



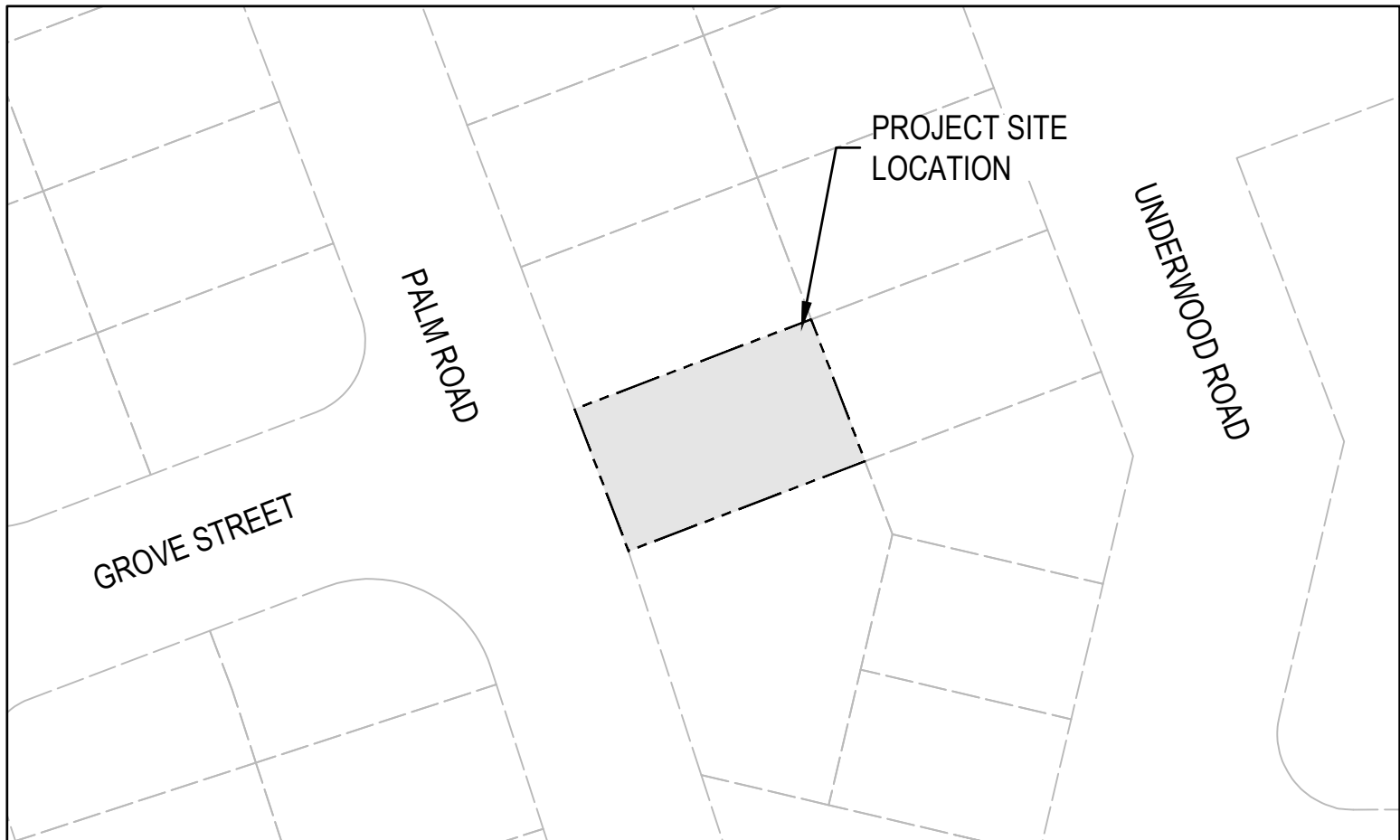
# STORMWATER WORKS for 32 PALM ROAD FORSTER NSW 2428

Prepared by  
**WALLACE INFRASTRUCTURE DESIGN PTY LTD**

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(BE Civil) MIE Aust CPEng

Chartered Professional Engineer  
Membership No. 4404352

Registered on the NER in the area(s)  
of practice of CIVIL



LOCATION PLAN  
(NTS)

DRAWING NUMBER	DRAWING DESCRIPTION
C01.01	LEGEND, DRAWING SCHEDULE AND LOCATION PLAN
C02.01	GENERAL NOTES
C05.01	STORMWATER MANAGEMENT PLAN
C06.01	STORMWATER PIT DETAILS
C06.02	REUSE & ON-SITE DETENTION TANK SECTION & DETAILS
C06.03	TYPICAL RAINGARDEN SECTION & DETAILS

## ABBREVIATIONS

A/G	ABOVE GROUND	IFC	ISSUED FOR CONSTRUCTION	SV	STOP VALVE
AGG	AGGREGATE	IFCR	ISSUED FOR CLIENT REVIEW	SW	STORMWATER
ARCH	ARCHITECT	IL	INVERT LEVEL	SWP	STORMWATER PIT
ASP	ASPHALT	IO	INSPECTION OPENING	THK	THICKNESS
BM	BENCHMARK	KIP	KERB INLET PIT	TJ	TRAVERSE JOINT
CAD	COMPUTER AIDED DRAFTING	L	LENGTH	TOW	TOP OF WALL
C-C	CENTRE TO CENTRE	LP	LAMP POST (SURVEY)	TW	TRADE WASTE
CH	CHAINAGE	MAX	MAXIMUM	TYP	TYPICAL
CI	CAST IRON	MC	MASS CONCRETE	U/G	UNDERGROUND
CJ	CONSTRUCTION JOINT	MH	MANHOLE	UNO	UNLESS NOTED OTHERWISE
CL	COVER LEVEL or CENTRE LINE	MIN	MINIMUM	U/S	UPSTREAM
CO	CLEAN OUT (SUBSOIL)	MISC	MISCELLANEOUS	VC	VITRIFIED CLAY PIPE
COG	CHANGE OF GRADE	N	NORTH	VP	VENT PIPE
CONC	CONCRETE	NRV	NON RETURN VALVE	VR	VERTICAL RISER
CTRL	CONTROL	NTS	NOT TO SCALE	W	WIDTH
CR	CROWN	OD	OUTER DIAMETER	WC	WATER CLOSET
CTS	CENTRES	OF	OVERFLOW	WL	WATER LEVEL
D	DEPTH	OH	OVERHEAD	WM	WATER METER
DIA	DIAMETER	PP	POWER POLE	WS	WASTE STACK
DP	DOWNPIPE	PPE	PERSONAL PROTECTIVE EQUIP.		
DRG	DRAWING	PVC	POLYVINYLCHLORIDE	UNITS	
D/S	DOWN STREAM	PV	PRESSURE VENT	mm	MILLIMETRES
DTM	DIGITAL TERRAIN MODEL	PVP	PRESSURE VENT PIPE	cm	CENTIMETRES
EB	EDGE BITUMIN	QA	QUALITY ANALYSIS	m	METRES
EX	EXISTING	QTY	QUANTITY	m <sup>2</sup>	SQUARE METRES
ESL	EXISTING SURFACE LEVEL	R	RADIUS	m <sup>3</sup>	CUBIC METRES
FH	FIRE HYDRANT	RC	REINFORCED CONCRETE	L/s	LITRES PER SECOND
FHR	FIRE HOSE REEL	REV	REVISION	ha	HECTARES
FFL	FINISHED FLOOR LEVEL	RL	REDUCED LEVEL		
FGL	FINISHED GROUND LEVEL	RW	RETAINING WALL		
FSL	FINISHED SURFACE LEVEL	SFW	SEALED FLOOR WASTE		
FW	FLOOR WASTE	SL	SURFACE LEVEL		
GA	GENERAL ARRANGEMENT	SMH	SEWER MANHOLE		
GI	GALVANISED IRON	SMV	SEWER MAIN VENT		
GFL	GARAGE FINISHED LEVEL	SOD	SIDE OUTLET DRAIN		
IC	INSPECTION CHAMBER	S/S	STAINLESS STEEL		
ID	INSIDE DIAMETER	STD	STANDARD		

## LINETYPES & SYMBOLS

### GENERAL

SITE BOUNDARY	---
CADASTRAL BOUNDARY	---
EASEMENT BOUNDARY	---
EXISTING FEATURES	
CONTOURS	---30---
STORMWATER PIPE	---
STORMWATER PIT	---
ELECTRICAL CABLE - U/G	---E---
ELECTRICAL CABLE - O/H	---OHE---
EXISTING SEWER PIPE	---S---
EXISTING WATER	---W---
EXISTING WATER (HYDRANT)	●
EXISTING WATER (STOP VALVE)	X
EXISTING TELECOM	---OFC---
COMMUNICATIONS PIT	---
EXISTING GAS	---G---
EXISTING BUILDING	---
TREES / SHRUBS	---

### PROPOSED - BUILDING (INDICATIVE ONLY)

DWELLING NUMBER	UNIT 01
FINISHED FLOOR LEVEL	FFL 5.00
BUILDING FOOTPRINT	---

### PROPOSED - UTILITIES

SEWER	---S---
WATER	---W---
COMMUNICATIONS	---T---
COMMUNICATIONS - OPTIC FIBRE	---OFC---
COMMUNICATIONS PIT	---
GAS	---G---
ELECTRICAL CABLE - U/G	---E---
ELECTRICAL CABLE - O/H	---OHE---
REDUNDANT	· X · X · X · X · X · X ·

### PROPOSED - EROSION AND SEDIMENT CONTROL

SITE EXCLUSION FENCE	---[X]---[X]---[X]---
SEDIMENT FENCE	--->--->--->---
DIVERSION DRAIN	---
STABLISED SITE ACCESS	---
MATERIAL STOCKPILE	---
SLOPE DIRECTION	---
GEOTEXTILE INLET FILTER	---
MESH AND GRAVEL INLET FILTER	---
SANDBAG / HAY BALES	---
PROPOSED CONTOURS	
MAJOR CONTOUR INTERVAL	---10---
MINOR CONTOUR INTERVAL	---

### PROPOSED - STORMWATER

SW PIPE (INCL. DIA/GRADE/LENGTH)	ØXXXmm uPVC X.X% GRADE, X.XXm
SW PIPE - CHARGED (INCL. DIA/GRADE/LENGTH)	ØXXXmm uPVC CHARGE X.X% GRADE, X.XXm
SW PIT - GRATED / JUNCTION	---
SW - KERB INLET PIT (INCLUDING LINTEL)	---
RAINWATER/REUSE TANK	---
GROSS POLLUTANT TRAP	---
GRATED DRAIN	---
INFILTRATION TRENCH	---
HEADWALL	---
SUBSOIL	---
SW SWALE	---
PIPE RISER	○ XX
PIPE DROPPER	○ XX
OVERLAND FLOW PATH	---
SW PIT NUMBER	---
SW CATCHMENT (NUMBER / AREA IN ha)	---

### PROPOSED - CIVIL

CONCRETE	---
ASPHALTIC CONCRETE	---
SAND	---
EARTH	---
RIP RAP	---
BUILDING / STRUCTURES	---
TIMBER	---
BLOCK PAVERS	---
RETAINING WALL	---
KERB RAMP	---
VEHICULAR CROSSING	---
FENCE	---
BATTER	---
BOLLARD - TYPE 1 (FIXED)	● B-T1
BOLLARD - TYPE 2 (REMOVABLE)	● B-T2
LINEMARKING - CHEVRON	---
EXPANSION JOINT	---EJ---
TRAVERSE JOINT	---TJ---
CONTROL JOINT	---CJ---
FINISHED GRADE LEVELS	25.758
EXISTING GRADE LEVELS	25.710

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REV	DESCRIPTION	DATE	APPVD	ENDOD
A	DA ISSUE	10.09.24	K.B.	-

ARCHITECT:

collins collins  
BUILDING DESIGN

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PROJECT:

CIVIL WORKS for  
LOT 25, DP 22922  
32 PALM ROAD  
FORSTER NSW 2428

DRAWING TITLE:

**CIVIL SERVICES**  
LEGEND, DRAWING SCHEDULE  
AND LOCATION PLAN

DRAWING STATUS

**DA APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION

SCALE:

N.T.S.

ORIG. SIZE

A1

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AK	AK	KB	KB	--	10.09.24

PROJECT No.

24221

DRAWING No.

C01.01

REV

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GENERAL NOTES

1. ALL CONSTRUCTION WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S ENGINEERING REQUIREMENTS FOR DEVELOPMENTS.
2. ALL DIMENSIONS, EASEMENTS AND LOTS SUBJECT TO REGISTRATION OF DEPOSITED PLAN.
3. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND CONSULTANT'S DRAWINGS AND SPECIFICATIONS, AND OTHER WRITTEN REPORTS (e.g GEOTECHNICAL, ARBORIST, ENVIRONMENTAL, ETC.). ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH ANY WORKS.
4. ALL LEVELS SHALL BE OBTAINED FROM ESTABLISHED BENCH MARKS AS DIRECTED BY THE SUPERVISOR.
5. THE DEVELOPER, SHALL ENSURE ALL ASSOCIATED DOCUMENTATION (GEOTECHNICAL, LANDSCAPE, ARCHITECTURAL, ELECTRICAL, TELECOM, GAS ETC.) HAS BEEN APPROVED FOR CONSTRUCTION BEFORE COMMENCING ANY WORKS.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND ADJUSTMENT TO ALL IN GROUND AND ABOVE GROUND SERVICES. SEE HUNTER WATER'S NOTICE OF REQUIREMENTS.
7. EROSION CONTROL MEASURES, DEVICES, SILT TRAPS. ETC. ARE TO BE INSTALLED BEFORE ANY SITE DISTURBANCE IN ACCORDANCE WITH COUNCIL INSPECTORS REQUIREMENTS AND SITE SEDIMENTATION AND EROSION CONTROL PLANS.
8. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ALL WORKS ARE CARRIED OUT IN ACCORDANCE WITH THE WORK HEALTH SAFETY ACT.
9. VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS.
10. ALL WASTE OR DEMOLISHED MATERIALS SHALL BE DISPOSED OF OFF SITE TO A COUNCIL APPROVED SITE. ALL FEES AND CHARGES SHALL BE INCLUDED IN THE CONTRACT SUM.
11. CONSTRUCTION VIBRATION TO COMPLY WITH AS2760.1-2004 AND/OR NSW DEPT OF ENVIRONMENT AND CONSERVATION NOISE REQUIREMENTS
12. EMISSIONS FROM SITE ARE NOT TO INTERFERE WITH THE AMENITY OF THE NEIGHBORHOOD.
13. NOISE EMISSIONS ARE TO COMPLY WITH NSW EPA NOISE CONTROL MANUAL. TIME RESTRICTIONS APPLY TO CONSTRUCTION WORKS AS FOLLOWS: 7AM TO 6PM MON-FRI; 8AM TO 1PM SAT.
14. TREES & SHRUBS WHICH ARE FELLED SHALL BE SALVAGED FOR RE-USE, EITHER IN LOG FORM, OR AS A WOODCHIP MULCH FOR EROSION CONTROL AND/OR SITE REHABILITATION. NON-SALVAGEABLE MATERIAL SUCH AS ROOTS & STUMPS SHALL BE DISPOSED OF IN AN APPROVED MANNER.
15. 'ESCP' REFERS TO EROSION AND SEDIMENT CONTROL PLAN, 'SWMP' REFERS TO SOIL AND WATER MANAGEMENT PLAN, AND, 'ESC' REFERS TO EROSION AND SEDIMENT CONTROL.
16. SEDIMENT, INCLUDES, BUT IS NOT LIMITED TO, CLAY, SILT, SAND, GRAVEL, SOIL, MUD, CEMENT AND CERAMIC WASTE.
17. ANY REFERENCE TO THE BLUE BOOK REFERS TO "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", LANDCOM, 2004.
18. ANY REFERENCE TO THE IECA WHITE BOOKS (2008) REFERS TO IECA 2008, "BEST PRACTICE EROSION AND SEDIMENT CONTROL". BOOKS 1-6. INTERNATIONAL EROSION CONTROL ASSOCIATION (AUSTRALASIA), PICTON, NSW.
19. ANY MATERIAL DEPOSITED IN ANY CONSERVATION AREA FROM WORKS ASSOCIATED WITH THE DEVELOPMENT SHALL BE REMOVED IMMEDIATELY BY MEASURES INVOLVING MINIMAL GROUND AND/OR VEGETATION DISTURBANCES AND NO MACHINERY, OR FOLLOWING DIRECTIONS BY COUNCIL AND/OR WITHIN A TIMEFRAME ADVISED BY COUNCIL.

SURVEY NOTES

1. THE EXISTING SURVEY CONDITIONS SHOWN ON THESE DRAWINGS HAVE BEEN DERIVED FROM SURVEY INFORMATION SUPPLIED BY ZENITH SURVEYING SERVICES DATED 29.05.2023, REF NO. 3007-23.
2. THE FOLLOWING SURVEY INFORMATION HAS BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS:

POSITION DATUM:PM 48499

ORIENTATION:MGA 56

EASTING:456 172.274

NORTHING:6 437 782.579

HEIGHT DATUM:RL: 27.695 (AHD)
3. THE INFORMATION SHOWN IS PROVIDED AS A BASIS FOR THE DESIGN. WALLACE DESIGN GROUP DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
4. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTRACTOR SHALL CONTACT ZENITH SURVEYING SERVICES AND OR WALLACE DESIGN GROUP FOR CLARIFICATION.
5. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.

STORMWATER NOTES

1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DETAILS.
2. ALL WORKS ARE TO BE IN ACCORDANCE WITH AS3500, COUNCIL'S DEVELOPMENT CONTROL PLAN AND PROPRIETARY MANUFACTURERS RECOMMENDATIONS.
3. UNLESS OTHERWISE STATED, ALL STORMWATER PIPES (INCLUDING DOWNPIPES AND RAINWATER TANK OVERFLOW PIPES) ARE TO BE uPVC SEWER GRADE, U.N.O JOINTED & INSTALLED TO MANUFACTURERS RECOMMENDATIONS.
4. ALL uPVC STORMWATER LINES TO HAVE ALL JOINTS, INC. DOWNPIPE CONNECTIONS, FULLY SOLVENT WELDED, INCLUDING ANY CHARGED LINES.
5. CONNECT DOWNPIPES AS REQUIRED TO NOMINATED HARVESTING TANK IN ACCORDANCE WITH APPROVED DEVELOPMENT PLANS AND HYDRAULIC ENGINEERS DESIGN.
6. ALL LEVELS ARE DATUM AHD.
7. ALL LEVELS ARE FINISHED PAVEMENT OR LAWN LEVELS.
8. CONTRACTOR TO ALLOW FOR ALL PIPE SUPPORT SYSTEM TO SOFFIT AS PER MANUFACTURERS SPECIFICATIONS.
9. ALL CONCRETE TO BE MANUFACTURED AND SUPPLIED IN ACCORDANCE WITH AS1379.
10. AT COUNCIL'S DISCRETION, ALL CONCRETE CAN BE SUBJECT TO PROJECT ASSESSMENT AND TESTING TO AS1379
11. MINIMUM PIPE COVERS TO BE IN ACCORDANCE WITH AS3500.
12. PITS TO BE FILLED ACCORDINGLY TO MEET INVERTS AS NEEDED.
13. CONTRACTOR TO CONFIRM ALL LEVELS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES ARE TO BE IMMEDIATELY REPORTED TO WALLACE DESIGN GROUP.

SUBSOIL DRAINAGE NOTES

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH COUNCIL'S CONSTRUCTION SPECIFICATIONS FOR SUBSURFACE DRAINAGE.
2. SUBSOIL PIPE TO BE Ø100 SLOTTED PVC OR CORRUGATED CIRCULAR PLASTIC PIPE AND ENCLOSED IN SEAMLESS FILTER FABRIC SOCK
3. SUBSOIL DRAINS SHALL CONSIST OF A 300 (MINIMUM) WIDE TRENCH, BACKFILLED WITH 7 OR 10mm AGGREGATE AND WRAPPED IN BIDIM A12 GEOTEXTILE FABRIC OR SIMILAR, LAPPED AT THE TOP. DEPTH OF TRENCH TO EXTEND 450 (MINIMUM) IN ROCK OR 600 (MINIMUM) IN EARTH BELOW FINISHED SUB-GRADE LEVEL. INVERT OF TRENCH SHOULD ALSO BE LOWER THAN THE INVERT OF ANY SERVICE CROSSINGS.

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PROJECT:

CIVIL WORKS for  
LOT 25, DP 22922  
32 PALM ROAD  
FORSTER NSW 2428

DRAWING TITLE:

**CIVIL SERVICES**  
GENERAL NOTES

DRAWING STATUS **DA APPROVAL**  
**NOT TO BE USED FOR CONSTRUCTION**

SCALE:		N.T.S.		ORIG. SIZE	
				A1	
DRAWN	DESIGNED	CHECKED	APPROVED	ENDORSED	DATE
AK	AK	KB	KB	--	10.09.24
PROJECT No.		DRAWING No.			REV
24221		C02.01			A

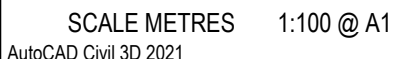


**NOTE:**

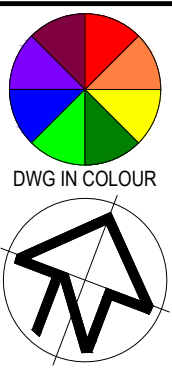
1. STORMWATER ANALYSIS HAS BEEN COMPLETED USING DRAINS MODELLING SOFTWARE IN ACCORDANCE WITH BOOK 3, RUNOFF IN URBAN AREAS, *AUSTRALIA RAINFALL AND RUNOFF, A GUIDE TO FLOOD ESTIMATING. 2019.*
2. ASSUMPTIONS FOR STORMWATER ANALYSIS INCLUDE:
  - BASIC REQUIREMENT EXCLUDED FROM ANALYSIS.
  - RAINWATER REUSE VOLUMES EXCLUDED FROM PRELIMINARY ANALYSIS.
  - DETENTION VOLUME IN BIOFILTRATION EXCLUDED FROM PRELIMINARY ANALYSIS; HOWEVER, AT CC STAGE, THE VOLUME WILL BE ASSESS TO REDUCE THE OVERALL DETENTION VOLUME IN THE TANK.

<u>GENERAL SITE CALCULATIONS:</u>	
TOTAL SITE AREA:	557.48 m <sup>2</sup>
BUILDING AREA (2 UNITS)	311.67 m <sup>2</sup>
DRIVEWAY	64.76 m <sup>2</sup>
TOTAL SITE IMPERVIOUS AREA -	376.43 m <sup>2</sup>
PERCENT SITE IMPERVIOUS AREA -	67.5%

RAIN GARDEN REQUIREMENTS:			
TOTAL FILTER AREA REQUIRED (5m <sup>2</sup> per unit) -			10.0 m <sup>2</sup>
TOTAL SURFACE AREA (5m <sup>2</sup> per unit) -			10.0 m <sup>2</sup>
OUTPUT RESULTS FOR TARGET ANALYSIS:			
	EXISTING	PROPOSED	% REDUCTION
GP	11.0 kg/yr	0.0 kg/yr	100.0%
TSS	46.2 kg/yr	5.40 kg/yr	88.3%
TP	0.12 kg/yr	0.05 kg/yr	62.0%
TN	1.13 kg/yr	0.39 kg/yr	65.3%



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# CIVIL SERVICES

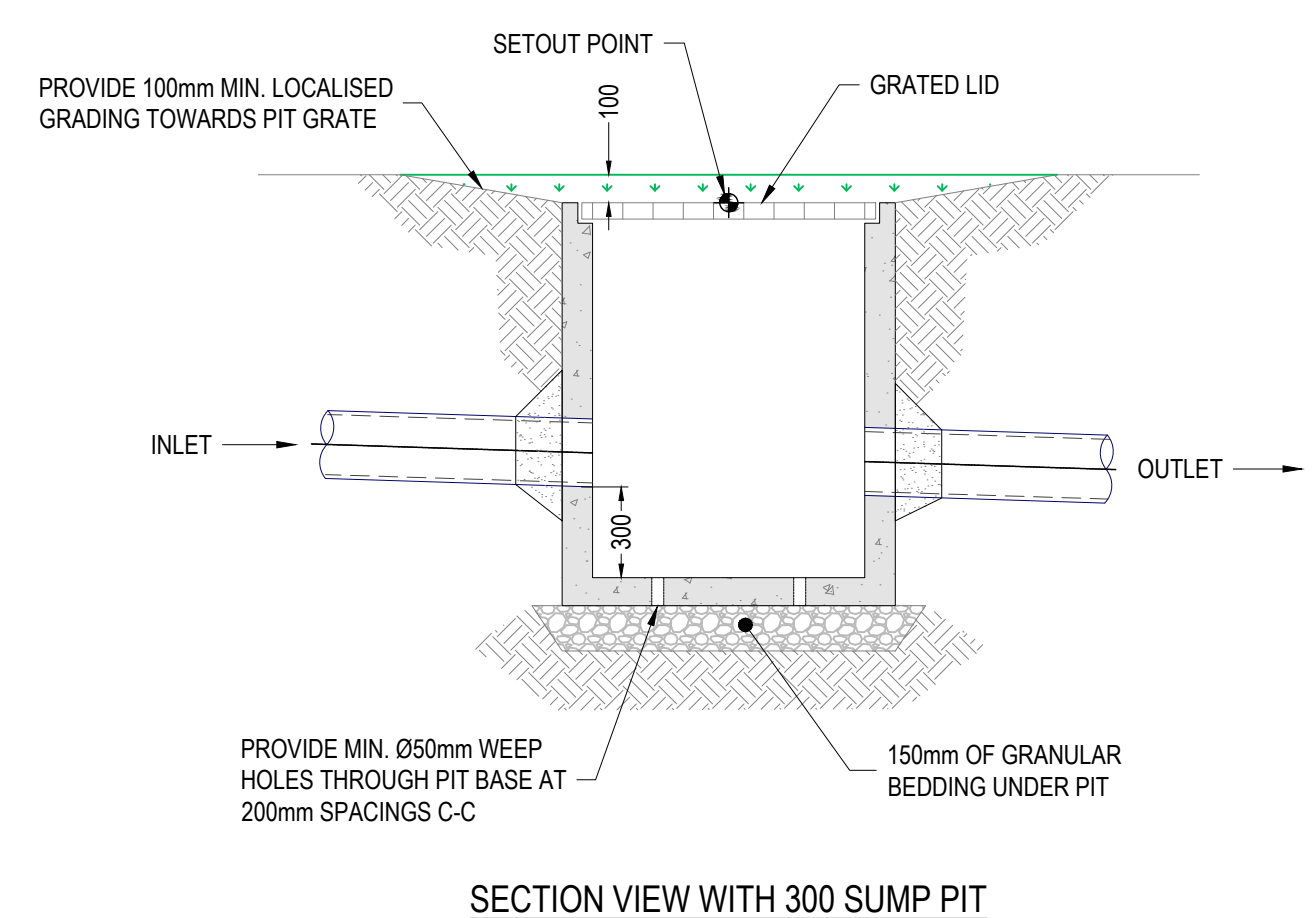
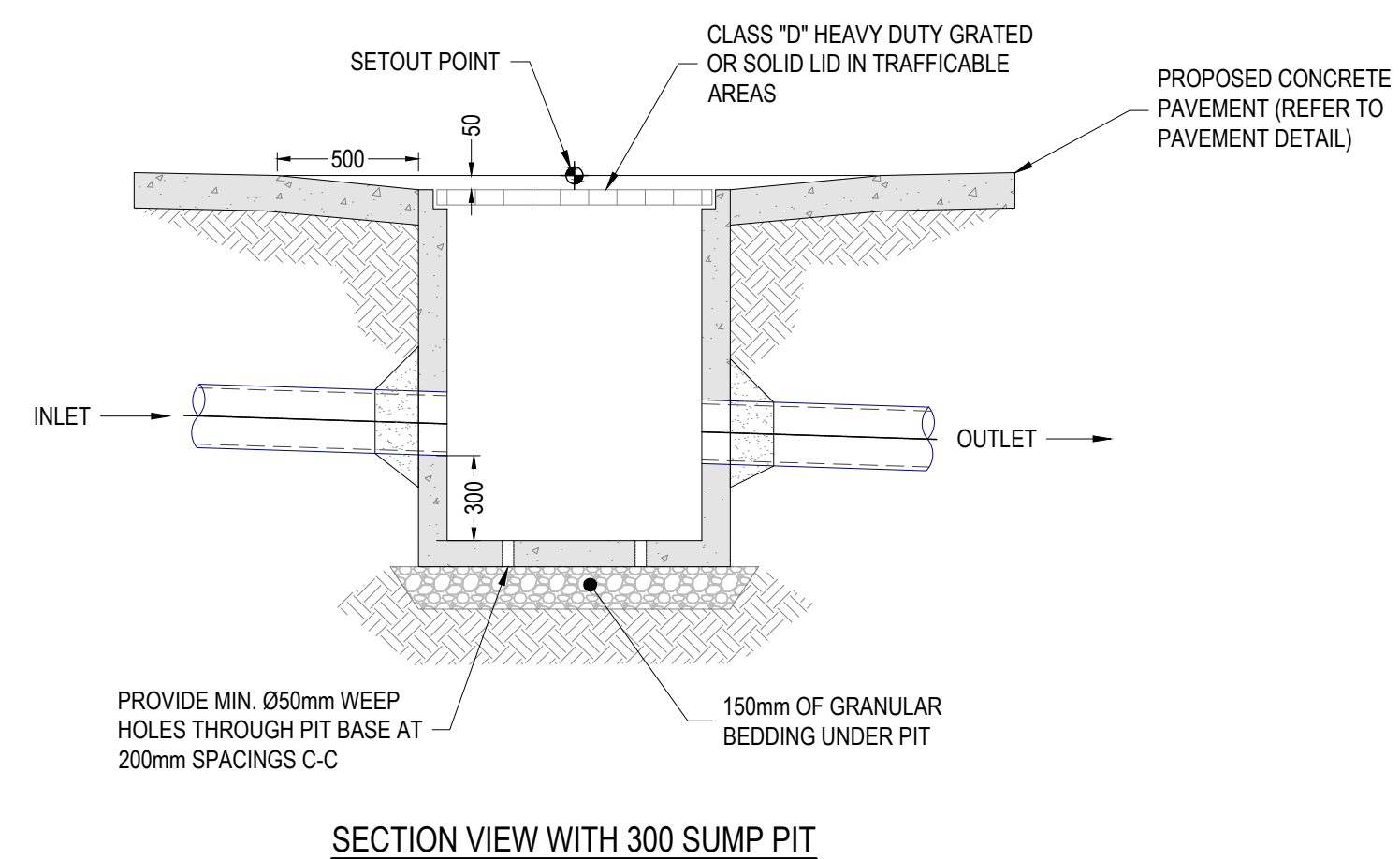
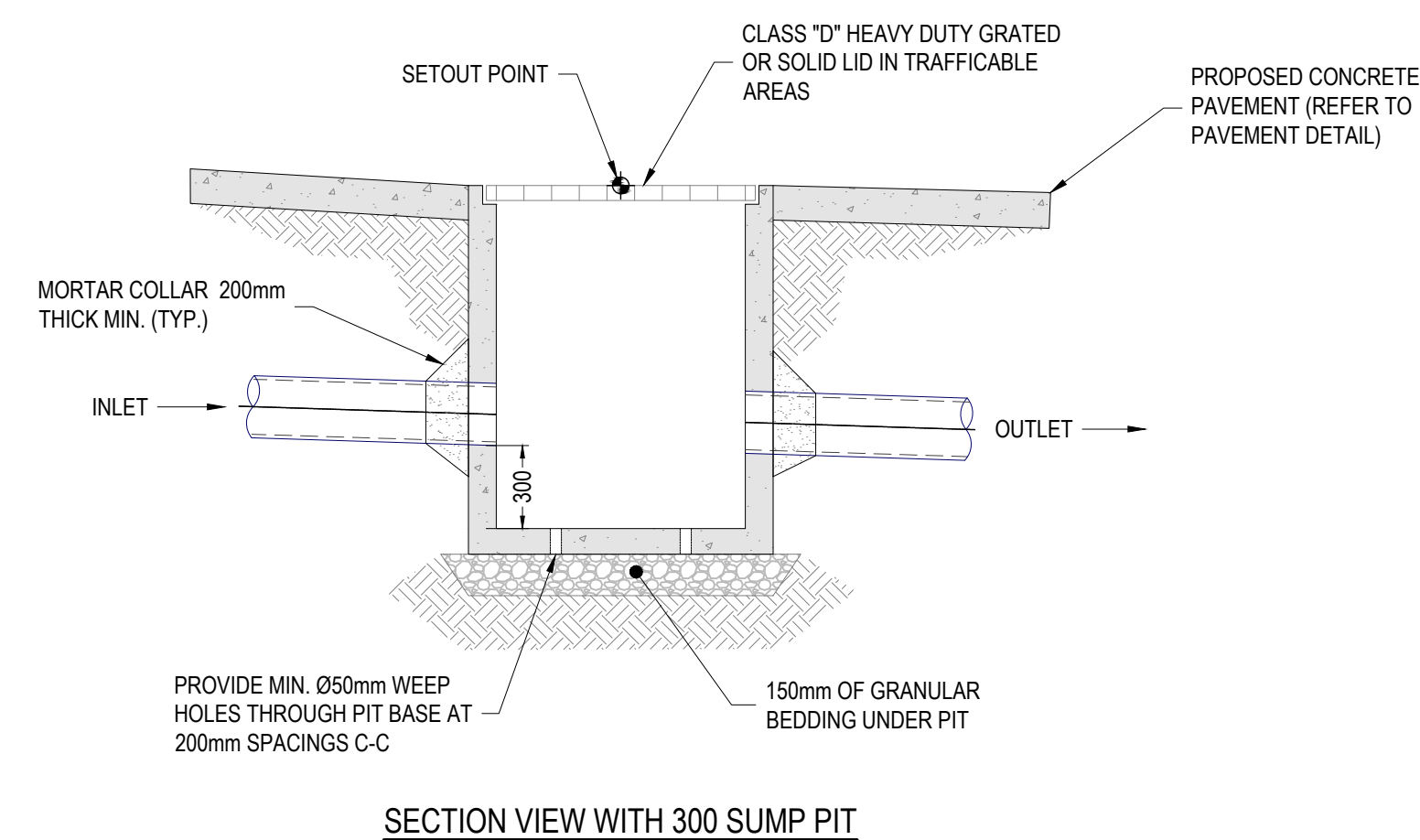
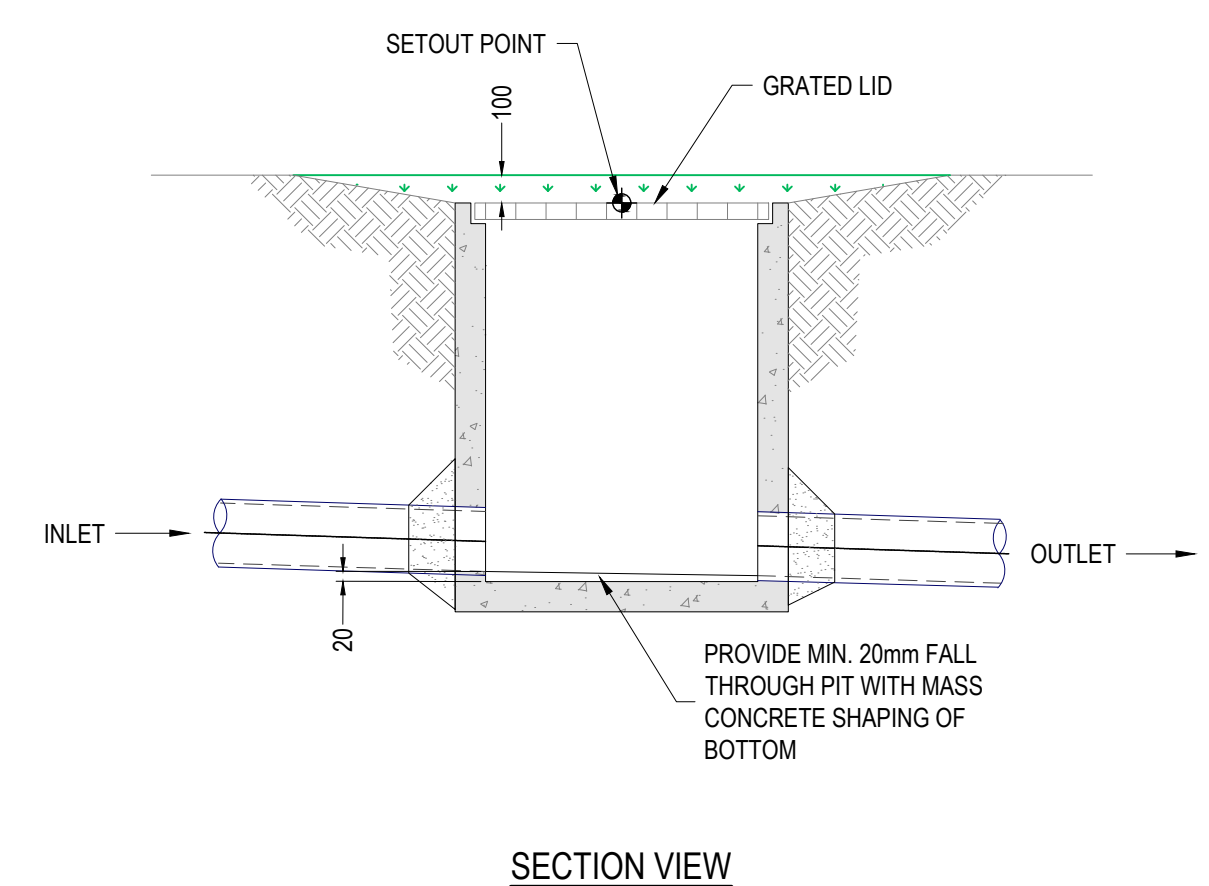
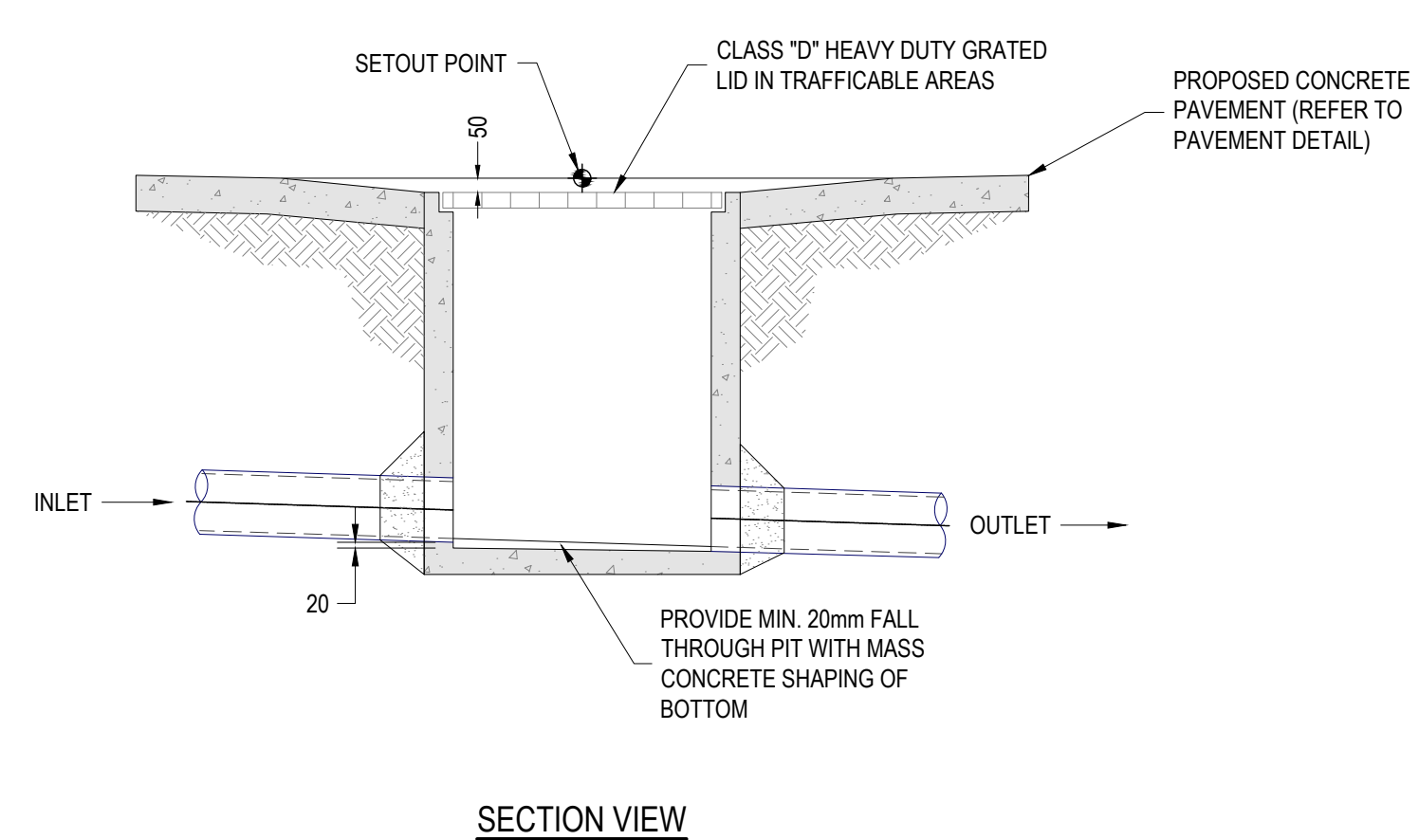
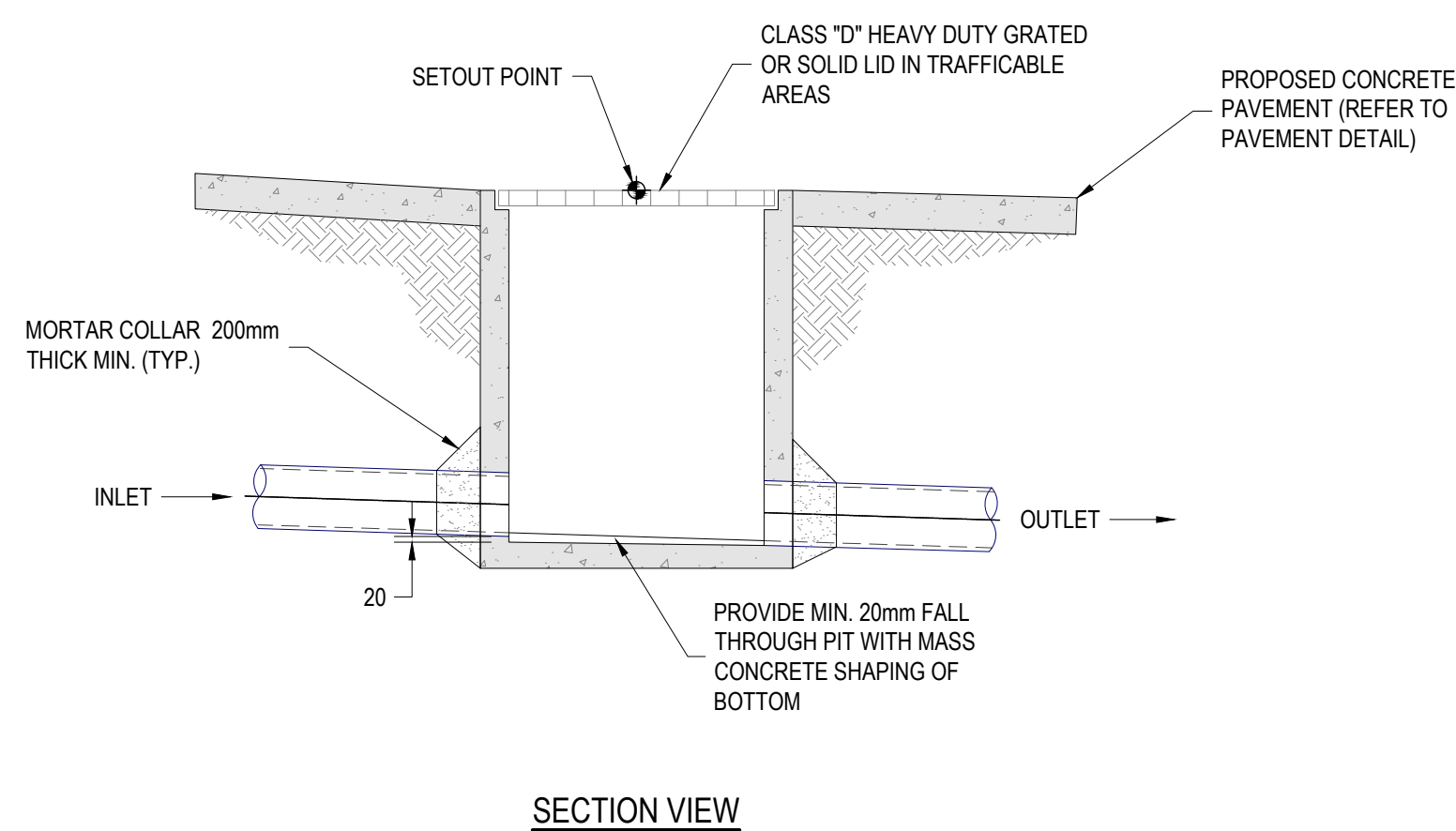
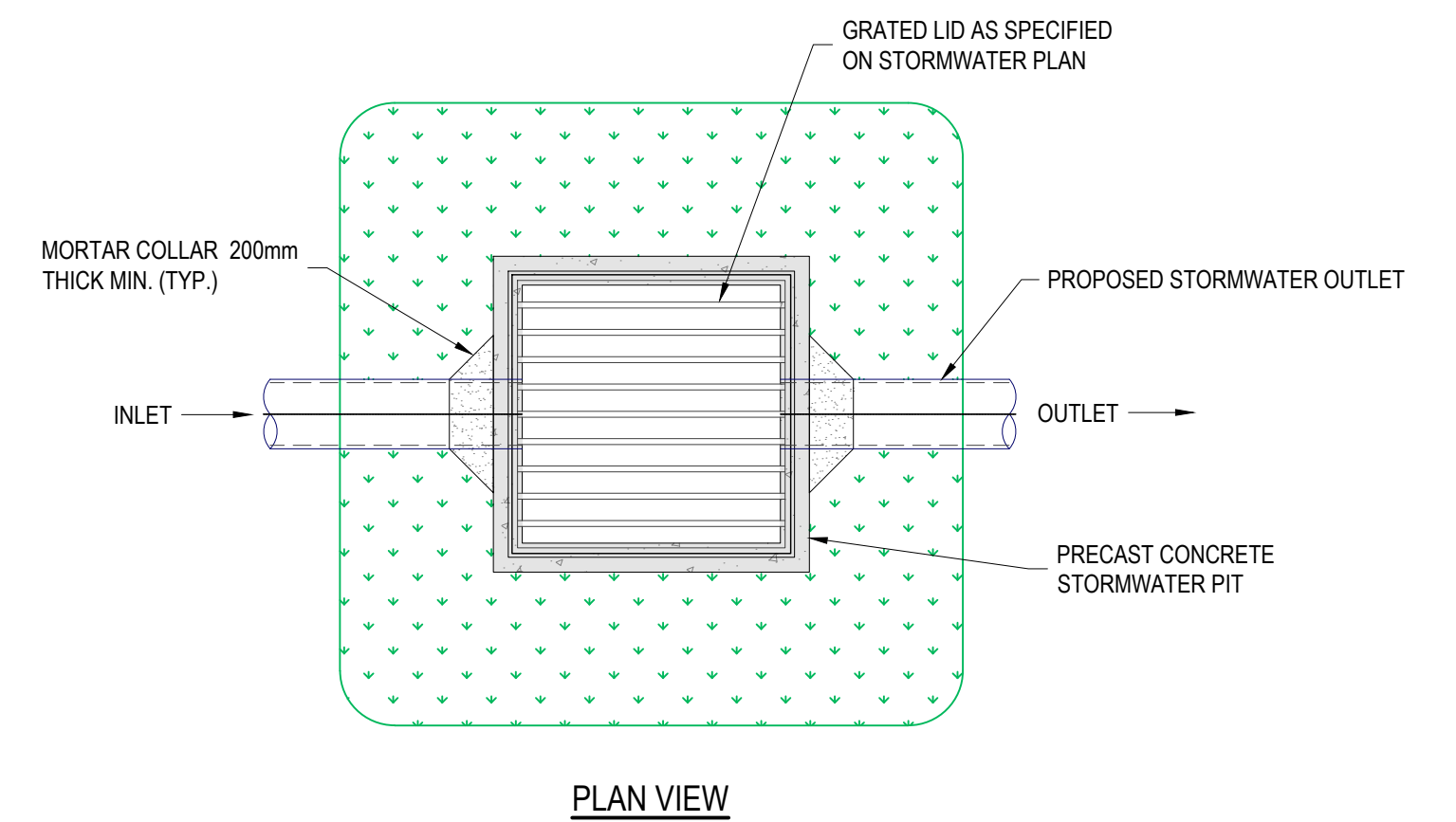
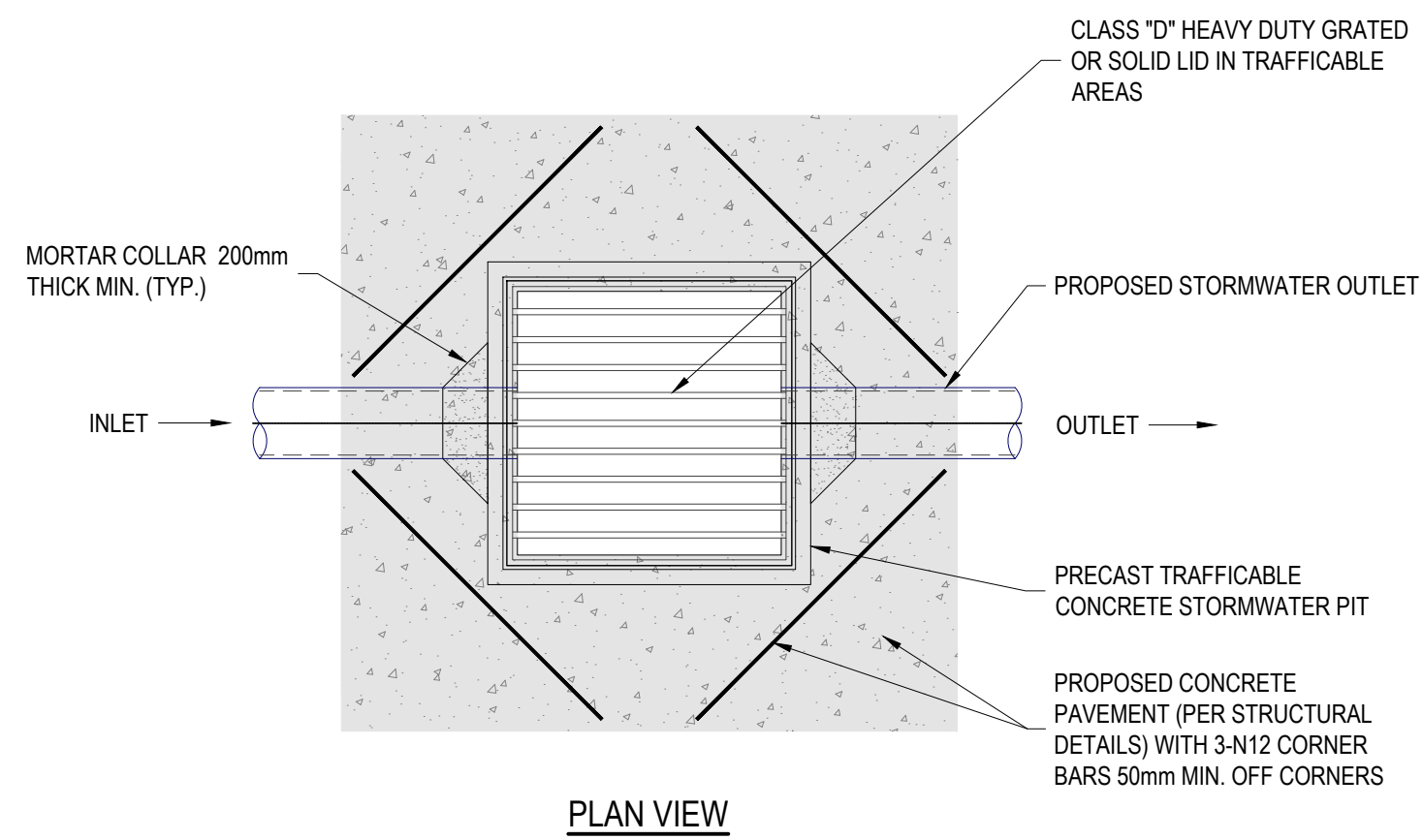
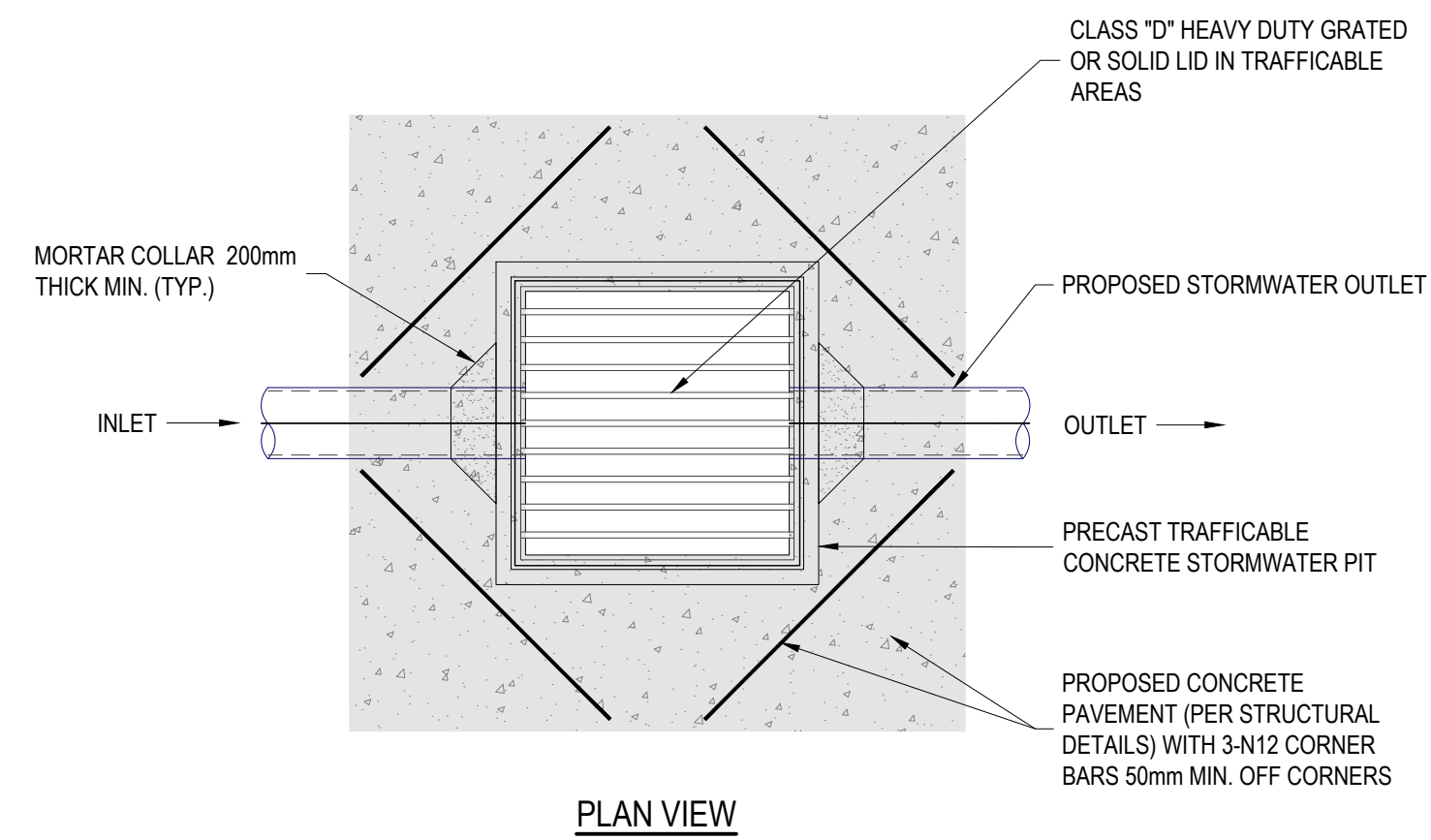
## STORMWATER MANAGEMENT PLAN

DRAWING STATUS	DA APPROVAL
	NOT TO BE USED FOR CONSTRUCTION

SCALE: 1:100					ORIG. SIZE A1	
DRAWN AK	DESIGNED AK	CHECKED KB	APPROVED KB	ENDORSED --	DATE 10.09.24	
PROJECT No. 24221		DRAWING No. C05.01			REV A	

PLOTTED BY:- KEN      DATE:- 10 September 2024 10 32 AM      FILENAME:- O:\PROJECTS\2024\24221 - 32 PALM ROAD, FORSTER\CAD\TITLE\24221 CIV DA-1A- 32 PALM ROAD, FORSTER

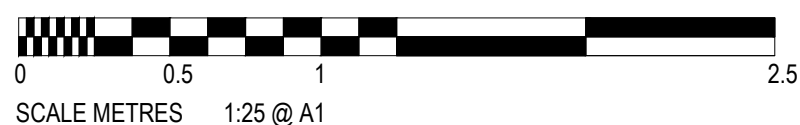




### TYPICAL AT-GRADE STORMWATER DRAINAGE PIT IN PAVED AREAS

### TYPICAL DEPRESSED STORMWATER DRAINAGE PIT IN PAVED AREAS

### TYPICAL DEPRESSED STORMWATER DRAINAGE PIT IN GRASSED AREAS



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PROJECT:

CIVIL WORKS for  
LOT 25, DP 22922  
32 PALM ROAD  
FORSTER NSW 2428

DRAWING TITLE:

## CIVIL SERVICES

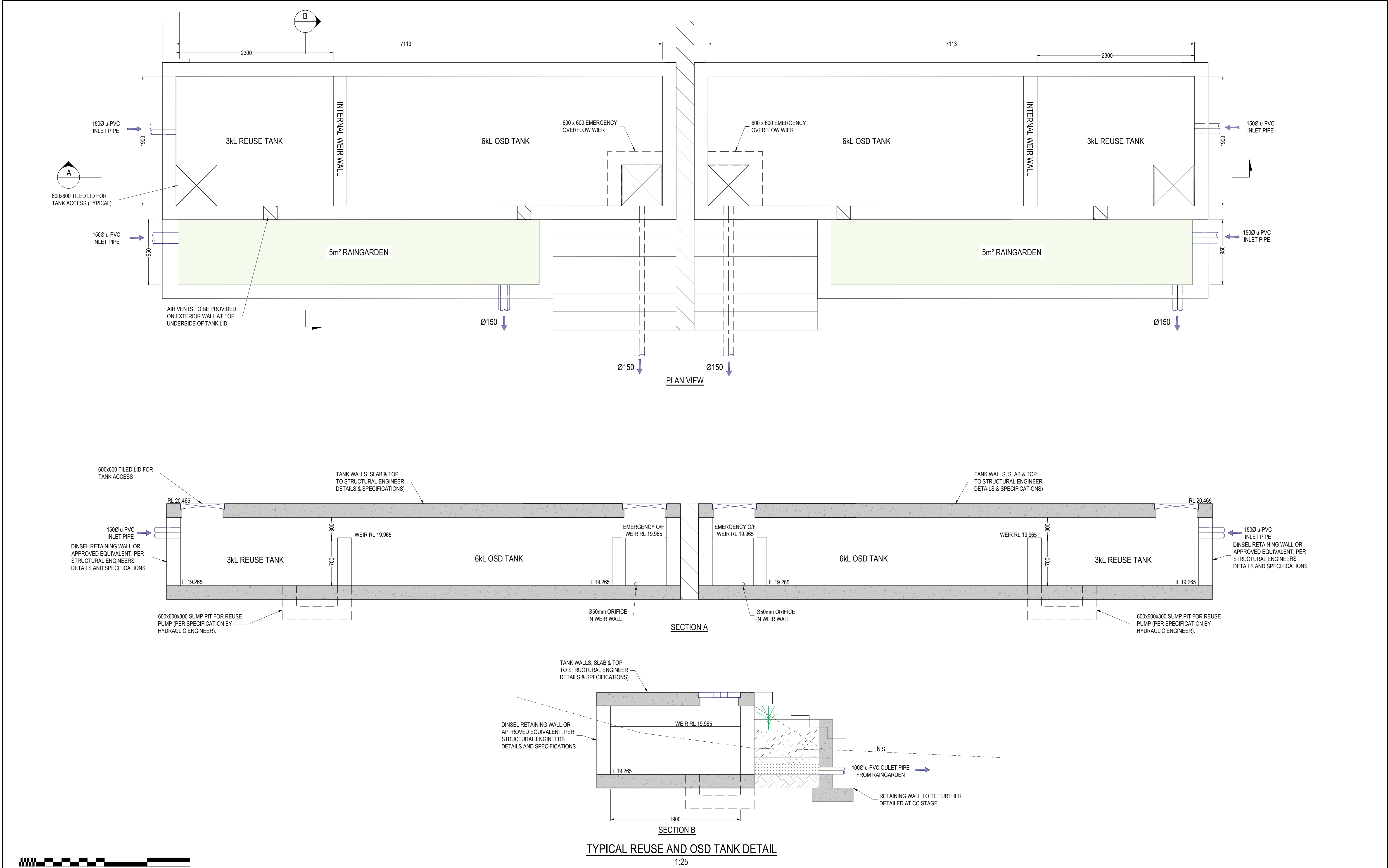
### STORMWATER PIT DETAILS

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PLOTTED BY:- KEN      DATE:- 10 September 2024 10 32 AM      FILENAME:- O:\PROJECTS\2024\24221 - 32 PALM ROAD, FORSTER\CAD\TITLE\24221 CIV DA-1A1- 32 PALM ROAD, FORSTER



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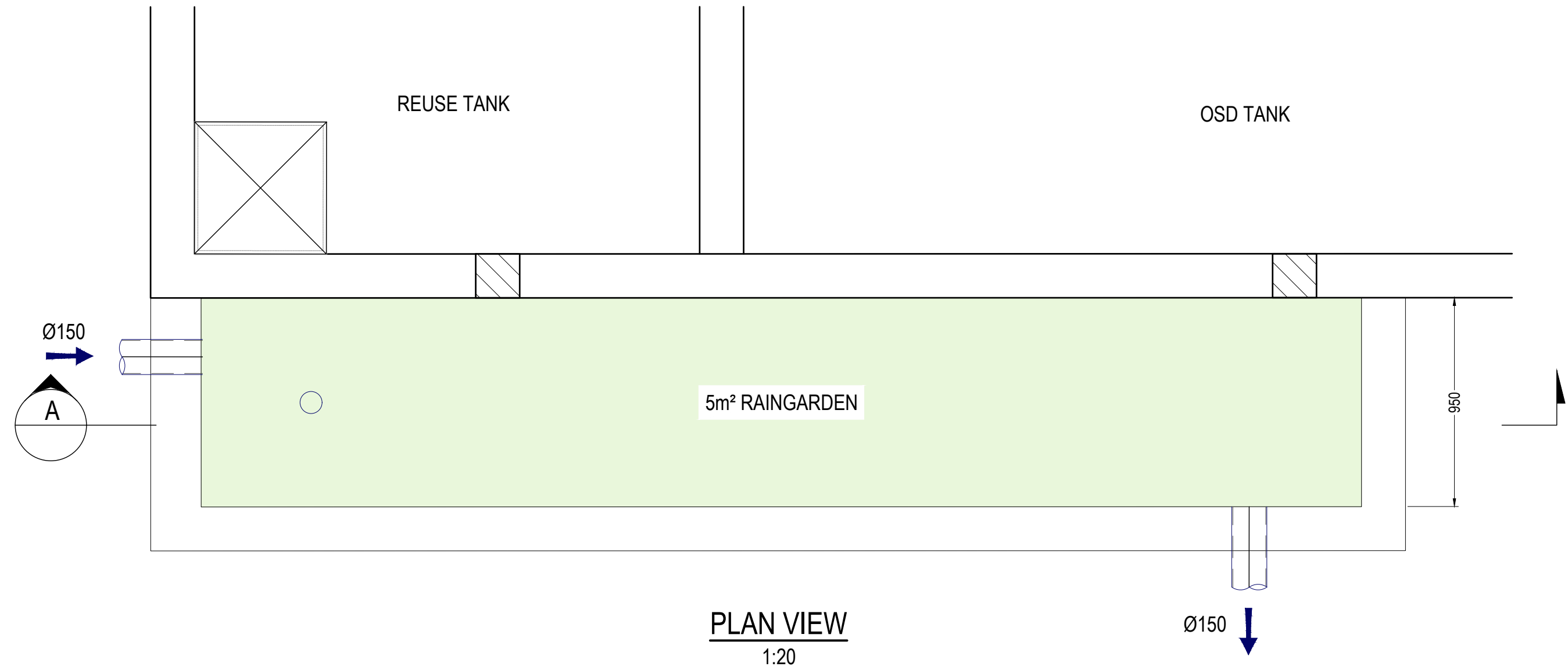
**CIVIL SERVICES**  
REUSE & ON-SITE DETENTION TANK  
SECTIONS AND DETAILS

DRAWING STATUS **DA APPROVAL**

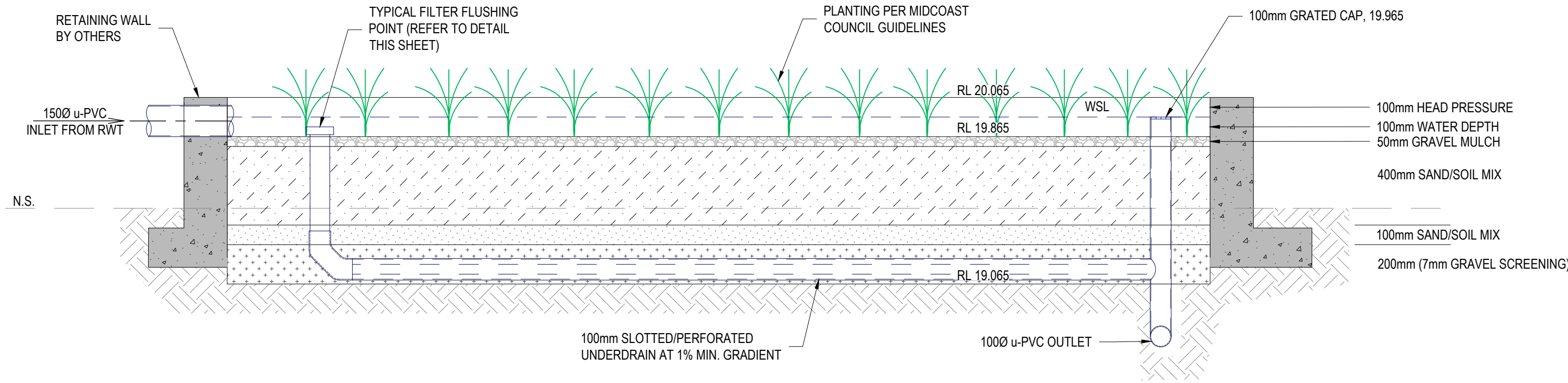
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DRAWN	DESIGNED	CHECKED	APPROVED	ENDORSED	DATE	
AK	AK	KB	KB	--	10.09.24	
PROJECT No.		DRAWING No.		REV		
24221		C06.02		A		





PLAN VIEW  
1:20



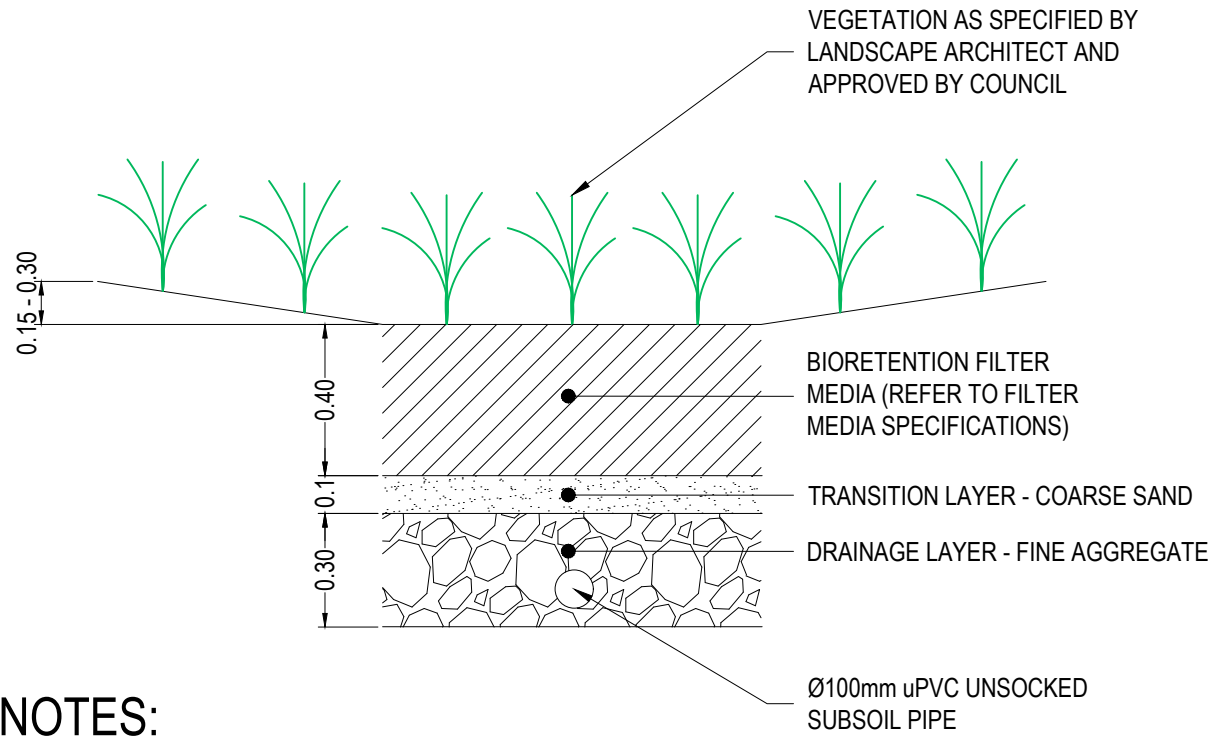
TYPICAL ABOVE-GROUND  
PLANTER BOX RAINGARDEN SECTION  
1:20

RAINGARDEN CONSTRUCTION NOTES:

1. A 150mm TOPSOIL TEMPORARY SURFACE TREATMENT AND GEOTEXTILE LAYER ARE TO BE INSTALLED WITHIN THE TOP 150mm OF THE FILTER MEDIA UNTIL SUCH TIME THAT THE UPSTREAM CATCHMENT DRAINING TO THE BASIN IS 80% DEVELOPED.
2. ONCE THE UPSTREAM CATCHMENT AREA DRAINING TO THE BASIN IS 80% DEVELOPED, THE TOP LAYER IS TO BE REMOVED BY PEELING BACK AND DISPOSING OF THE GEOTEXTILE LAYER, TOPSOIL AND TURF; AND REFILLING THE AREA WITH THE APPROPRIATE FILTER MEDIA, AND LANDSCAPING.
3. THE FILTER MEDIA SPECIFICATION AND GRADING ARE TO BE VERIFIED BY COUNCIL'S INSPECTOR PRIOR TO PLACEMENT. RELEVANT MATERIAL SPECIFICATION SHEETS ARE TO BE PROVIDED BY THE CONTRACTOR.
4. THE SUBSOIL DRAINAGE PIPES WITHIN THE BIORETENTION SYSTEM ARE TO BE SLOTTED 100mm uPVC CONSISTENT WITH AS/NZS 1254. JOINTS ARE TO BE SOLVENT CEMENT GLUED AND BENDS ARE TO BE 45° TO MINIMIZE BLOCKAGE.
5. FILTER MEDIA TO BE LIGHTLY COMPACTED USING A SINGLE PASS VIBRATING PLATE OR ROLLER (ETC. DRUM LAWN ROLLER). UNDER NO CIRCUMSTANCES SHOULD HEAVY COMPACTION OR MULTIPLE PASSES BE MADE.
6. FILTER MEDIA MUST BE INSTALLED IN TWO LIFTS UNLESS DEPTH OF MEDIA IS <500mm.
7. DURING CONSTRUCTION, THE TOP 100mm OF THE MEDIA IS TO BE AMELIORATED WITH APPROPRIATE ORGANIC MATTER, FERTILISER AND TRACE ELEMENTS TO AID PLANT ESTABLISHMENT AS PER THE TABLE BELOW:

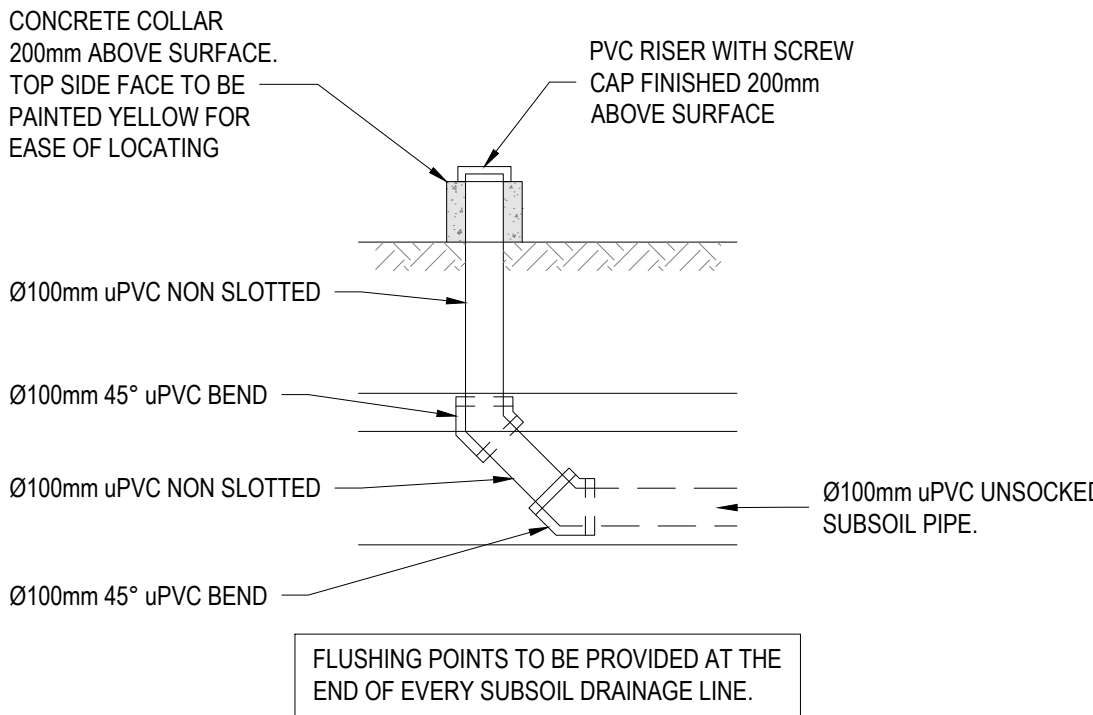
CONSTITUENT AND QUANTITY (kg/100m² OF FILTER AREA)	
GRANULATED POULTRY MANURE FINES	50
SUPERPHOSPHATE	2
MAGNESIUM SULPHATE	3
POTASSIUM SULPHATE	2
TRACE ELEMENT MIX	1
FERTILIZER NPK (16.4.14)	4
LIME	20

8. THE MEDIA IS TO BE PLANTED IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT REQUIREMENTS.



NOTES:

1. RAINGARDEN FILTER MEDIA: SPECIFICATION AND HYDRAULIC CONDUCTIVITY SHALL BE IN ACCORDANCE WITH THE FACILITY FOR ADVANCING WATER BIOFILTRATION (FAWB, 2009) "ADOPTION GUIDELINES FOR STORMWATER BIOFILTRATION SYSTEM".
2. THE FILTER MEDIA SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - pH BETWEEN 5.5 AND 7.5
  - ORTHIPHOSPHATE CONTENT = 50mg/kg
  - ORGANIC MATTER CONTENT 3 TO 5% w/w
  - TOTAL NITROGEN CONTENT = 800mg/kg
  - SATURATED HYDRAULIC CONDUCTIVITY = 180mm/hr
3. THE FILTER MEDIA SHALL BE WELL GRADED AND GENERALLY BE A LOAMY SAND AND BE FREE OF CONTAMINANTS SUCH AS RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND WEEDS AND SHOULD NOT BE HYDROPHOBIC.
4. THE COURSE SAND TRANSITION LAYER SHALL BE OF A CLEAN WELL GRADED SAND/COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES.
5. THE DRAINAGE LAYER SHALL BE OF A CLEAN FINE GRAVEL CONSISTING OF 5 TO 7mm WASHED SCREENINGS.
6. REFER TO COUNCIL'S LANDSCAPE DESIGN GUIDELINES FOR TOPSOIL, MULCH AND PLANTING SPECIFICATIONS.



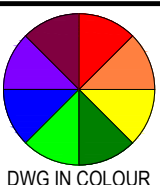
FILTER FLUSHING POINT DETAIL  
1:20

TYPICAL RAINGARDEN FILTER MEDIA DETAIL  
1:20



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DRAWING TITLE:

**CIVIL SERVICES**  
TYPICAL RAINGARDEN SECTION &  
DETAILS

DRAWING STATUS **DA APPROVAL**  
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1:20				A1	
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