GRAND ENGINEERING
Structural Geotech Stormwater

PROJECT
DUPLEX DEVELOPMENT

ADDRESS
20 CAMPBELL AVENUE, CROMER

CLIENT
MR RAJ DEEP

PROJECT No.
24G2397

DRAWING LIST

CV01	NOTES SHEET
CV05	STORMWATER PLAN
CV10	DETAILS SHEET 1
CV11	DETAILS SHEET 2
CV12	OSD CHECKLIST

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A	ISSUE FOR APPROVAL	C.B	S.P.	S.P.	10.02.25

AMENDMENTS

STATUS: FOR APPROVAL

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GENERAL NOTES

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANT DRAWINGS, SPECIFICATIONS AND WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE CONTRACT DURATION AND ANY DISCREPANCIES SHALL BE RAISED FOR THE ATTENTION OF GRAND ENGINEERING PRIOR TO CONSTRUCTION.

G2. CONTRACTOR TO COMPLY WITH ALL RULES AND REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION OVER THE PROPOSED WORKS PRIOR TO COMMENCEMENT OF WORKS ON SITE.

G3. ALL THE EXISTING SERVICES INFORMATION SHOWN ON THE DRAWINGS ARE BASED ON THE SURVEY PROVIDED BY THE SURVEYOR AND GRAND ENGINEERING DOES NOT GUARANTEE THE ACCURACY OF THE PROVIDED INFORMATION BY THE SURVEYOR. CONTRACTOR TO VERIFY ALL UNDERGROUND SERVICES AND COMPLY WITH RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF ANY WORKS.

G4. MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS.

STORMWATER NOTES

S1. ALL STORMWATER WORKS MUST BE IN ACCORDANCE WITH CURRENT VERSION OF AS3500 AND IN ACCORDANCE WITH THE REQUIREMENTS OF RELEVANT AUTHORITIES.

S2. THE GRADIENT OF THE STORMWATER PIPE SHALL NOT BE LESS THAN 1.0%. GRADE SHOWN ON THE DRAWINGS SHOULD NOT BE REDUCED WITHOUT THE APPROVAL BY AN ENGINEER.

S3. UNSLOTTED uPVC SEWER GRADE PIPE TO BE USED IN A SITUATION WHERE SUBSOIL DRAINS NEED TO BE LAID UNDER THE FLOOR SLAB AND VEHICULAR PAVEMENT.

S4. SUBSOIL DRAINS TO BE SLOTTED FLEXIBLE uPVC UNLESS NOTED OTHERWISE WRAPPED IN GEOTEXTILE FILTER FABRIC (BIDIM A24 OR EQUIVALENT) WITH 100mm OF SUBSOIL FILTER GRAVEL AROUND.

S5. STORMWATER PIPES TO BE INSTALLED AS PER THE INVERT LEVELS SHOWN ON THE DRAWINGS (GRADE SHOWN ARE NOMINAL ONLY)

S6. GRATES AND COVER SHALL CONFORM WITH AS3996 AND AS 1428.1 REQUIREMENTS.

S7. INSTALL STEP IRON FOR PITS DEEPER THAN 1.2m.

S8. THE MINIMUM DIAMETER OF PIPE SHALL BE DN90 FOR SINGLE DWELLINGS IN RURAL AREAS AND RESIDENTIAL BUILDINGS ON URBAN ALLOTMENTS WITH AREAS LESS THAN 1000m^2. FOR OTHER PROPERTIES MINIMUM DIAMETER SHALL BE DN150 U.N.O.

S9. THE MINIMUM PIPE COVER SHALL BE IN ACCORDANCE WITH AS 3500 TABLE 6.2.5.

RAINWATER TANK NOTES

R1. THE TANK SHALL MEET ALL CURRENT SYDNEY WATER REQUIREMENTS AND BE CONSTRUCTED TO SATISFY NSW CODE OF PRACTISE: PLUMBING AND DRAINAGE

R2. ALL TAPS CONNECTED TO RAINWATER TANK SHALL BE CLEARLY MARKED 'RAINWATER' OR 'NOT FOR DRINKING'.

R3. ROOF GUTTERS SHOULD HAVE LEAF GUARDS OR SIMILAR FITTED TO MINIMISE ENTRY OF DEBRIS TO THE TANK. RAINWATER SHOULD BE SCREENED PRIOR TO ENTERING THE TANK, OR A FIRST FLUSH DEVICE FITTED. FIT FLAPS ON ALL INLET PIPES. NO OPENINGS ARE PERMITTED THAT WOULD ALLOW INSECTS TO ENTER.

R4. TANKS SHALL HAVE SUITABLE PUMP FITTED TO ENSURE ADEQUATE PRESSURE, EXCEPT WHERE THE TANK IS LESS THAN 1200 LITRES AND ONLY USED FOR GARDEN WATERING.

R5. THE OFFTAKE TO THE PUMP SHALL BE A MINIMUM OF 100mm ABOVE THE BASE OF THE TANK TO AVOID UPTAKE OF ANY SETTLED MATERIAL

R6. THE OVERFLOW FROM RAINWATER TANK SHALL BE DIRECTED TO THE NEAREST STORMWATER PIT.

R7. TO MAINTAIN THE INTEGRITY OF THE STORED RAINWATER, ANY DISCHARGE FROM A DRIVEWAY OR CAPARK (EVEN IF TREATED) SHOULD DISCHARGE DOWNSTREAM OF THE RAINWATER STORAGE.

R8. A BUOYANCY CHECK NEEDS TO BE UNDERTAKEN TO ENSURE THAT AN INGROUND TANK WILL NOT POP OUT OF THE GROUND IF THE TANK IS EMPTY AND THERE IS HIGH WATER TABLE OR LOW PERMEABILITY GROUND. PARTICULAR CARE NEEDS TO BE UNDERTAKEN DURING CONSTRUCTION IF THE TANK IS LEFT IN THE OPEN HOLE WHILE FITTING THE PIPES AND THE HOLE COULD FILL UP WITH THE SURFACE WATER FROM RAIN ON THE SITE PRIOR TO BACKFILLING

R9. BELOW GROUND TANKS INSTALLED WITHIN THE ZONE OF INFLUENCE OF AN EXISTING BUILDING SHALL ADEQUATELY SUPPORT THE BUILDING'S FOOTINGS TO PREVENT THE MOVEMENT DURING CONSTRUCTION

R10. ONLY ROOF RUNOFF TO BE DIRECTED TOWARDS RAINWATER TANK.

R11. RAINWATER TANK TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATION

R12. FIRST FLUSH DEVICE TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATION

R13. PUMP SIZE AND DIMENSIONS TO BE NOMINATED BY MANUFACTURER

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AMENDMENTS

SITE: 20 CAMPBELL AVENUE, CROMER

CLIENT: MR RAJ DEEP

STATUS: FOR APPROVAL

DRAWING TITLE: NOTES SHEET

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
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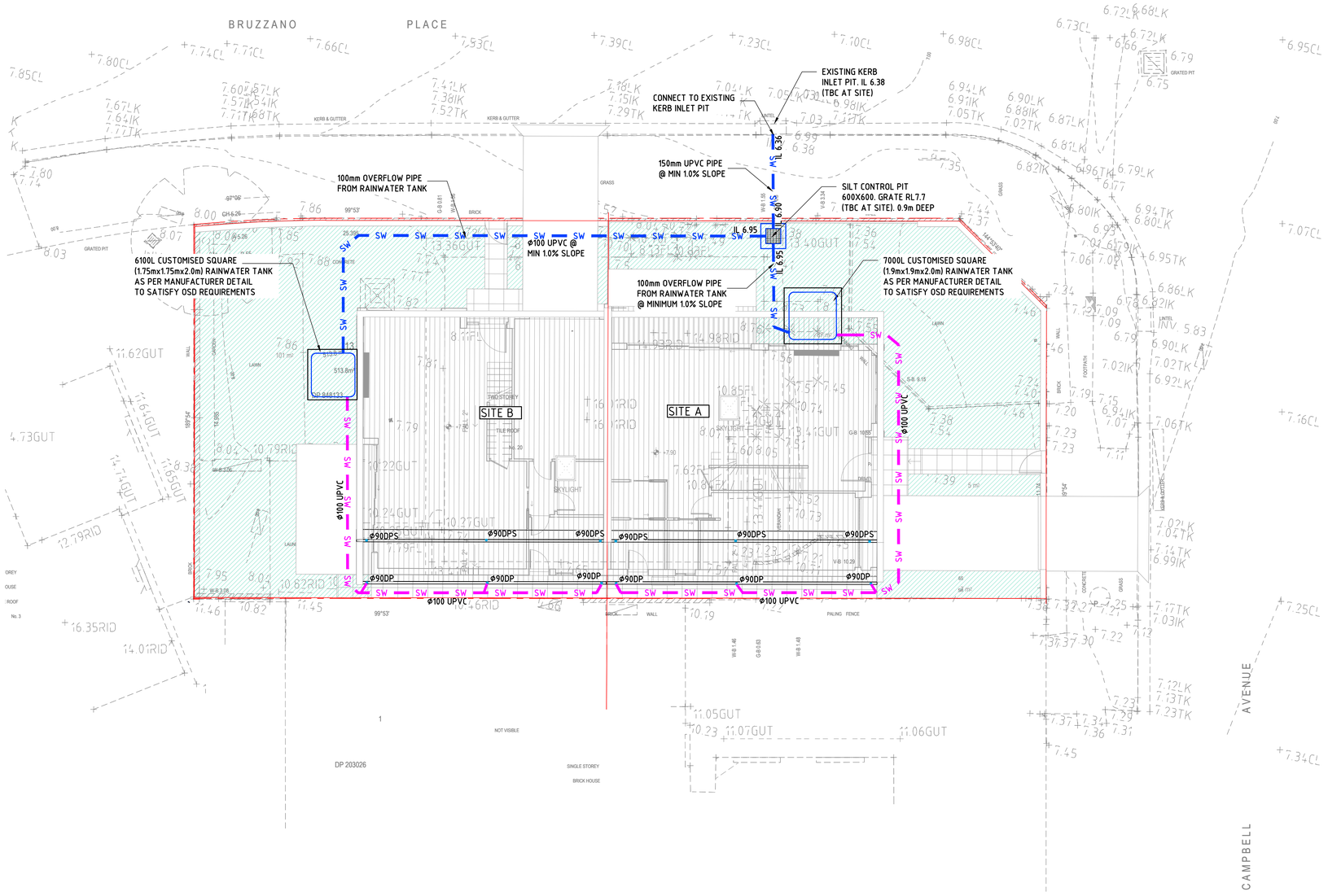

LEGENDS

- SITE BOUNDARY
- EXISTING CONTOUR
- SW — PROPOSED STORMWATER LINE
- SW — PROPOSED ROOFWATER LINE
- DPS — DOWNPIPES TO SPREADER
- DP — DOWNPIPES

NOTES:

1. THIS PLAN IS BASED ON NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY
2. ARCHITECT TO CONFIRM ANY BASIX REQUIREMENTS.
3. REFER TO CV11 FOR OSD CALCULATION AND DETAIL

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SITE: 20 CAMPBELL AVENUE, CROMER

CLIENT: MR RAJ DEEP

STATUS: FOR APPROVAL			
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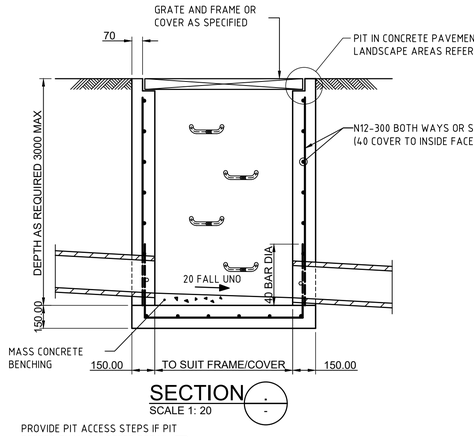
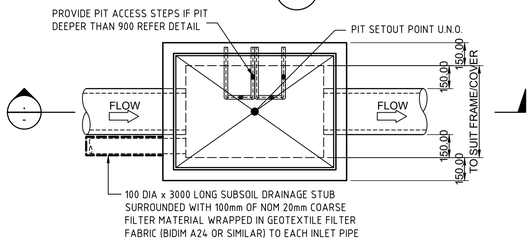
PROJECT NO: 24G2397	DRAWING NO: CV05	REVISION: A	

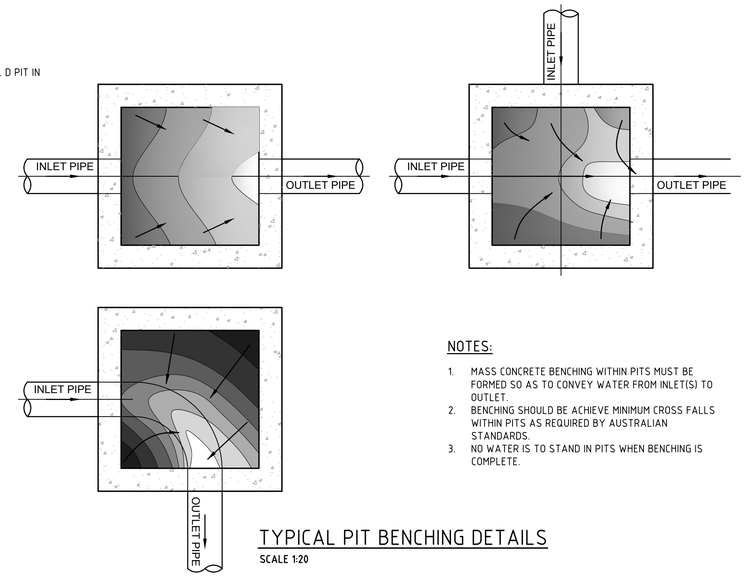


SECTION
SCALE 1: 20



PLAN
SCALE 1: 20

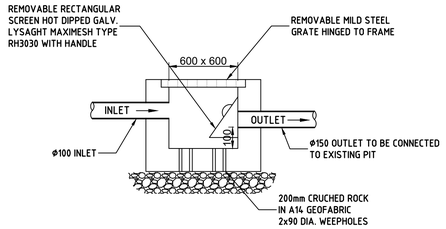
PIT TYPE (INLET/JUNCTION)



NOTES:

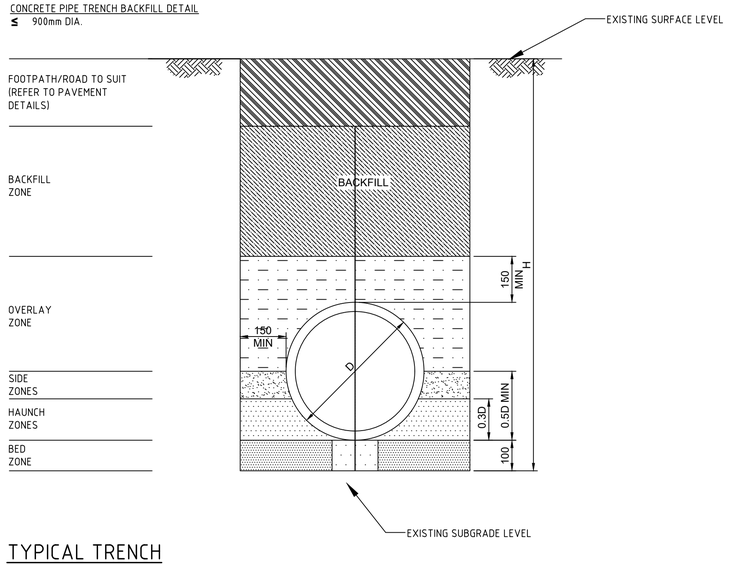
1. MASS CONCRETE BENCHING WITHIN PITS MUST BE FORMED SO AS TO CONVEY WATER FROM INLET(S) TO OUTLET.
2. BENCHING SHOULD BE ACHIEVE MINIMUM CROSS FALLS WITHIN PITS AS REQUIRED BY AUSTRALIAN STANDARDS.
3. NO WATER IS TO STAND IN PITS WHEN BENCHING IS COMPLETE.

TYPICAL PIT BENCHING DETAILS
SCALE 1:20

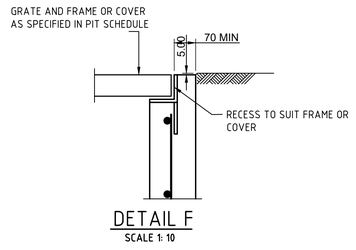


SILT ARRESTOR PIT DETAILS - TYPICAL
SCALE 1:20

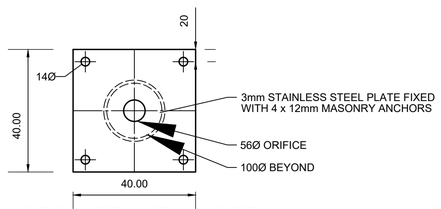
CONCRETE PIPE TRENCH BACKFILL DETAIL
≤ 900mm DIA.



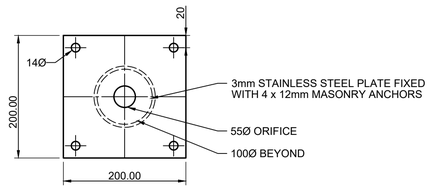
TYPICAL TRENCH BACKFILL DETAIL
SCALE 1:10



DETAIL F
SCALE 1: 10



ORIFICE PLATE DETAIL(SITE A)
SCALE 1:5



ORIFICE PLATE DETAIL(SITE B)
SCALE 1:5

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DRAWING TITLE: DETAILS SHEET 1

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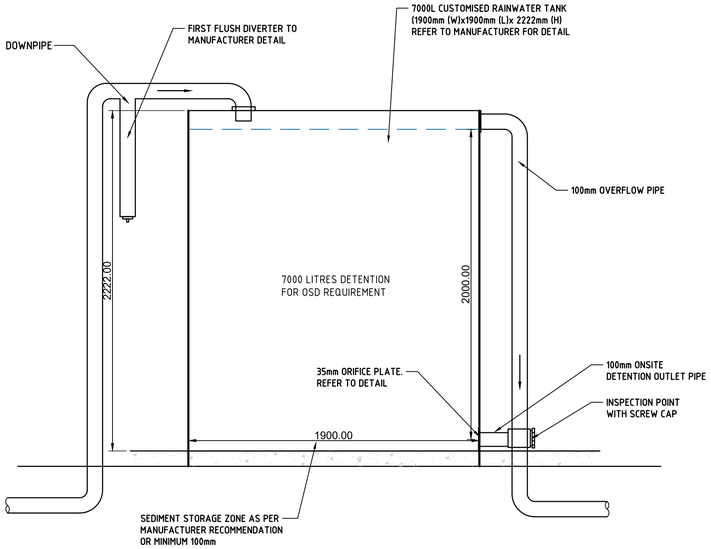
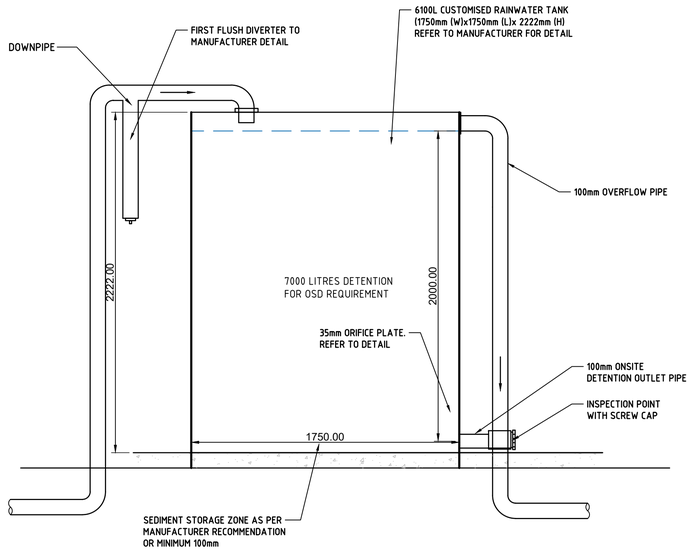


OSD TANK DETAIL (SITE A)

SCALE 1:20



OSD TANK DETAIL (SITE B)

SCALE 1:20

RAINWATER TANK NOTES:

1. CUSTOMISED RAINWATER TANKS AS PER MANUFACTURER DETAILS
2. REFER TO MANUFACTURER FOR THE EXACT DIMENSION OF THE TANK
3. A FIRST FLUSH DEVICE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER SPECIFICATION AND DETAIL TO DIVERT THE FIRST 1mm OF ROOF WATER.
4. REFER TO MANUFACTURER FOR PUMP SIZES AND SPECIFICATION
5. ORIFICE PLATE TO BE INSTALLED BY LICENSED AND QUALIFIED PLUMBER AND USE WASHER OR SEALANT TO AVOID LEAKAGE.

On Site Detention Design

PROPOSED SITE INFORMATION

LGA:	Northern Beaches Council
TOTAL SITE AREA:	509.9m² (SITE A 259.7m² + SITE B 250.2m²)

SITE A

TOTAL AREA :	259.7m²
ROOF AREA:	127m²
OTHER IMPERVIOUS AREA (BYPASS):	37m² (LESS THAN 30% OF SITE AREA)
TOTAL IMPERVIOUS AREA:	164m² (63% IMPERVIOUS AREA)

OSD VOLUME CALCULATED AS PER NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY
APPENDIX 8 TABLE A8-2
MINIMUM OSD VOLUME (SSR): 7.00m³ (INTERPOLATION BETWEEN 250m² AND 300m²)
PSD = 9.39l/s (INTERPOLATION BETWEEN 250m² AND 300m²)

ORIFICE PLATE SIZED AS PER APPENDIX 9
DEPTH OF TANK ABOVE CENTRELINE OF ORIFICE = 2.0m
ORIFICE DIA = 56.17 ~56mm
OUTLET PIPE = 100mm

SITE B

TOTAL AREA :	250.2m²
ROOF AREA:	116m²
OTHER IMPERVIOUS AREA (BYPASS):	28m² (LESS THAN 30% OF SITE AREA)
TOTAL IMPERVIOUS AREA:	144m² (56% IMPERVIOUS AREA)

OSD VOLUME CALCULATED AS PER NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY
APPENDIX 8 TABLE A8-1
MINIMUM OSD VOLUME (SSR): 6.10m³
PSD = 9.00l/s

ORIFICE PLATE SIZED AS PER APPENDIX 9
DEPTH OF TANK ABOVE CENTRELINE OF ORIFICE = 2.0m
ORIFICE DIA = 55mm
OUTLET PIPE = 100mm

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DRAWING TITLE: DETAILS SHEET 2

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
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Appendix 16 – On-site Detention Checklist

This checklist is to be used to determine the on-site stormwater disposal requirement for developments and must be completed and included with the submission of any development application for these works.
Please read this form carefully for its notes, guidelines, definition and relevant policies.

For assistance and support, please contact Council's Development Engineering and Certification team on 1300 434 434.

Part 1 Location of the Property			
House Humber	20	Legal Property Description	
Street	CAMPBELL AVE	Lot	
Suburb	CROMER	Section	
Postcode	2099	DP	

Part 2 Site Details			
Northern Beaches Stormwater Regions (refer to Map 2 of Northern Beaches Council's Water Management for Development policy)	REG 2	Total Site Area	509.9m²
Pre-Development Impervious Area	326m²	Post-Development Impervious Area	308m²
Is the site of the development located within an established Flood Prone Land as referred to Council's Local Environmental Plans? If yes, On-site stormwater Detention system (OSD) is not required and please proceed to part 5 of this checklist If no, please proceed to part 3 of this checklist.			Yes ☐ No ☑

Part 3: Northern Beaches Stormwater Regions (refer to Map 2 of Northern Beaches Council's Water Management for Development policy)
If the site of the development located within Region 1, please proceed to the part 4.1 of this checklist
If the site of the development located within Region 2, please proceed to the part 4.2 of this checklist
If the site of the development located within Region 3, please proceed to the part 4.3 of this checklist
If the site of the development located within Region 4, please refer to Council's Warriewood Valley Water Management Specification.

Part 4 Determination of OSD Requirements

Part 4.1 Northern Beaches Stormwater Region 1	
Is the additional impervious area of the development more than 50 m² on a cumulative basis since February 1996?	Yes ☐ No ☐
If yes, OSD is required and please refer to section 9.3.1 of Council's Water Management for Development Policy If no, OSD is not required and please proceed to the part 5 of this checklist	

Part 4.2 Northern Beaches Stormwater Region 2	
Part 4.2.1 Description of Work	
Residential flat building, commercial, industrial, multiple occupancy development and subdivisions resulting in the creation of three lots or more, will require OSD in all case. Please provide a design in accordance with the section 9.3.2 of Council's Water Management for Development Policy. Any single residential building development, please proceed to part 4.2.2 of this checklist.	
Part 4.2.2 Exemption	
Is the site area less than 450m²?	Yes ☐ No ☑
Does the site of the development drain directly to the ocean without the need to pass through a drainage control structure such as pipe, bridge, culvert, kerb and gutter or natural drainage system?	Yes ☐ No ☑
Is it an alternation and addition development to the existing dwellings?	Yes ☐ No ☑
If yes to any of the above questions, OSD is not required. If no to all the above questions, proceed to part 4.2.3	
Part 4.2.3 Determination of OSD Requirements	
Calculation	a) Site area m² x 0.40 (40%) = ... 204 m² b) Post- development impervious area = ... 308 .... m² **OSD will not be required when (a) is greater than (b)** Is OSD required for this development (tick one only) Yes ☑ No ☐ If yes, provide a design in accordance with the section 9.3.2 of Council's Water Management for Development Policy. If no, OSD is not required and please proceed to part 5 of this checklist.

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