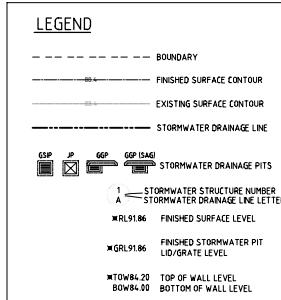


7 RENSHAW STREET, CRANE BROOK

CIVIL ENGINEERING WORKS FOR DEVELOPMENT APPLICATION

DRAWING INDEX:	
DRAWING No.	DRAWING TITLE
02216_100	COVER SHEET, DRAWING INDEX, GENERAL NOTES & LOCALITY SKETCH
02216_201	GENERAL ARRANGEMENT PLAN - SHEET 01
02216_202	GENERAL ARRANGEMENT PLAN - SHEET 02
02216_231	CUT / FILL PLAN
02216_601	CATCHMENT PLAN
02216_621	OSD TANK PLAN & DETAILS
02216_622	OSD TANK SECTIONS
02216_701	SEDIMENT & EROSION CONTROL - PLAN
02216_702	SEDIMENT & EROSION CONTROL - DETAILS



GENERAL NOTES:

G1. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENRITH COUNCIL'S CIVIL WORKS SPECIFICATION.
 G2. THE CONSTRUCTOR SHALL REVIEW, BE AWARE AND AT ALL TIMES COMPLY WITH THE SPECIFIC REQUIREMENTS FOR THIS DEVELOPMENT AS SET OUT IN PENRITH NOTICE OF DETERMINATION.
 G3. ANY CHANGES MADE BY THE CONSTRUCTOR TO ANY LEVEL, DIMENSION, LOCATION, POSITION, ALIGNMENT ETC. OF ANY OF THE WORKS SHOWN ON THE DRAWINGS WITHOUT THE WRITTEN CONSENT OF CRM CONSULTING ENGINEERS PTY, LTD. AND OR THE PRINCIPAL CERTIFYING AUTHORITY IS DONE SO AT THE CONSTRUCTORS OWN RISK.
 G4. THE CONSTRUCTOR SHALL ALLOW TO LIASE WITH AND PROVIDE SUFFICIENT NOTICE TO THE PRINCIPAL CERTIFYING AUTHORITY FOR ALL WORKS AS ALL WORKS ARE INSPECTED TO ENSURE CONFORMANCE CERTIFICATES TO BE ISSUED THEREAFTER.
 G5. DURING THE CONSTRUCTION PERIOD, THE CONSTRUCTOR SHALL LIASE WITH THE PRINCIPAL CERTIFYING AUTHORITY PRIOR TO ANY CONSTRUCTION WORK COMMENCING AND PREPARE AN INSPECTION AND TEST PLAN WITH A MUTUALLY AGREED WITNESS AND RECORD OF ALL CONSTRUCTION WORKS.
 G6. IF THE PRINCIPAL CERTIFYING AUTHORITY IS NOT PENRITH COUNCIL, THEN THE CONSTRUCTOR MUST CONTACT WORKS DIVISION TO ENHANCE THEIR INSPECTION OF ALL WORKS INCLUDING EROSION AND SEDIMENT CONTROL MEASURES WITHIN THE ROAD RESERVE AREA.
 G7. THE CONSTRUCTOR SHALL USE A SUITABLY QUALIFIED SURVEYOR TO SET OUT ALL WORKS. THE SURVEYOR SHALL ISSUE A CERTIFICATE TO THE PRINCIPAL CERTIFYING AUTHORITY CERTIFYING THAT THE WORKS HAVE BEEN SET OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS PRIOR TO THE WORKS BEING CONSTRUCTED.
 G8. ALL NEW WORKS SHALL MAKE A SMOOTH CONNECTION WITH ANY FORMATIONS, STREETS AND VEGETATION.
 G9. THE WORKS SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THERE IS MINIMUM DISTURBANCE TO EXISTING TREES AND VEGETATION.
 G10. ALL BOUNDARY LOCATIONS, DIMENSIONS, BEARINGS, AREAS, ETC. SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND ARE SUBJECT TO A FINAL SURVEY AND REVISION BASED ON THE FINAL PLAN OF SUBDIVISION WITH LAND AND PROPERTY INFORMATION NSW.

G11. NOT USED
 G12. NOT USED

STORMWATER NOTES:

1. STORMWATER DESIGN CRITERIA:
 MINOR STORM ARI: 20 YEARS
 MAJOR STORM ARI: 100 YEARS
 IFD DATA LOCATION: CRANE BROOK
 2. PIPES 300MM AND LARGER TO BE STEEL, REINFORCED CONCRETE PIPES CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS UND.
 3. PIPES DN900 AND SMALLER SHALL BE GRADE SH (SEWER GRADE) uPVC WITH RUBBER RING JOINTS.
 4. EQUIVALENT STRENGTH FIBRE REINFORCED CONCRETE PIPES MAY BE USED UP TO DN450.
 5. PIPES FOR SUB-SOIL DRAINS SHALL BE SLOTTED 100MM DIAMETER CLASS 1000 WRAPPED IN GEOPRAB UND, COMPLYING WITH THE REQUIREMENTS OF AS 2439.
 6. PRECAST PITS SHALL BE ALLOWED, AND THE INSTU BASE SHALL COMPLY WITH THE REQUIREMENT OF THE CONSTRUCTION CONTRACT.
 7. STORMWATER KNOB OUTLET TO BE INSTALLED ON THE LOWER SIDE OF EACH LOT.
 8. PROVIDE STEP TRAPS FOR PITS DEEPER THAN 12m.
 9. COMPRESSIVE STRENGTH FOR CAST IN-SITU PITS SHALL BE 25MPa UNLESS NOTED OTHERWISE.
 10. ALL PITS SHALL BE BENCHED AND FLOW STREAMLINED.
 11. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS 1214 OR AS 1650, AS APPROPRIATE.
 12. GEOPRAB FILTER SHALL BE PERMEABLE, NON-WOVEN FABRIC MANUFACTURED FROM A POLYMER SUCH AS POLYPROPYLENE OR POLYESTER OF MASS NOT LESS THAN 155g/m².
 13. THE MINIMUM TRENCH WIDTH SHALL BE AS FOLLOWS:
 CONCRETE AND FRC PIPES: EXTERNAL PIPE DIAMETER PLUS 400mm
 uPVC PIPE: EXTERNAL DIAMETER OF PIPE PLUS 200mm
 SUBSOIL PIPE: 250mm.
 14. ALL BOUNDARIES SHALL BE PLACED CENTRALLY WITHIN THE TRENCH WITH EQUAL CLEARANCE EACH SIDE.
 15. 90mm dia. SURFACE DRAINAGE PIPE 3m LONG WRAPPED IN FILTER SOCK TO BE PROVIDED IN PIPE TRENCHES UPSTREAM OF ALL PITS.
 16. PIPE BEDDING MATERIAL SHALL BE CLEAN COARSE RIVER SAND OR RECYCLED EQUIVALENT MATERIAL, WITH DEPTH AS FOLLOWS:
 CONCRETE AND FRC PIPES: 100MM (75MM IN ROCK)
 uPVC PIPE: 75MM (100MM IN ROCK)
 SUBSOIL PIPE: 50mm.
 17. ALL TRENCHES SHALL BE BACKFILLED WITH GRANULAR MATERIAL SUCH AS QUARRY FINES OR COARSE RIVER SAND TO A MINIMUM OF 50MM ABOVE THE PIPE. THE GRANULAR MATERIAL SHALL BE PLACED IN 150MM THICK MAXIMUM LAYERS AND COMPACTION TO ACHIEVE A DENSITY INDEX (DI) OF 70%. FREQUENCIES OF COMPACTION TESTS FOR TRENCHES SHALL BE 1 TEST PER 2 LAYERS PER 40 LINEAR METRES.
 18. BACKFILL THE REMAINDER OF THE TRENCH ABOVE THE SAND TO SUBGRADE LEVEL WITH TRENCH MATERIAL, PLATE AND COMPACT MATERIAL IN LAYERS NOT EXCEEDING 50MM THICKNESS. MATERIAL LOWER THAN 500MM BELOW SUBGRADE LEVEL SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD MAXIMUM DRY DENSITY. THE TOP 500MM BELOW PAVEMENT SUBGRADE LEVELS SHALL BE COMPACTED TO AT LEAST 100% STANDARD MAXIMUM DRY DENSITY.

NOT USED

21. UNLESS OTHERWISE DETAILED OR PERMITTED, THE MINIMUM GRADE OF ALL PIPE WORKS SHALL BE 10%.
 22. PRIOR TO ISSUE OF PRACTICAL COMPLETION THE CONTRACTOR SHALL CARRY OUT CCTV SURVEY OF ALL PIPES AND SUBMIT DVD AND WRITTEN REPORT THAT ALL PIPES ARE FREE OF DEFECTS LAID TO THE SPECIFICATION.

23. NOT USED
 24. NOT USED
 25. NOT USED
 26. NOT USED

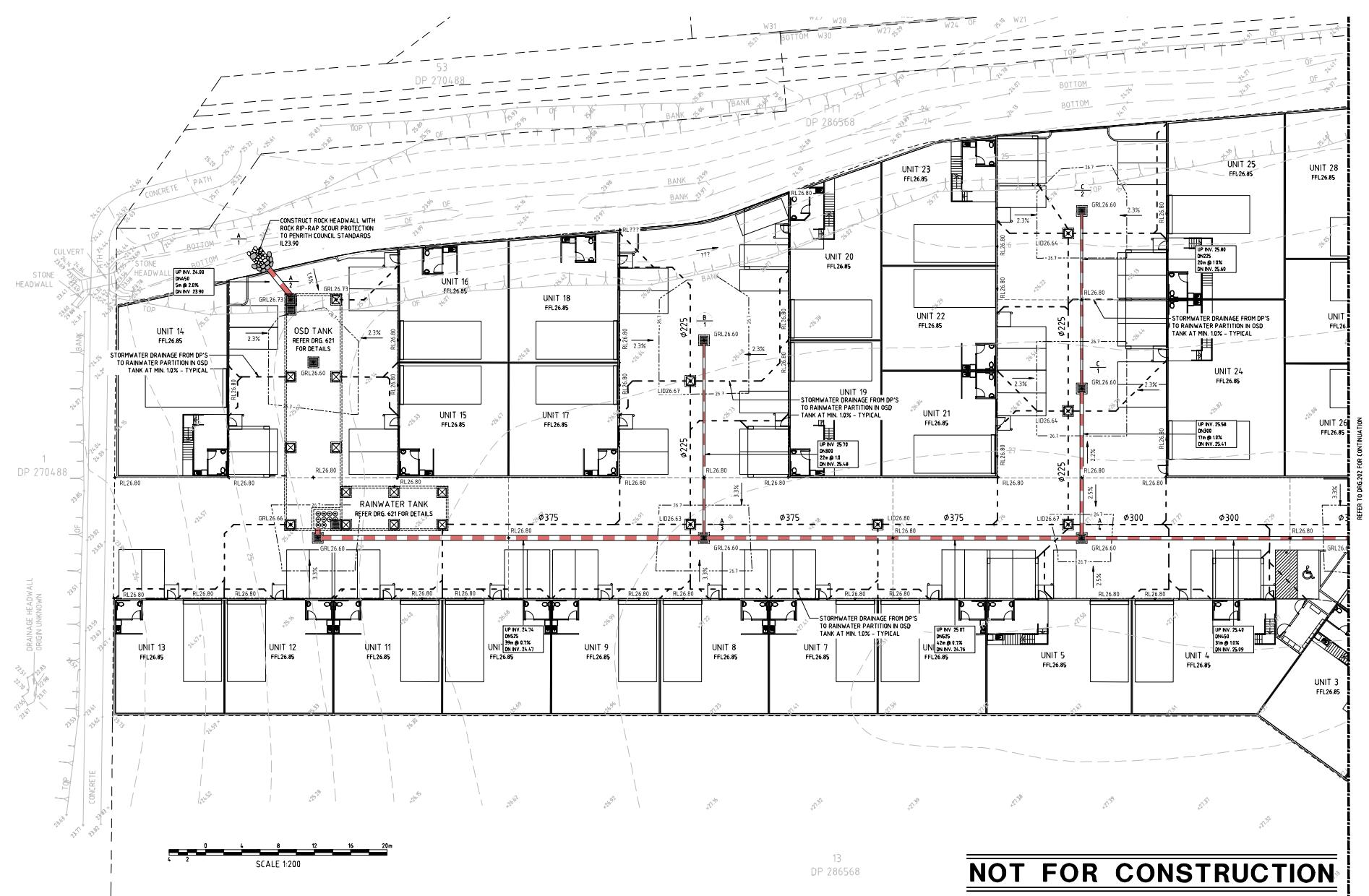
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PROJECT VERIFIER'S SIGNATURE	DATE	SUITE 26 11-13 BRICKHOLLOW AVE NORTH PENRITH NSW 2151 PHONE: (02) 9680 3100 (02) 9634 6999 ABN 21 118 134 240	ENGINEER	P.O.	PENRITH		
02 A.M. 08/04/20	A.M. ISSUE FOR DA APPROVAL	VERIFIER	A.M.	SCALE @ A1	N/A		COVER SHEET, DRAWING INDEX & LOCALITY SKETCH
01 T.T. 25/03/20	A.M. ISSUE FOR REVIEW	PHONE:	(02) 9680 3100 (02) 9634 6999				
REV. DES.	DATE	VER.	DESCRIPTION				STATUS DEVELOPMENT APPLICATION DRAWING NO. 02216_100 REVISION 02



LOCALITY SKETCH
NOT TO SCALE

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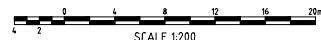
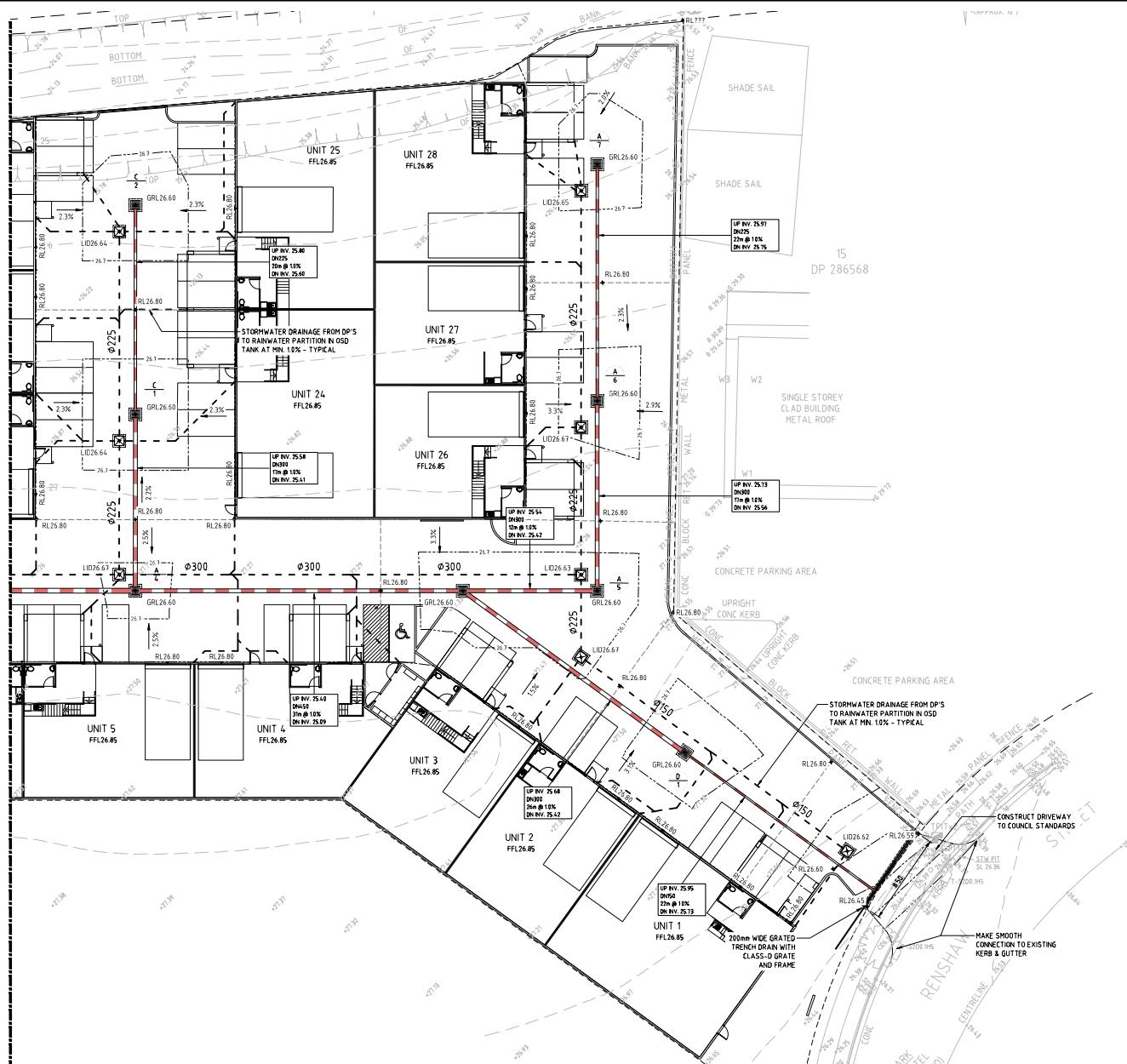


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02	A.M.	08/04/20	A.M.	ISSUE FOR DA APPROVAL	PROJECT VERIFIER'S SIGNATURE	DATE	ENGINEER	P.O.	PENRITH		GENERAL ARRANGEMENT PLAN - SHEET 01
01	T.T.	25/03/20	A.M.	ISSUE FOR REVIEW			VERIFIER	A.M.	SCALE @ A1	1200	
REV.	DES.	DATE	VER.	DESCRIPTION			PHONE:	(02) 9680 3100	FAX:	(02) 9634 6999	ABN 21 118 134 240
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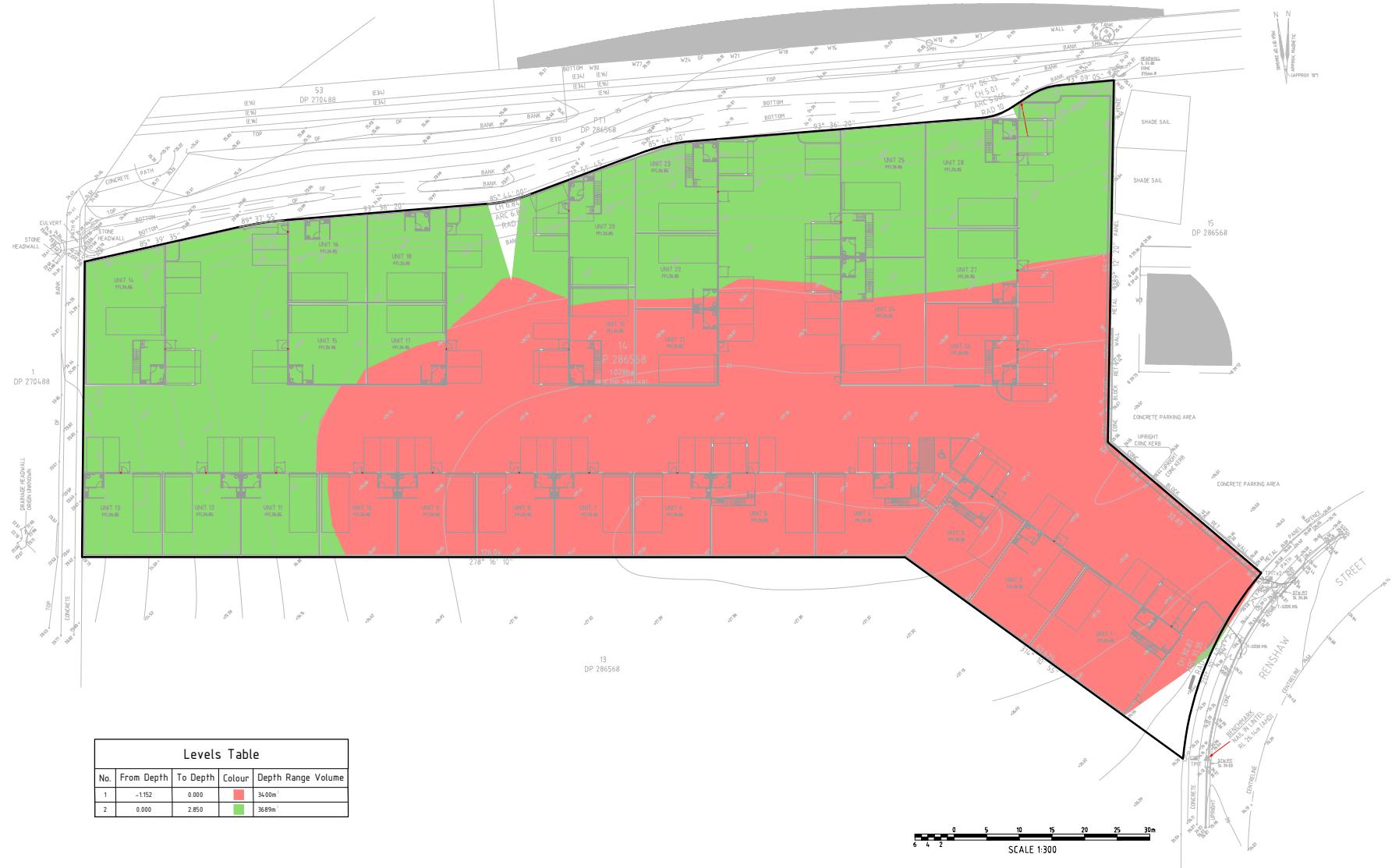
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REFER TO DRG.2011 FOR CONTINUATION



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02	A.M.	08/04/20	A.M.
ISSUE FOR DA APPROVAL			
01	T.T.	25/03/20	A.M.
ISSUE FOR REVIEW			
REV.	DES.	DATE	VER. DESCRIPTION
 CAM CONSULTING ENGINEERS CIVIL AND HYDRAULIC ENGINEERING, LANDSCAPE AND PROJECT MANAGEMENT SUITE 26 11 - 13 BURROWHOLLOW AVE NORTHWOOD NSW 2153 PHONE: (02) 9630 3100 (02) 9634 6899 FAX: (02) 9634 6899 ABN 21 118 34 240			
DESIGNER	T.T.	DATE	DECEMBER 2019
ENGINEER	P.O.	LEA	PENRITH
VERPER	A.M.	SCALE @ A1	1:200
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GENERAL ARRANGEMENT PLAN - SHEET 02			
STATUS	DEVELOPMENT APPLICATION	DRAWING No.	02216_202
		REVISION	02

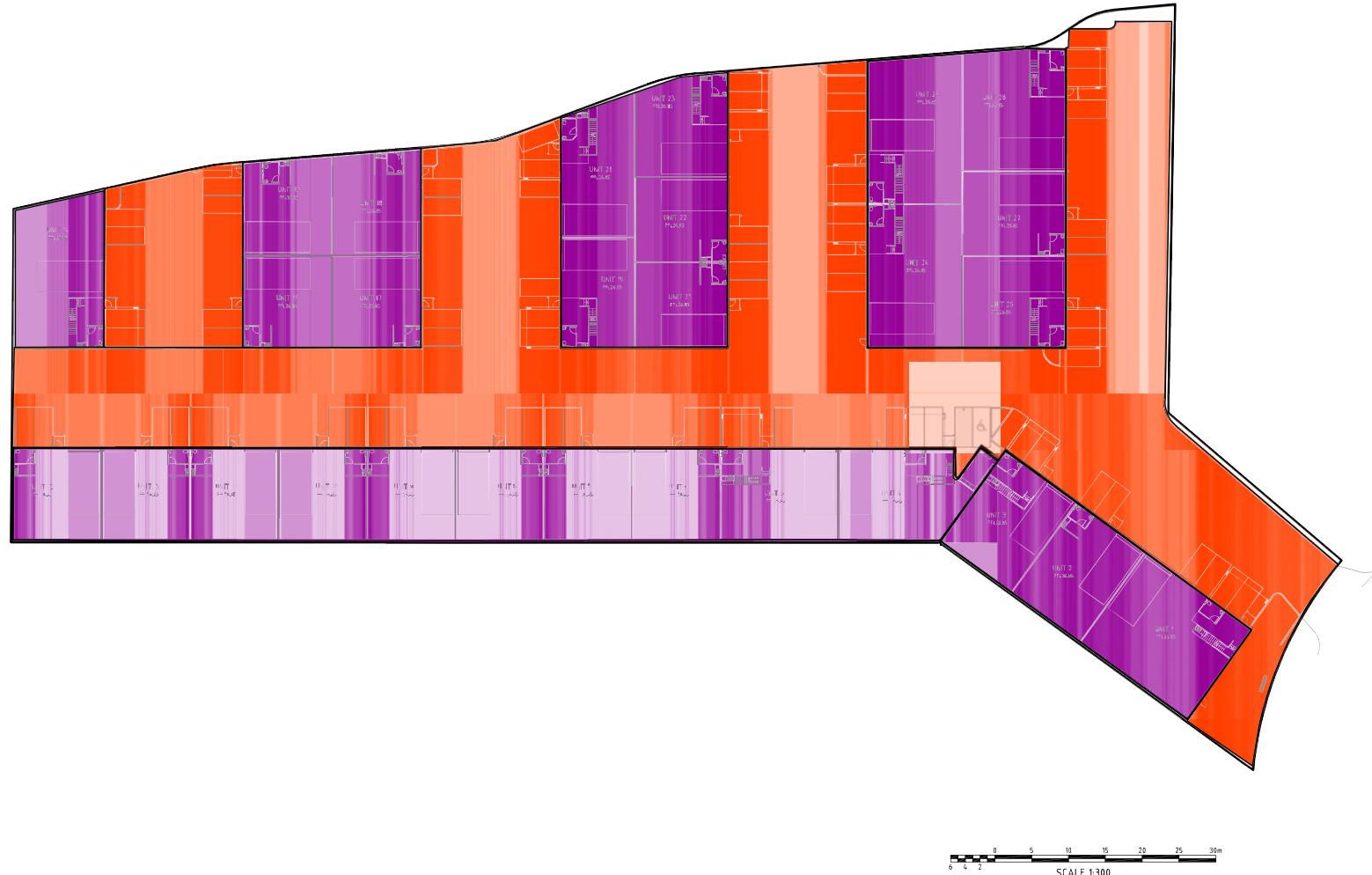
NOT FOR CONSTRUCTION



			THIS DRAWING IS NOT TO BE USED FOR TENDER/CONSTRUCTION UNLESS ENDORSED BELOW	CLIENT	CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT SUITE 26 11-13 BROOKHOLLOW AVE NORWICH NSW 2151 PHONE: (02) 9680 3100 FAX: (02) 9634 6989 ABN 21 118 134 240	DESIGNER T.T. ENGINEER P.O. VERPER A.M.	DATE DECEMBER 2019 PENRITH SCALE @ A1 1:300	7 RENSHAW STREET, CRANEBOOK BULK-EARTHWORKS PLAN
02	A.H.	08/04/20	A.M.	ISSUE FOR DA APPROVAL				
01	T.T.	25/03/20	A.M.	ISSUE FOR REVIEW				
REV.	DES.	DATE	VER.	DESCRIPTION				STATUS DEVELOPMENT APPLICATION DRAWING NO. 02216_231 REVISION 02

NOT FOR CONSTRUCTION

CATCHMENT LEGEND			
No.	Catchment Type	Colour	Area
1	Roof Area	Light Orange	5079m ²
2	Other Impervious Area	Purple	5166m ²
Total Catchment Area			10,245m ²



			THIS DRAWING IS NOT TO BE USED FOR TENDER/CONSTRUCTION UNLESS ENDORSED BELOW	CLIENT	CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT SUITE 29 17 BROOKHOLLOW AVE NORWEST NSW 2153 PHONE: (02) 9680 3100 FAX: (02) 9624 6989 ABN 23 118 134 240	DESIGNER T.T.	DATE DECEMBER 2019	7 RENSHAW STREET, CRANE BROOK
02	A.M.	08/04/20	A.M.	ISSUE FOR DA APPROVAL	PROJECT VERIFIER'S SIGNATURE	DATE		
01	T.T.	25/03/20	A.M.	ISSUE FOR REVIEW				
REV.	DES.	DATE	VER.	DESCRIPTION				CATCHMENT PLAN

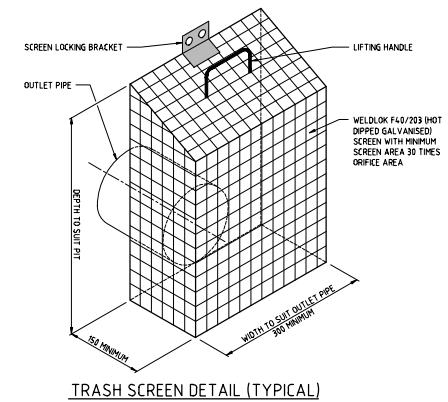
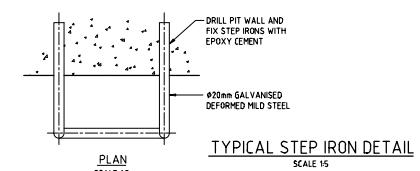
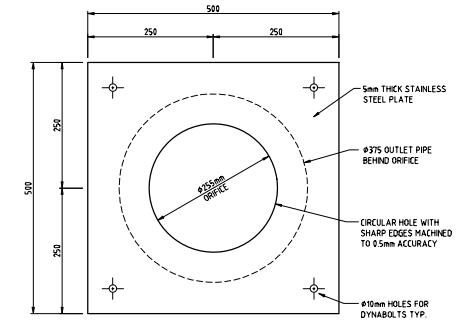
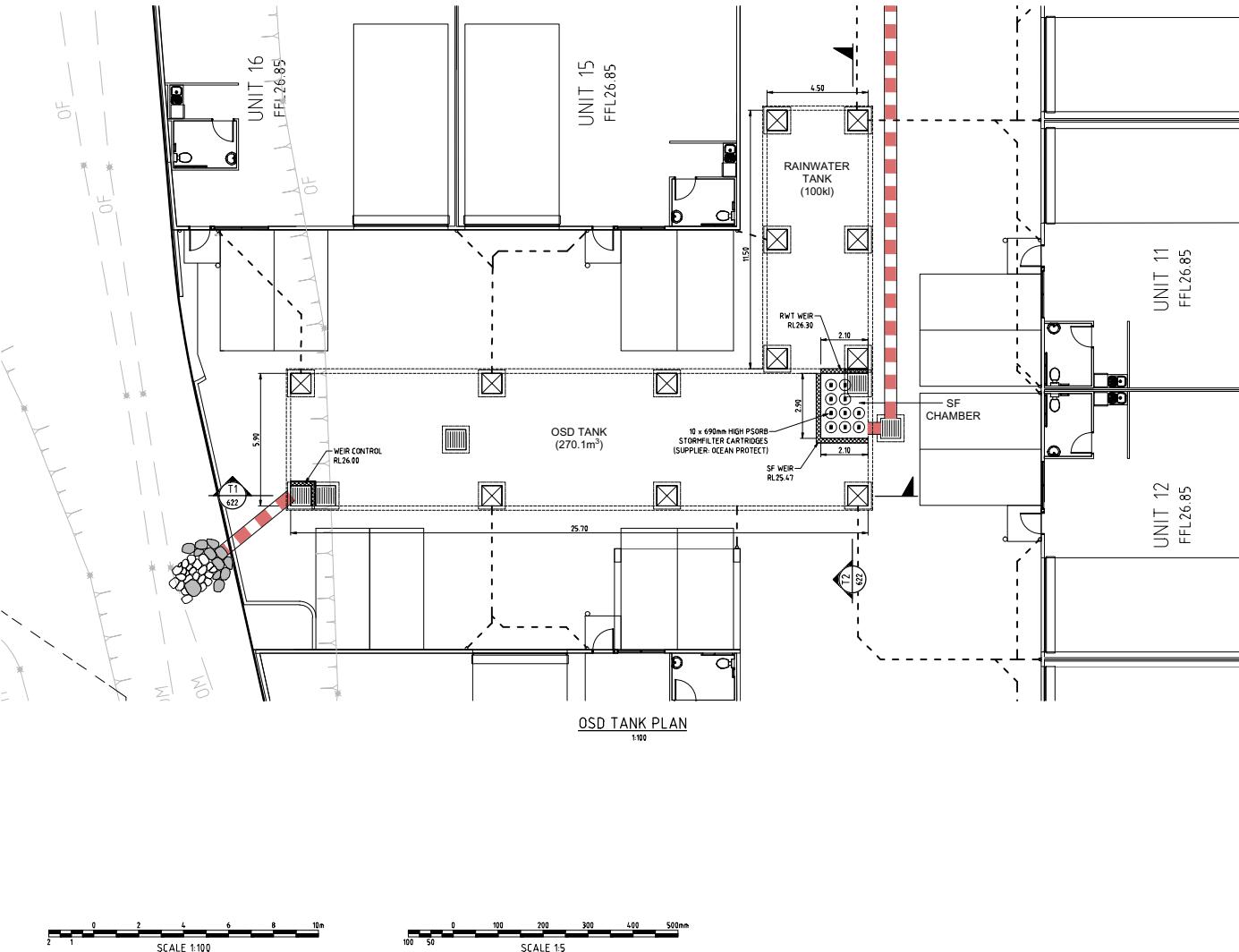


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ENGINEERS**

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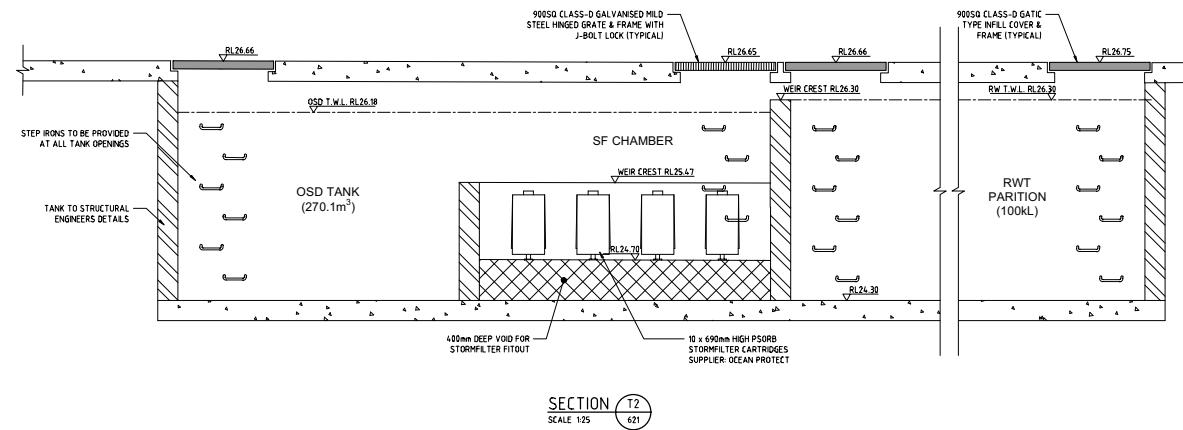
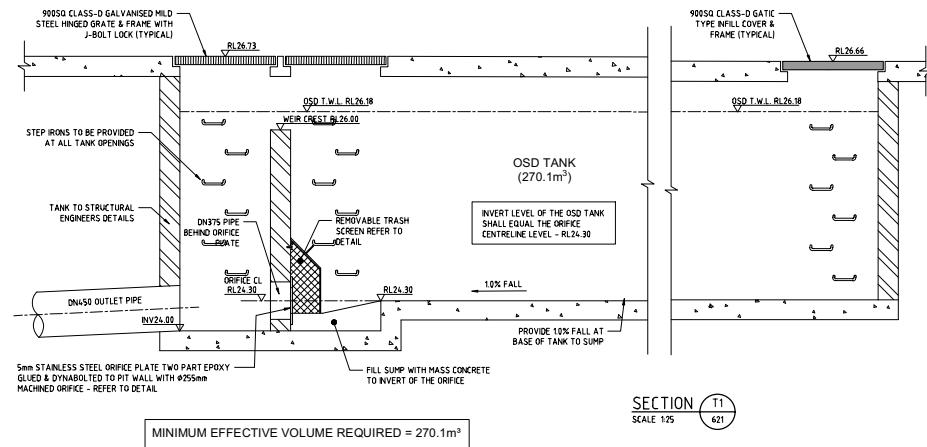
REV.	DES.	DATE	VER.	DESCRIPTION	PROJECT VERIFIER'S SIGNATURE	DATE	CLIENT	CIVIL AND HYDRAULIC ENGINEERING DESIGN AND PROJECT MANAGEMENT	DESIGNER	T.T.	DATE	DECEMBER 2019	7 RENSHAW STREET, CRANE BROOK	
								SUITE 26 11-13 BROOKHOLLOW AVE NORWICH NSW 2151 PHONE: (02) 9680 3100 FAX: (02) 9634 6989 ABN 21 118 134 240	ENGINEER	P.O.	LSA	PENRITH		



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STATUS DEVELOPMENT APPLICATION DRAWING NO. 02216_621 REVISION 02

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CLIENT



CIVIL AND HYDRAULIC
ENGINEERING DESIGN AND
PROJECT MANAGEMENT
SUITE 26
11-13 BROOKHOLLOW AVE
NORWICH NSW 2151
PHONE: (02) 9680 3100
FAX: (02) 9634 6989
ABN 21 118 134 240

DESIGNER

T.T.

DATE

DECEMBER 2019

7 RENSHAW STREET, CRANE BROOK

ENGINEER

LGA

PENRITH

VERIFIER

A.M.

AS NOTED

SCALE

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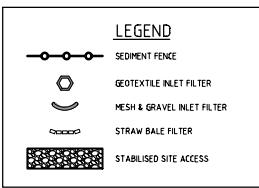
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OSD TANK SECTIONS

STATUS DEVELOPMENT APPLICATION DRAWING NO. 02216_622 REVISION 02

NOT FOR CONSTRUCTION



ENVIRONMENTAL CONTROL NOTES:

EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL. THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. NO CONSTRUCTION WORKS ARE TO COMMENCE ON SITE UNTIL ALL EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE AND HAVE BEEN INSPECTED AND APPROVED BY THE COUNCIL ENGINEER AND/OR SUPERINTENDENT.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REGULARLY INSPECTED, IN PARTICULAR AFTER STORMS, AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE THE MEASURES CORRECT AND EFFICIENT FUNCTION THROUGHOUT THE DURATION OF THE WORKS, UNTIL SUCH TIME AS THE COUNCIL ENGINEER AND/OR SUPERINTENDENT AUTHORISES THE REMOVAL OF SUCH MEASURES.
4. ALL STOCKPILES SHALL BE CLEAR OF ALL TREES AND DRAINAGE LINES INCLUDING (ERLAND FLOW PATHS) AND EROSION CONTROL EROSION.
5. IN THE CASE OF THE TEMPORARY CONSTRUCTION EXIT, THE CONTRACTOR SHALL UNDERTAKE WEEKLY SURFACE CLEANING BY DRAZ BROS OR EQUIVALENT, TO REMOVE ALL BUILD UP OF FOREIGN MATERIAL TO THE SATISFACTION OF THE SUPERINTENDENT.

TRAFFIC CONTROLS

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF TRAFFIC INCLUDING VEHICLES AND PEDESTRIANS TO THE SATISFACTION OF COUNCIL, THE RELEVANT STATE AUTHORITIES AND THE SUPERINTENDENT.
2. THE CONTRACTOR IS TO PREPARE A TRAFFIC MANAGEMENT PLAN TO THE REQUIREMENTS OF THE RMS - TRAFFIC CONTROL AT WORK SITE, AS T742 - AUSTRALIAN STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND LOCAL COUNCIL STANDARDS.

OTHER ENVIRONMENTAL CONTROLS

1. OTHER ENVIRONMENTAL CONTROLS LIKE NOISE, DUST, VIBRATION, FLORA & FAUNA, FIRE, HAZMAT, AND CONTAMINATIONS MUST BE CONTROLLED TO THE REQUIREMENT OF THE COUNCIL AND THE RELEVANT STATE AUTHORITIES.

