

PROPOSED RESIDENTIAL DEVELOPMENT TYPE: DUAL OCCUPANCY

DRAWINGS SERIES TO BE PRINTED IN
COLOUR

DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION

ADDRESS: No. 93 CROWN ROAD, QUEENSCLIFF
TITLE: LOT 1/DP17127
DRAWING SERIES: STORMWATER MANAGEMENT PLAN

GENERAL NOTES

- GN1 ALL DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION.
- GN2 THE CONTRACTOR SHALL LOCATE AND DETERMINE LEVELS OF ALL EXISTING SERVICES PRIOR TO COMMENCING EXCAVATION WORK. ALL SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE AND FOR GUIDANCE ONLY.
- GN3 THIS DRAWING SERIES IS TO BE READ IN CONCURRENCE WITH RELEVANT DRAWINGS SERIES FROM OTHER CONSULTANTS, COUNCIL OR RELEVANT SPECIFICATIONS. WHERE DISCREPANCIES ARE DETECTED THE DESIGN ENGINEER IS TO BE CONTACTED IMMEDIATELY FOR VALIDATION/ RECTIFICATION.
- GN4 BUILDER AND CONTRACTORS IS TO ENSURE THAT ALL COUNCIL DEVELOPMENT CONSENT CONDITIONS, CONSTRUCTION CERTIFICATE AND BASIX REQUIREMENTS ARE MET.
- GN5 A STRUCTURAL ENGINEER IS TO DESIGN AND DETAIL SUBSOIL DRAINAGE. UNLESS APPROVED BY OUR OFFICE, SUBSOIL DRAINAGE IS NOT TO CONNECT INTO THE STORMWATER SYSTEM DISPLAYED WITHIN THIS DRAWING SERIES.
- GN6 PLANS ISSUED FOR DEVELOPMENT APPLICATION, SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE.
- GN7 PLANS ISSUED FOR DEVELOPMENT APPLICATION PURPOSES, SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

RAINWATER RE-USE NOTES

- RN1 THE RAINWATER TANK IS TO BE INSTALLED AND EMPLOYED AS PER BASIX, SYDNEY WATER, COUNCIL AND NSW HEALTH REQUIREMENTS FOR NON DRINKING USE ONLY.
- RN2 ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE.
- RN3 BUILDER AND PLUMBER TO ENSURE THE INSTALLATION OF THE RAINWATER TANK SYSTEM IS IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND THE RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK (HB 230- 2008).
- RN4 DO NOT DIRECT CONNECT TOWN WATER SUPPLY AND THE RAIN WATER SUPPLY.
- RN5 THE RAINWATER TANK AND EVERY RAINWATER SUPPLY OUTLET POINT ARE TO BE LABELLED (RAINWATER) ON A METAL SIGN IN ACCORDANCE WITH AS1319.
- RN6 SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING.
- RN7 ROOF RUN-OFF ONLY IS BE DIRECTED TO THE RAINWATER TANK . SURFACE WATER SYSTEMS/INLETS ARE NOT TO BE CONNECTED.
- RN8 ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE DEVICES TO PREVENT MOSQUITO AND VERMIN ENTRY TO THE SATISFACTION OF THE REGULATORY AUTHORITY.
- RN9 PROVIDE APPROPRIATE FLOAT VALVES TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
- RN10 PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN

BEFORE YOU DIG AUSTRALIA



THE MOST UP TO DATE BEFORE YOU DIG AUSTRALIA (BYDA) PLANS MUST BE KEPT ON-SITE AT ALL TIMES. ANY PERSON ABOUT TO DIG OR EXCAVATE MUST READ BYDA PLANS PRIOR TO THE COMMENCEMENT OF WORK.

STORMWATER NOTES

- SN1 ALL STORMWATER DRAINAGE PIPES AND ASSOCIATED DEVICES, ARE TO BE INSTALLED IN ACCORDANCE WITH THE RELEVANT STANDARDS, THE BUILDING CODE OF AUSTRALIA, MANUFACTURER'S RECOMMENDATIONS, SYDNEY CATCHMENT AUTHORITY RECOMMENDED PRACTICE, AND LOCAL COUNCIL, AS APPLICABLE.
- SN2 ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE AS/NZS3500 AND THE REQUIREMENTS OF THE LOCAL GOVERNMENT AREAS POLICIES, CODES AND SPECIFICATIONS. ENSURE INSPECTION OPENINGS ARE INSTALLED TO DRAINAGE LINES AT REQUIRED LOCATIONS.
- SN3 STORMWATER PIPES UP TO DN150 SHALL BE LAID AT A MINIMUM 1% GRADE UNLESS OTHERWISE NOTED.
- SN4 WHERE NECESSARY PUBLIC UTILITY SERVICES ARE TO BE ALTERED AND AMENDED AT THE CLIENT'S EXPENSE.
- SN5 ALL NEW WORK MAKE SMOOTH TRANSITIONS AND CONNECTIONS WITH EXISTING WORK.
- SN6 LOCAL GOVERNMENT AREAS TREE PRESERVATION AND MANAGEMENT ORDERS TO BE ABIDED BY. A PERMIT IS REQUIRED BEFORE TREE/S CAN BE REMOVED .
- SN7 ALL PITTS TO BE STREAMLINED AND BENCHED IN ACCORDANCE WITH LOCAL GOVERNMENTS AREAS SPECIFICATIONS.
- SN8 STEP IRONS ARE TO BE PROVIDED FOR ALL PITTS OVER 1.2m DEEP IN ACCORDANCE WITH AS/NZS3500 AND LOCAL GOVERNMENT AREAS CODES AND POLICES.
- SN9 DOWNPIPES, RAINWATER LINES AND STORMWATER LINES TO BE FULLY SEALED UNLESS OTHERWISE NOTED.
- SN10 ALL GRATE AND INVERT LEVELS PROVIDED ON THIS DRAWING ARE EXTRACTED FROM SURVEY AND REDUCED TO AHD. FOLLOWING EARTHWORKS, PIT INSTALLATION AND BENCHING THE LEVELS ARE TO BE VERIFIED OR ADJUSTED TO MEET THE DESIGN INTENT. IF EVER IN DOUBT CONTACT DESIGN ENGINEER.
- SN11 ALL SUSPENDED DRAINAGE PIPES ARE TO STRAPPED IN ACCORDANCE WITH AS/NZ 2032.
- SN12 LOW POINTS OF CHARGED DRAINAGE SYSTEMS REQUIRE DEVICES FOR FLUSHING AND MAINTENANCE.
- SN13 THE NUMBER AND LOCATION OF DOWNPIPES, ON THIS DRAWING SERIES, ARE SHOWN INDICATIVELY AND ARE TO BE CONFIRMED ON-SITE BY BUILDER PRIOR TO CONSTRUCTION. ROOF DRAINAGE, BY OTHERS, AND TO BE INSTALLED IN ACCORDANCE WITH AS/NZs 3500 SERIES.
- SN14 NEW WORKS SHALL NOT CREATE ANY TRAPPED SURFACE AREAS. IN SUCH CASES WHERE TRAPPED AREAS EXIST, A DRAINAGE NETWORK WITH ADEQUATE CAPACITY SHALL BE REQUIRED TO DRAIN STORMWATER TO AN APPROVED DISCHARGE POINT. A PUMP-OUT SYSTEM MAY BE REQUIRED IF THE TRAPPED AREA IS BELOW THE NATURAL SURFACE LEVEL. IN EACH INSTANCE, THE DESIGN ENGINEER MUST BE CONTACTED FOR DESIGN DETAILS (AS REQUIRED) BEFORE CONSTRUCTION.
- SN15 WHEN SURFACES FALL TOWARDS A BUILDING, INCLUDING LAND OUTSIDE OF THE SITE, GROUND SURFACE LEVELS ADJACENT TO THE BUILDING ARE TO BE RE-GRADED SUCH THAT THE FIRST METER HAS A MINIMUM 50MM FALL AWAY FROM THE BUILDING AS PER THE NATIONAL CONSTRUCTION CODE.
- SN16 BALCONY DRAINAGE AND WATERPROOFING TO BE INSTALLED IN STRICT ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARD AND NATIONAL CONSTRUCTION CODE, DESIGN IS TO BE BY OTHERS.

DRAWING LEGEND

- INDICATES INDICATIVE EXTENT OF EXISTING DWELLING
- INDICATES INDICATIVE EXTENT OF PROPOSED EXTENSION
- INDICATES INDICATIVE EXTENT OF PROPOSED DRIVEWAY
- INDICATES ON-SITE DETENTION TANK
- INDICATES RAINWATER TANK
- INDICATES ABSORPTION SYSTEM
- INDICATES PROPOSED DOWNPIPE/RISER
- INDICATES EXISTING DOWNPIPE/RISER
- INDICATES INSPECTION OPENING WITH SCREW DOWN LID
- INDICATES RAINWATER OUTLET
- INDICATES PLANTER BOX OUTLET
- INDICATES EAVE OPENING
- INDICATES PIPE DROPPER
- BOX GUTTER SUMP/RAINWATER HEAD SUMP
- INDICATES EAVE TYPE AND DIRECTION
- INDICATES DOWNPIPE SPREADER
- INDICATES GRATED BOX DRAIN WITH OUTLET
- INDICATES DRAINAGE PIT GRATED OPENING
- INDICATES DRAINAGE PIT SEALED COVER
- INDICATES STORMWATER PIPE INVERT LEVELS. UNLESS OTHERWISE NOTED PIT BASE IS TO EQUAL PIPE BASE
- INDICATES DN100 RAINWATER PIPE.
- INDICATES DN100 STORMWATER PIPE.
- INDICATES EXISTING STORMWATER PIPE.
- INDICATES DN100 SEWER GRADE CHARGED STORMWATER PIPE.
- INDICATES INDICITIVE LOCATION OF RISING MAIN BY OTHERS.
- INDICATES SIZE AND DIRECTION OF RAINWATER PIPE GREATER THAN DN100.
- INDICATES SIZE AND DIRECTION OF STORMWATER PIPE GREATER THAN DN100.
- INDICATES SIZE AND DIRECTION OF EXISTING STORMWATER PIPE GREATER THAN DN100.
- INDICATES SIZE AND DIRECTION OF SEWER GRADE CHARGED STORMWATER PIPE.
- INDICATES SITE BOUNDARY
- INDICATES EASEMENT WITHIN SITE, REFER TO DETAILED SURVEY
- INDICATES INDICATIVE ROOF OUTLINE
- PIPE LINE CONTINUES TO REFERENCED PAGE
- PENETRATION DIRECTION
- SERVICE TYPE SIZE
- PENETRATION DIRECTION

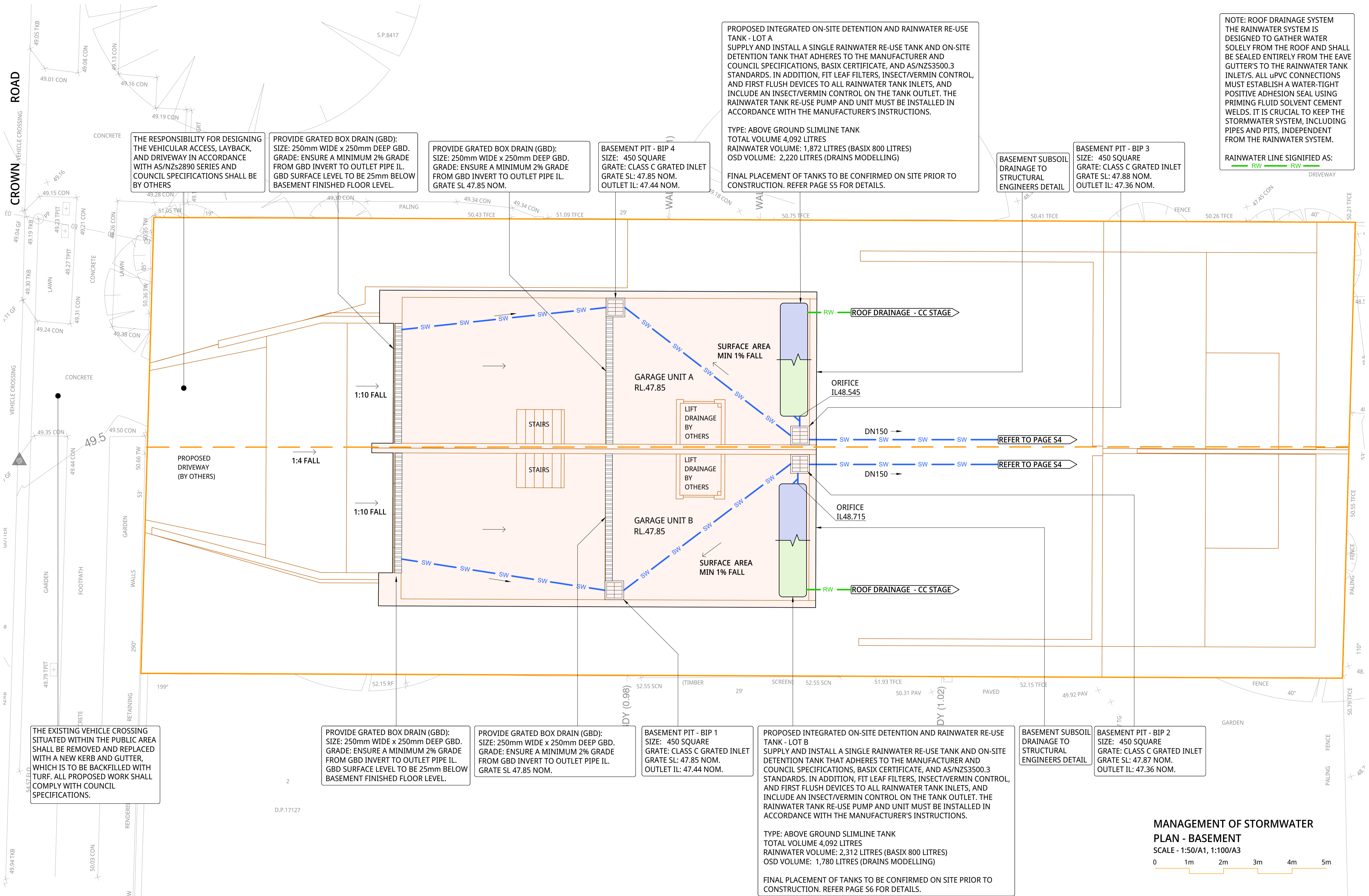
SITE SUMMARY OF COUNCIL SPECIFICATION

1. COUNCIL: NORTHERN BEACHES COUNCIL
2. RELEVANT DOCUMENTS:
 - 2.1. NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY (FEB 2021)
 - 2.2. AS/NZS 3500.3
3. ENGINEERING COMMENTS:
 - STORMWATER DISCHARGE
THE DEVELOPMENT IS LOCATED ON A RIDGE AND PROPOSES TO DRAIN THE MAJORITY OF THE SITE, BY GRAVITY, TO HIGHVIEW AVENUE. THE REMAINING LANDSCAPED AREA DRAINS BY GRAVITY TO CROWN ROAD. THE DEVELOPMENT PROPOSES A NEW KERB TO FACILITATE DISCHARGE AT HIGHVIEW AVENUE. THE PROPOSED KERB OUTLET'S FOR EACH LOT HAVE BEEN EXTENDED APPROXIMATELY 9m DOWN THE AVENUE TO AVOID THE USE OF PUMP OUT SYSTEM IN THE BASEMENT AREAS. THE DEVELOPMENT PROPOSES TO KEEP DRAINAGE FROM EACH UNIT SEPARATE.
 - ON- SITE DETENTION
THE DEVELOPMENT PROPOSES A DUAL OCCUPANCY WITH THE SITES IMPERVIOUS AREA > 40% CONSEQUENTLY THE DEVELOPMENT PROPOSES OSD. A DRAINS HYDRAULIC AND HYDROLOGICAL MODEL WAS CREATED AND IS EXPECTED TO RESTRICT SITES FLOWS TO LESS THAN PRE-DEVELOPMENT CONDITIONS FOR ALL STORM EVENTS UP TO AND INCLUDING THE 1% AEP. DEVELOPMENT FLOW RATES ARE SHOWN ON PAGE S7, COUNCIL CHECKLIST ON PAGE S8 AND OSD DETAILS ON PAGE S5 & S6
 - RAINWATER REUSE
RAINWATER REUSE TO BE IN ACCORDANCE BASIX CERTIFICATE.

THIS DRAWING SERIES HAS BEEN PREPARED IN GENERAL ACCORDANCE WITH THE ABOVE DOCUMENTS.

PAGE DIRECTORY

TITLE PAGE & NOTES	PAGE 51
MANAGEMENT OF STORMWATER PLAN - BASEMENT	PAGE 52
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 1	PAGE 53
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 2	PAGE 54
MANAGEMENT OF STORMWATER DETAILS PAGE 1	PAGE 55
MANAGEMENT OF STORMWATER DETAILS PAGE 2	PAGE 56
MANAGEMENT OF STORMWATER CALCULATIONS	PAGE 57
MANAGEMENT OF STORMWATER CHECKLIST	PAGE 58



THE RESPONSIBILITY FOR DESIGNING THE VEHICULAR ACCESS, LAYBACK, AND DRIVEWAY IN ACCORDANCE WITH AS/NZS2890 SERIES AND COUNCIL SPECIFICATIONS SHALL BE BY OTHERS

PROVIDE GRATED BOX DRAIN (GBD): SIZE: 250mm WIDE x 250mm DEEP GBD. GRADE: ENSURE A MINIMUM 2% GRADE FROM GBD INVERT TO OUTLET PIPE IL. GBD SURFACE LEVEL TO BE 25mm BELOW BASEMENT FINISHED FLOOR LEVEL.

PROVIDE GRATED BOX DRAIN (GBD): SIZE: 250mm WIDE x 250mm DEEP GBD. GRADE: ENSURE A MINIMUM 2% GRADE FROM GBD INVERT TO OUTLET PIPE IL. GRATE SL 47.85 NOM.

BASEMENT PIT - BIP 4
SIZE: 450 SQUARE
GRATE: CLASS C GRATED INLET
GRATE SL: 47.85 NOM.
OUTLET IL: 47.44 NOM.

PROPOSED INTEGRATED ON-SITE DETENTION AND RAINWATER RE-USE TANK - LOT A
SUPPLY AND INSTALL A SINGLE RAINWATER RE-USE TANK AND ON-SITE DETENTION TANK THAT ADHERES TO THE MANUFACTURER AND COUNCIL SPECIFICATIONS, BASIX CERTIFICATE, AND AS/NZS3500.3 STANDARDS. IN ADDITION, FIT LEAF FILTERS, INSECT/VERMIN CONTROL, AND FIRST FLUSH DEVICES TO ALL RAINWATER TANK INLETS, AND INCLUDE AN INSECT/VERMIN CONTROL ON THE TANK OUTLET. THE RAINWATER TANK RE-USE PUMP AND UNIT MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

TYPE: ABOVE GROUND SLIMLINE TANK
TOTAL VOLUME 4,092 LITRES
RAINWATER VOLUME: 1,872 LITRES (BASIX 800 LITRES)
OSD VOLUME: 2,220 LITRES (DRAINS MODELLING)

FINAL PLACEMENT OF TANKS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION. REFER PAGE S5 FOR DETAILS.

BASEMENT SUBSOIL DRAINAGE TO STRUCTURAL ENGINEERS DETAIL

BASEMENT PIT - BIP 3
SIZE: 450 SQUARE
GRATE: CLASS C GRATED INLET
GRATE SL: 47.88 NOM.
OUTLET IL: 47.36 NOM.

NOTE: ROOF DRAINAGE SYSTEM THE RAINWATER SYSTEM IS DESIGNED TO GATHER WATER SOLELY FROM THE ROOF AND SHALL BE SEALED ENTIRELY FROM THE EAVE GUTTER'S TO THE RAINWATER TANK INLET/S. ALL UPVC CONNECTIONS MUST ESTABLISH A WATER-TIGHT POSITIVE ADHESION SEAL USING PRIMING FLUID SOLVENT CEMENT WELDS. IT IS CRUCIAL TO KEEP THE STORMWATER SYSTEM, INCLUDING PIPES AND PITS, INDEPENDENT FROM THE RAINWATER SYSTEM.

RAINWATER LINE SIGNIFIED AS:
RW RW

THE EXISTING VEHICLE CROSSING SITUATED WITHIN THE PUBLIC AREA SHALL BE REMOVED AND REPLACED WITH A NEW KERB AND GUTTER, WHICH IS TO BE BACKFILLED WITH TURF. ALL PROPOSED WORK SHALL COMPLY WITH COUNCIL SPECIFICATIONS.

PROVIDE GRATED BOX DRAIN (GBD): SIZE: 250mm WIDE x 250mm DEEP GBD. GRADE: ENSURE A MINIMUM 2% GRADE FROM GBD INVERT TO OUTLET PIPE IL. GBD SURFACE LEVEL TO BE 25mm BELOW BASEMENT FINISHED FLOOR LEVEL.

PROVIDE GRATED BOX DRAIN (GBD): SIZE: 250mm WIDE x 250mm DEEP GBD. GRADE: ENSURE A MINIMUM 2% GRADE FROM GBD INVERT TO OUTLET PIPE IL. GRATE SL 47.85 NOM.

BASEMENT PIT - BIP 1
SIZE: 450 SQUARE
GRATE: CLASS C GRATED INLET
GRATE SL: 47.85 NOM.
OUTLET IL: 47.44 NOM.

PROPOSED INTEGRATED ON-SITE DETENTION AND RAINWATER RE-USE TANK - LOT B
SUPPLY AND INSTALL A SINGLE RAINWATER RE-USE TANK AND ON-SITE DETENTION TANK THAT ADHERES TO THE MANUFACTURER AND COUNCIL SPECIFICATIONS, BASIX CERTIFICATE, AND AS/NZS3500.3 STANDARDS. IN ADDITION, FIT LEAF FILTERS, INSECT/VERMIN CONTROL, AND FIRST FLUSH DEVICES TO ALL RAINWATER TANK INLETS, AND INCLUDE AN INSECT/VERMIN CONTROL ON THE TANK OUTLET. THE RAINWATER TANK RE-USE PUMP AND UNIT MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

TYPE: ABOVE GROUND SLIMLINE TANK
TOTAL VOLUME 4,092 LITRES
RAINWATER VOLUME: 2,312 LITRES (BASIX 800 LITRES)
OSD VOLUME: 1,780 LITRES (DRAINS MODELLING)

FINAL PLACEMENT OF TANKS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION. REFER PAGE S6 FOR DETAILS.

BASEMENT SUBSOIL DRAINAGE TO STRUCTURAL ENGINEERS DETAIL

BASEMENT PIT - BIP 2
SIZE: 450 SQUARE
GRATE: CLASS C GRATED INLET
GRATE SL: 47.87 NOM.
OUTLET IL: 47.36 NOM.

MANAGEMENT OF STORMWATER
PLAN - BASEMENT

SCALE - 1:50/A1, 1:100/A3

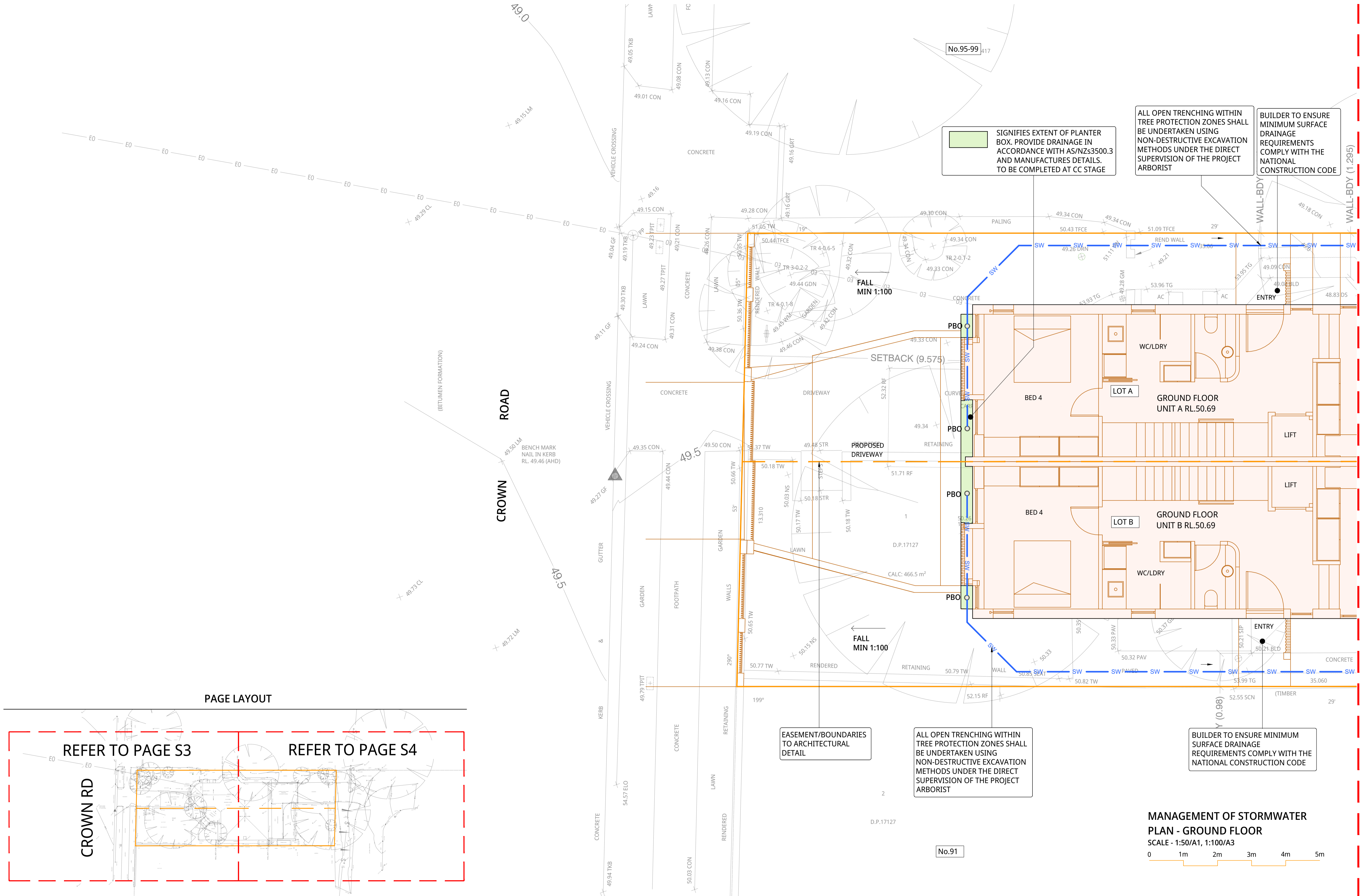


Revision	Drawn	Date	Description	Checked	Approved	North	Architect
3	SSD	13.02.25	ISSUED FOR DEVELOPMENT APPLICATION	SC	SSD		Mac2mac Atelier Interiors and Design
2	SSD	13.02.25	ISSUED FOR CLIENT REVIEW	SC	SSD		Client: MACINDOE
1	SSD	19.12.24	ISSUED FOR CLIENT REVIEW	SC	SSD		

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Project
PROPOSED DUAL OCCUPANCY
No. 93 CROWN ROAD QUEENSLIFF

Drawing Title
MANAGEMENT OF STORMWATER PLAN - BASEMENT
Project No.
ACE24112
Scale: A1
AS NOTED
Page No.
S2
Revision
3



SIGNIFIES EXTENT OF PLANTER BOX. PROVIDE DRAINAGE IN ACCORDANCE WITH AS/NZS3500.3 AND MANUFACTURES DETAILS. TO BE COMPLETED AT CC STAGE

ALL OPEN TRENCHING WITHIN TREE PROTECTION ZONES SHALL BE UNDERTAKEN USING NON-DESTRUCTIVE EXCAVATION METHODS UNDER THE DIRECT SUPERVISION OF THE PROJECT ARBORIST

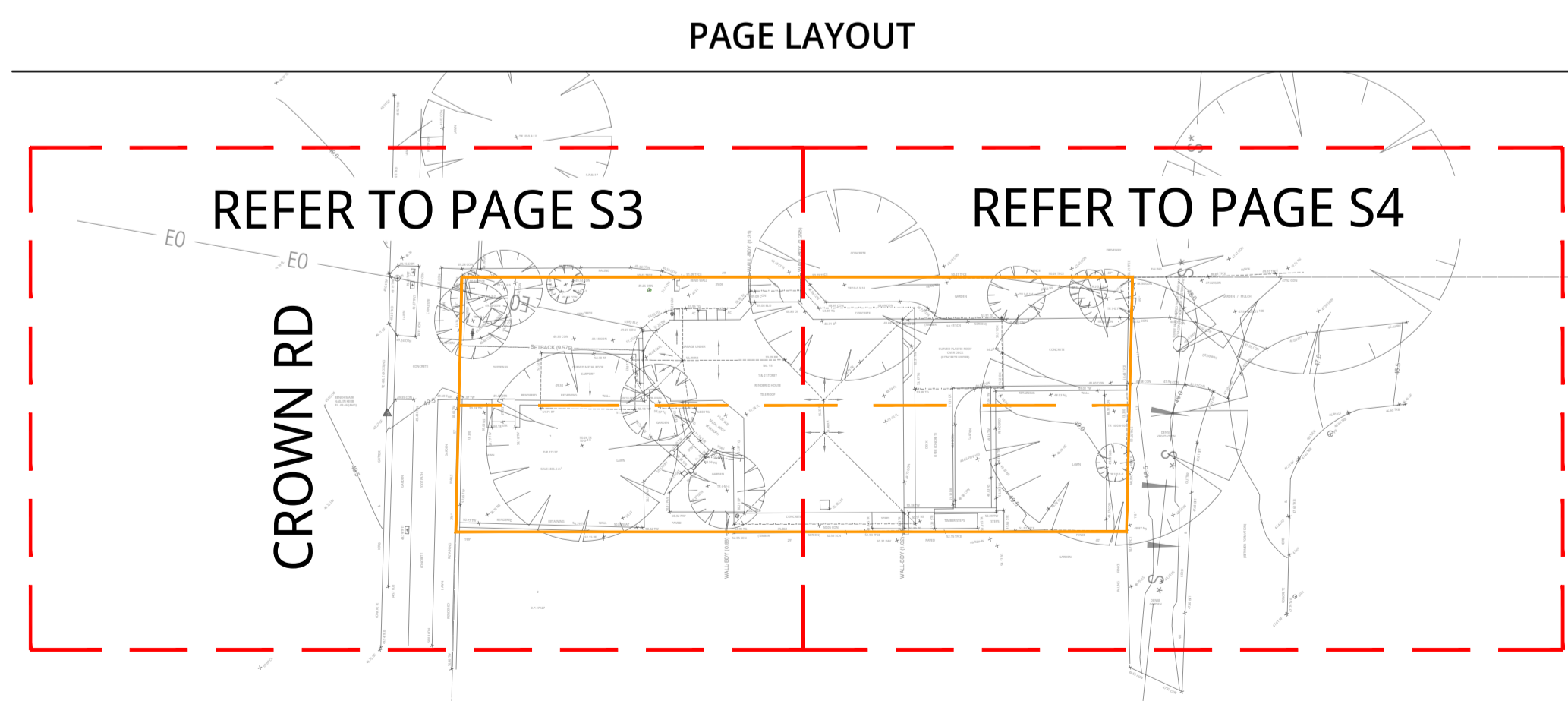
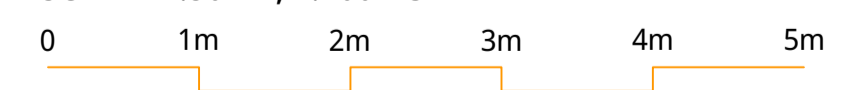
BUILDER TO ENSURE MINIMUM SURFACE DRAINAGE REQUIREMENTS COMPLY WITH THE NATIONAL CONSTRUCTION CODE

EASEMENT/BOUNDARIES TO ARCHITECTURAL DETAIL

ALL OPEN TRENCHING WITHIN TREE PROTECTION ZONES SHALL BE UNDERTAKEN USING NON-DESTRUCTIVE EXCAVATION METHODS UNDER THE DIRECT SUPERVISION OF THE PROJECT ARBORIST

BUILDER TO ENSURE MINIMUM SURFACE DRAINAGE REQUIREMENTS COMPLY WITH THE NATIONAL CONSTRUCTION CODE

MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR
SCALE - 1:50/A1, 1:100/A3



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3	SSD	13.02.25	ISSUED FOR DEVELOPMENT APPLICATION	SC	SSD
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1	SSD	19.12.24	ISSUED FOR CLIENT REVIEW	SC	SSD

North
 Architect
Mac2mac Atelier
 Interiors and Design
 Client: MACINDOE

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 Project
PROPOSED DUAL OCCUPANCY
 No. 93 CROWN ROAD QUEENSLIFF

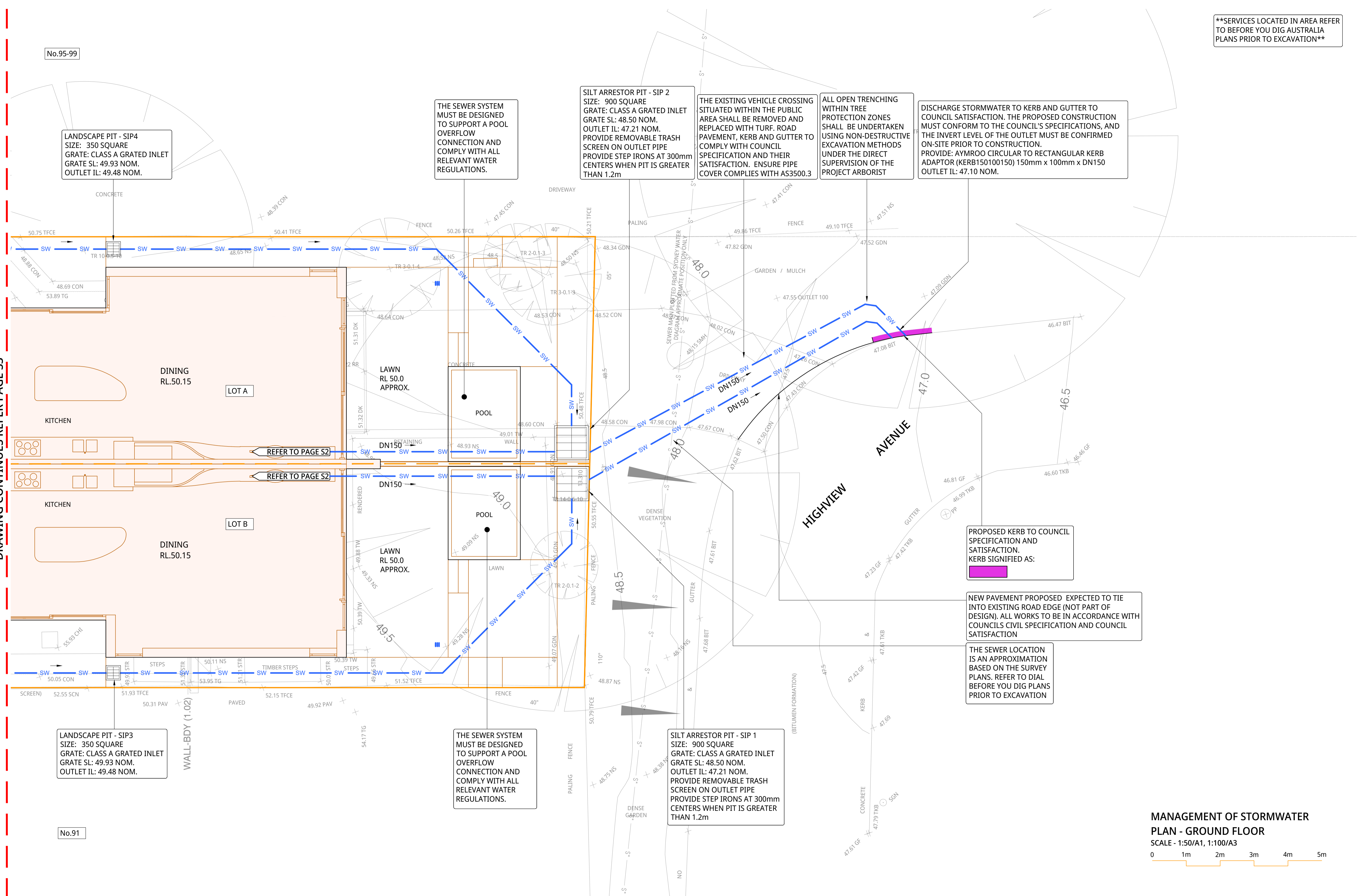
Drawing Title
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 1
 Project No.
ACE24112

Scale: A1
 AS NOTED
 Page No.
S3
 Revision
3

DRAWING CONTINUES REFER PAGE S4

****SERVICES LOCATED IN AREA REFER TO BEFORE YOU DIG AUSTRALIA PLANS PRIOR TO EXCAVATION****

DRAWING CONTINUES REFER PAGE S3



LANDSCAPE PIT - SIP4
 SIZE: 350 SQUARE
 GRATE: CLASS A GRATED INLET
 GRATE SL: 49.93 NOM.
 OUTLET IL: 49.48 NOM.

THE SEWER SYSTEM MUST BE DESIGNED TO SUPPORT A POOL OVERFLOW CONNECTION AND COMPLY WITH ALL RELEVANT WATER REGULATIONS.

SILT ARRESTOR PIT - SIP 2
 SIZE: 900 SQUARE
 GRATE: CLASS A GRATED INLET
 GRATE SL: 48.50 NOM.
 OUTLET IL: 47.21 NOM.
 PROVIDE REMOVABLE TRASH SCREEN ON OUTLET PIPE
 PROVIDE STEP IRONS AT 300mm CENTERS WHEN PIT IS GREATER THAN 1.2m

THE EXISTING VEHICLE CROSSING SITUATED WITHIN THE PUBLIC AREA SHALL BE REMOVED AND REPLACED WITH TURF. ROAD PAVEMENT, KERB AND GUTTER TO COMPLY WITH COUNCIL SPECIFICATION AND THEIR SATISFACTION. ENSURE PIPE COVER COMPLIES WITH AS3500.3

ALL OPEN TRENCHING WITHIN TREE PROTECTION ZONES SHALL BE UNDERTAKEN USING NON-DESTRUCTIVE EXCAVATION METHODS UNDER THE DIRECT SUPERVISION OF THE PROJECT ARBORIST

DISCHARGE STORMWATER TO KERB AND GUTTER TO COUNCIL SATISFACTION. THE PROPOSED CONSTRUCTION MUST CONFORM TO THE COUNCIL'S SPECIFICATIONS, AND THE INVERT LEVEL OF THE OUTLET MUST BE CONFIRMED ON-SITE PRIOR TO CONSTRUCTION.
 PROVIDE: AYMROO CIRCULAR TO RECTANGULAR KERB ADAPTOR (KERB150100150) 150mm x 100mm x DN150
 OUTLET IL: 47.10 NOM.

PROPOSED KERB TO COUNCIL SPECIFICATION AND SATISFACTION. KERB SIGNIFIED AS:

NEW PAVEMENT PROPOSED EXPECTED TO TIE INTO EXISTING ROAD EDGE (NOT PART OF DESIGN). ALL WORKS TO BE IN ACCORDANCE WITH COUNCILS CIVIL SPECIFICATION AND COUNCIL SATISFACTION

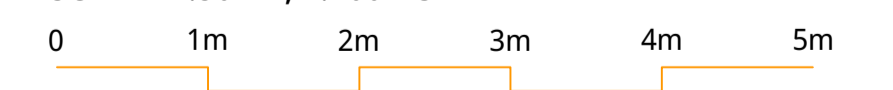
THE SEWER LOCATION IS AN APPROXIMATION BASED ON THE SURVEY PLANS. REFER TO DIAL BEFORE YOU DIG PLANS PRIOR TO EXCAVATION

LANDSCAPE PIT - SIP3
 SIZE: 350 SQUARE
 GRATE: CLASS A GRATED INLET
 GRATE SL: 49.93 NOM.
 OUTLET IL: 49.48 NOM.

THE SEWER SYSTEM MUST BE DESIGNED TO SUPPORT A POOL OVERFLOW CONNECTION AND COMPLY WITH ALL RELEVANT WATER REGULATIONS.

SILT ARRESTOR PIT - SIP 1
 SIZE: 900 SQUARE
 GRATE: CLASS A GRATED INLET
 GRATE SL: 48.50 NOM.
 OUTLET IL: 47.21 NOM.
 PROVIDE REMOVABLE TRASH SCREEN ON OUTLET PIPE
 PROVIDE STEP IRONS AT 300mm CENTERS WHEN PIT IS GREATER THAN 1.2m

MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR
 SCALE - 1:50/A1, 1:100/A3



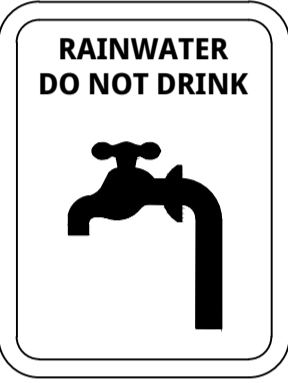
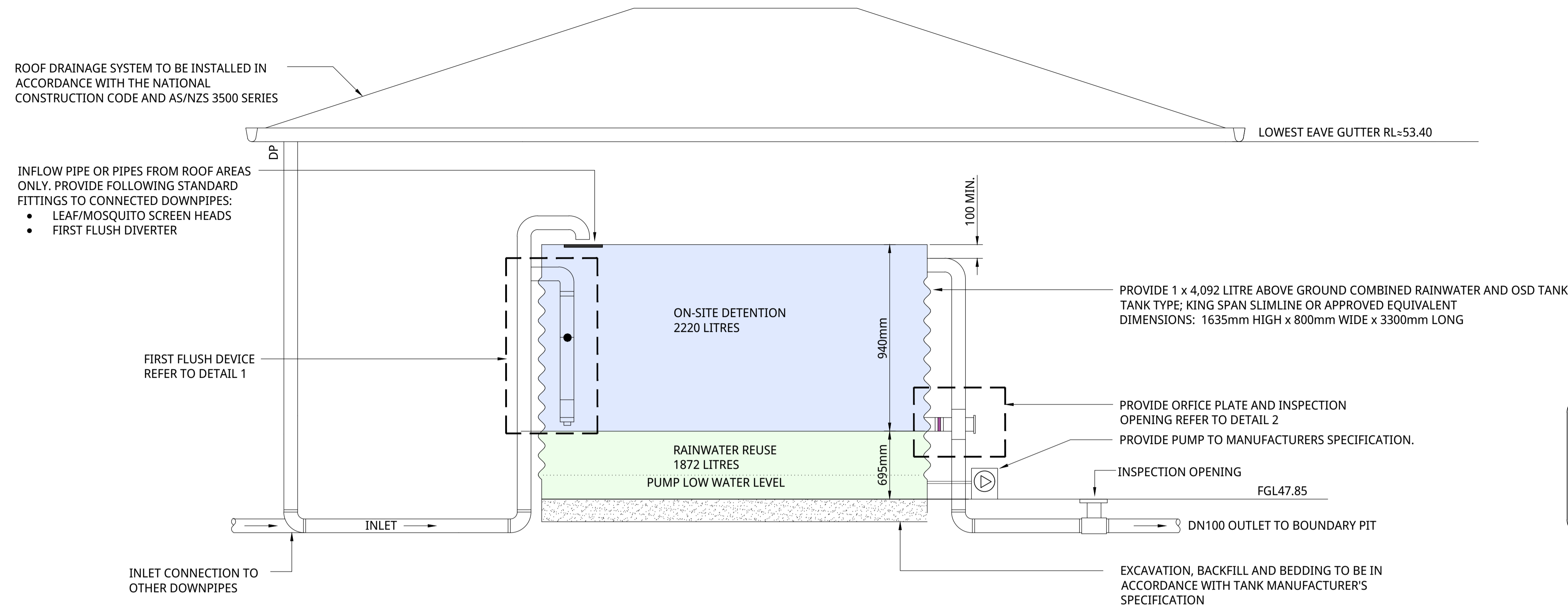
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Mac2mac Atelier
 Interiors and Design
 Client: MACINDOE

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Project
PROPOSED DUAL OCCUPANCY
 No. 93 CROWN ROAD
 QUEENSLIFF

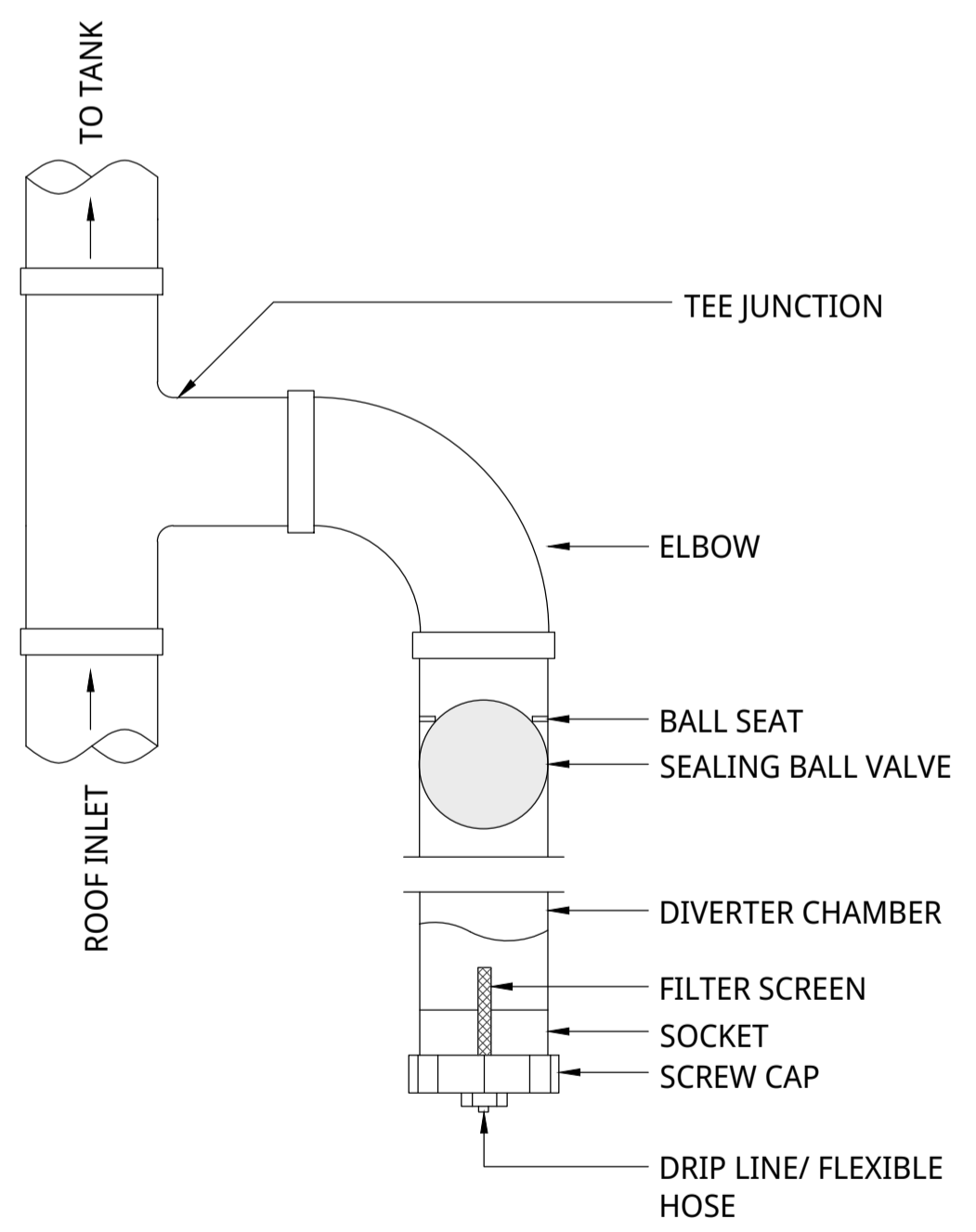
Drawing Title
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 2
 Project No.
ACE24112
 Scale: A1
 AS NOTED
 Page No.
S4
 Revision
3



**INTEGRATED ABOVE GROUND ON-SITE DETENTION & RAINWATER RE-USE TANK
TYPICAL ELEVATION - LOT A**

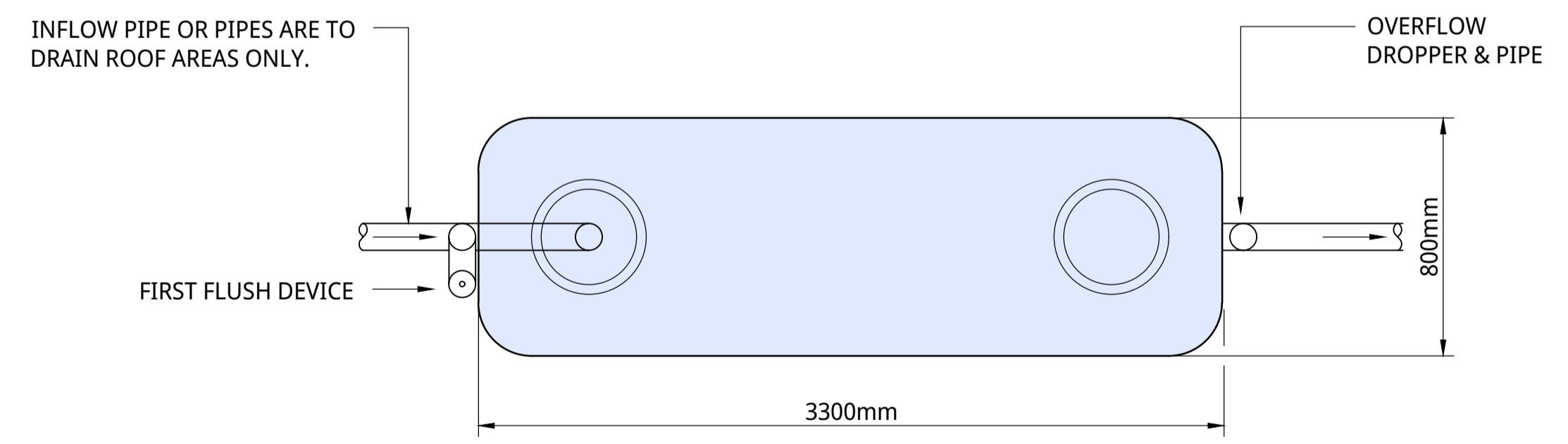
- NTS
NOTES:
1. RAINWATER TANK TO BE SUITABLY TREATED AND CONNECTED TO AN EXTERNAL TAP AND ALL TOILET CISTERNS.
 2. RAINWATER TANK TO ALSO MEET BASIX REQUIREMENTS
 3. RAINWATER TANK DIMENSIONS TO BE VERIFIED WITH TANK MANUFACTURER, DESIGN ENGINEER TO VALIDATE ANY VARIATIONS PRIOR TO CONSTRUCTION.
 4. REFER TO RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK BY MPMSAA (2008) FOR TANK CONNECTION SCHEMATICS.
 5. ONLY ONE RAINWATER TANK INLET IS SHOWN FOR INDICATIVE PURPOSES.

TYPICAL WARNING SIGN
NTS
NOTES:
1. REFER TO NOTE RN5 ON PAGE S1



DETAIL 1 - TYPICAL FIRST FLUSH DEVICE
NTS

- NOTES:
1. APPROVED EQUIVALENT OTHER FIRST FLUSH DEVICE MAY BE INSTALLED.
 2. ENSURE FIRST FLUSH DEVICE DOES NOT POND WATER IN ENCLOSED SPACES.
 3. FIRST FLUSH VOLUME TO BE A MINIMUM 20L PER 100m² OF ROOF



DETAIL 2 - TYPICAL ORIFICE OUTLET
NTS

- NOTES:
1. APPROVED EQUIVALENT OTHER ORIFICE OUTLET MAY BE INSTALLED.

**INTEGRATED ABOVE GROUND ON-SITE DETENTION TANK AND RAINWATER RE-USE TANK
TYPICAL PLAN - LOT A**

NTS

ROOF DRAINAGE SYSTEM TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL CONSTRUCTION CODE AND AS/NZS 3500 SERIES

LOWEST EAVE GUTTER RL=53.40

INFLOW PIPE OR PIPES FROM ROOF AREAS ONLY. PROVIDE FOLLOWING STANDARD FITTINGS TO CONNECTED DOWNPIPES:

- LEAF/MOSQUITO SCREEN HEADS
- FIRST FLUSH DIVERTER

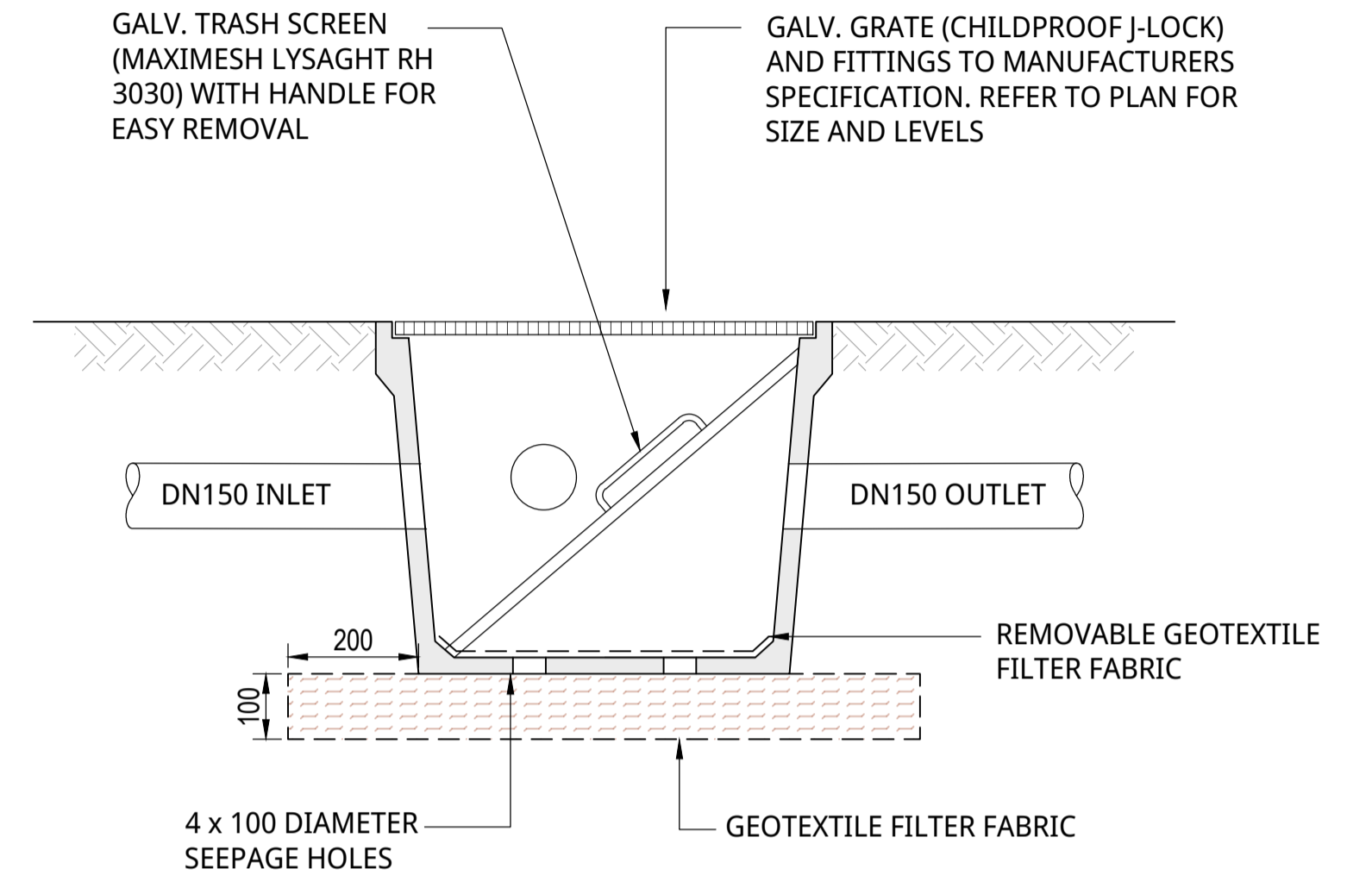
FIRST FLUSH DEVICE REFER TO DETAIL 1

PROVIDE 1 x 4,092 LITRE ABOVE GROUND COMBINED RAINWATER AND OSD TANK TANK TYPE; KING SPAN SLIMLINE OR APPROVED EQUIVALENT DIMENSIONS: 1635mm HIGH x 800mm WIDE x 3300mm LONG

PROVIDE ORFICE PLATE AND INSPECTION OPENING REFER TO DETAIL 2
PROVIDE PUMP TO MANUFACTURERS SPECIFICATION.

INSPECTION OPENING FGL47.85
DN100 OUTLET TO BOUNDARY PIT

EXCAVATION, BACKFILL AND BEDDING TO BE IN ACCORDANCE WITH TANK MANUFACTURER'S SPECIFICATION



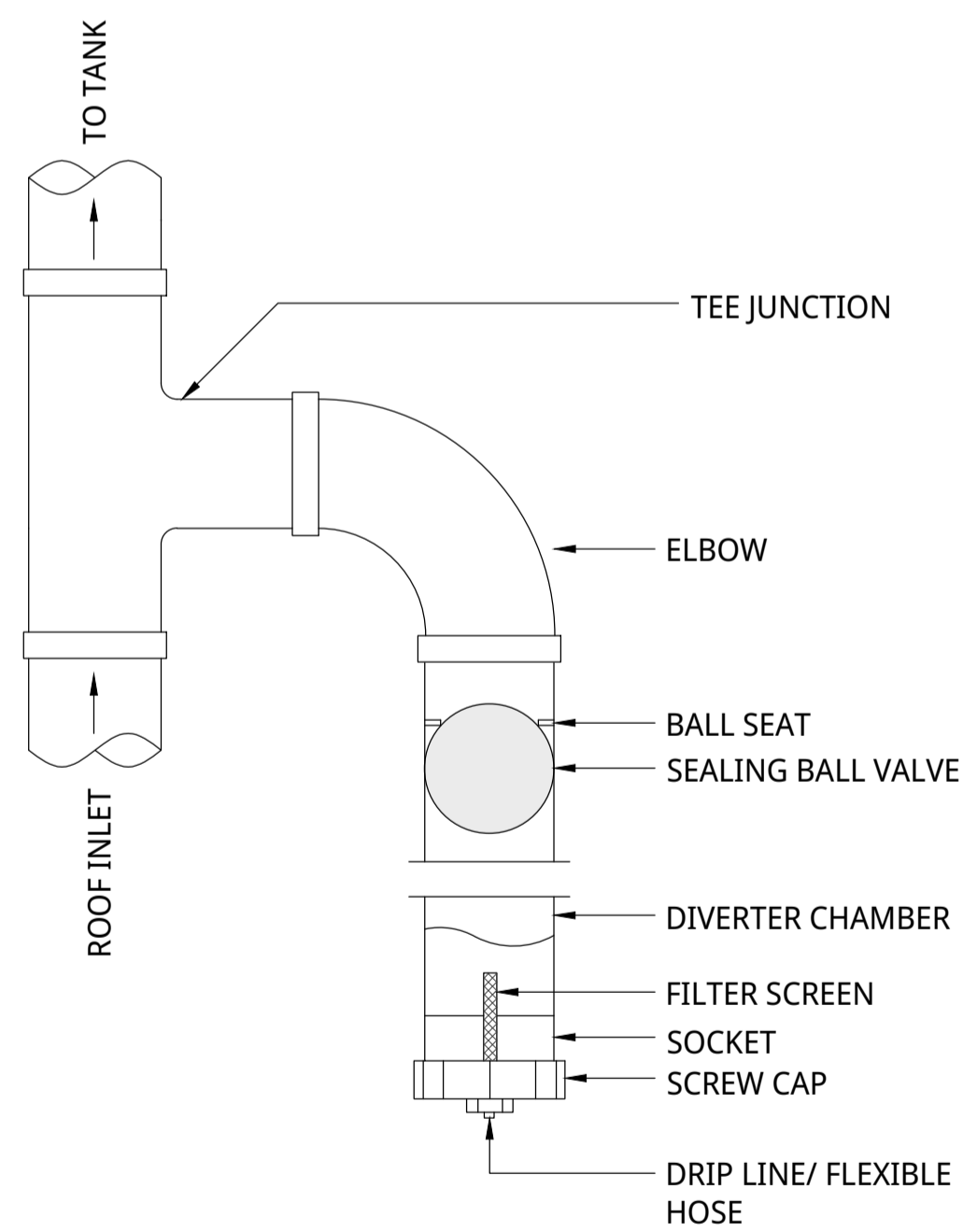
TYPICAL SILT ARRESTOR PIT DETAIL SECTION
SCALE: 1:10/A1, 1:20/A3



TYPICAL WARNING SIGN
NTS
NOTES:
1. REFER TO NOTE RN5 ON PAGE S1

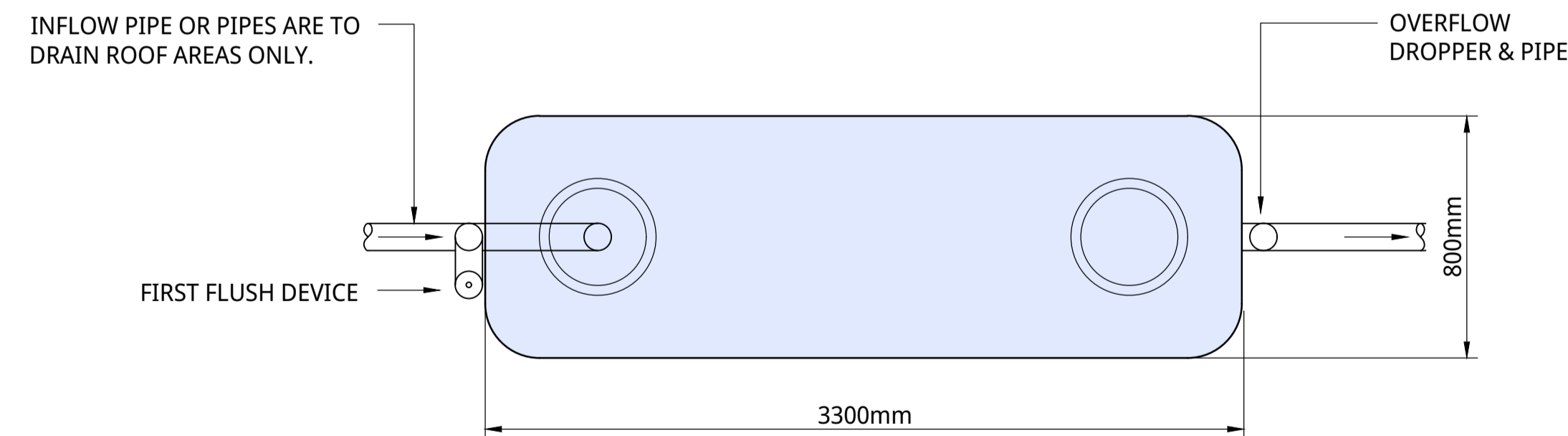
INTEGRATED ABOVE GROUND ON-SITE DETENTION & RAINWATER RE-USE TANK
TYPICAL ELEVATION - LOT B
NTS

- NOTES:
1. RAINWATER TANK TO BE SUITABLY TREATED AND CONNECTED TO AN EXTERNAL TAP AND ALL TOILET CISTERNS.
 2. RAINWATER TANK TO ALSO MEET BASIX REQUIREMENTS
 3. RAINWATER TANK DIMENSIONS TO BE VERIFIED WITH TANK MANUFACTURER, DESIGN ENGINEER TO VALIDATE ANY VARIATIONS PRIOR TO CONSTRUCTION.
 4. REFER TO RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK BY MPMSAA (2008) FOR TANK CONNECTION SCHEMATICS.
 5. ONLY ONE RAINWATER TANK INLET IS SHOWN FOR INDICATIVE PURPOSES.

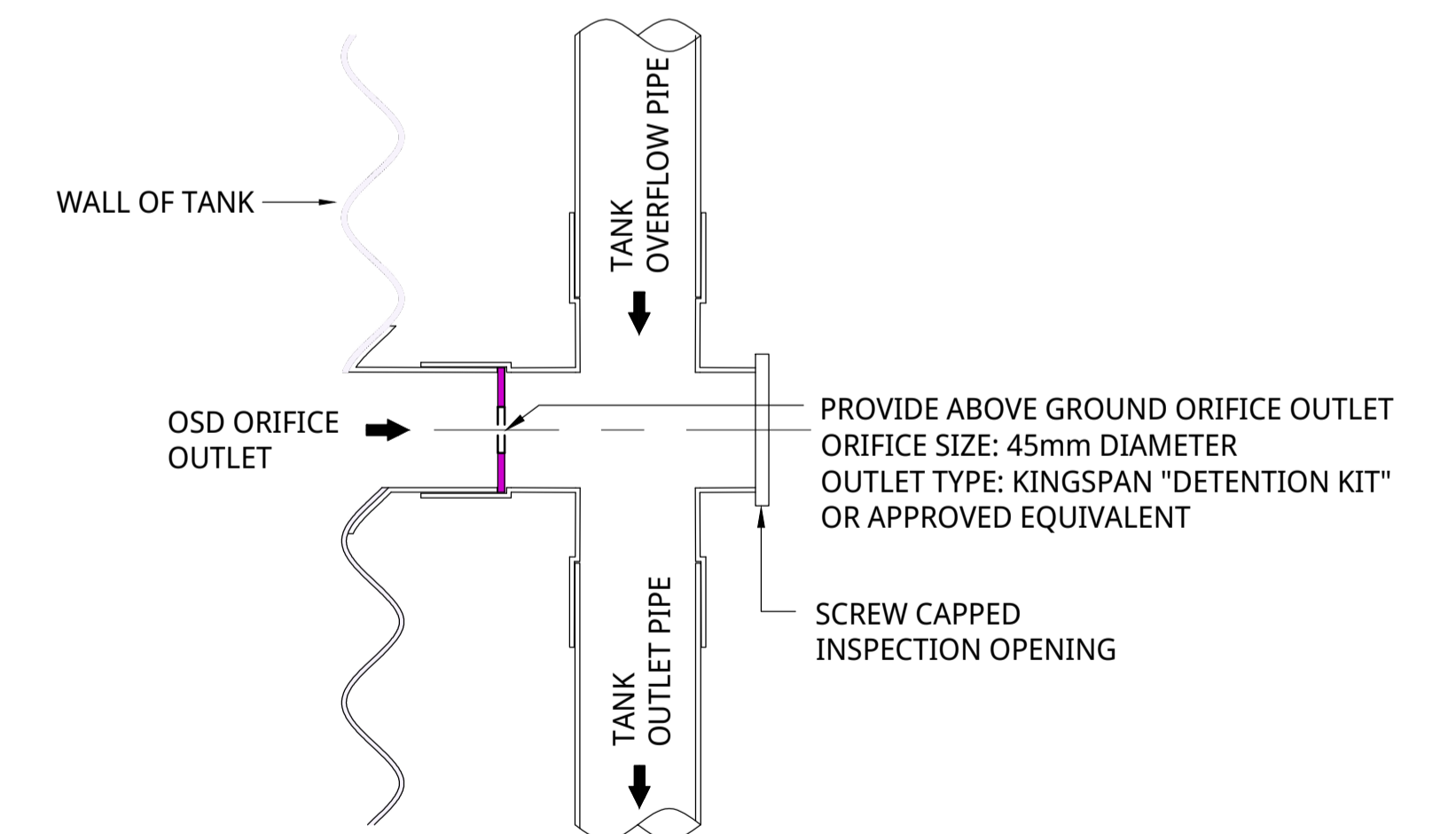


DETAIL 1 - TYPICAL FIRST FLUSH DEVICE
NTS

- NOTES:
1. APPROVED EQUIVALENT OTHER FIRST FLUSH DEVICE MAY BE INSTALLED.
 2. ENSURE FIRST FLUSH DEVICE DOES NOT POND WATER IN ENCLOSED SPACES.
 3. FIRST FLUSH VOLUME TO BE A MINIMUM 20L PER 100m² OF ROOF

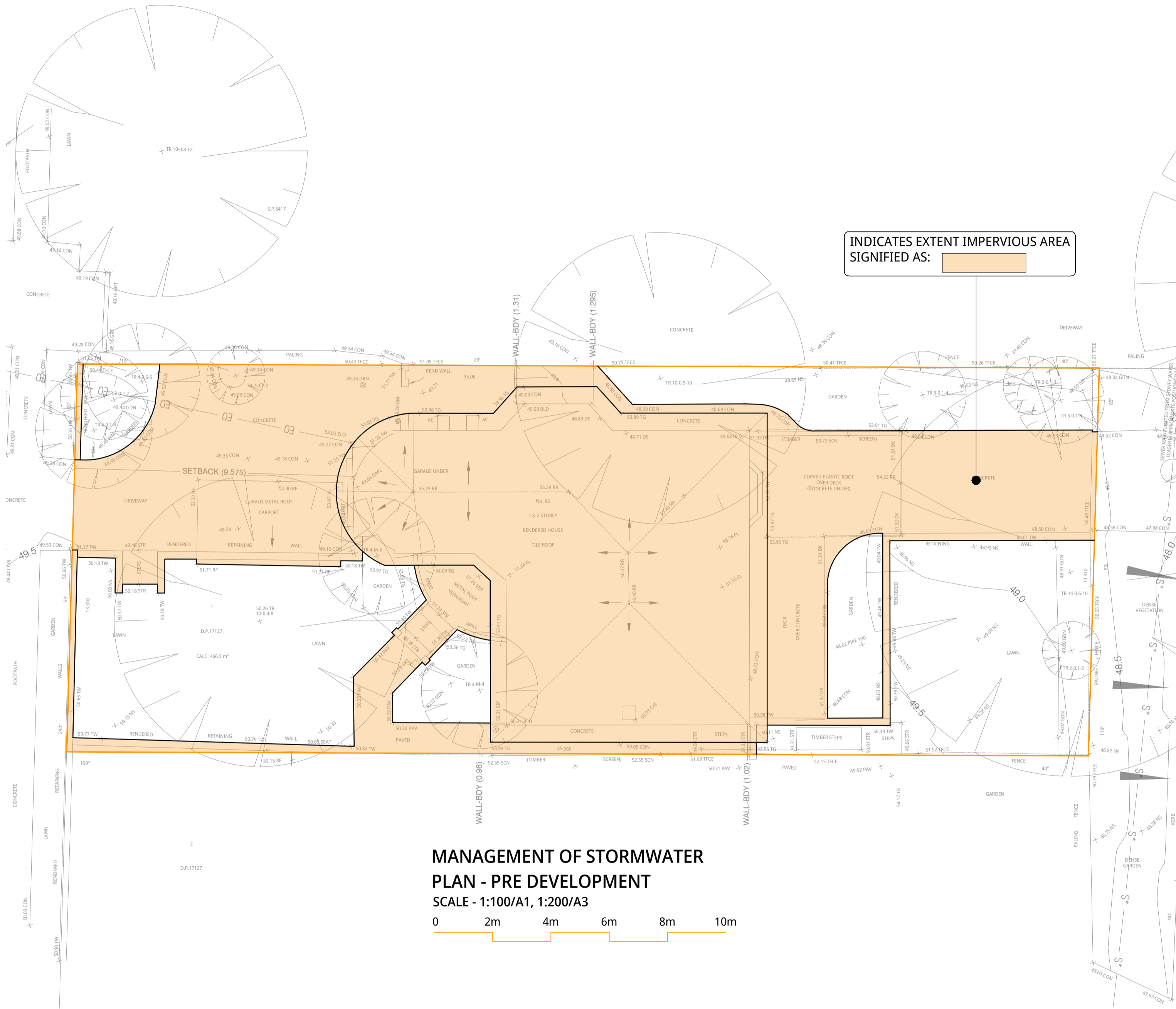


INTEGRATED ABOVE GROUND ON-SITE DETENTION TANK AND RAINWATER RE-USE TANK
TYPICAL PLAN - LOT B
NTS

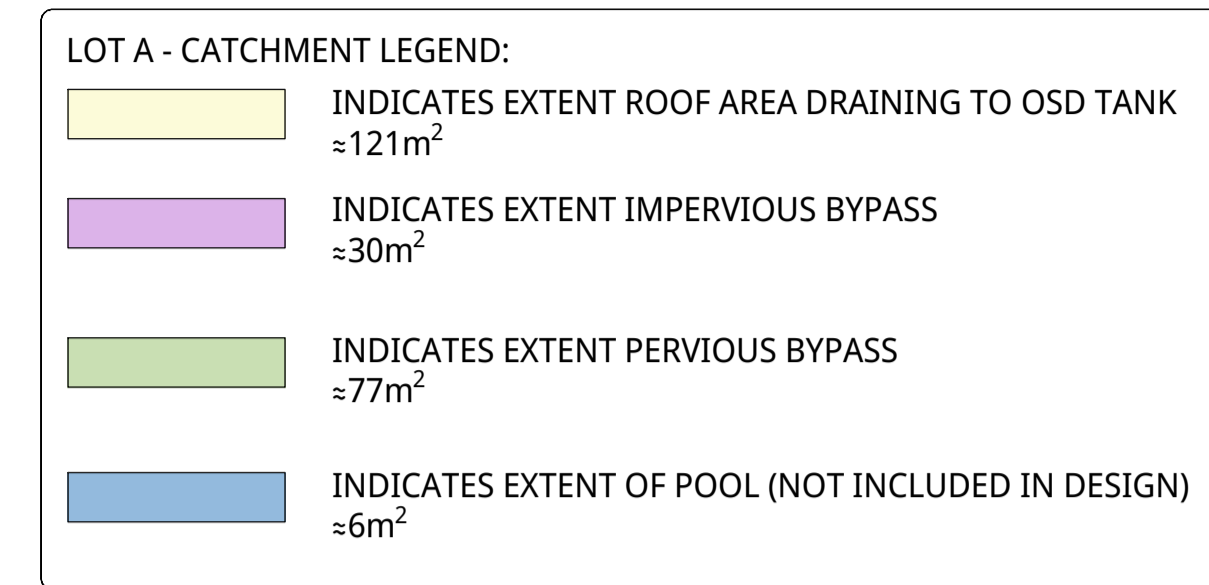


DETAIL 2 - TYPICAL ORFICE OUTLET
NTS

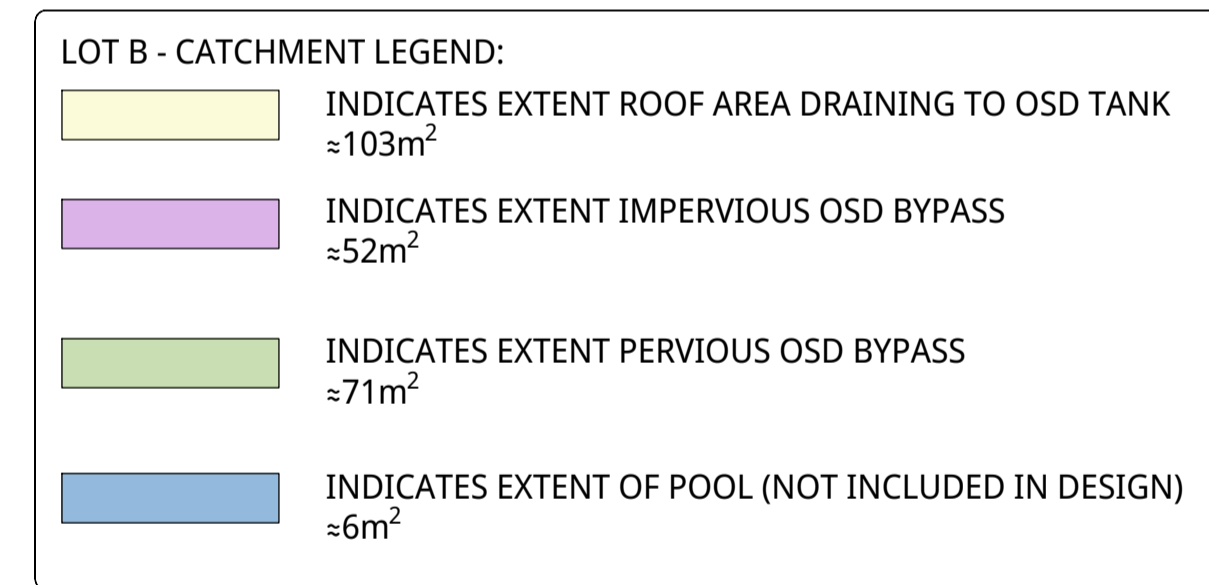
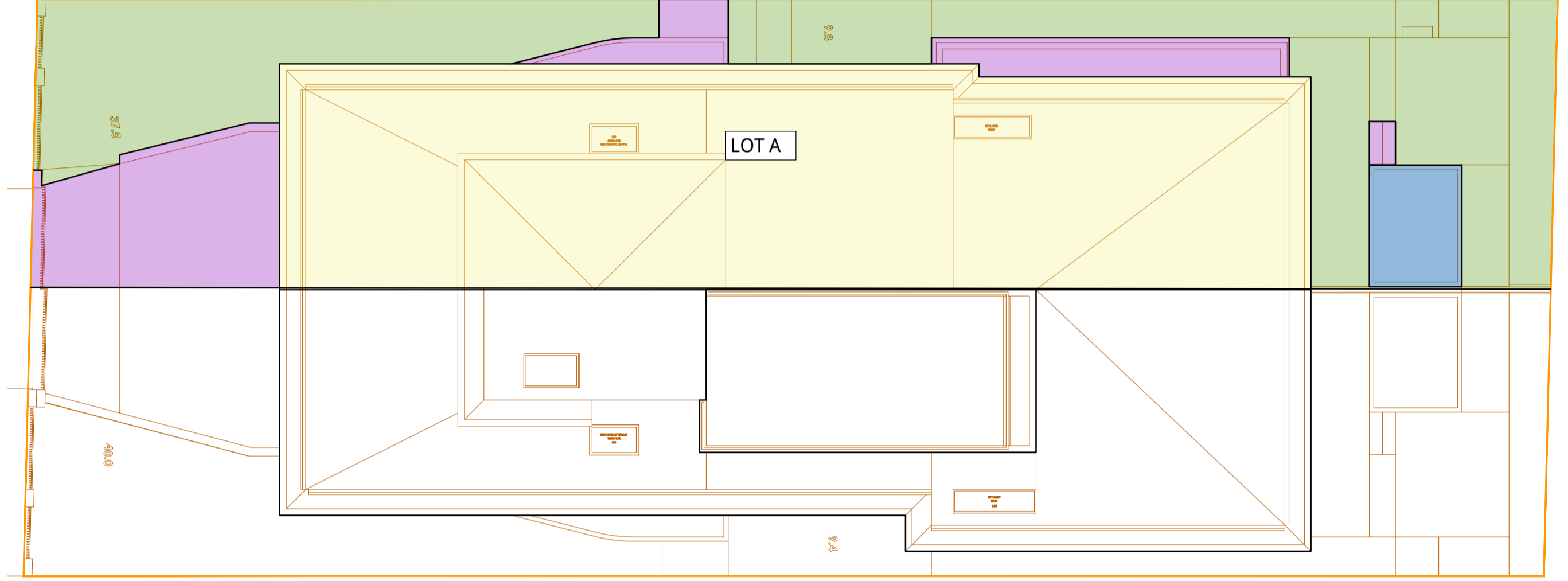
- NOTES:
1. APPROVED EQUIVALENT OTHER ORFICE OUTLET MAY BE INSTALLED.



**MANAGEMENT OF STORMWATER
PLAN - PRE DEVELOPMENT**
SCALE - 1:100/A1, 1:200/A3



**MANAGEMENT OF STORMWATER
PLAN - POST DEVELOPMENT - LOT A**
SCALE - 1:100/A1, 1:200/A3



**MANAGEMENT OF STORMWATER
PLAN - POST DEVELOPMENT - LOT B**
SCALE - 1:100/A1, 1:200/A3

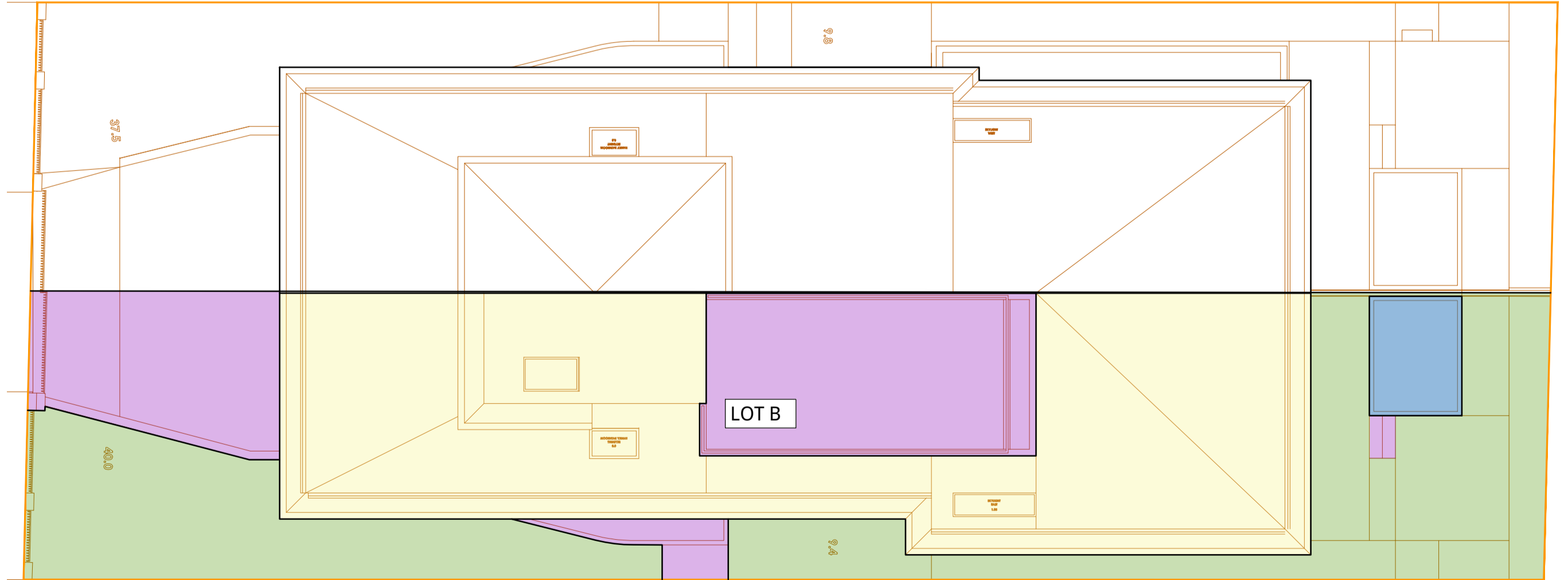


TABLE 1 - SITE DISCHARGE CALCULATIONS

STORMEVENT	PRE-DEVELOPMENT (l/s)	STATE OF NATURE FLOW (l/s)	LOT A - OSD FLOW (l/s)	LOT A - BYPASS FLOW (l/s)	LOT B - OSD FLOW (l/s)	LOT B - BYPASS FLOW (l/s)	TOTAL DISCHARGE FLOW (l/s)
CATCHMENT AREA & IMPERVIOUS PERCENTAGE	467m ² & 62%	467m ² & 0.0%	121m ² & 100%	107m ² & 28%	103m ² & 100%	123m ² & 43%	-
20% AEP	15.00	11.00	3.00	3.00	2.00	3.00	11
5% AEP	22.00	19.00	3.00	5.00	3.00	6.00	17
1% AEP	30.00	25.00	4.00	6.00	3.00	7.00	20

- NOTES:
 1. SITE DISCHARGE RESTRICTED TO PRE-DEVELOPED SITE FLOWS FOR THE 5, 20 AND 100 YEAR STORM EVENTS
 2. ROOF DRAINAGE TO BE DESIGNED TO THE 100 YEAR STORM EVENT



Revision	Drawn	Date	Description	Checked	Approved	North	Architect
3	SSD	13.02.25	ISSUED FOR DEVELOPMENT APPLICATION	SC	SSD		
2	SSD	13.02.25	ISSUED FOR CLIENT REVIEW	SC	SSD		
1	SSD	19.12.24	ISSUED FOR CLIENT REVIEW	SC	SSD		

Mac2mac Atelier
 Interiors and Design
 Client: MACINDOE

Project
**PROPOSED
 DUAL OCCUPANCY**
 No. 93 CROWN ROAD
 QUEENSLIFF

Drawing Title
**MANAGEMENT OF STORMWATER
 CALCULATIONS**
 Project No.
ACE24112

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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		REFER TO TITLE	
House Number		Legal Property Description	
Street		Lot	
Suburb		Section	
Postcode		DP	

Part 2 Site Details			
Northern Beaches Stormwater Regions (refer to Map 2 of Northern Beaches Council's Water Management for Development policy)	2	Total Site Area	466.5m ²
Pre-Development Impervious Area	290m ²	Post-Development Impervious Area	306m ²
Is the site of the development located within an established Flood Prone Land as referred to Council's Local Environmental Plans?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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.			

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 m ² on a cumulative basis since February 1996?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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 cases. 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 450m ² ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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 <input type="checkbox"/> No <input checked="" type="checkbox"/>
Is it an alteration and addition development to the existing dwellings?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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	<p>a) Site area m² x 0.40 (40%) = 187m²..... m² b) Post-development impervious area = 306m²..... m²</p> <p>OSD will not be required when (a) is greater than (b) Is OSD required for this development (tick one only) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>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.</p>

Part 4.3 Northern Beaches Stormwater Region 3

Part 4.3.1 Stormwater Zone	
In the region, the method of stormwater control to be applied shall depend on the location of the site. Please refer to Map 3 of Northern Beaches Council's Water Management for Development policy.	
If the site of the development located within stormwater zone 1, please proceed to the part 4.3.1 of this checklist	
If the site of the development located within stormwater zone 2, please provide a design in accordance with the section 9.3.3.3 of Council's Water Management for Development Policy.	
If the site of the development located within stormwater zone 3, please provide a design in accordance with the section 9.3.3.4 of Council's Water Management for Development Policy.	
If the site of the development located within stormwater zone 4, please provide a design in accordance with the section 9.3.3.5 of Council's Water Management for Development Policy.	

Part 4.3.2 Determination of OSD requirements in Stormwater Zone 1

Part 4.3.2.1 For A New Building	
1) Exemption	<p>a) Is the site area less than 400? Yes <input type="checkbox"/> No <input type="checkbox"/> b) Is the post-development impervious area less than 190 m²? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If yes to both questions, OSD is not required. If no to any of the above questions, please proceed to calculation</p>
2) Calculation	<p>a) Site area _____ m² x 0.35 = _____ m² + 50 = _____ m² b) Post-development impervious area _____ m²</p> <p>OSD will not be required when (b) is less than 250 m² and (a) is greater than (b) Is OSD required for this development? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, provide a design in accordance with the section 9.3.3.2 of Council's Water Management for Development Policy. If no, OSD is not required and please proceed to part 5.</p>

Part 4.3.2.2 For Alterations and Additions

If the current impervious area of the site is more than 60% of the site area, OSD will be required. Alternatively, please proceed to the next calculation section.	
1) Calculation	<p>Is the post development impervious area increased by less than 50 m²? Yes <input type="checkbox"/> No <input type="checkbox"/> Is the post development impervious area less than 60% of the site area? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If yes to both questions, OSD is not required. If no to any of the above questions, provide a design in accordance with section 9.3.3.2 of Council's Water Management for Development Policy</p>

Part 5 Disposal of Stormwater

Does the site fall naturally towards the street?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If yes, provide a design in accordance with section 5.1 of Council's Water Management for Development Policy. If no, provide a design in accordance with section 5.5 of Council's Water Management for Development Policy.	

Definitions

Designed to help you fill out this application	<p>Site area: This refers to the area of the land bounded by its existing or proposed boundaries. Impervious area: This refers to driveways, parking spaces, pathways, paved areas, hardstand areas, roofed areas, garages and outbuildings. Pre Development Impervious area: This refers all impervious areas of the site before the development. Post Development Impervious area: This refers all the impervious areas within the site after the development is completed.</p>
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