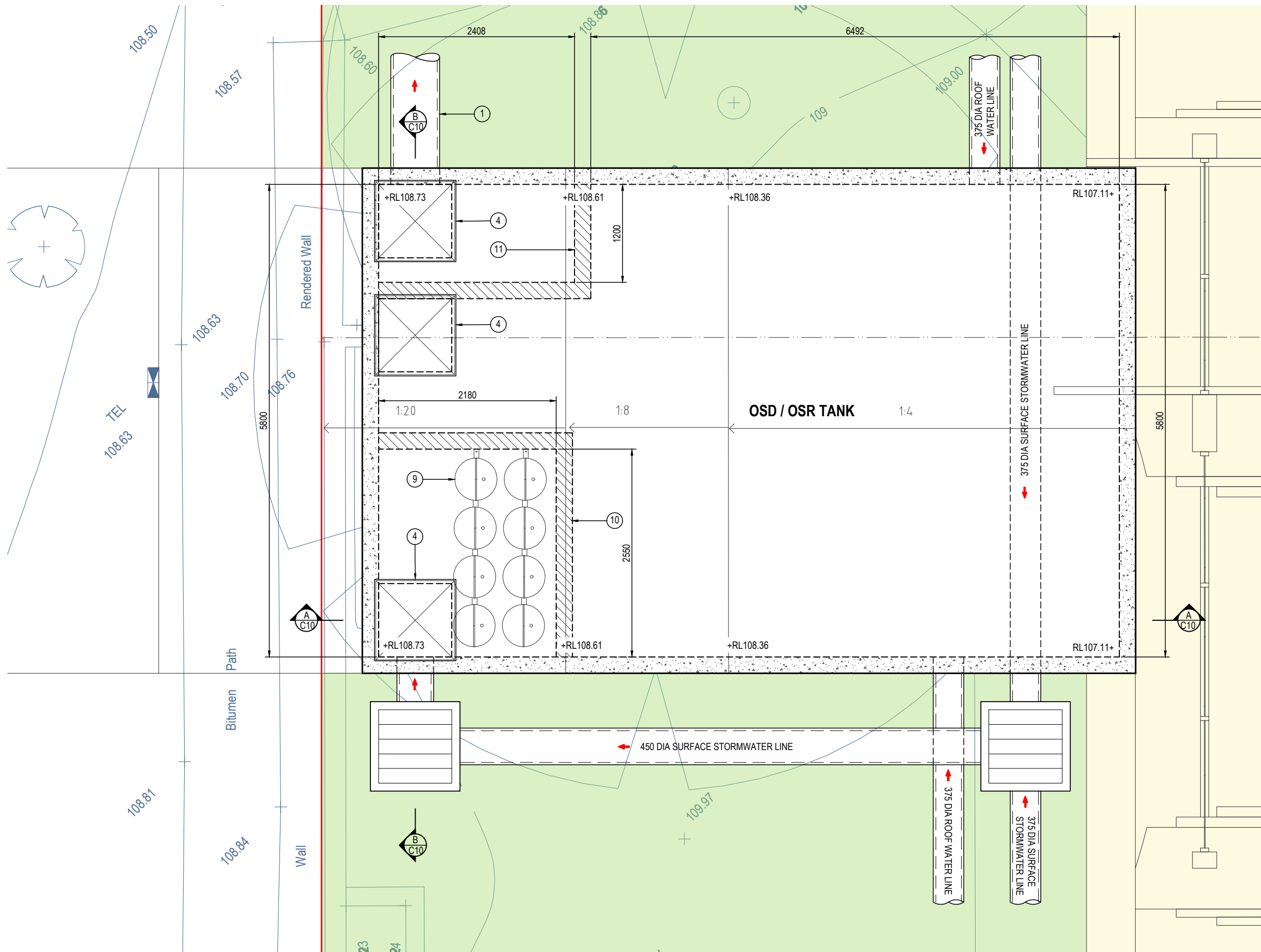
SCALE - 1:200/A1, 1:400/A3

SCALE: HORIZ. 1:200
VERT. 1:200



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A					ISSUED FOR DEVELOPMENT APPROVAL		21.05.25		IK		BK		PROPOSED RESIDENTIAL DEVELOPMENT	
Issue					Description		Date		Drawn		Approved		No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON	
1					10m at full size		10m		10m		10m		Project No. CC250085	
1					10m at full size		10m		10m		10m		Dwg. No. C8	
1					10m at full size		10m		10m		10m		Issue A	

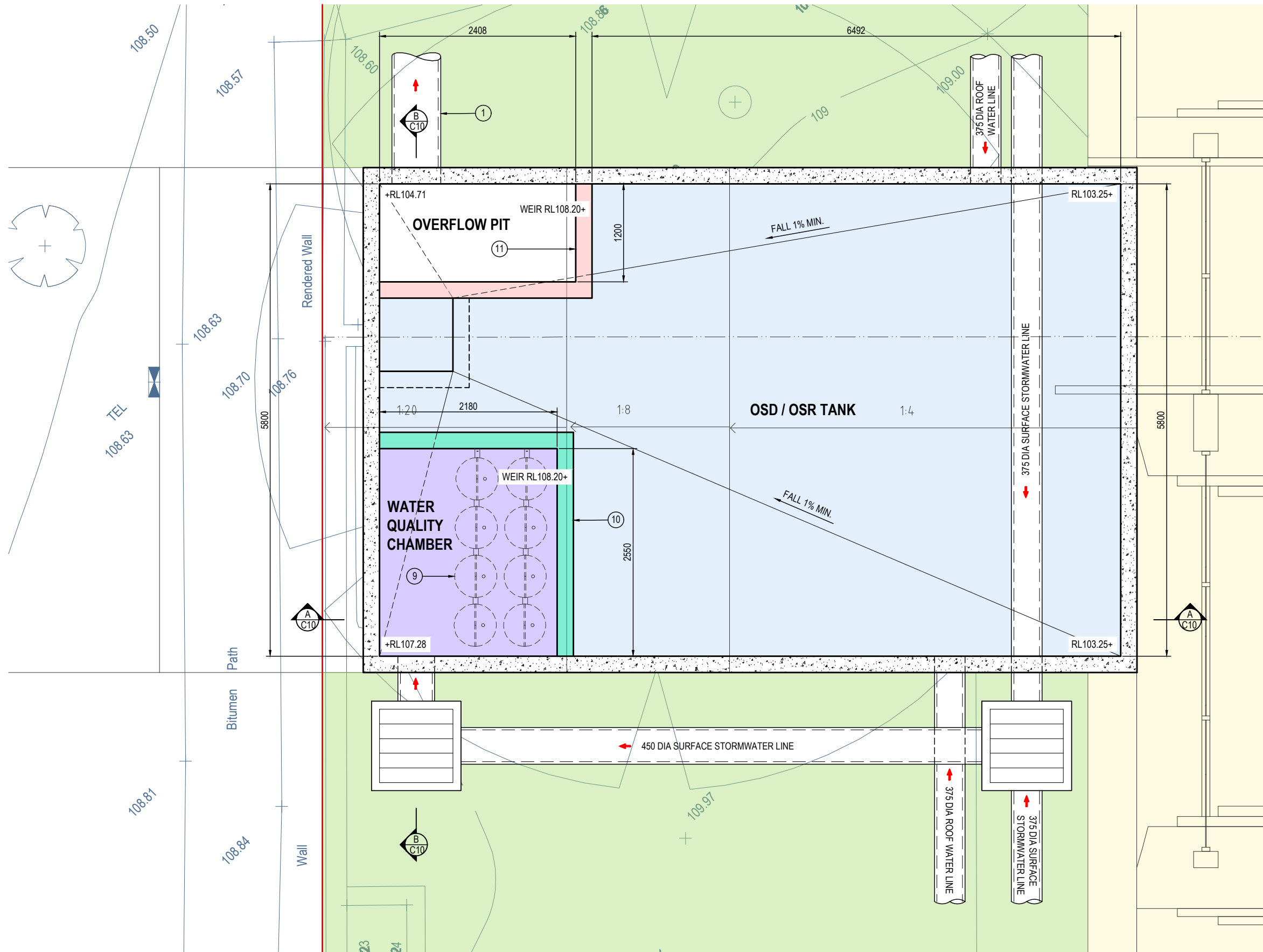


LEGEND	
①	600 DIA OUTLET PIPE
②	350 x 350 x 4 PL 316SS 4 HOLES 12 DIA FOR M10 CHEMSETS
③	TRASH SCREEN LYSAGHT RH3030 GALV. REMOVABLE WITH HANDLE
④	900 x 900 SOLID COVER BOLTED DOWN
⑤	RE-USE PUMP TO MANUFACTURERS SPECIFICATIONS
⑥	NON-RETURN VALVE
⑦	PVC PIPE CLASS '16' RISING MAIN BY OTHERS
⑧	PROVIDE GALVANISED STEP IRONS AT 300mm CENTRES WHERE DEPTH EXCEEDS 1100mm IN ACCORDANCE WITH THE AUST. STANDARDS AT ALL ACCESS POINTS OF THE TANK, TYP.
⑨	8 x 690 HIGH OCEAN PROTECT FILTERS
⑩	WATER QUALITY CHAMBER WEIR
⑪	OSD OVERFLOW CHAMBER WEIR

ON-SITE DETENTION / RETENTION TANK ROOF PLAN
SCALE - 1:100/A1, 1:200/A3

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				WERONA AVE RESIDENCE HOLDING PTY LTD		PMDL		HYDRACOR Consulting Engineers Pty Ltd Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499		ONSITE DETENTION/RETENTION TANK ROOF PLAN			
A		ISSUED FOR DEVELOPMENT APPROVAL		21.05.25	IK	BK	Drawn		AS SHOWN	A1		Q.A. Check	Date
Issue		Description		Date	Drawn	Approved	Designed		Project No.	Dwg. No.		Issue	
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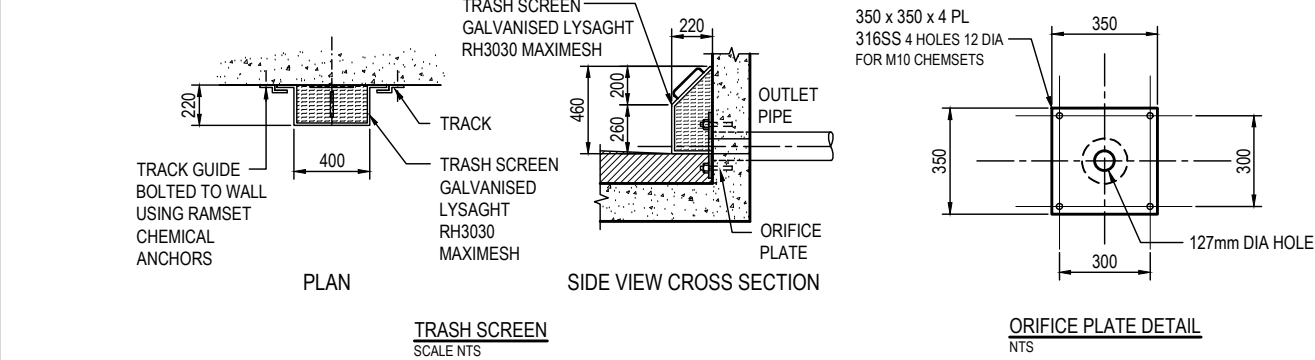
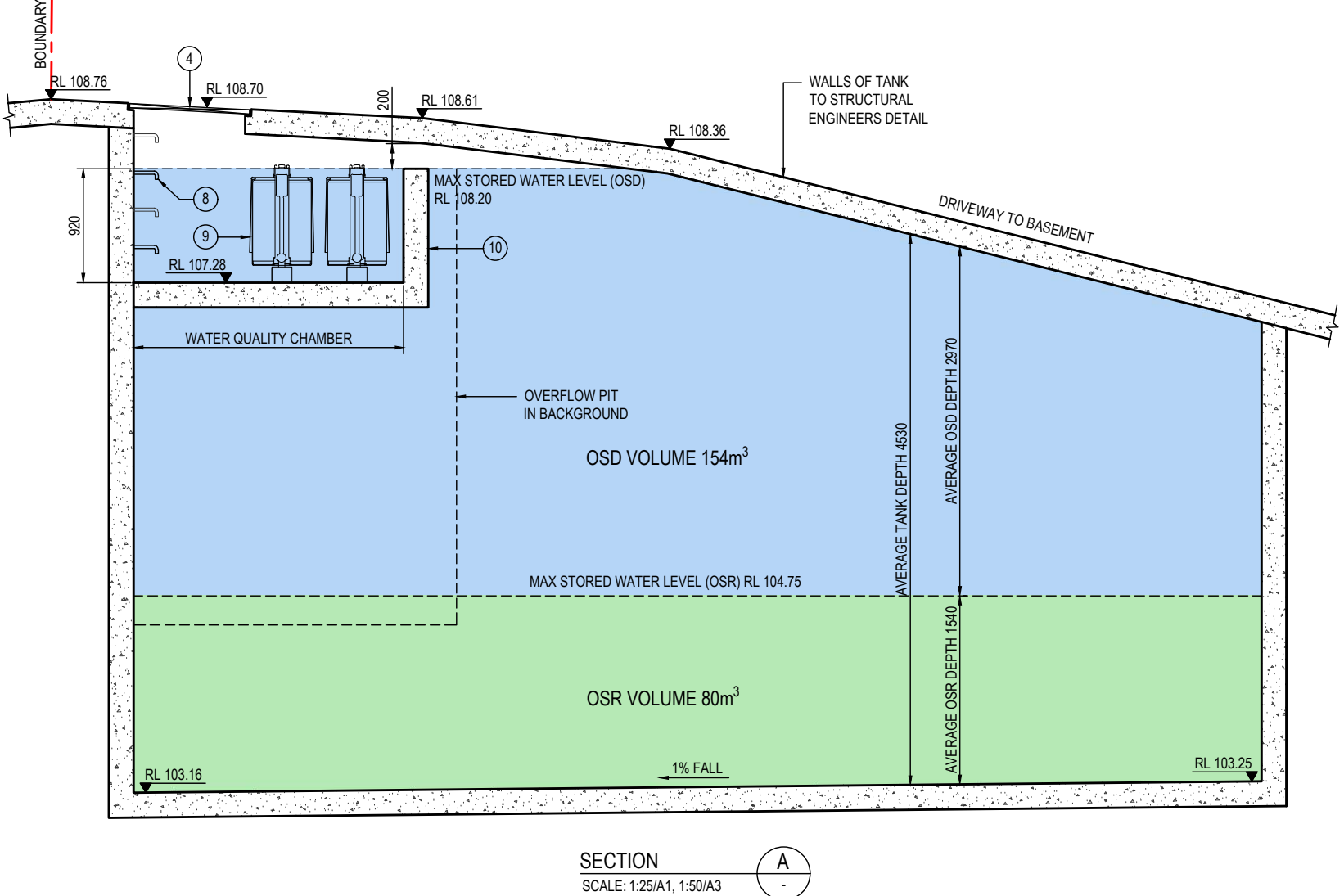
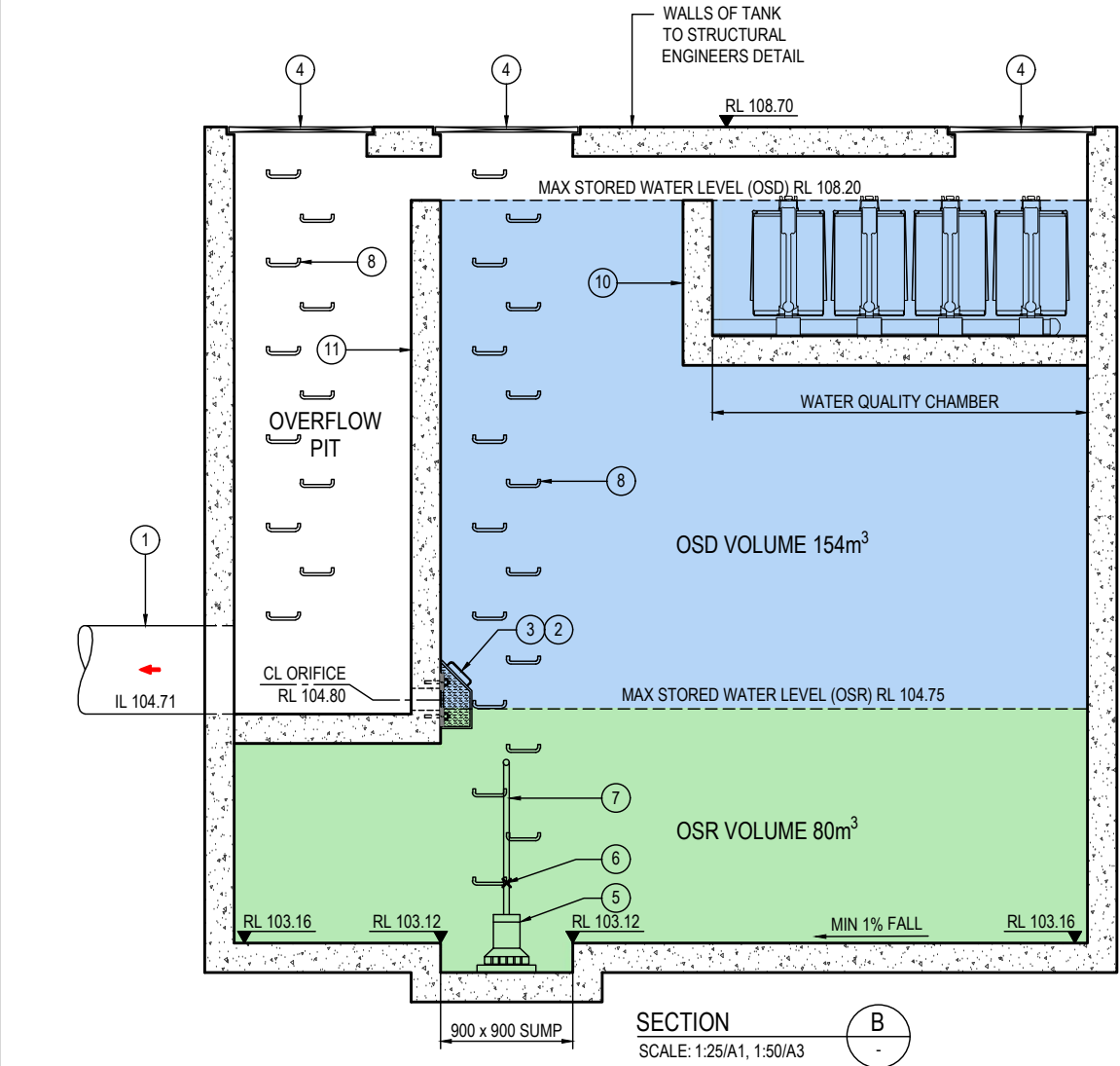
LEGEND	
①	600 DIA OUTLET PIPE
②	350 x 350 x 4 PL 316SS 4 HOLES 12 DIA FOR M10 CHEMSETS
③	TRASH SCREEN LYSAGHT RH3030 GALV. REMOVABLE WITH HANDLE
④	900 x 900 SOLID COVER BOLTED DOWN
⑤	RE-USE PUMP TO MANUFACTURERS SPECIFICATIONS
⑥	NON-RETURN VALVE
⑦	PVC PIPE CLASS '16' RISING MAIN BY OTHERS
⑧	PROVIDE GALVANISED STEP IRONS AT 300mm CENTRES WHERE DEPTH EXCEEDS 1100mm IN ACCORDANCE WITH THE AUST. STANDARDS AT ALL ACCESS POINTS OF THE TANK, TYP.
⑨	8 x 690 HIGH OCEAN PROTECT FILTERS
⑩	WATER QUALITY CHAMBER WEIR
⑪	OSD OVERFLOW CHAMBER WEIR

OSD TANK WALL LEGEND	
	FULL HEIGHT WALL
	ATLAN CHAMBER - TOP OF WEIR RL 108.20
	OVERFLOW PIT - TOP OF WEIR RL 108.20

ON-SITE DETENTION / RETENTION TANK BASE PLAN
SCALE - 1:100/A1, 1:200/A3

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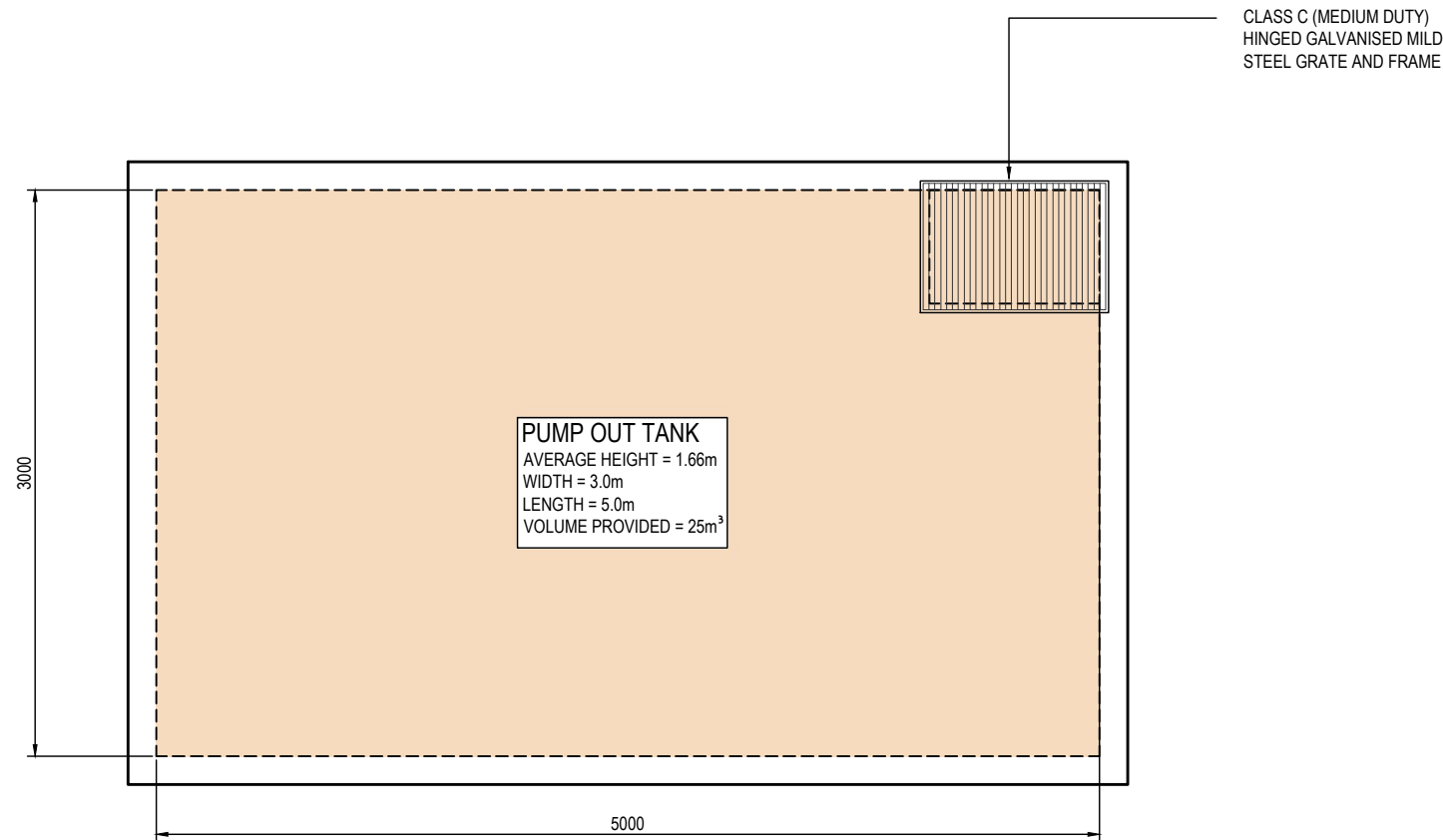
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A		ISSUED FOR DEVELOPMENT APPROVAL		21.05.25		IK		BK		Scale		A1		Q.A. Check	
Issue		Description		Date		Drawn		Approved		AS SHOWN		BK		Date	
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										BK		CC250085		C10	
														Issue	
														A	



LEGEND			
①	600 DIA OUTLET PIPE	⑧	PROVIDE GALVANISED STEP IRONS AT 300mm CENTRES WHERE DEPTH EXCEEDS 1100mm IN ACCORDANCE WITH THE AUST. STANDARDS AT ALL ACCESS POINTS OF THE TANK, TYP.
②	350 x 350 x 4 PL 316SS 4 HOLES 12 DIA FOR M10 CHEMSETS	⑨	6 x 690 HIGH OCEAN PROTECT FILTERS
③	TRASH SCREEN LYSAGHT RH3030 GALV. REMOVABLE WITH HANDLE	⑩	WATER QUALITY CHAMBER WEIR
④	900 x 900 SOLID COVER BOLTED DOWN	⑪	OSD OVERFLOW CHAMBER WEIR
⑤	RE-USE PUMP TO MANUFACTURERS SPECIFICATIONS		
⑥	NON-RETURN VALVE		
⑦	PVC PIPE CLASS '16' RISING MAIN BY OTHERS		

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WERONA AVE RESIDENCE HOLDING PTY LTD				PMDL				HYDRACOR Consulting Engineers Pty Ltd Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499				PROPOSED RESIDENTIAL DEVELOPMENT No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON			
Issue				Date				Scale				Q.A. Check			
A				21.05.25				AS SHOWN				BK			
Description				Drawn				Project No.				Dwg. No.			
ISSUED FOR DEVELOPMENT APPROVAL				IK				CC250085				C11			
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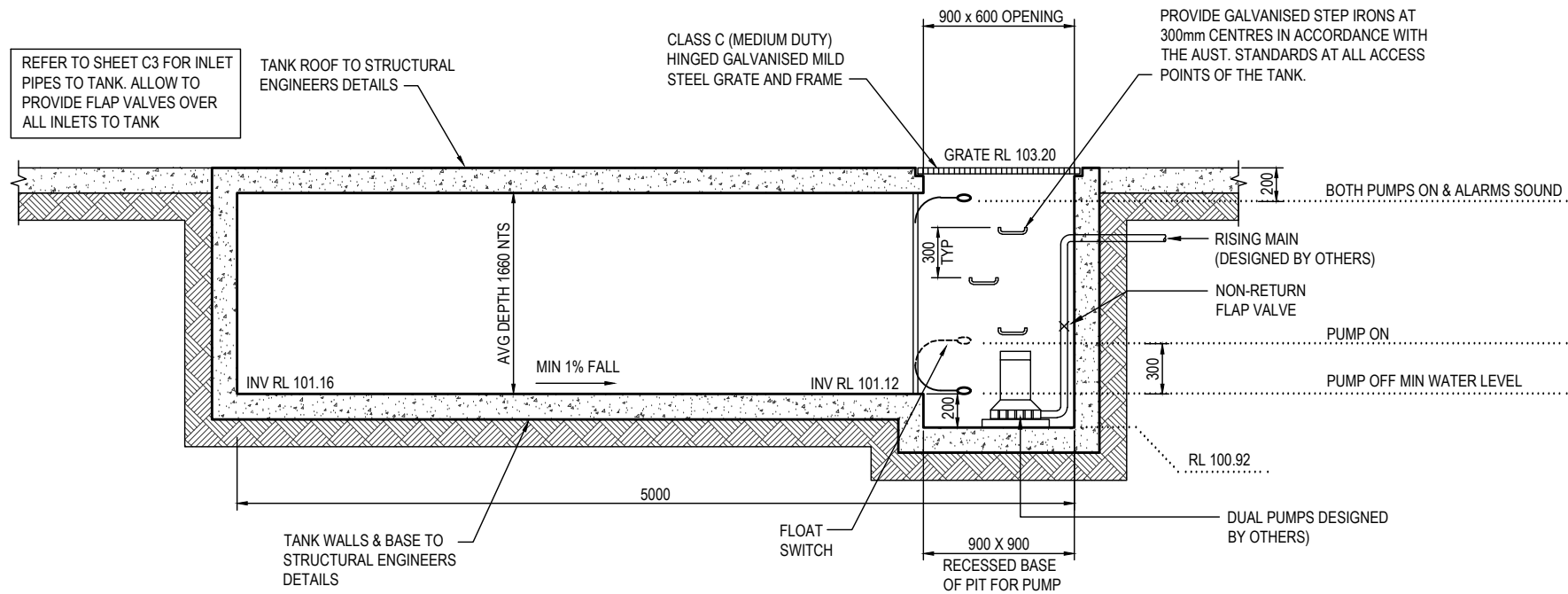


PUMP OUT TANK PLAN
SCALE 1:20/A1, 1:40/A3

STANDARD PUMP OUT DESIGN NOTES

THE PUMP SYSTEM SHALL BE OPERATED IN THE FOLLOWING MANNER:-

1. THE PUMPS 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 THAT 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 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 PROVIDED 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 PROVIDED 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 POINTS TO THE PUMP OUT STORAGE TANK.



TYPICAL SECTION THROUGH PUMP OUT TANK
SCALE 1:20/A1, 1:40/A3

PUMP-OUT TANK MAINTENANCE SCHEDULE

MAINTENANCE CONTRACT

NOTE: A 24 HOUR X 12 MONTHLY EMERGENCY AND MAINTENANCE CONTRACT SHALL BE OBTAINED FROM A COMPANY CAPABLE OF EXECUTING THE WORK AND SHALL BE KEPT IN FORCE BY THE PROPERTY OWNER(S) FOR THE LIFE OF THE BUILDING.

THE MAINTENANCE CONTRACT SHALL BE CARRIED OUT EVERY THREE (3) MONTHS AND SHALL INCLUDE THE FOLLOWING ACTIVITIES:

1. CLEAN OUT ALL PITS OF SILT AND DEBRIS.
2. CHECK AND CLEAN OUT, IF NECESSARY, ALL PIPELINES.
3. CHECK:
 - 3.1. PUMPS FOR WEAR
 - 3.2. PUMP OIL SEALS
 - 3.3. PUMP STRAINER AND CLEAN

4. CARRY OUT ROUTINE MAINTENANCE TO PUMPS AS RECOMMENDED BY THE MANUFACTURER.
5. CHECK OPERATIONAL SEQUENCE OF LEVEL SWITCHES, PUMPS AND CONTROL PANEL.
6. THE EMERGENCY CONTRACT SHALL PROVIDE FOR A 24 HOUR X 7 DAY PER WEEK SERVICE.

THE CONTRACTOR SHALL PROVIDE A NAME PLATE STATING NAME, WORKING HOURS, TELEPHONE NUMBER AND OUT OF HOURS NUMBER AND SUCH NAME PLATE SHALL BE FIXED TO THE FRONT OF THE CONTROL PANEL.

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							WERONA AVE RESIDENCE HOLDING PTY LTD		PMDL		HYDRACOR CONSULTING ENGINEERS		PROPOSED RESIDENTIAL DEVELOPMENT	
											Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499		No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON	
											ENGINEERS CIVIL FLOOD STUDIES STORMWATER HYDRAULIC		No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON	
													Stormwater Management Details - Sheet No.2	

STREAM FLOW CONTROL REPORT

INTRODUCTION & METHODOLOGY

WE REFER TO KU-RING-GAI COUNCIL DEVELOPMENT CONTROL PLAN AND SPECIFICALLY CLAUSE 24C.3 SECTION 4 WHICH REQUIRES THE ASSESSMENT OF A RAINWATER TANK SYSTEM WHICH PROVIDES A 50% REDUCTION IN RUNOFF DAYS. IN ORDER TO DETERMINE THE RAINWATER TANK VOLUME REQUIRED TO MEET THE 50% REDUCTION TARGET A WATER BALANCE MODEL WAS DEVELOPED TO REPRESENT THE WATER TRANSPORTATION PROCESS IDENTIFIED IN FIGURE 1 BELOW.

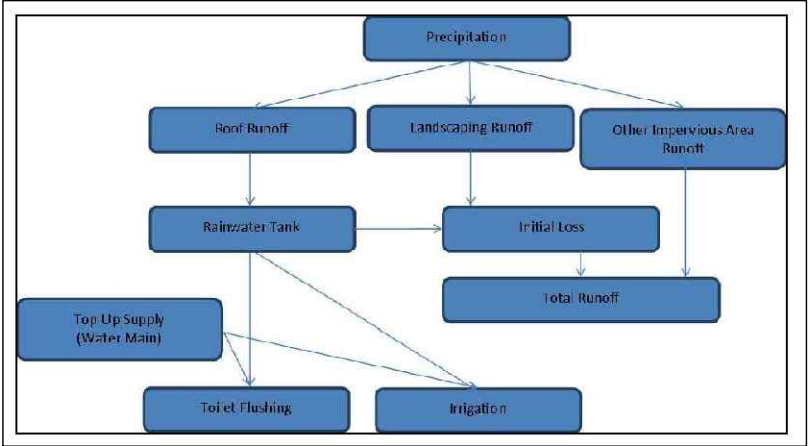


FIGURE 1. WATER BALANCE MODEL SUMMARY

THE METHODOLOGY ADOPTED, ASSESSES THE STORMWATER RUNOFF DIRECTED TO THE TANK ON A DAILY BASIS AND THE DAILY DRAWDOWN ASSOCIATED WITH DOMESTIC USAGE. THE MODELLING PRODUCES A DAILY TIME SERIES FOR THE AVAILABLE STORAGE IN THE TANK, DAILY MAINS WATER TOP UP, SPILL DURING STORMS, AND THE STORAGE LEVEL IN THE TANK.

WATER BALANCE SUMMARY

Post-development site (no management measures)		Post-development site (with management measures)	
areas		areas	
total area	7776 m ²	total area	7776 m ²
impervious area draining to re-use	0 m ²	impervious area draining to re-use	2621 m ²
pervious area	3643 m ²	pervious area	3643 m ²
impervious area graded to landscaping	0 m ²	impervious area graded to landscaping	1512 m ²
impervious area bypassing reuse & landscaping	4133 m ²	impervious area bypassing reuse & landscaping	0 m ²
reuse		reuse	
reuse tank volume	0 m ³	reuse tank volume	80 m ³
initial fraction full of reuse tanks	1	initial fraction full of reuse tanks	0.5
daily reuse	0 m ³	daily reuse	0 m ³
irrigation use per week	0 m	irrigation use per week	0.015 m
losses		losses	
pervious area loss (mm)	12 mm	pervious area loss (mm)	12 mm
impervious area loss (mm) **	1 mm	impervious area loss (mm) **	1 mm
area to re-use loss (mm) *	0.5 mm	area to re-use loss (mm) *	0.5 mm
statistics		statistics	
Number of runoff days	3070	Number of runoff days	1531
number of tank spill days	0	number of tank spill days	1025
total runoff volume	215,449.16	total runoff volume	160,451.15
number of simulated days	11323	number of simulated days	11323
number of rain events	4595	number of rain events	4595
days reuse demand met	0	days reuse demand met	10295
number of irrigation days	0	number of irrigation days	1618
		reduction in runoff days	50.1%
		reduction in runoff volume	25.5%

WATER BALANCE DATA SUMMARY

AS SHOWN ABOVE REUSE IS ONLY REQUIRED TO CONNECT TO IRRIGATION ONLY TO ACHIEVE COMPLIANCE WITH COUNCIL'S REQUIREMENTS FOR RUNOFF REDUCTION.

CONCLUSION

BASED ON THE FOREGOING A MINIMUM TOTAL RAINWATER TANK VOLUME OF 80KL IS REQUIRED TO REDUCE RUNOFF DAYS BY 50.1%.

STORMWATER QUALITY REPORT

1 INTRODUCTION

A CATCHMENT BASED WATER QUALITY MODEL WAS DEVELOPED TO ASSESS THE STORMWATER RUNOFF QUALITY IN ACCORDANCE WITH THE REQUIREMENTS OF KU-RING-GAI DEVELOPMENT CONTROL PLAN PART 24 CLAUSE 24C.6 'STORMWATER QUALITY CONTROL.' IN THIS REGARD WE REFER TO THE PRESCRIBED TARGETS TABLED FOLLOWING:

TABLE 1 - STORMWATER POLUTANT REDUCTION TARGETS (MUSIC v6.3.0)

STORMWATER POLLUTANT	REDUCTION TARGETS
GROSS POLLUTANT	70%
TOTAL SUSPENDED SOLIDS (TSS)	85%
TOTAL PHOSPHORUS (TP)	65%
TOTAL NITROGEN (TN)	45%

2 STUDY METHODOLOGY

THE OBJECTIVES OF THIS REPORT ARE TO:

- ASSESS THE RUNOFF QUALITY FOR THE UNTREATED POST DEVELOPED SCENARIO AND IDENTIFY STORMWATER QUALITY CONTROLS LIKELY TO IMPACT ON RUNOFF QUALITY.
- ASSESS THE STORMWATER QUALITY FOR THE POST DEVELOPED SCENARIO INCLUDING THE MEASURES PROPOSED TO MEET THE POLLUTANT REMOVAL TARGETS .

THE REPORT IS BASED ON THE APPLICATION OF MUSIC SOFTWARE (MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION). IN THIS REGARD THE MODEL IS DEFINED AS FOLLOWS:

- A STORMWATER QUALITY MODEL TO CONVERT RAINFALL AND EVAPOTRANSPIRATION INTO RUNOFF.
- ESTIMATION OF STORMWATER FLOW AND POLLUTION GENERATION BY SIMULATING THE PERFORMANCE OF STORMWATER TREATMENT DEVICES INDIVIDUALLY AND AS PART OF A TREATMENT TRAIN.

THE MODEL DEFINES WATER QUALITY PROFILES FOR BOTH TREATED AND UNTREATED POST DEVELOPED SCENARIOS. THE TREATED POST DEVELOPED MODEL INCLUDES PARAMETERS WHICH REPRESENT THE WATER QUALITY MEASURES.

3 STORMWATER QUALITY MODELLING

3.1 GENERAL

THE FOLLOWING PARAMETERS WERE ASSESSED FOR THE HYDROLOGICAL MODELLING ASSOCIATED WITH THE CATCHMENT.

- RAINFALL/RUNOFF AND EVAPOTRANSPIRATION.
- SUB CATCHMENT DIVERSIONS.
- LAND USE (PERVIOUS AND IMPERVIOUS)

3.2 RAINFALL/RUNOFF AND EVAPOTRANSPIRATION

COUNCIL'S MUSIC-LINK DATA VERSION 6.35 WAS UTILISED IN THIS STUDY. THEREFORE DAILY RAINFALL DATA WAS OBTAINED FROM THE SYDNEY OBSERVATORY HILL RAINFALL STATION WITH 6 min TIMESTEP, STATION NO. 066062. THE DEFAULT KU-RING-GAI COUNCIL MUSIC LINK MONTHLY AVERAGE POTENTIAL EVAPOTRANSPIRATION DATA WAS ALSO UTILISED IN THIS STUDY.

THE DETAILS ARE SUMMARISED IN TABLE 3.1 AND 3.2

TABLE 3.1 - DETAILS OF DAILY RAINFALL DATA			
STATION	NAME	PERIOD	TIMESTEP
066062	SYDNEY OBSERVATORY HILL	01/01/1963-31/12/1993	6 min

TABLE 3.2 - SUMMARY OF POTENTIAL EVAPOTRANSPIRATION (PET)					
JAN	FEB	MAR	APR	MAY	JUN
180	135	128	85	58	43
JUL	AUG	SEP	OCT	NOV	DEC
43	58	88	127	152	163

3.3 CATCHMENT DEFINITION

THE POST DEVELOPED CATCHMENT CHARACTERISTICS ARE IDENTIFIED IN TABLE 3.3.

TABLE 3.3 - POST DEVELOPMENT SUB CATCHMENT DETAILS			
SUB CATCHMENT ID	SUB CATCHMENT AREA (ha)	% IMPERVIOUS AREA	% PERVIOUS AREA
ROOF TO OSR	0.262	100	0
DRIVEWAY TO PUMP OUT	0.010	100	0
IMPERVIOUS AREA TO WQ FILTERS	0.141	100	0
LANDSCAPE TO OSD	0.365	0	100

4 MUSIC MODEL

THE MUSIC MODEL IS BASED ON A 6 min RAINFALL-RUNOFF MODEL IN CONJUNCTION WITH REPRESENTATIVE BASEFLOW AND STORMFLOW EVENT MEAN CONCENTRATIONS (EMCs).

4.1 WATER QUALITY PARAMETERS

THE ADOPTED VALUES OF VARIOUS MUSIC RAINFALL AND RUNOFF PARAMETERS ARE SUMMARISED IN TABLE 4.1 AS PER THE DEFAULT NODE VALUES WHEN ADOPTING THE KU-RING-GAI COUNCIL MUSIC LINK.

TABLE 4.1 - ADOPTED MUSIC RAINFALL/RUNOFF PARAMETERS	
PARAMETER	VALUE
IMPERVIOUS AREA PROPERTIES	
RAINFALL THRESHOLD (mm/DAY)	1.0 (0.3 ROOFS)
PERVIOUS AREA PROPERTIES	
SOIL STORAGE CAPACITY (mm)	170
SOIL INITIAL STORAGE (% OF CAPACITY)	30
FIELD CAPACITY (mm)	70
INFILTRATION CAPACITY COEFFICIENT - a	210
INFILTRATION CAPACITY EXPONENT - b	4.70
GROUNDWATER PROPERTIES	
INITIAL DEPTH (mm)	10
DAILY RECHARGE RATE (%)	50
DAILY BASEFLOW RATE (%)	5
DAILY DEEP SEEPAGE RATE (%)	0

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A ISSUED FOR DEVELOPMENT APPROVAL 21.05.25 IK BK												Drawn	Date	Scale	A1	C.A. Check	Date	
Issue Description												IK	MAY 2025	AS SHOWN	BK	21.05.2025		
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4.1 WATER QUALITY PARAMETERS CONT.

STORMWATER QUALITY IS CHARACTERISED USING EVENT MEAN CONCENTRATION (EMCs) UNDER STORM AND BASE FLOW CONDITIONS. THE VALUE OF WATER QUALITY PARAMETERS ADOPTED IN THIS STUDY IS SUMMARISED IN TABLE 4.2

TABLE 4.2 - ADOPTED MUSIC WATER QUALITY PARAMETERS							
LAND-USE CATEGORY		Log ₁₀ TSS (mg/L)		Log ₁₀ TP (mg/L)		Log ₁₀ TN (mg/L)	
		STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW
GENERAL URBAN	MEAN	2.15	1.20	-0.60	-0.85	0.30	0.11
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
ROADS	MEAN	2.43	1.20	-0.3	-0.85	0.34	0.11
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
ROOFS	MEAN	1.30	1.10	-0.89	-0.82	0.30	0.32
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12

4.2 STORMWATER TREATMENT MEASURES

THE PROPOSED STORMWATER TREATMENT MEASURES INCLUDED IN THE POST DEVELOPED MODEL ARE AS FOLLOWS:

- 80,000 LITRE OSR TANK (FOR IRRIGATION ONLY)
- 8 X OCEAN PROTECT STORMFILTERS (690 PSORB)
- 4 X OCEANGUARDS
- THE SCHEMATIC LAYOUT FOR THE POST DEVELOPED MUSIC MODEL IS DEPICTED IN FOLLOWING FIGURE 1

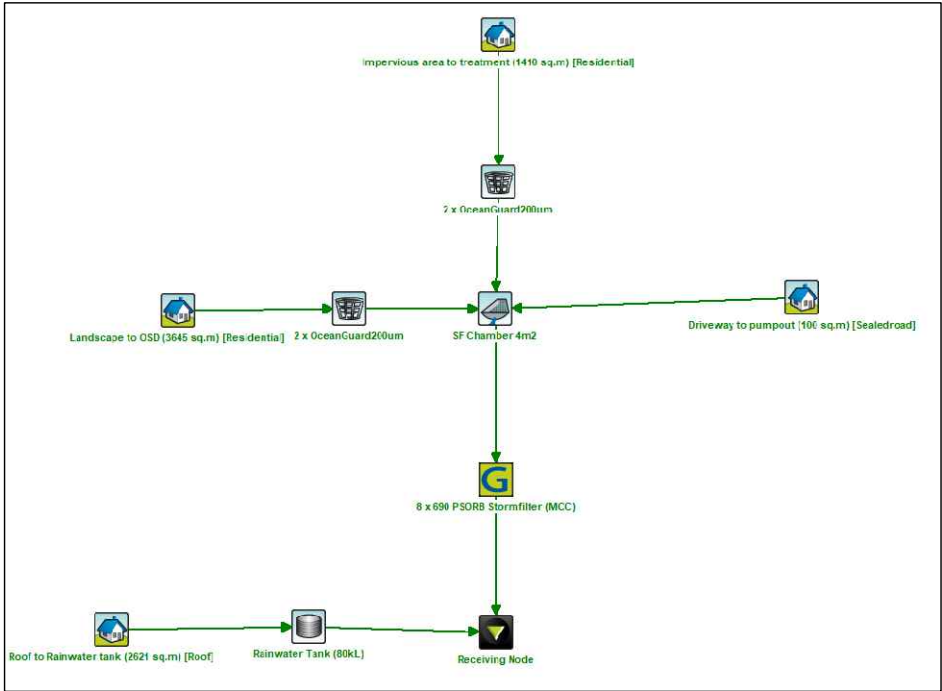


FIGURE 1 - MUSIC MODEL SCHEMATIC

5 RESULTS & CONCLUSION

BASED ON THE FOREGOING THE PROPOSED STORMWATER QUALITY TREATMENT MEASURES MEET THE REQUIRED TARGETS OF KU-RING-GAI COUNCIL.
REFER TO THE ASSOCIATED MUSIC LINK REPORT: 'CC250085 musicLink Report.pdf'
AS PREPARED BY HYDRACOR CONSULTING ENGINEERS PTY LTD FOR FURTHER INFORMATION.

TABLE 5.1 - TREATMENT TRAIN EFFECTIVENESS

Treatment Train Effectiveness - Receiving Node			
	Sources	Residual Load	% Reduction
Flow (ML/yr)	6.65	5.47	17.7
Total Suspended Solids (kg/yr)	586	84.2	85.6
Total Phosphorus (kg/yr)	1.42	0.492	65.3
Total Nitrogen (kg/yr)	13.7	7.05	48.5
Gross Pollutants (kg/yr)	116	0	100

EROSION & SEDIMENT LEGEND

- 1 INSTALL SEDIMENT FENCING REFER DETAIL SD 6-8, SHEET C17. WHERE UNDER CANOPY AREAS OF TREES TO BE RETAINED, FENCING NOT TO BE DUG INTO THE GROUND BUT INSTEAD ATTACHED TO GROUND BY TIGHTLY PACKED SANDBAGS.

2 NOTE: PROVIDE PROTECTION TO DRAINAGE PITS FOLLOWING PIT INSTALLATION. REFER DETAIL SD6-12 ON SHEET C17
- 3 THE EXISTING CROSSOVER & LAYBACK ARE TO BE RETAINED FOR SITE ACCESS UNTIL REASONABLE COMPLETION OF CONSTRUCTION WORKS

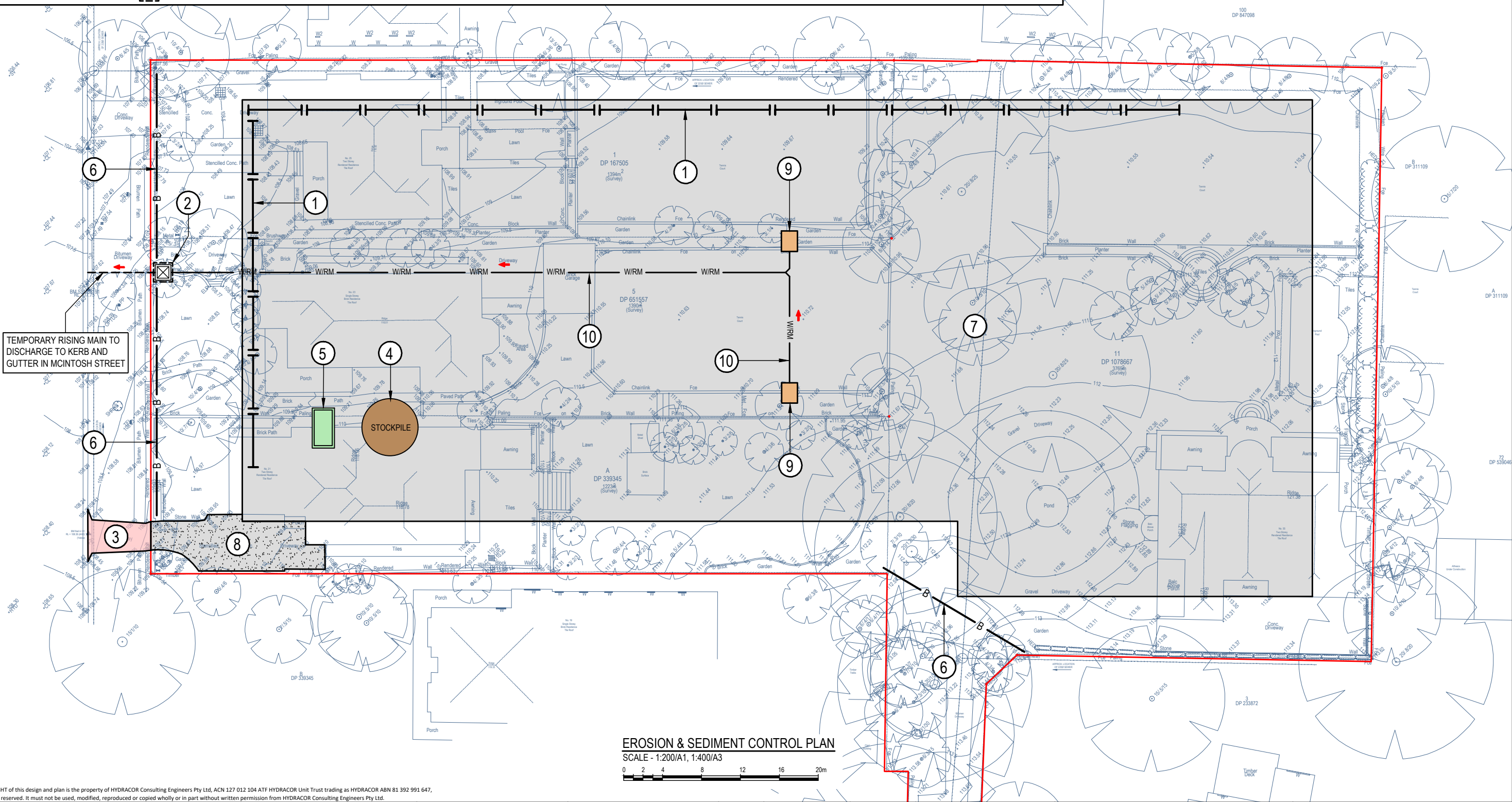
4 STOCKPILE IN ACCORDANCE WITH DETAIL SD 4-1. LOCATION MAY BE ALTERED PENDING CONSTRUCTION STAGING
- 5 WASTE STORAGE AREA PROVIDE SOLID AND LIQUID WASTE RECEPTACLE BINS

6 BARRIER FENCING OR UTILISE EXISTING BOUNDARY FENCE

7 PROPOSED DISTURBED AREA
- 8 SITE ACCESS PROVIDE LARGE COARSE DIA AGGREGATE OR RECYCLED CONCRETE. IN ACCORDANCE WITH DETAIL SD 6-14, SHEET C17

9 PROVIDE LIFT WELL PUMPOUT. TO BE CONFIRMED AT CC STAGE DISCHARGE TO BE CONTROLLED PUMP OUT FOLLOWING FLOCCULATION

10 PROVIDE TEMPORARY PUMP OUT AND RISING MAIN TO OUTLET.



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EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT.
- CONTRACTORS WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE GUIDELINES OF "MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION", DEPT OF HOUSING, 1998 (BLUE BOOK).
- ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

LAND DISTURBANCE INSTRUCTIONS

- DISTURBANCE TO BE NO FURTHER THAN 5 (PREFERABLY 2) METRES FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON APPROVED PLANS. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
- ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METRES THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
- ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.
- WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:
 - INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
 - CONSTRUCT THE STABILISED SITE ACCESS.
 - CONSTRUCT DIVERSION DRAINS AS REQUIRED.
 - INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
 - INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS.
 - CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
 - UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
 - GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
 - REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
- ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.
- ON COMPLETION OF MAJOR WORKS LEAVE DISTURBED LANDS WITH A SCARIFIED SURFACE TO ENCOURAGE WATER INFILTRATION AND ASSIST WITH KEYING TOPSOIL LATER.

SITE MAINTENANCE INSTRUCTIONS

- THE SITE SUPERINTENDENT WILL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:
 - ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT ANY NECESSARY REPAIRS.
 - REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5 METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS AND PAVED AREAS.
 - REMOVE TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURE HAS BEEN EXCEEDED.
 - ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
 - CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS. MAKE ONGOING CHANGES TO THE PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECTED TO CHANGES IN CONDITIONS ON THE WORK-SITE OR ELSEWHERE IN THE CATCHMENT.
 - MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
- THE SITE SUPERINTENDENT WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL. ENTRIES WILL INCLUDE:
 - THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS.
 - THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS.
 - THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE.
 - THE NEED FOR DUST PREVENTION STRATEGIES.
 - ANY REMEDIAL WORKS TO BE UNDERTAKEN. THE LOGBOOK WILL BE KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF THE WORKS.

SEDIMENT CONTROL INSTRUCTIONS

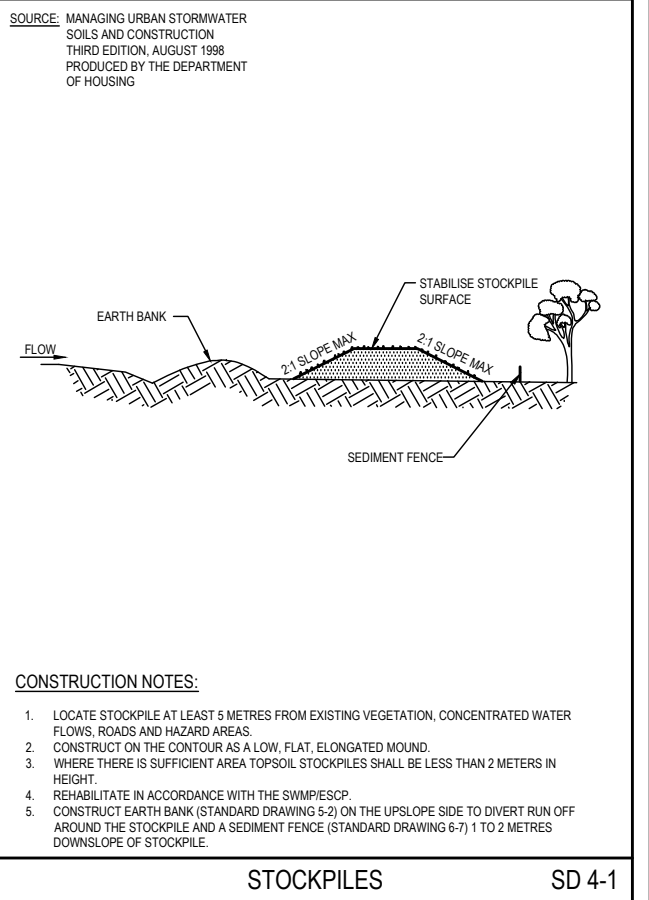
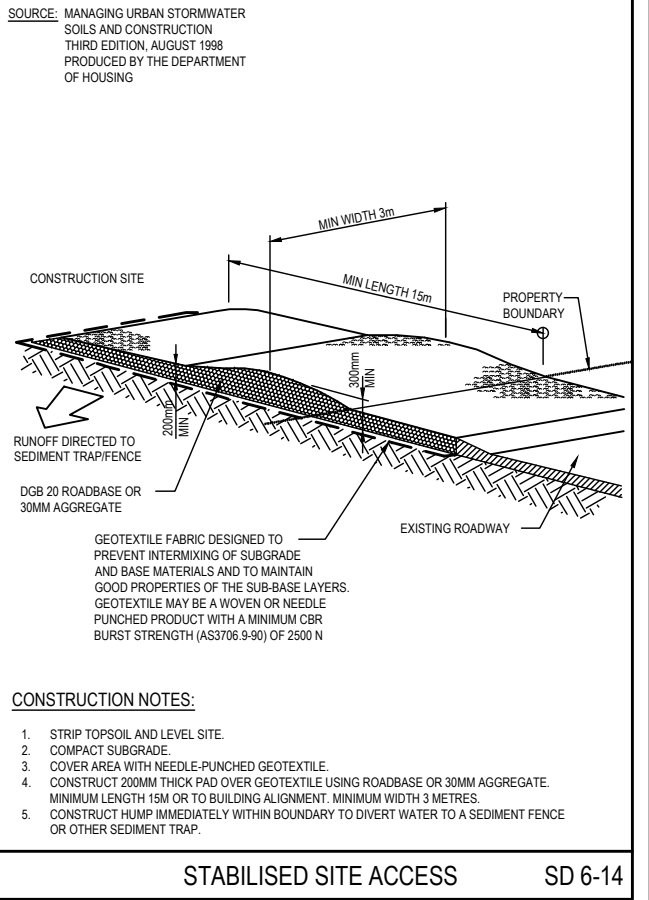
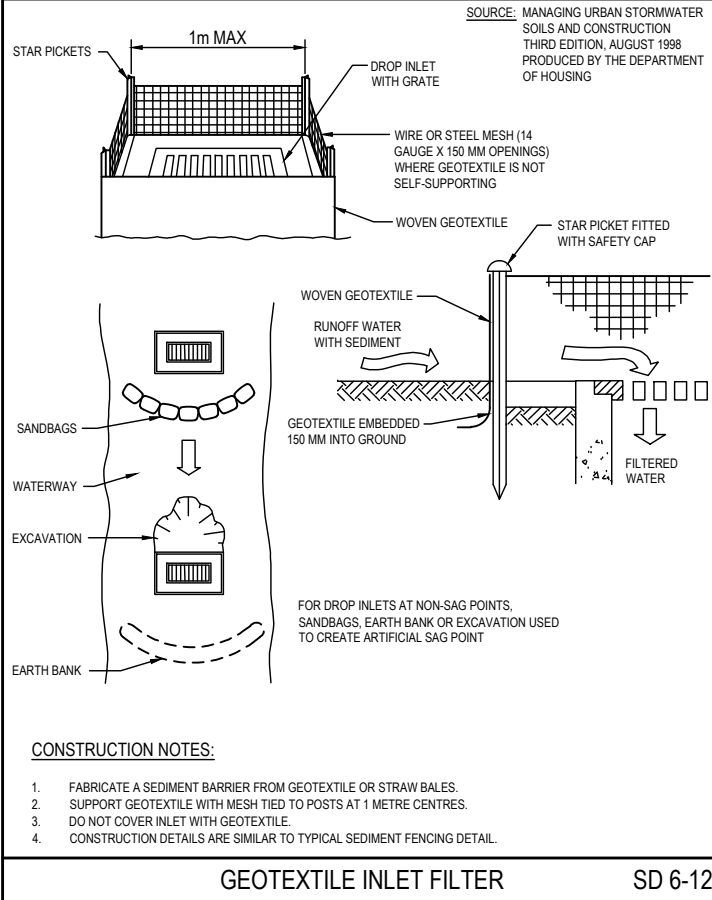
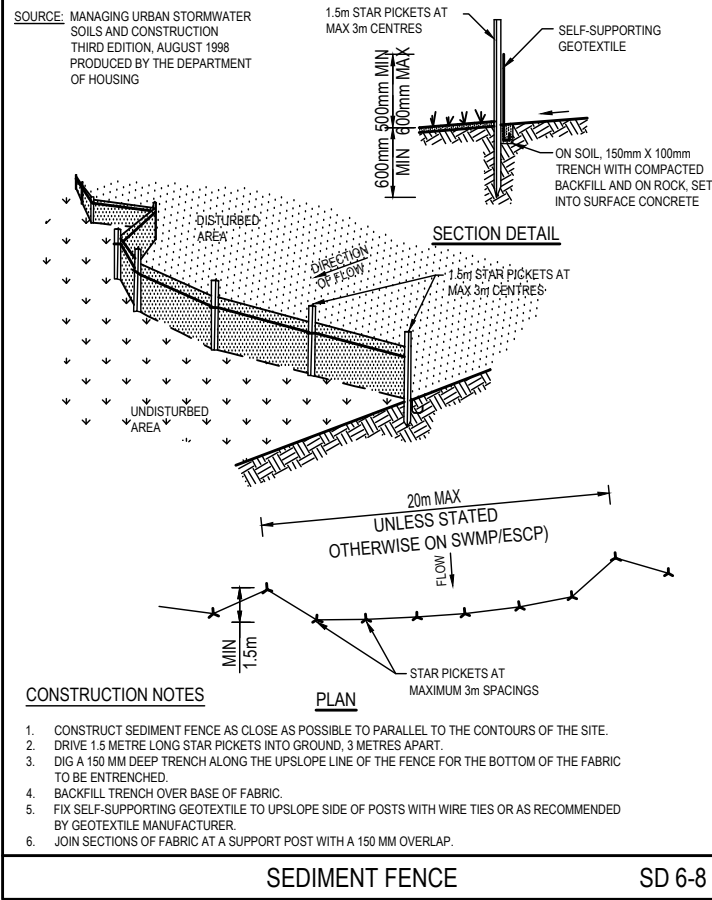
- SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
- SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
- SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
- STOCKPILES ARE NOT TO BE LOCATED WITHIN 5 METRES OF HAZARD AREAS INCLUDING AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS.
- WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR WATER HAS BEEN TREATED BY AN APPROVED DEVICE.
- TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
- ACCESS TO SITES SHOULD BE STABILISED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

SOIL EROSION CONTROL INSTRUCTIONS

- EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER, UNLESS OTHERWISE NOTED, THAN:
 - 2(H):1(V) WHERE SLOPE LENGTH LESS THAN 12 METRES
 - 2.5(H):1(V) WHERE SLOPE LENGTH BETWEEN 12 AND 16 METRES.
 - 3(H):1(V) WHERE SLOPE LENGTH BETWEEN 16 AND 20 METRES.
 - 4(H):1(V) WHERE SLOPE LENGTH GREATER THAN 20 METRES.
- ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 1:20 YEAR ARI, TIME OF CONCENTRATION STORM EVENT.
- WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FLOW VELOCITIES ARE TO BE LIMITED TO THOSE SHOWN IN TABLE 5-1 OF "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", DEPT OF HOUSING 1998 (BLUE BOOK). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.
- STOCKPILES AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.1 (60% GROUND-COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.
- ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.
- FOR AREAS OF SHEET FLOW USE THE FOLLOWING GROUND COVER PLANT SPECIES FOR TEMPORARY COVER: JAPANESE MILLET 20 KG/HA AND OATS 20 KG/HA.
- PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND-COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.
- REVEGETATION SHOULD BE AIMED AT RE-ESTABLISHING NATURAL SPECIES. NATURAL SURFACE SOILS SHOULD BE REPLACED AND NON-PERSISTENT ANNUAL COVER CROPS SHOULD BE USED.

WASTE CONTROL INSTRUCTIONS

- ACCEPTABLE BINS WILL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES WILL BE PROVIDED AT LEAST WEEKLY. DISPOSAL OF WASTE WILL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.
- ALL POSSIBLE POLLUTANT MATERIALS ARE TO BE STORED WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOOD PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS. STORE SUCH MATERIALS IN A DESIGNATED AREA UNDER COVER WHERE POSSIBLE AND WITHIN CONTAINMENT BUNDS.
- ALL SITE STAFF AND SUB-CONTRACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.
- ANY DE-WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.
- PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.



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				North		Client		Architect		Project		Drawing Title	
						WERONA AVE RESIDENCE HOLDING PTY LTD		PMDL		HYDRACOR Consulting Engineers Pty Ltd Platinum Building, Suite 2.01, 4 Ilya Avenue ERINA NSW 2250, Australia T +61 2 4324 3499		PROPOSED RESIDENTIAL DEVELOPMENT No.25, 23 & 21 MCINTOSH STREET No.55 WERONA AVENUE GORDON	
												EROSION & SEDIMENT CONTROL NOTES & DETAILS	
A		ISSUED FOR DEVELOPMENT APPROVAL		21.05.25		IK		BK				Date	
Issue		Description		Date		Drawn		Approved		Project No.		Dwg. No.	
										CC250085		C17	
												Issue	
												A	