

PROPOSED RESIDENTIAL DEVELOPMENT TYPE: ALTERATIONS AND ADDITIONS

ADDRESS: No. 23 PARK AVENUE, AVALON BEACH
TITLE: LOT 43/DP 13325
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.

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 PITS TO BE STREAMLINED AND BENCHED IN ACCORDANCE WITH LOCAL GOVERNMENTS AREAS SPECIFICATIONS.
SN8	STEP IRONS ARE TO BE PROVIDED FOR ALL PITS 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.

DRAWINGS SERIES TO BE PRINTED IN COLOUR

**DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION**

DRAWING LEGEND

	INDICATES ESTIMATED EXTENT OF EXISTING DWELLING
	INDICATES ESTIMATED EXTENT OF PROPOSED WORKS
	INDICATES ESTIMATED EXTENT OF PROPOSED DRIVEWAY
	INDICATES PROPOSED ON-SITE DETENTION TANK/S
	INDICATES PROPOSED RAINWATER TANK/S
	INDICATES PROPOSED ABSORPTION SYSTEM
	INDICATES GRATED BOX DRAIN WITH OUTLET
	INDICATES LINEAR GRATE TO ARCHITECTURAL DETAIL
	INDICATES TOW/H?? PROPOSED TOP OF WALL/HOB, TO ARCHITECTURAL DETAIL
	INDICATES DRAINAGE PIT WITH GRATED OPENING
	INDICATES DRAINAGE PIT WITH SEALED COVER
	INDICATES STORMWATER PIPE INVERT LEVELS. UNLESS OTHERWISE NOTED PIT BASE IS TO EQUAL PIPE BASE
	INDICATES PIPE DIRECTION, DIAMETER, AND MIN FALL
	INDICATES EAVES GUTTER ORIFICE
	INDICATES PROPOSED DOWNPIPE/RISER
	INDICATES EXISTING DOWNPIPE/RISER
	INDICATES PROPOSED PIPE DROPPER
	INDICATES INSPECTION OPENING WITH A SCREW DOWN LID
	INDICATES GUTTER HIGH POINT
	INDICATES PROPOSED SCUPPER/SPITTER OVERFLOW/S
	INDICATES PROPOSED PLANTER DRAIN OUTLET/S
	INDICATES PROPOSED BALCONY DRAIN OUTLET/S
	INDICATES PROPOSED ROOF DRAIN OUTLET/S
	INDICATES PROPOSED LINEAR DRAIN OUTLET/S
	INDICATES PROPOSED BOX GUTTER FLOW DIRECTION
	INDICATES PROPOSED EAVE GUTTER FLOW DIRECTION
	INDICATES PROPOSED VALLEY GUTTER FLOW DIRECTION
	INDICATES BOX GUTTER SUMP/RAINWATER HEAD SUMP
	INDICATES PROPOSED DOWNPIPE SPREADER
	INDICATES ESTIMATED ROOF PITCH
	INDICATES PROPOSED SURFACE FALL DIRECTION
	INDICATES PROPOSED REDUCED LEVEL/S OR PIPE INVERT LEVEL/S
	PROPOSED STEP HEIGHT
	PIPE LINE CONTINUES TO REFERENCED PAGE
	PENETRATION/FLOW DIRECTION
	SERVICE TYPE: SW (STORMWATER), RW (RAINWATER)
	SIZE
	PENETRATION/FLOW DIRECTION
	INDICATES 100mm DIA. RAINWATER PIPE, U.N.O.
	INDICATES 100mm DIA. STORMWATER PIPE, U.N.O
	INDICATES EXISTING STORMWATER PIPE
	INDICATES EXISTING RAINWATER PIPE
	INDICATES 100mm DIA. SEWER GRADE CHARGED STORMWATER PIPE.
	INDICATES INDICATIVE LOCATION OF PROPOSED RISING MAIN
	ESTIMATED LOCATION OF EXISTING SEWER MAINS
	ESTIMATED LOCATION OF EXISTING ELECTRICITY LINE
	ESTIMATED LOCATION OF EXISTING TELECOMMUNICATION
	ESTIMATED LOCATION OF EXISTING WATER MAINS
	ESTIMATED LOCATION OF EXISTING GAS MAINS
	INDICATES SITE BOUNDARY
	INDICATES EASEMENT WITHIN SITE, REFER TO DETAILED SURVEY
	INDICATES INDICATIVE ROOF OUTLINE
	INDICATES SIZE & DIRECTION OF RAINWATER PIPE GREATER THAN 100mm DIA.
	INDICATES SIZE & DIRECTION OF STORMWATER PIPE GREATER THAN 100mm DIA.
	INDICATES SIZE & DIRECTION OF STORMWATER PIPE GREATER THAN 100mm DIA.
	INDICATES SIZE & DIRECTION OF EXISTING STORMWATER PIPE GREATER THAN 100mm DIA.

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:
 - ON- SITE DETENTION (OSD)

PROPERTY IS LOW LYING AND A DRAINAGE EASEMENT WAS NOT GRANTED FROM THE DOWNSTREAM NEIGHBOUR (LETTER ATTACHED). IN THIS REGARD THE APPLICATION OF AN OSD SYSTEM TO A LEVEL SPREADER HAS BEEN PROPOSED. WE NOTE OSD DETAILS ARE SHOWN ON PAGE S4 AND FLOWS ON PAGE S6.

FURTHERMORE WE NOTE THE DESIGN PROPOSES AN ORIFICE SIZE OF 30mm DIAMETER WHICH DEPARTS FROM COUNCIL POLICY. IN THIS REGARD WE BELIEVE WE WOULD STILL COMPLY WITH AS3500.3 WHICH ALLOWS A MINIMUM ORIFICE SIZE OF 25mm DIAMETER.

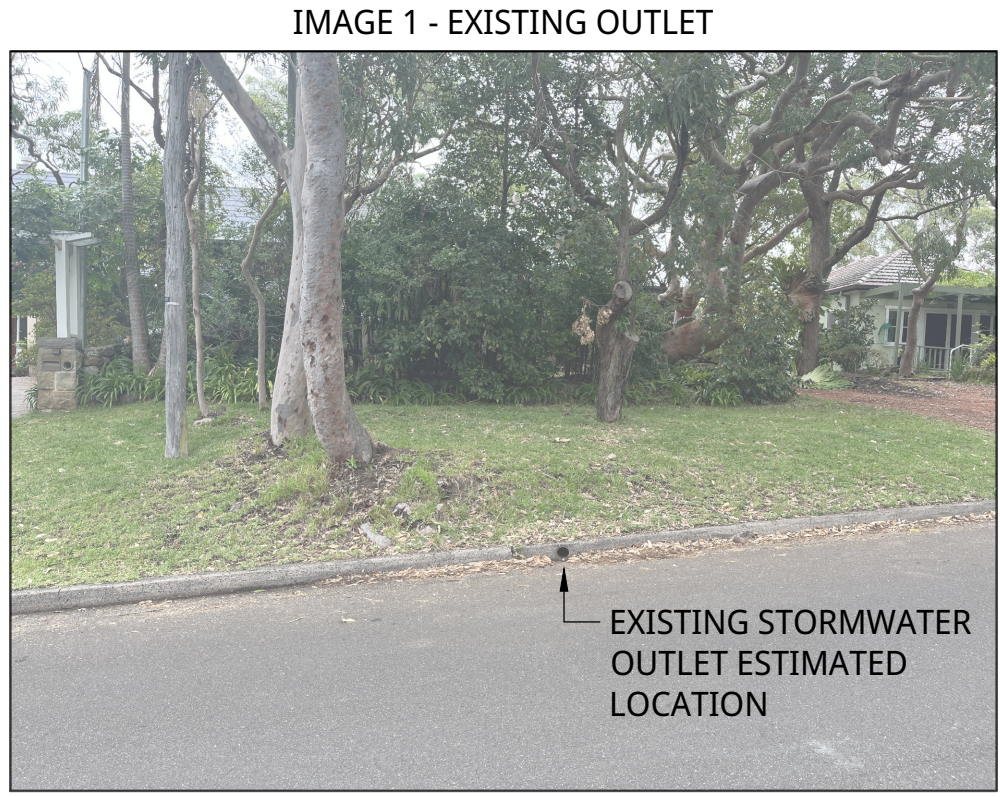
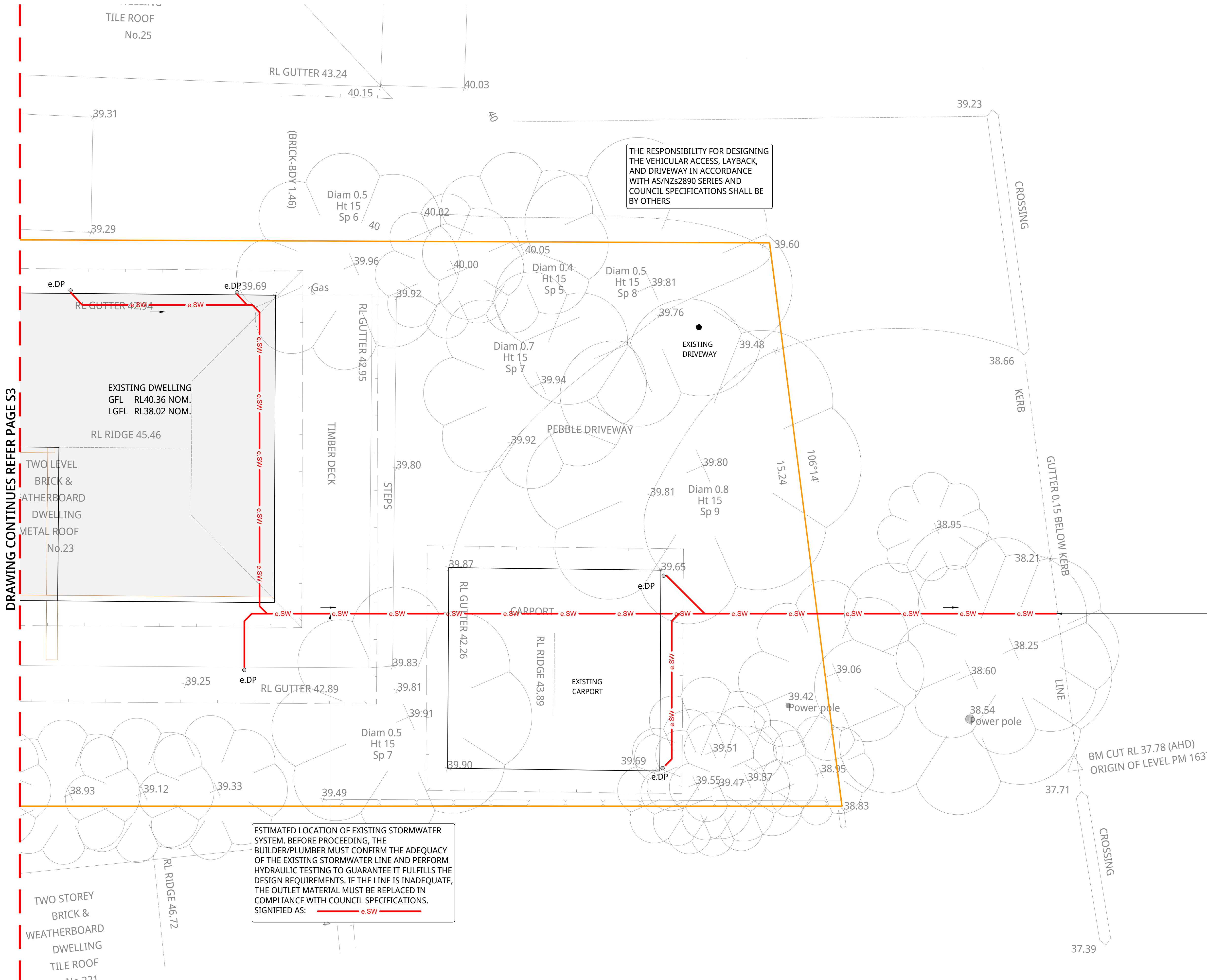
- **STORMWATER DISCHARGE**
THE DEVELOPMENT IS LOCATED ON A RIDGE. AFTER A SITE INSPECTION WE BELIEVE THE MAJORITY OF THE EXISTING DWELLING DRAINS TO PARK AVENUE BY GRAVITY (REFER TO PAGE 56 FOR AREA CALCULATIONS). THE REMAINING OF THE SITE DRAINS TO THE REAR.
- **SITE FLOWS**
TO ESTIMATE THE SITE FLOW RATES UNDER STATE OF NATURE AND POST-DEVELOPMENT SCENARIOS, A HYDRAULIC DRAINAGE (DRAINS) MODEL WAS CREATED. REFER TO THE PSD FLOW RATES FOR EACH STORM EVENT UNDER EACH CONDITIONS ON PAGE 56.
ALSO NOTE THAT THE SITE IS ON A RIDGE AREAS FALLING TOWARD THE STREET AND AREAS AFFECTED BY TREE'S WERE EXCLUDED IN THE DRAIN MODELLING. REFER TO PAGE 56 FOR AREA CALCULATIONS.
****OUR ANALYSIS ESTIMATED THAT THE PROPOSED SITE'S FLOW RATES WERE RESTRICTED TO STATE OF NATURE CONDITIONS (5% AEP), INSTEAD OF THE COUNCIL-RECOMMENDED 20% AEP STORM EVENT. ACHIEVING THE DESIRED 20% AEP FLOW RESTRICTION FOR THE PROPOSED STORMWATER SYSTEM WAS FOUND TO BE UNFEASIBLE DUE TO A SIGNIFICANT EXISTING PERVIOUS BYPASS AREA AND SITE CONSTRAINTS (TREES, SURFACE ROCK, DEVELOPMENT TYPE)**

FURTHERMORE, WE NOTE THAT THE POST-DEVELOPMENT FLOW RATES DRAINING TO THE REAR ARE EXPECTED TO BE LESS THAN STATE OF NATURE FLOWS FOR ALL STORMS UP TO THE 100-YEAR STORM EVENT ARE. WE EXPECT A 5L/S REDUCTION IN RUNOFF DURING 100YR STORMEVENT FROM STATE OF NATURE CONDITIONS.

BASED ON THE ABOVE ANALYSIS, WE RECOMMEND THE PROPOSED STORMWATER DESIGN AS A SAFE AND PRACTICAL SOLUTION TO SUPPORT THE DEVELOPMENT. FURTHERMORE, WE BELIEVE THAT THIS SET OF DRAWINGS HAS BEEN PREPARED TO FULFIL THE INTENT OF THE AFOREMENTIONED DOCUMENTS WITH THE NOTED EXCEPTION ABOVE**.

PAGE DIRECTORY

TITLE PAGE & NOTES	PAGE S1
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 1	PAGE S2
MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 2	PAGE S3
MANAGEMENT OF STORMWATER DETAILS - PAGE 1	PAGE S4
MANAGEMENT OF STORMWATER DETAILS - PAGE 2	PAGE S5
MANAGEMENT OF STORMWATER PLAN - CALCULATIONS	PAGE S6



DRAWING CONTINUES REFER PAGE S3

PARK AVENUE

MANAGEMENT OF STORMWATER
PLAN - GROUND FLOOR PAGE 1 OF 2
SCALE - 1:50/A1, 1:100/A3



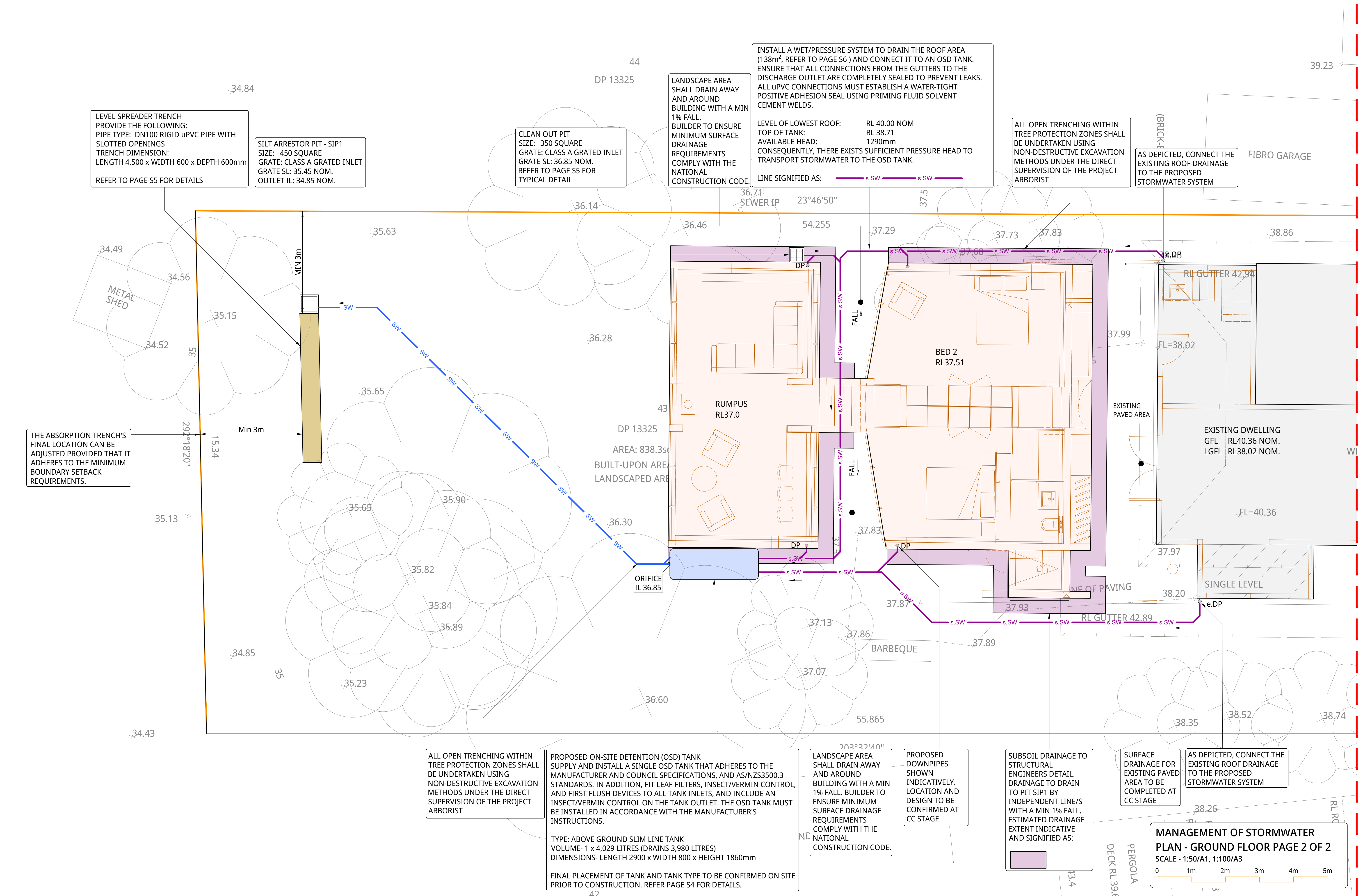
Revision	Drawn	Date	Description	Checked	Approved	North	Architect	Project	Drawing Title
1	SSD	05.05.25	ISSUED FOR CLIENT REVIEW	RM	SSD		SOBI WING SLINGSBY ARCHITECT Client: OWENS	PROPOSED ALT'S AND ADD'S No. 23 PARK AVENUE AVALON BEACH	MANAGEMENT OF STORMWATER PLAN - GROUND FLOOR PAGE 1 OF 2 Project No. ACE25042

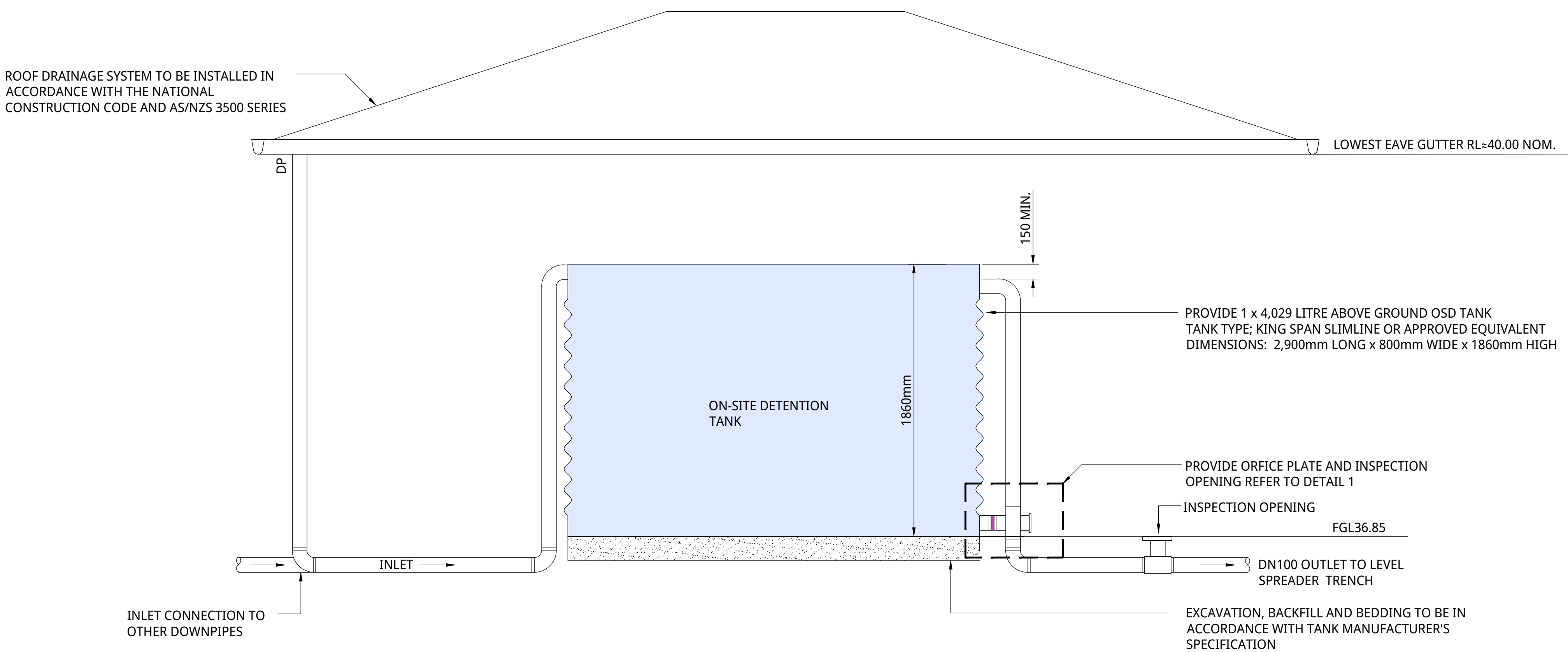


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Project
PROPOSED ALT'S AND ADD'S
No. 23 PARK AVENUE
AVALON BEACH

Drawing Title
MANAGEMENT OF STORMWATER
PLAN - GROUND FLOOR PAGE 1 OF 2
Project No. ACE25042
Scale: A1
AS NOTED
Page No. S2
Revision 1



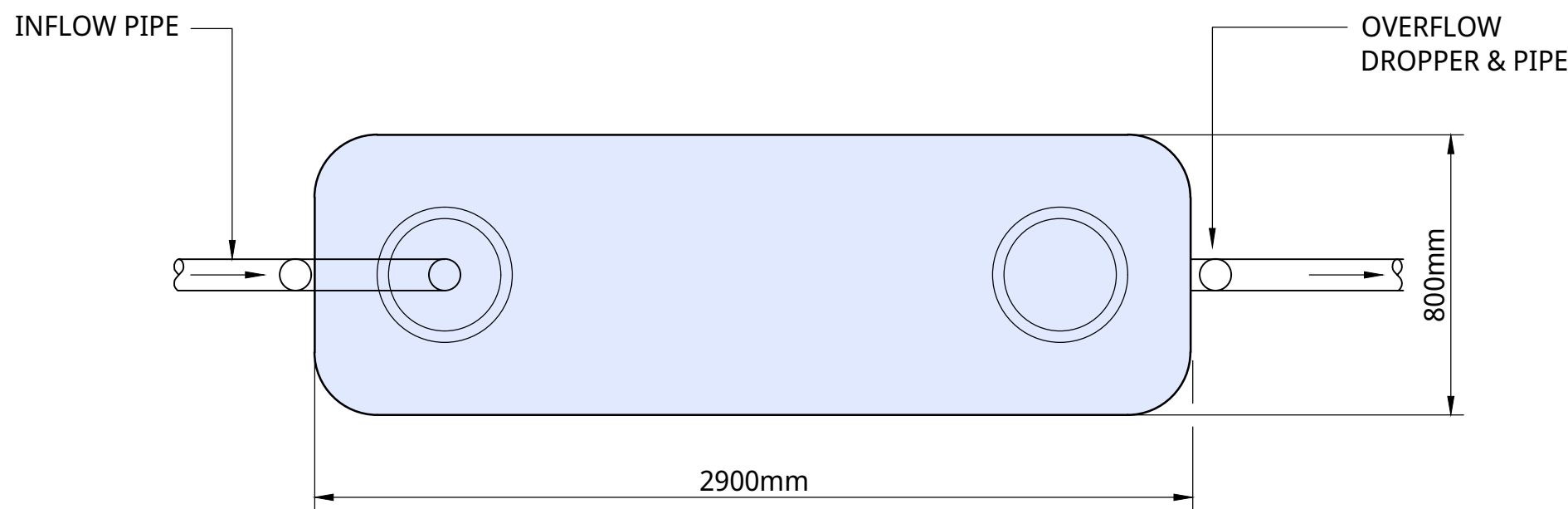


ABOVE GROUND ON-SITE DETENTION TANK
TYPICAL ELEVATION

NTS

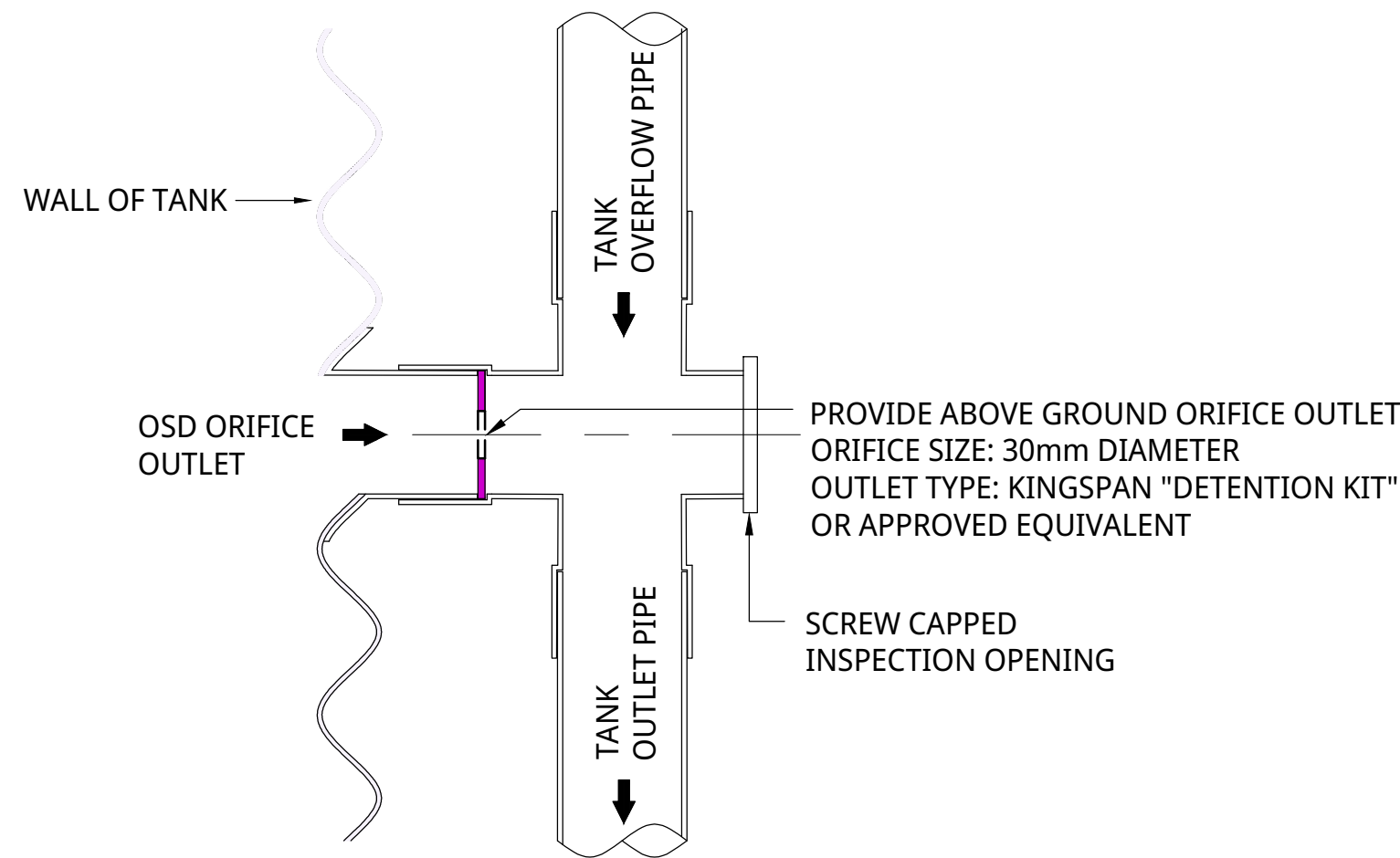
NOTES:

1. ON SITE DENTITION TANK DIMENSIONS TO BE VERIFIED WITH TANK MANUFACTURER, DESIGN ENGINEER TO VALIDATE ANY VARIATIONS PRIOR TO CONSTRUCTION.
2. ONLY ONE STORMWATER LINE INLET IS SHOWN FOR INDICATIVE PURPOSES.



ABOVE GROUND ON-SITE DETENTION TANK
TYPICAL PLAN

NTS

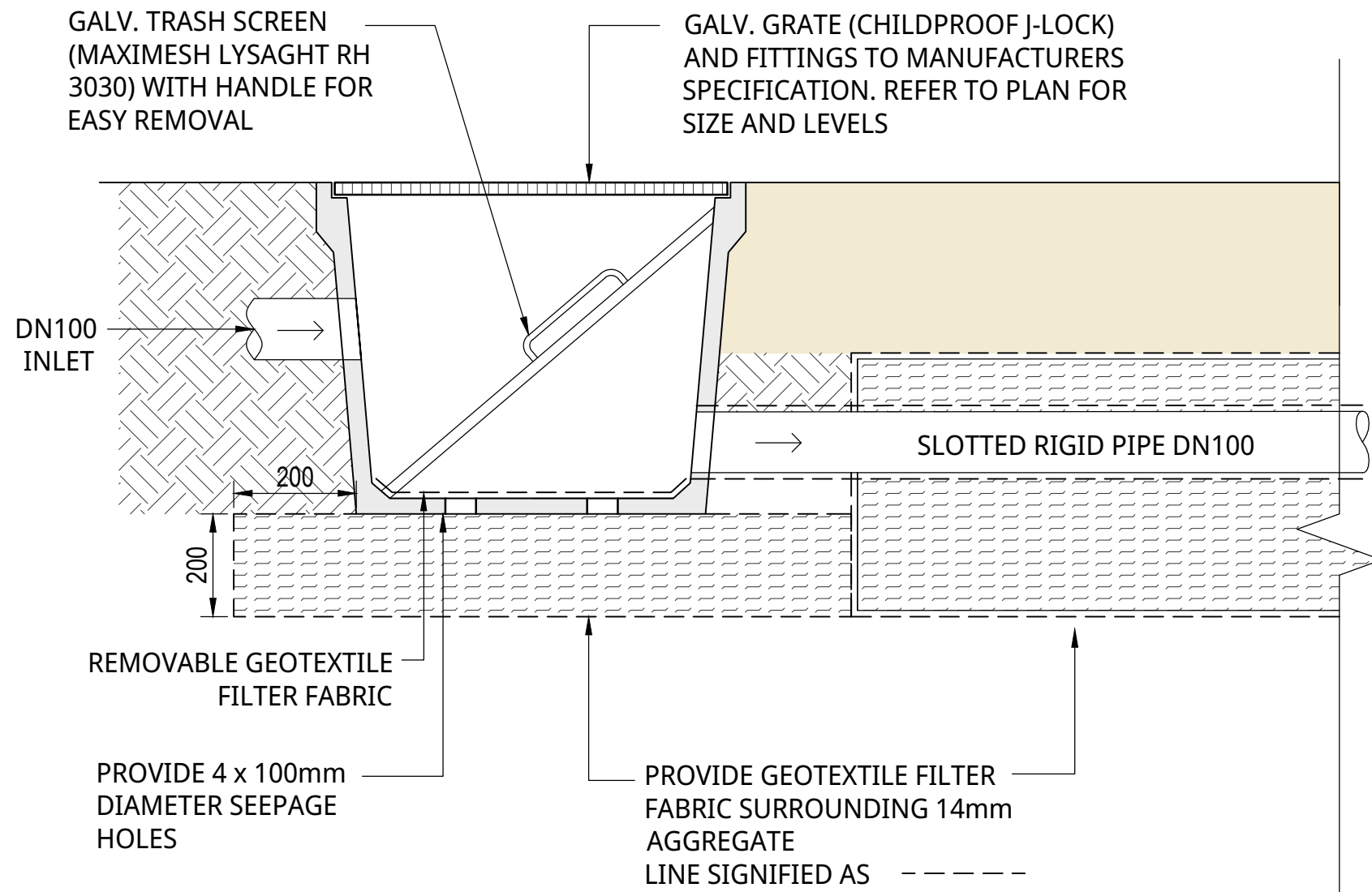
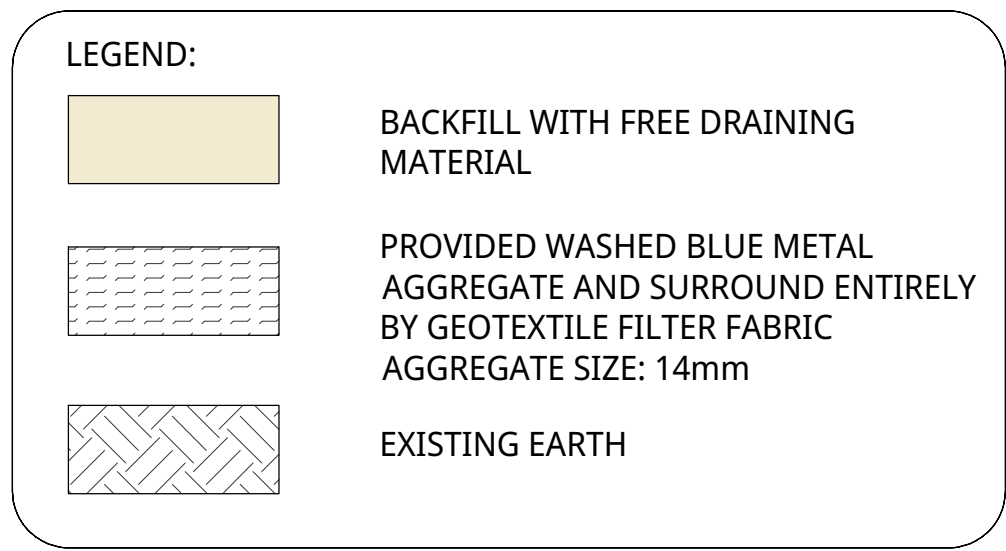


DETAIL 1 - TYPICAL ORIFICE OUTLET

NTS

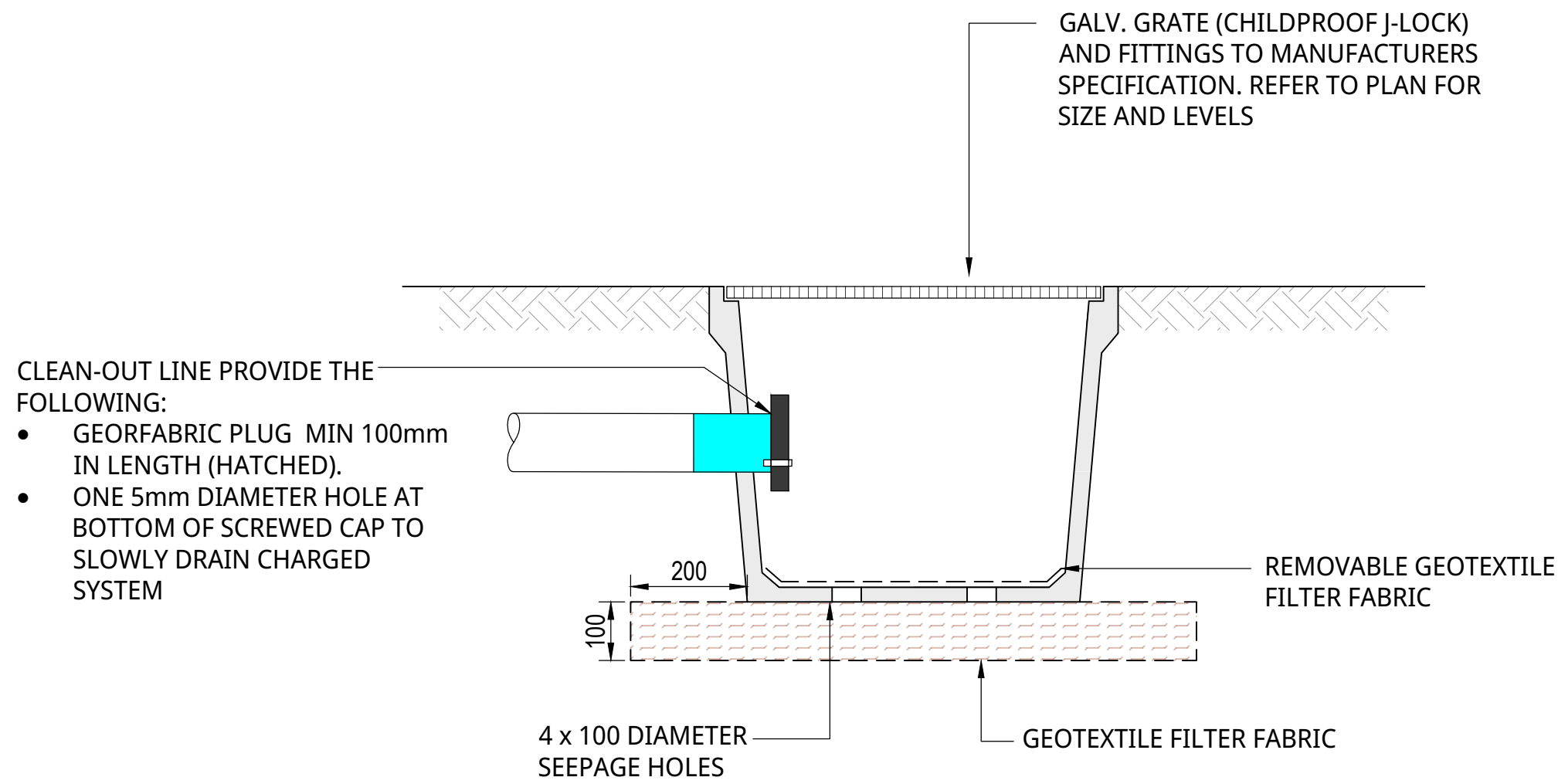
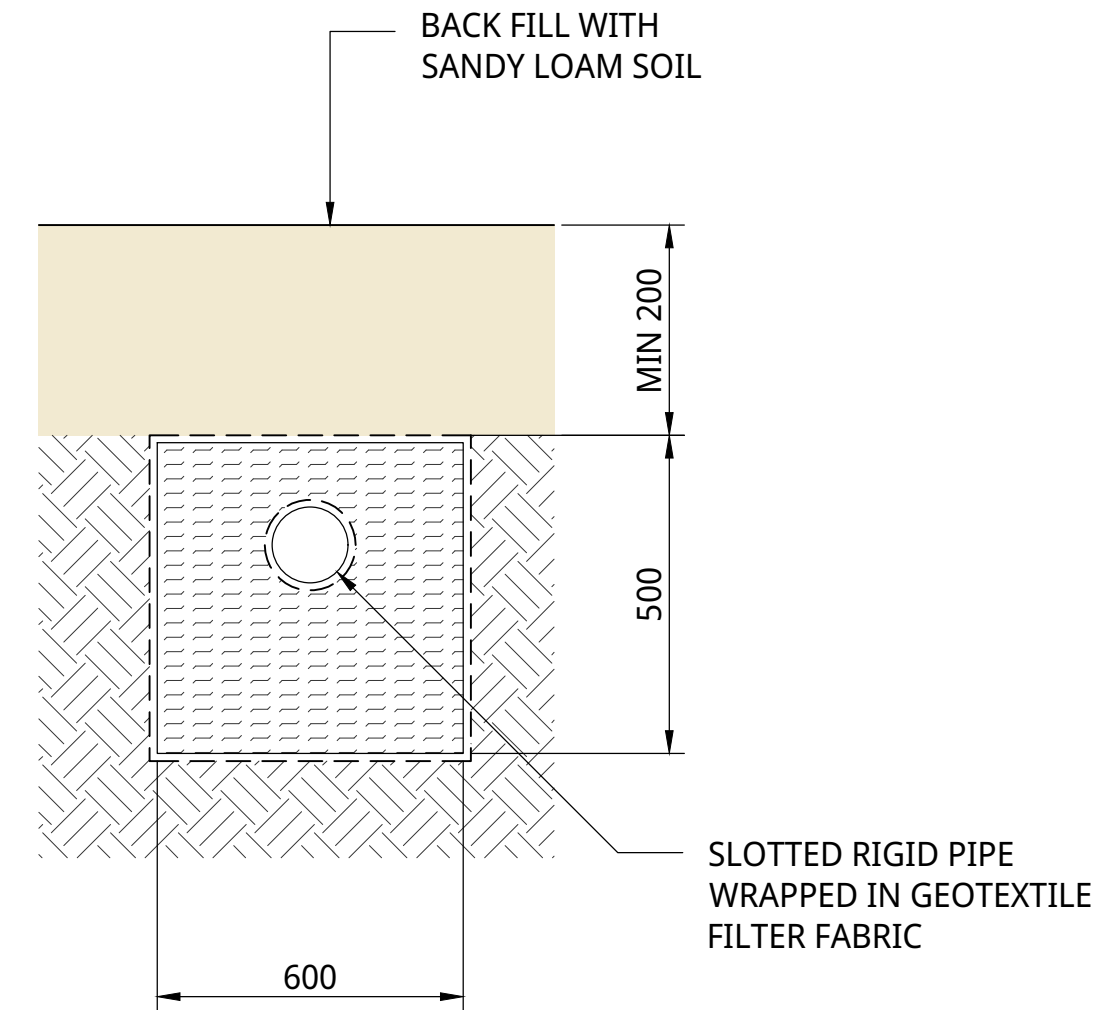
NOTES:

1. APPROVED EQUIVALENT OTHER ORIFICE OUTLET MAY BE INSTALLED.



NOTES:

1. THE LEVEL SPREADER SHOULD NOT BE LOCATED WITHIN THREE METRES OF THE SIDE OR REAR BOUNDARY, OR THREE METRES FROM ANY ON-SITE BUILDING OR NEIGHBOURING BUILDINGS.
2. LEVEL SPREADER TRENCH SHALL BE LAID FLAT ALONG CONTOURS



PIT LEGEND:

- PROVIDED WASHED AGGREGATE AND SURROUND ENTIRELY BY GEOTEXTILE FILTER FABRIC AGGREGATE SIZE: 14mm
- EXISTING EARTH

NOTE:

1. REFER TO DRAWING PLAN (PAGE S3) FOR PIT DIMENSIONS

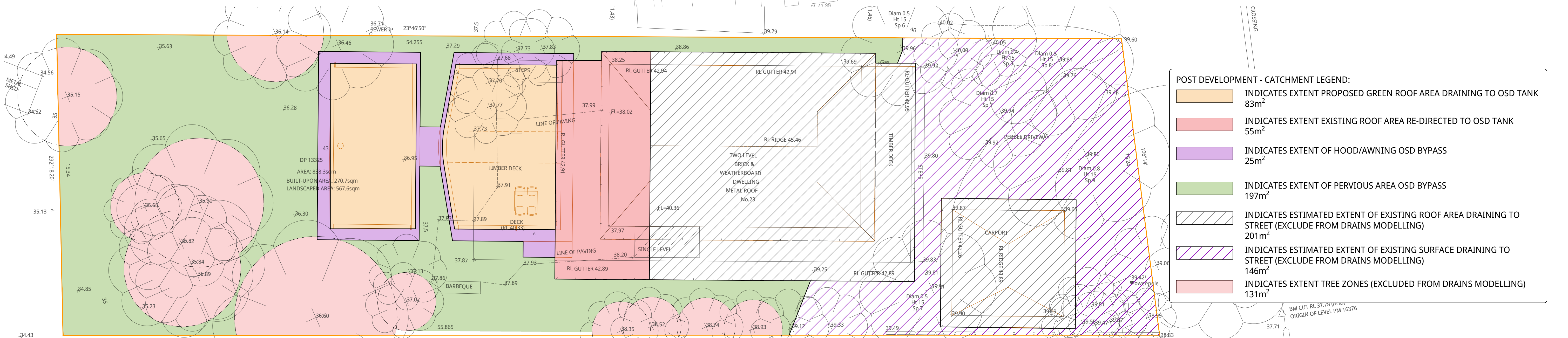
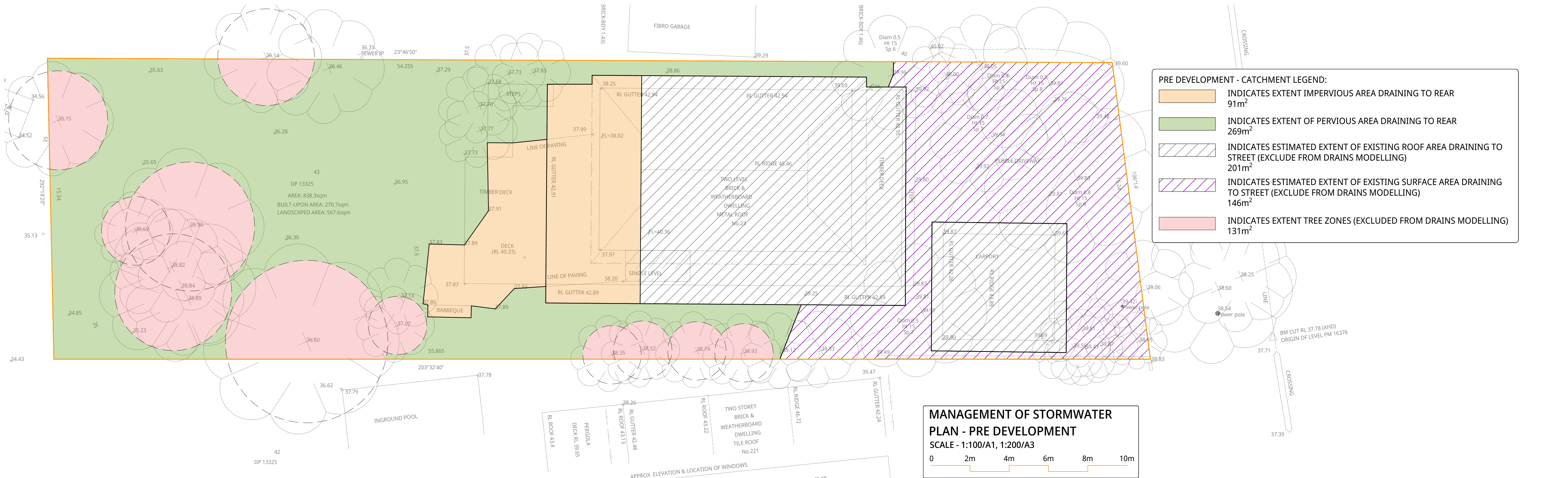


TABLE 1 - SITE DISCHARGE CALCULATIONS				
STORMEVENT	STATE OF NATURE FLOW (l/s)	OSD FLOW TO REAR (l/s)	BYPASS FLOW (l/s)	TOTAL REAR DISCHARGE FLOW (l/s)
CATCHMENT AREA & IMPERVIOUS PERCENTAGE	360m² & 0.0%	138m² & 100%	220m² & 11%	-
20% AEP	8.00	2.00	5.00	7.00
5% AEP	14.00	2.00	9.00	11.00
1% AEP	19.00	2.00	12.00	14.00

- NOTES:
1. SITE DISCHARGE RESTRICTED TO THE 20 YEAR STATE OF NATURE STORMEVENT.
 2. PROPOSED ROOF DRAINAGE TO BE DESIGNED TO THE 100YEAR STORM EVENT
 3. REFER TO POST DEVELOPMENT AREAS FOR DRAINS MODELLING AREA EXCLUSIONS.