

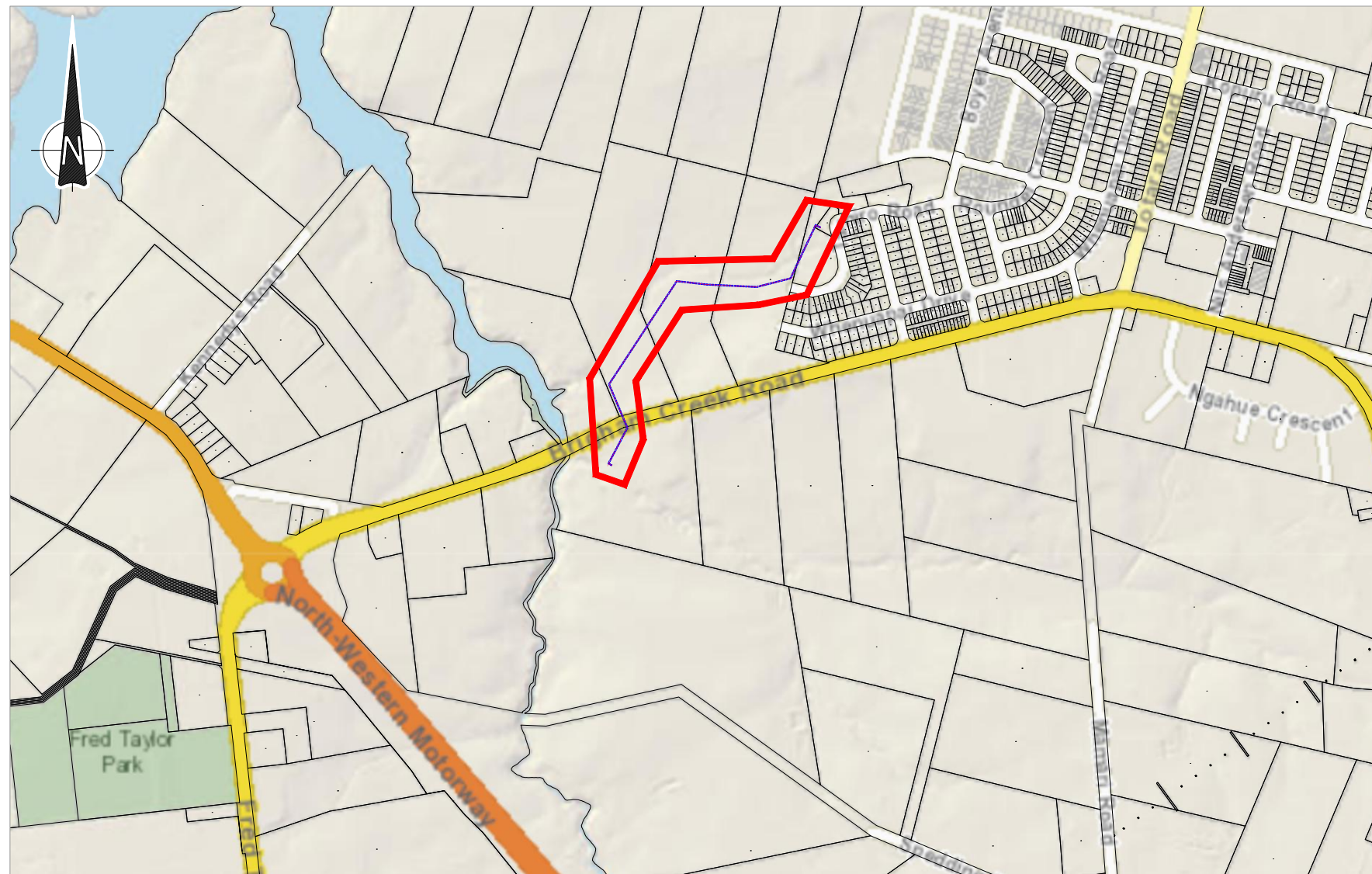
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY PIPE

DRAWING No		DRAWING TITLE	REVISION
R0017910	001	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN – DRAWING INDEX	1
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DETAILED DESIGN
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					DES. APPROVED	SW	12-21				ORIGINAL SCALE	A3	CONTRACT No.	6484-6934
					DRAWN	DX	12-21					N.T.S.		
					DWG. APPROVED	DJ	12-21				REF No.	12508391 3-AWD32		
					WSL DESIGN MGMT.						DWG No.	R0017910.001		
1	12-21	ISSUED FOR DETAILED DESIGN		D.X.	WSL PROJ. LEAD								ISSUE	1
ISSUE	DATE	AMENDMENT		BY	APPD.		BY	DATE						

WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY PIPE



LOCALITY PLAN
NOT TO SCALE

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ISSUE	DATE	AMENDMENT	BY	APPD.			BY	DATE						

THE SCOPE OF EARTHWORK SPECIFICATION RELATES ONLY TO EXCAVATION/BACKFILL WITHIN OPEN TRENCH WORKS, SURROUNDING MANHOLES, AND THE BACKFILL TO ORIGINAL CONDITIONS/DESIGN REQUIRED PROFILE.

1. SITE VERIFICATION

THE CONTRACTOR SHALL BE DEEMED TO HAVE REVIEWED THE GEOTECHNICAL FACTUAL REPORT AND HAVE READ AND UNDERSTOOD THE INFERRED GROUND CONDITIONS.

2. SITE MANAGEMENT PLAN

THE CONTRACTOR SHALL PREPARE AN EARTHWORKS MANAGEMENT PLAN PRIOR TO THE COMMENCEMENT OF WORKS AND INCLUDING EROSION AND SEDIMENT CONTROL AND DUST CONTROL. THE MANAGEMENT PLAN SHOULD MAKE REFERENCE TO LOCAL AUTHORITY REQUIREMENTS. THIS PLAN SHALL BE SUBMITTED TO THE LOCAL AUTHORITY AND APPROVED PRIOR TO COMMENCING ANY EARTHWORKS.

3. PRIOR TO COMMENCEMENT OF CONSTRUCTION

EXISTING SERVICES

BEFORE COMMENCEMENT OF EXCAVATION, THE CONTRACTOR SHALL ASCERTAIN THE LOCATION OF THE EXISTING SERVICES WITHIN THE WORK AREAS OR AREAS LIKELY TO BE AFFECTED BY THE WORK AND DRAINAGE FOR THEIR CONNECTION AND DIVERSION.

INSTRUCTIONS OR INFORMATION GIVEN TO THE CONTRACTOR BY THE ENGINEER OR SHOWN ON THE DRAWINGS, SHALL IN NO WAY RELEASE HIM FROM LIABILITIES UNDER THIS CLAUSE.

WHEN TRENCHING AND EXCAVATING, CARE IS TO BE TAKEN NOT TO DAMAGE EXISTING DRAINS, WATER MAINS, CABLES, ETC. IF IN SERVICE. SHOULD ANY DAMAGE OCCUR, THE ENGINEER AND LOCAL AUTHORITY SHALL BE NOTIFIED AT ONCE AND THE DAMAGE MADE GOOD.

SURFACE DRAINAGE

TEMPORARY SURFACE DRAINAGE SHALL BE CONSTRUCTED BY THE CONTRACTOR TO MAINTAIN THE NATURAL DRAINAGE AND LIMIT THE INTRODUCTION OF WATER TO THE EARTHWORKS.

4. FILL MATERIAL DEFINITION

GRANULAR FILL

DEFINED AS A WELL GRADED, DURABLE, GRANULAR AGGREGATE WHICH CONTAINS SPECIFIED FINES AND WHICH MEETS SPECIFIED GRADING, STRENGTH, AND DURABILITY CRITERIA AS DEFINED BELOW:

- GRADINGS FOR GAP65, GAP40 AND GAP20 ARE TO CONFORM TO THOSE SPECIFIED IN THE SUMMARY TABLE1
- FREE DRAINING GRANULAR MATERIAL SHALL BE IMPORTED CRUSHED AND GRADED CLEAN MATERIAL, PREFERABLY, WELL GRADED OR UNIFORM, WITH 100% PASSING A 10MM SIEVE, AND 15% PASSING A 0.5MM SIEVE OR OTHER SIMILAR APPROVED.
- IF THE MATERIAL AND GRADING IS NOT SPECIFIED ELSEWHERE, HARDFILL MATERIAL SHALL BE GAP65 MATERIAL OR FILL APPROVED BY THE ENGINEER.

THE CONTRACTOR IS TO SUPPLY THE FOLLOWING DATA RELATED TO THE PROPOSED BACKFILL MATERIALS FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION:

- ADDRESS OF THE SOURCE QUARRY;
- THE GEOLOGICAL DESCRIPTION OF THE PARENT MATERIAL;
- THE CONTRACTOR SHALL PROVIDE A PARTICLE SIZE DISTRIBUTION TEST, COMPACTION TEST AND BROKEN FACE PERCENTAGE TEST RESULTS FROM A REPRESENTATIVE GRAVEL FILL SAMPLE TESTED IN AN INDEPENDENT AND ACCREDITED LABORATORY.
- RESULTS OF COMPACTION TESTS AS SPECIFIED IN NZS 4402:1988 – TEST 4.1.1 OR TEST 4.1.3 ARE TO BE CARRIED OUT ON THE PROPOSED BACKFILL AND THE RESULTS PRESENTED TO THE ENGINEER FOR AGREEMENT PRIOR TO CONSTRUCTION. THESE ARE TO CLEARLY SHOW THE OPTIMUM MOISTURE CONTENT AND MAXIMUM DENSITY ACHIEVED.

BASED ON THE ABOVE DETAILS, THE CONTRACTOR IS TO AGREE THE METHOD OF COMPACTION WITH THE DESIGNER PRIOR TO COMMENCEMENT OF CONSTRUCTION ON SITE.

COHESIVE FILL

DEFINED AS MATERIAL COMPRISED PREDOMINANTLY CLAY AND SILT WITH NON–GRANULAR COMPOSITE.

CLEAN FILL

CLEANFILL MATERIAL IS MATERIAL THAT DOES NOT UNDERGO ANY PHYSICAL, CHEMICAL, OR BIOLOGICAL TRANSFORMATIONS THAT WILL CAUSE ADVERSE ENVIRONMENTAL EFFECTS OR HEALTH EFFECTS ONCE IT IS PLACED IN THE GROUND. CLEANFILL MATERIAL HAS NO POTENTIALLY HAZARDOUS CONTENT AND MUST NOT BE CONTAMINATED BY OR MIXED WITH ANY OTHER NON–CLEANFILL MATERIAL.

UNSUITABLE

DEFINED AS MATERIAL NOT CONSIDERED ACCEPTABLE FOR THE USE AS ENGINEERING FILL WITHIN THE BACKFILL OF THE TRENCH EXCAVATIONS AND/OR ACCESS PLATFORM. THIS WILL COMPRISE:

- o OVERLY ORGANIC / ORGANIC MATERIAL / TOPSOIL
- o NON–ENGINEERED FILL THAT CANNOT BE RECONDITIONED
- o OVERLY SATURATED MATERIAL THAT CANNOT BE RECONDITIONED
- o REFUGE/RUBBISH

SITE WON MATERIAL

MATERIAL THAT IS IN–SITU, AND EXCAVATED FOR CONTRACT WORKS. THIS MATERIAL CAN BE CONDITIONED (DRIED, DISCED

AND BLENDED) AND BE PLACED AS PART OF SITE EARTHWORK TO MEET COMPACTION REQUIREMENTS.

ACCEPTABLE MATERIAL

ACCEPTABLE FILL IS TO BE USED FOR EARTHWORKS WHICH COMPRISES THE FOLLOWING MATERIALS LISTED BELOW FOR VARIOUS AREAS. IN ADDITION, MINIMUM STRENGTHS ALSO REQUIRED TO BE ACHIEVED, AS DEFINED IN SECTIONS 8 & 9 OF THIS SPECIFICATION.

a) TRENCH BACKFILL

- o CLEAN FILL (COHESIVE), WON 100% FROM SITE AND REUSED/RECONDITIONED
- o IMPORTED FILL (COHESIVE), 100% OFFSITE, AND USED
- o MIXED/CONDITIONED FILL (COHESIVE), COMPRISING BOTH LOCALLY WON AND IMPORTED (SECTION 7 FOR CONDITIONING NOTES).

b) MANHOLES

CLEAN IMPORTED GRANULAR FILL, GAP65 OR EQUIVALENT (FOR BULK BACKFILLING OF MANHOLE TRENCH EXCAVATIONS ONLY) OR SAND

5. EXCAVATION – PIPE TRENCH AND MANHOLE

GENERAL REQUIREMENTS

- a) THE BOTTOM OF THE EXCAVATIONS SHALL BE FORMED ON SUITABLE NATURAL MATERIAL AS AGREED BY THE CONTRACTOR AND ENGINEER, AND BE SUITABLY SHORED IF NEEDED TO ALLOW HORIZONTAL PLACEMENT OF FILL. THE ENGINEER MAY REQUIRE ADDITIONAL EXCAVATION TO REMOVE ANY POCKETS OF SOFT SOIL, UNSUITABLE MATERIAL, OR LOOSE ROCK.
- b) TRENCH EXCAVATION SHOULD BE STAGED. MAXIMUM EXCAVATION OF TRENCH EXCAVATION SHOULD BE NO MORE THAN 10 M IN LENGTH EACH STAGE.
- c) EXCAVATION FOR THE PARTICULAR SECTION OF OPEN TRENCH WORK SHALL NOT COMMENCE UNTIL THE CORRESPONDING ADJACENT SECTION OF IN–GROUND RETAINING WALL HAS BEEN CONSTRUCTED AND A MINIMUM OF 7 DAYS HAS LAPSED SINCE THE CONCRETE HAS BEEN POURED
- d) THE EXCAVATIONS SHALL BE KEPT FREE OF WATER.
- e) NO WORK SHALL BE CARRIED OUT UPON PREPARED EXCAVATION SURFACES UNTIL THE ENGINEER HAS APPROVED THE PREPARED SURFACES.
- f) TEMPORARY AND PERMANENT CUT SLOPES SHALL BE ADEQUATELY PROTECTED.
- g) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EFFECT OR DAMAGE THE TEMPORARY WORKS MAY HAVE UPON OR WHICH MAY BE CAUSED TO THE WORKS, ANY EXISTING STRUCTURES OR ANY SURROUNDING PROPERTY AND FOR ANY EFFECT OR DAMAGE THAT MAY BE CAUSED BY THE EXCAVATION OR DISPOSAL OF EXCAVATED MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LANDSLIPS IN THE EXCAVATION AND ANY INJURIOUS EFFECTS CAUSED THEREBY AND SHALL MAKE GOOD ALL SUCH DAMAGE WHETHER TO THE WORKS, THE ADJOINING PROPERTY OR ADJACENT STRUCTURES TO THE SATISFACTION OF THE ENGINEER AND / OR LOCAL REGULATORY AUTHORITY.
- h) THE CONTRACTOR SHALL EMPLOY ONLY THOSE PLANT AND WORKING METHODS WHICH ARE SUITED TO THE MATERIALS TO BE HANDLED AND TRAVERSED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE NATURE OF THE SUITABLE MATERIAL SO THAT WHEN IT IS PLACED AND COMPACTED IT REMAINS ACCEPTABLE.

EXCAVATION IN SOIL, NON ENGINEERED FILL AND ROCK

THE CONTRACTOR SHALL ACCOUNT FOR ALL MATERIALS ENCOUNTERED, THAT COULD REASONABLY BE ANTICIPATED FROM THE GEOTECHNICAL INFORMATION PROVIDED. THIS SHALL INCLUDE VARIABLE MATERIAL IN THE NON–ENGINEERED FILL.

EXCAVATION SUPPORT

THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT WHERE NECESSARY. AS A MINIMUM, IT IS EXPECTED THAT ANY PROPOSED TRENCH IS PROTECTED BY TRENCH SHIELDS DURING EXCAVATION AND ALL PROPOSED MANHOLE / LAUNCH–RETRIEVAL SHAFTS BE SUPPORTED BE ADEQUATE STEEL RING CAISSONS. .

ALTERNATIVE SUPPORT MAY BE PROVIDED BY THE CONTRACTORS ENGINEER, SUBJECT TO PRIOR APPROVAL / VERIFICATION FROM THE DESIGN ENGINEER.

6. FILL CONDITIONING

FOR COHESIVE FILL, IN THE EVENT THAT SITE WON MATERIAL OR IMPORTED MATERIAL IS OVERLY SATURATED, REQUIRES BLENDING, OR DOES NOT DISPLAY SUFFICIENT PLASTICITY FOR ACHIEVING PROPER COMPACTION, THE CONTRACTOR MAY CONSIDER CONDITIONING OF THE MATERIAL PRIOR TO PLACEMENT AS ACCEPTABLE FILL. CONDITIONING INCLUDING SPECIFIC METHODOLOGIES SHOULD BE DISCUSSED AND AGREED BY THE CONTRACTOR AND THE DESIGNER AS REQUIRED, AT THE TIME.

7. PLACEMENT AND COMPACTION OF FILL – TRENCH AND MANHOLE EXCAVATION

- a. THE GENERAL PRINCIPLE TO BE ACHIEVED IN BACKFILLING OF THE TRENCH IS TO MAINTAIN AS BEST AS PRACTICAL THE ORIGINAL PERMEABILITY OF THE SOILS BELOW THE SLOPE. APPROVED LOCALLY WON MATERIAL, IMPORTED OR BLENDED MATERIAL MAY BE USED.
- b. PIPE BEDDING REQUIREMENTS SHOULD BE FOLLOWED AS PER PIPE DESIGN AND AS SPECIFIED ON DRAWING R0017910.010.

FOR TRENCH BACKFILL WORKS:

- a) MATERIAL TO COMPRISE COHESIVE, PREFERABLY LOCALLY WON, IMPORTED OR BLENDED (AT THE DIGRESSION OF THE DESIGN ENGINEER).
- b) RECONDITIONING OF LOCALLY WON MATERIAL OK, PROVIDED SITE PLATEAU TESTING AND/OR LABORATORY TESTING OF SAMPLE CAN BE PERFORMED AND PROVIDED BY CONTRACTOR

- c) PLACEMENT OF FILL IN LOOSE LAYERS NOT EXCEEDING 200 MM
- d) COMPACTION VIA THE USE OF MACHINE PLANT, SUFFICIENTLY WEIGHTED AND WITH A STUDDED SURFACE, I.E. A PAD–FOOT OR EQUIVALENT. FLAT PLATES NOT TO BE USED.
- e) CARE TO BE TAKEN DURING THE FIRST 1–2 LIFTS ABOVE THE PIPE BEDDING MATERIAL TO AVOID DAMAGE TO THE UNDERLYING PIPE
- f) COMPACTION OF THE TRENCH BACKFILL SHOULD ACHIEVE THE MINIMUM STRENGTH VALUES (TO BE VERIFIED ON SITE): COMPACTION REQUIREMENTS AS SET OUT BELOW:
 - o 5% AIR VOIDS
 - o TESTING AT NOMINAL LOCATIONS ALONG TRENCH, AND MINIMUM ONE TEST APPROXIMATELY HALF WAY UP, AND ONE AT FINISH LEVEL.

FOR MANHOLE BACKFILL:

- a) USE OF APPROPRIATELY SIZED GRANULAR FILL ACCEPTABLE
- b) TO BE COMPACTED IN LOOSE LAYERS NOT EXCEED TWICE THE AVERAGE PARTICLE DIAMETER
- c) USE OF VIBRATION COMPACTING EQUIPMENT
- d) ALTERNATIVELY THE USE OF SAND BACKFILL MAY BE CONSIDERED, IF COMPACTION OF GRANULAR FILL DEEMED IMPRACTICAL WITH THE SITE CONSTRAINTS

8. COMPACTION TESTING

COMPACTION REQUIREMENTS

ONE "SET" OF NUCLEAR DENSOMETER TESTS (WHERE ONE "SET" = 3 INDIVIDUAL TESTS) IS TO BE CARRIED OUT FOR EACH 30M³ OF FILL PLACED. 95% OF THE TESTS CARRIED OUT MUST MEET THE REQUIRED DENSITY SPECIFICATION."

WHERE FIELD TESTS INDICATE THAT THE SPECIFIED STANDARD OF COMPACTION HAS NOT BEEN ACHIEVED, CORRECTIVE ACTION SHALL BE TAKEN TO BRING THE FILL TO THE REQUIRED STANDARD AND AS REQUIRED BY THE ENGINEER. THIS MAY REQUIRE EXCAVATION AND REMOVAL OF THE FAILED FILL.

COMPACTION STANDARDS

AT ANY TIME EITHER PRIOR TO OR DURING THE COURSE OF CONSTRUCTION, THE ENGINEER MAY DIRECT MODIFICATIONS TO THE FOLLOWING COMPACTION CRITERIA, WITH THE OBJECT OF ENSURING THAT THE COMPACTION CRITERIA FOR THE PARTICULAR MATERIALS AND CONDITIONS BEING ENCOUNTERED OR LIKELY TO BE ENCOUNTERED ARE ACHIEVED.

9. FILL CONTROL AND TEST METHODS

GENERAL

NUCLEAR DENSOMETER TESTS WILL BE USED TO DETERMINE THE CLASSIFICATION AND COMPACTION STANDARDS OF FILL MATERIALS. APPROXIMATE TEST METHODS, SUCH AS A HAND SHEAR VANE, MAY BE EMPLOYED TO OBTAIN RAPID INDICATIVE RESULTS, BUT APPROXIMATE METHODS SHALL NOT BE USED FOR ACCEPTANCE PURPOSES WHERE THE ADEQUACY OF MATERIALS, PROCESSING OR WORKMANSHIP IS IN DOUBT OR THE AMOUNT BY WHICH THE TEST RESULT FAILS WITHIN THE CONFIDENCE LIMITS OF THE APPROXIMATE TEST RESULT. NUCLEAR DENSOMETER SHOULD BE COMPLETED IN ACCORDANCE WITH TEST METHOD NZS4407 TEST 4.2.1 AND BE CALIBRATED IN ACCORDANCE WITH TEST 4.2.4 OF NZS4407: 1991 AT A FREQUENCY NOT EXCEEDING 2 YEARS IN AN IANZ ACCREDITED LABORATORY.

PRIOR TO PLACEMENT OF FILL, CONTRACTOR IS TO OBTAIN A SITE SPECIFIC BULK HEAVY COMPACTION TEST FOR EACH REPRESENTATIVE FILL MATERIAL PROPOSED TO BE USED. A MINIMUM OF 1 TEST PER MATERIAL IS REQUIRED. THE TESTING SHALL BE CARRIED OUT BY A IANZ VERIFIED LABORATORY. THE RESULTS SHALL BE PROVIDED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO COMPACTION COMMENCING.

TABLE 1: GRADING OF MATERIAL								
GAP 65	PERCENTAGE PASSING		GAP40	PERCENTAGE PASSING		GAP20	PERCENTAGE PASSING	
APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT	APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT	APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT
65	100	100	37.5	100	100	19	100	100
37.5	80	90	19	61	80	13.2	80	95
19	50	70	9.5	38	57	9.5	64	76
9.5	30	55	4.75	23	43	4.75	37	48
4.75	20	40	2.36	10	33	2.36	26	36
2.36	15	30	1.18	7	25	1.18	18	28
1.18	10	22	0.6	2	19	0.6	12	22
0.6	6	18	0.3	0	14	0.3	6	14
0.3	4	14	0.15	0	10	0.15	2	7
0.15	2	10	0.075	0	7	0.075	0	3
0.075	0	7						

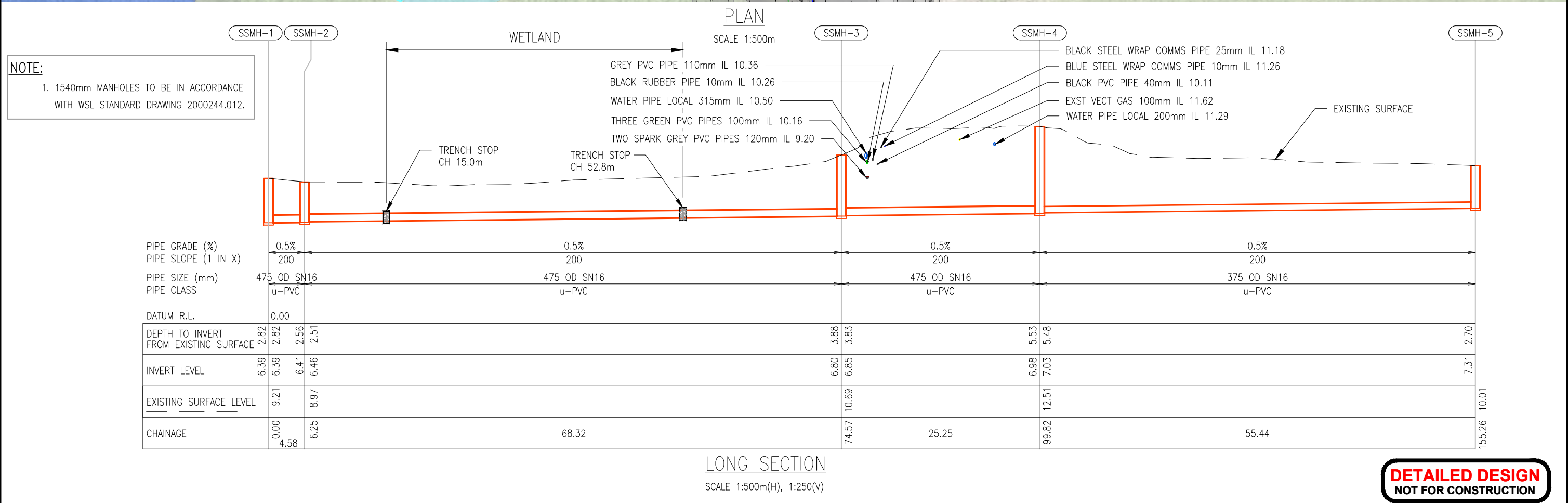
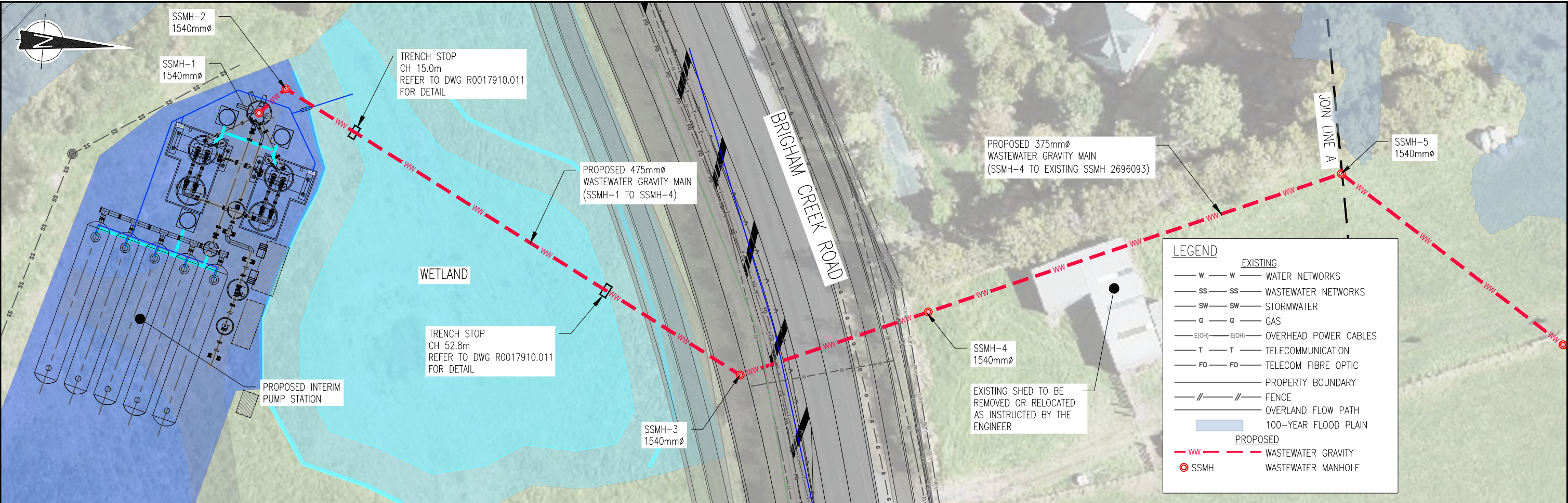
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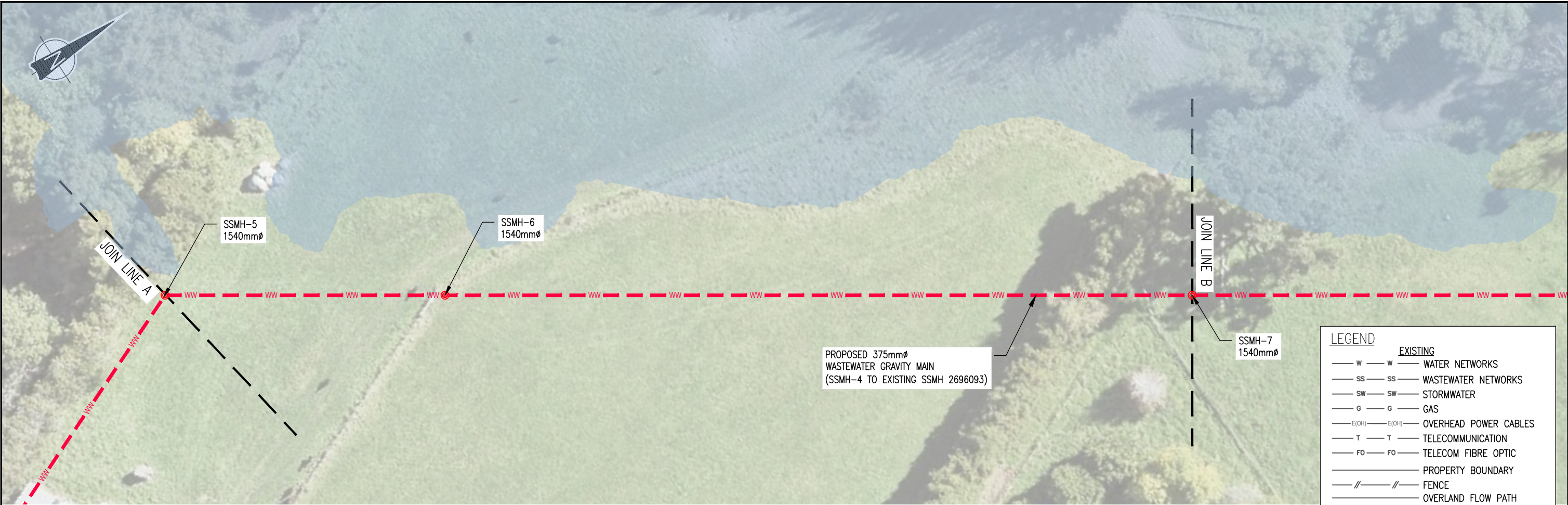
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2	8–21	RE–ISSUED FOR PRELIMINARY DESIGN	J.C.		WSL PROJ. LEAD			
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WHENUAPAI–REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS – GRAVITY MAIN – GENERAL NOTES



CAD FILE	R0017910.003	DATE	10–12–21
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484–6934
REF No.	12508391 3–AWD32		
DWG No.	R0017910.003	ISSUE	3





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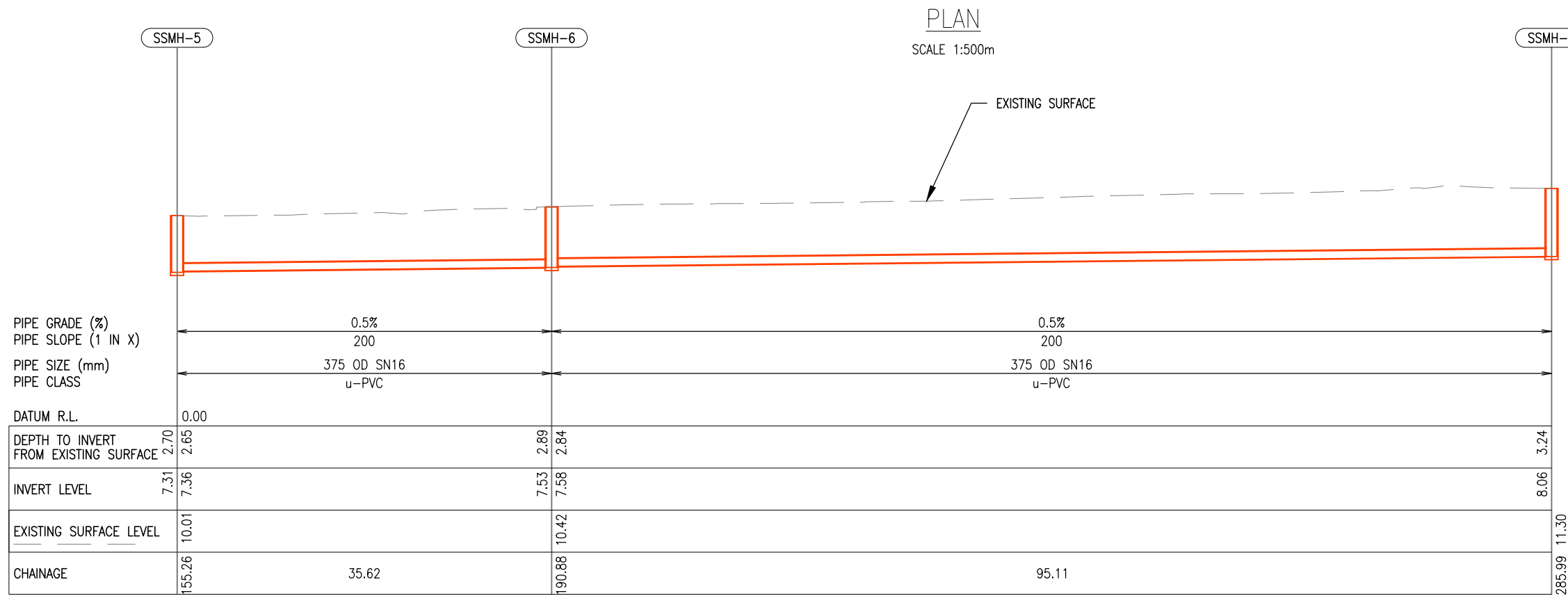
- W — W — WATER NETWORKS
- SS — SS — WASTEWATER NETWORKS
- SW — SW — STORMWATER
- G — G — GAS
- E(OH) — E(OH) — OVERHEAD POWER CABLES
- T — T — TELECOMMUNICATION
- FO — FO — TELECOM FIBRE OPTIC
- — — — — PROPERTY BOUNDARY
- // — // — FENCE
- — — — — OVERLAND FLOW PATH
- 100-YEAR FLOOD PLAIN

PROPOSED

- WW — WASTEWATER GRAVITY
- SSMH — WASTEWATER MANHOLE

NOTE:

1. 1540MM MANHOLES TO BE IN ACCORDANCE WITH WSL STANDARD DRAWING 2000244.012.



LONG SECTION
SCALE 1:500m(H), 1:250(V)

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3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	DESIGNED	PH	12-21		WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION - SHEET 2 OF 5			CAD FILE	R0017910.002	DATE	10-12-21	
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LEGEND

EXISTING

W

W

WATER NETWORKS

SS

SS

WASTEWATER NETWORKS

SW

SW

STORMWATER

G

G

GAS

E(OH)

E(OH)

OVERHEAD POWER CABLES

T

T

TELECOMMUNICATION

FO

FO

TELECOM FIBRE OPTIC

PROPERTY BOUNDARY

//

//

FENCE

OVERLAND FLOW PATH

100-YEAR FLOOD PLAIN

PROPOSED

WW

WW

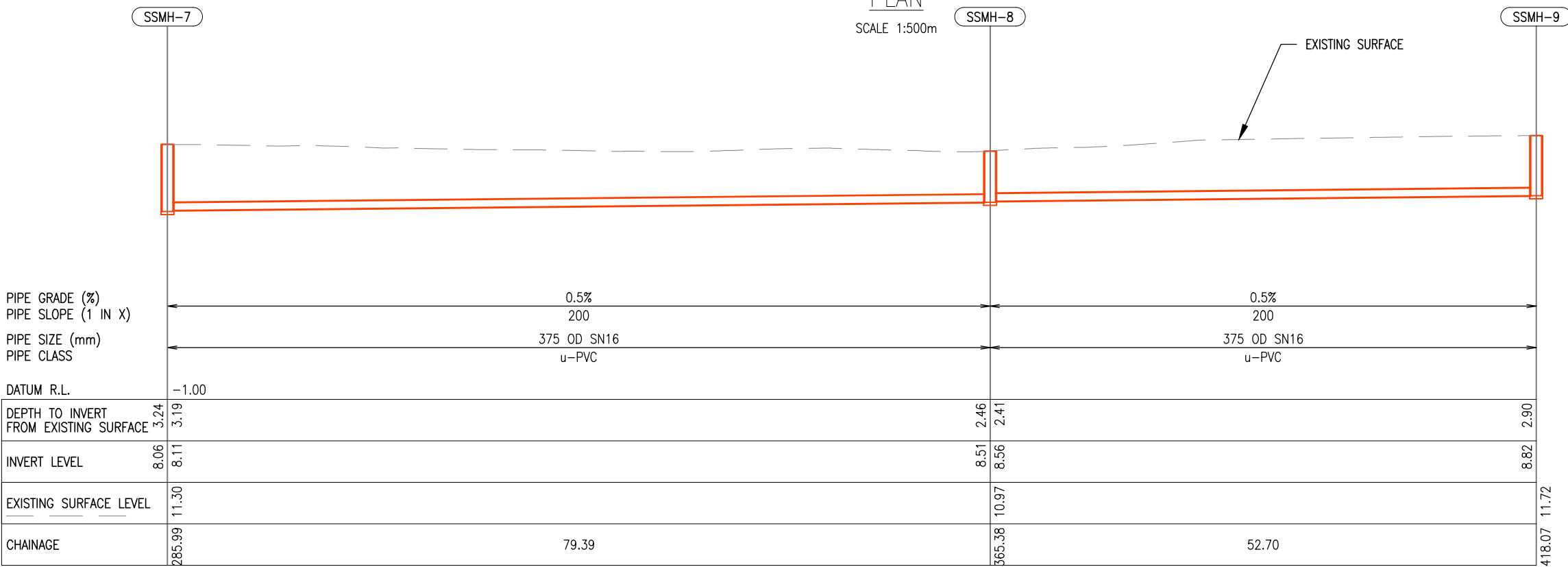
WASTEWATER GRAVITY

SSMH

SSMH

WASTEWATER MANHOLE

PLAN
SCALE 1:500m

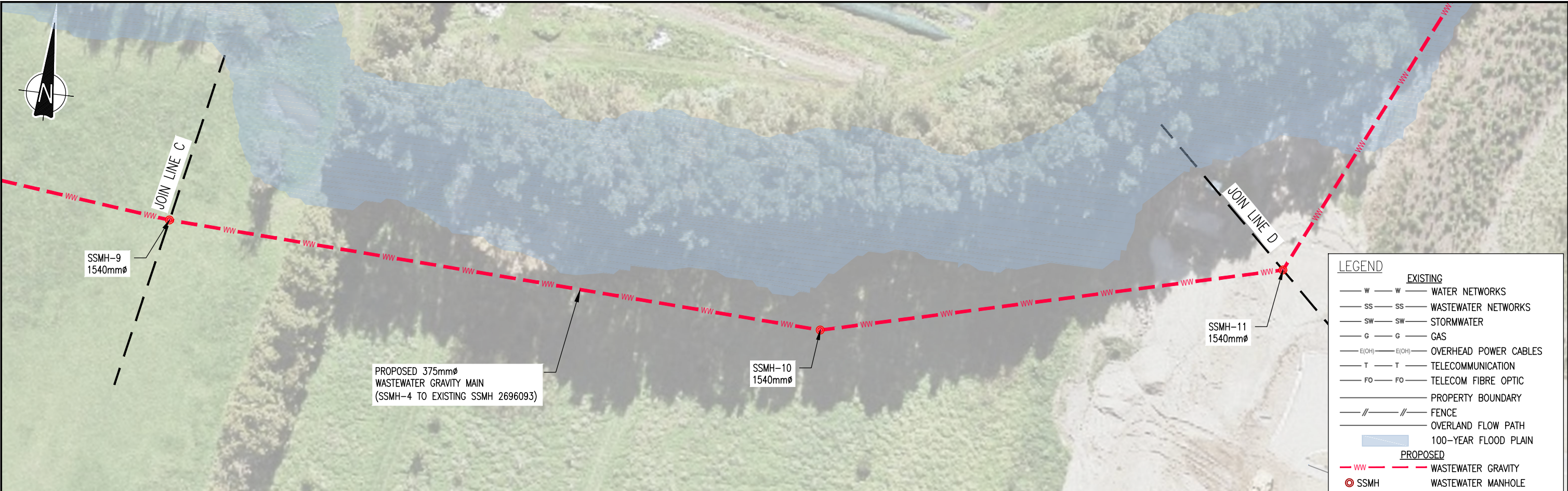


LONG SECTION
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LEGEND

EXISTING

W

W

WATER NETWORKS

SS

SS

WASTEWATER NETWORKS

SW

SW

STORMWATER

G

G

GAS

E(OH)

E(OH)

OVERHEAD POWER CABLES

T

T

TELECOMMUNICATION

FO

FO

TELECOM FIBRE OPTIC

PROPERTY BOUNDARY

//

//

FENCE

OVERLAND FLOW PATH

100-YEAR FLOOD PLAIN

PROPOSED

WW

WW

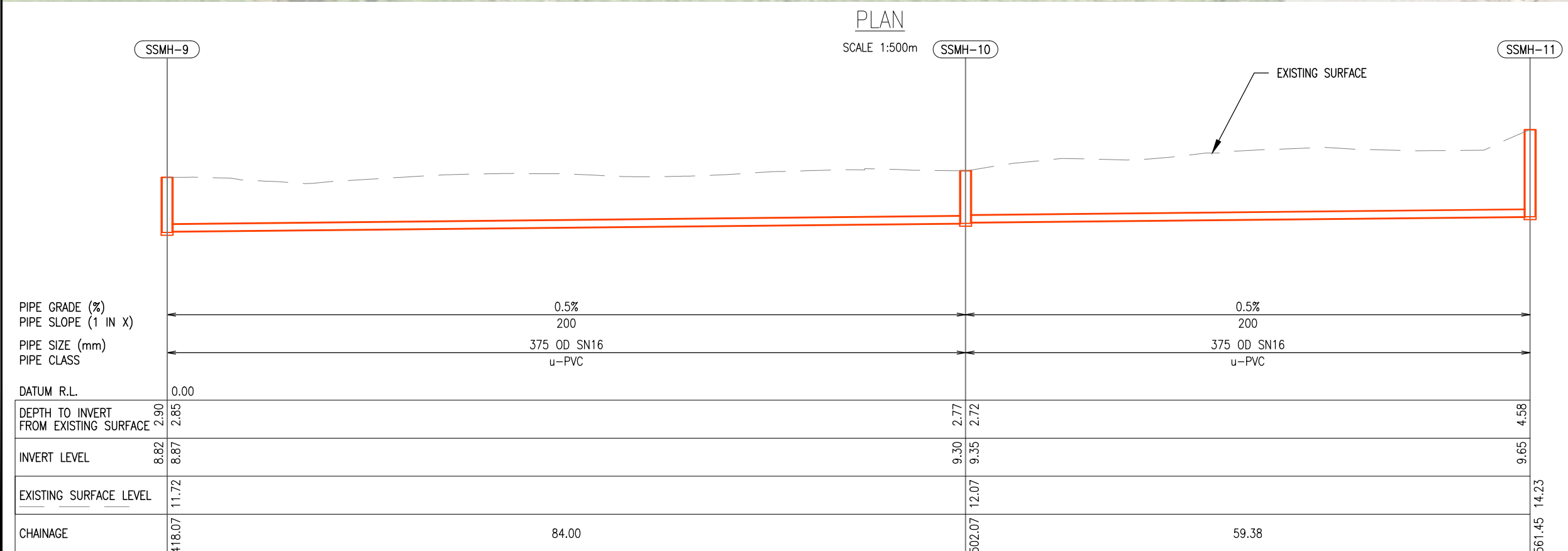
WASTEWATER GRAVITY

SSMH

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WASTEWATER MANHOLE

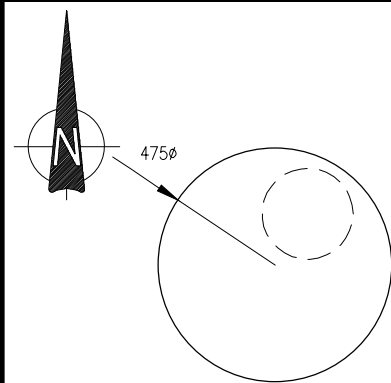
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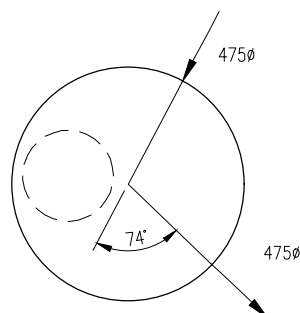
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NOT FOR CONSTRUCTION

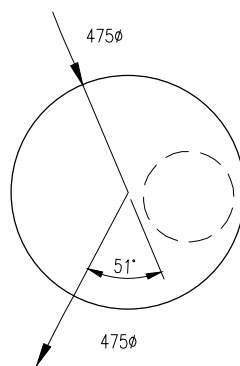
				DESIGNED	PH	12-21		WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION - SHEET 4 OF 5		CAD FILE	R0017910.002	DATE	10-12-21	
				DES. APPROVED	SW	12-21				ORIGINAL SCALE	A3	1:500	CONTRACT No.	6484-6934
				DRAWN	JC	12-21				REF No.	12508391 3-AWD32			
				DWG. APPROVED	DJ	12-21				DWG No.	R0017910.008			
				WSL DESIGN MGMT.						ISSUE	3			
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	WSL PROJ. LEAD										
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.											
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.											
ISSUE	DATE	AMENDMENT	BY	APPD.		DATE								



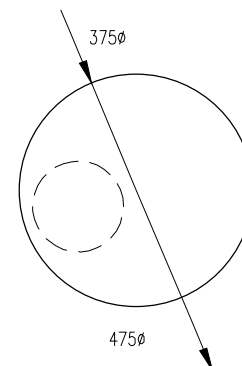
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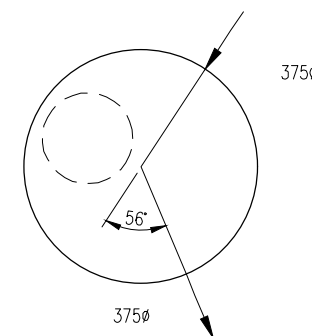
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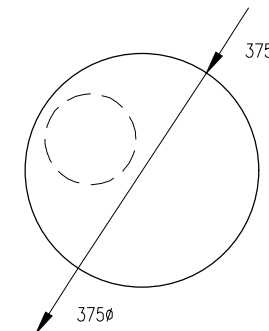
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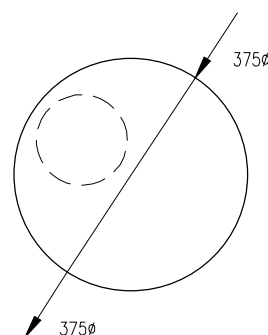
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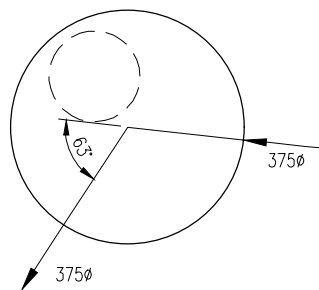
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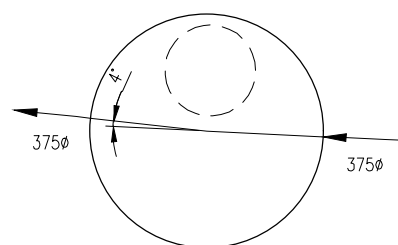
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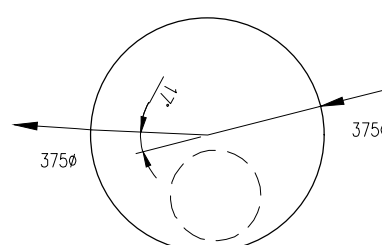
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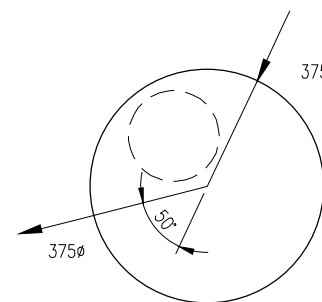
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SSMH-9



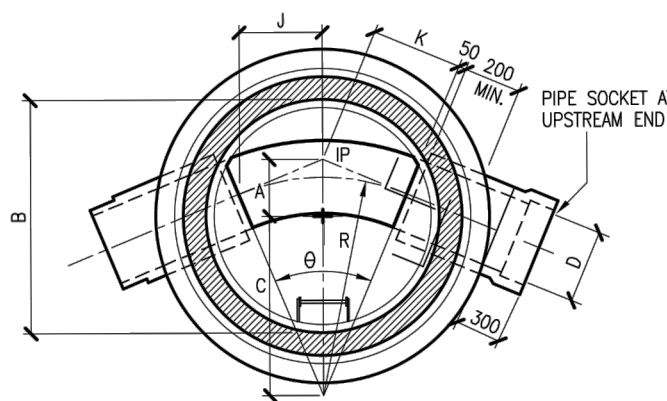
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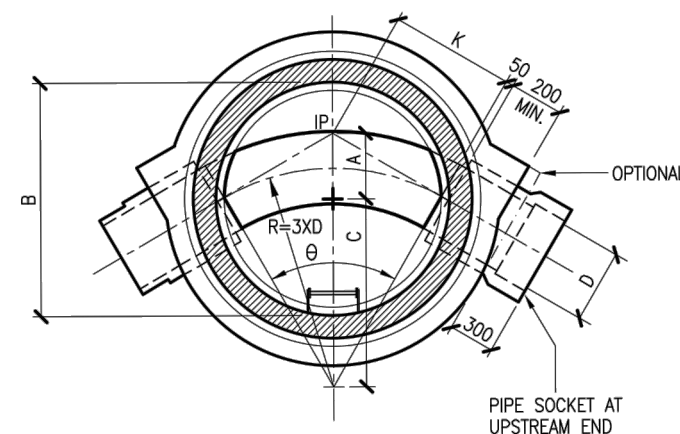
SSMH-11

SETOUT POINTS		
POINT	EASTING	NORTHING
SSMH-1	1743047.960	5926628.398
SSMH-2	1743042.764	5926631.866
SSMH-3	1743074.715	5926692.257
SSMH-4	1743064.939	5926715.540
SSMH-5	1743043.477	5926766.654
SSMH-6	1743063.052	5926796.415
SSMH-7	1743115.318	5926875.877
SSMH-8	1743158.943	5926942.204
SSMH-9	1743211.314	5926936.361
SSMH-10	1743295.217	5926932.351
SSMH-11	1743352.770	5926946.971

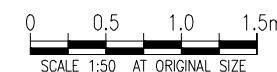
MANHOLE DIMENSION DETAIL										
MH No.	TYPE	PIPE ID	θ	J	R	K	A	B	C	NOTES
SSMH-1	A1	460		616		616	201	1540		
SSMH-2	A2	460	84°	616	1380	1243	548	1540	1149	
SSMH-3	A1	460	51°	616	1431	682	385	1540	1201	
SSMH-4	A1	460	0°	616		616	201	1540		STRAIGHT
SSMH-5	A1	370	56.4°	616	1312	698	442	1540	1044	
SSMH-6	A1	370	0°	616		616	237	1540		STRAIGHT
SSMH-7	A1	370	0°	616		616	237	1540		STRAIGHT
SSMH-8	A2	370	63°	616	1110	680	473	1540	840	
SSMH-9	A1	370	4°	616	17651	616	250	1540	17411	
SSMH-10	A1	370	17°	616	4168	623	295	1540	3919	
SSMH-11	A1	370	50°	616	1458	680	417	1540	1192	



TYPE A1
SCALE: 1:50 & N.TS.



TYPE A2
SCALE: 1:50 & N.TS.



DETAILED DESIGN
NOT FOR CONSTRUCTION

DESIGNED	PH	12-21		
DES. APPROVED	SW	12-21		
DRAWN	DX	12-21		
DWG. APPROVED	JC	12-21		
D.X.	S.W.		WSL DESIGN MGMT.	
D.X.	S.W.		WSL PROJ. LEAD	
ISSUE	DATE	AMENDMENT	BY	APPD.
2	11-21	ISSUED FOR DETAILED DESIGN		
1	11-21	ISSUED FOR PRELIMINARY DESIGN		

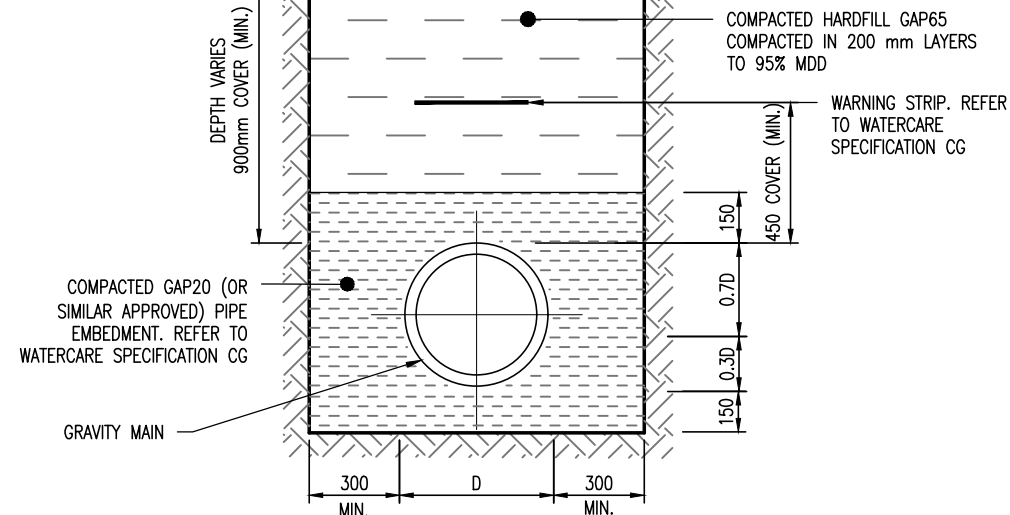
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS – WATER GRAVITY MAIN MANHOLE DIMENSIONS AND SETOUT



CAD FILE	R0017910.010	DATE	10-12-21
ORIGINAL SCALE	A3 1:50	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32	DWG No.	R0017910.010
		ISSUE	2

REFER AUCKLAND TRANSPORT – CODE
OF PRACTICE FOR WORKING IN THE
ROAD FOR ALL BACKFILLING,
REINSTATEMENT IN THE ROAD RESERVE

300 mm TNZ M4 AP40
BASECOURSE COMPACTED
TO 98% MDD



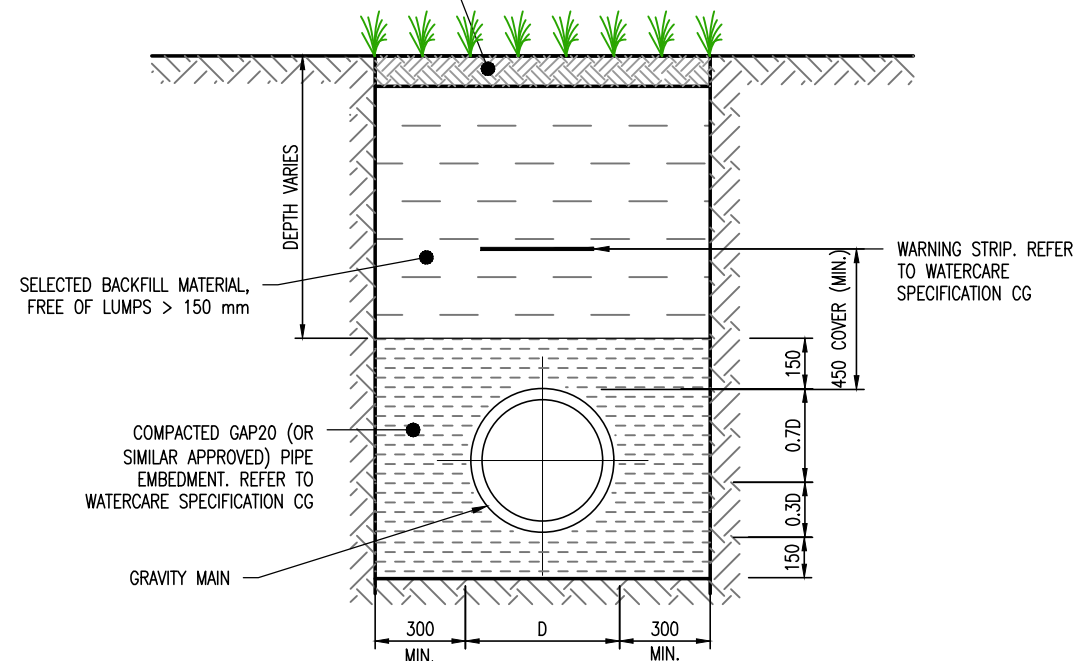
PIPE TRENCH INSTALLATION IN EXISTING CARRIAGEWAY
SCALE NTS

REINSTATEMENT TO MATCH EXISTING OR
AS ADVISED BY THE ENGINEER

SELECTED BACKFILL MATERIAL,
FREE OF LUMPS > 150 mm

COMPACTED GAP20 (OR
SIMILAR APPROVED) PIPE
EMBEDMENT. REFER TO
WATERCARE SPECIFICATION CG

GRAVITY MAIN



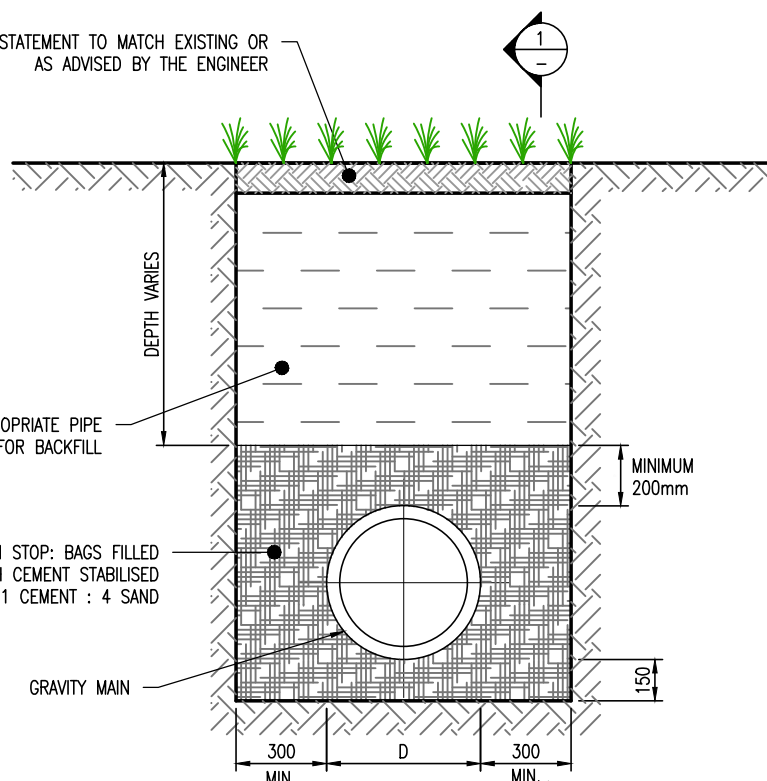
PIPE INSTALLATION IN GRASS AND BERM
SCALE NTS

REINSTATEMENT TO MATCH EXISTING OR
AS ADVISED BY THE ENGINEER

REFER TO APPROPRIATE PIPE
INSTALLATION FOR BACKFILL

TRENCH STOP: BAGS FILLED
WITH CEMENT STABILISED
SAND. 1 CEMENT : 4 SAND

GRAVITY MAIN



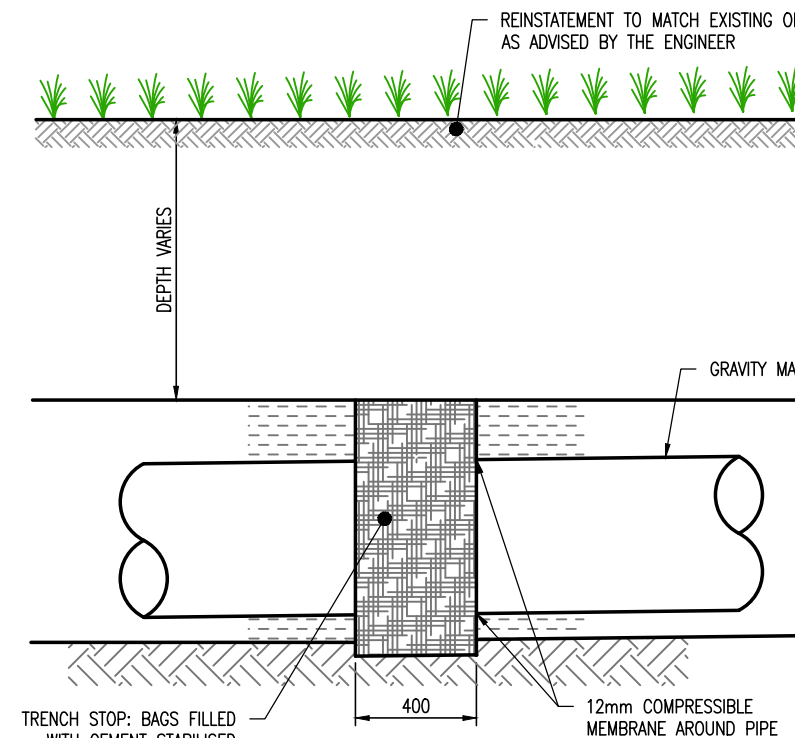
TRENCH STOP
SCALE NTS

REINSTATEMENT TO MATCH EXISTING OR
AS ADVISED BY THE ENGINEER

GRAVITY MAIN

TRENCH STOP: BAGS FILLED
WITH CEMENT STABILISED
SAND. 1 CEMENT : 4 SAND

SECTION 1
SCALE NTS



DETAILED DESIGN
NOT FOR CONSTRUCTION

NOTES:

1. MINIMUM HORIZONTAL AND VERTICAL CLEARANCE TO OTHER SERVICES COMPLIES WITH WATERCARE CODE OF PRACTICE.
2. FOR SELECTED BACKFILL MATERIAL REFER TO WATERCARE STANDARD.
3. DIMENSION 'D' REFERS TO THE EXTERNAL PIPE DIAMETER.

				DESIGNED	PH	11-21	
				DES. APPROVED	SW	12-21	
				DRAWN	DX	12-21	
3	12-21	ISSUED FOR DETAILED DESIGN	D.J.	P.H.	DWG. APPROVED	JC	12-21
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	D.X.		WSL DESIGN MGMT.		
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.		WSL PROJ. LEAD		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE	

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WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI

INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN TRENCH DETAILS



CAD FILE	R0017910.011	DATE	10-12-21
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	R0017910.011	ISSUE	3

WHENUAPAI - REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN

DRAWING No		DRAWING TITLE	ISSUE
2013654	001	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - DRAWING INDEX	3
2013654	002	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - LOCATION PLAN	3
2013654	003	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - GENERAL NOTES	5
2013654	004	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - GENERAL LAYOUT	5
2013654	005	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 1 OF 12	5
2013654	006	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 2 OF 12	5
2013654	007	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 3 OF 12	5
2013654	008	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 4 OF 12	5
2013654	009	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 5 OF 12	5
2013654	010	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 6 OF 12	5
2013654	011	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 7 OF 12	5
2013654	012	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 8 OF 12	5
2013654	013	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 9 OF 12	5
2013654	014	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 10 OF 12	5
2013654	015	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 11 OF 12	5
2013654	016	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 12 OF 12	4
2013654	017	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN AIR VALVE DETAILS	5
2013654	018	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN SCOUR VALVE DETAILS	5
2013654	019	INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN TRENCH DETAILS	5

DETAILED DESIGN
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					DESIGNED	P. HOUGHTON	9-22	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - DRAWING INDEX	 	CAD FILE	2013654.001	DATE	09-09-22
					DES. APPROVED	S. WANG	9-22				ORIGINAL SCALE	A3 N.T.S.	CONTRACT No.	6484-6934
3	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DRAWN	S. VASOL	9-22				REF No.	12508391	3-AWD32	
2	4-22	RE-ISSUED FOR DETAILED DESIGN	D.X	P.H.	DWG. APPROVED	D. XIE	9-22				DWG No.	2013654.001		ISSUE
1	12-21	ISSUED FOR DETAILED DESIGN	D.X.	P.H.	WSL DESIGN MGMT.									
					WSL PROJ. LEAD									
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE							

DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	P. HOUGHTON	9-22	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN - LOCATION PLAN	 	CAD FILE	2013654.002	DATE	09-09-22
				DES. APPROVED	S. WANG	9-22	ORIGINAL SCALE				A3	CONTRACT No.	6484-6934	
				DRAWN	S. VASOL	9-22	REF No.				12508391 3-AWD32			
				DWG. APPROVED	D. XIE	9-22	DWG No.				2013654.002	ISSUE	3	
3	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT		S.V.	P.H.									
2	4-22	RE-ISSUED FOR DETAILED DESIGN		D.X.	P.H.	WSL DESIGN MGMT.								
1	12-21	ISSUED FOR DETAILED DESIGN		D.X.	P.H.	WSL PROJ. LEAD								
ISSUE	DATE	AMENDMENT		BY	APPD.		BY	DATE						

THE SCOPE OF EARTHWORK SPECIFICATION RELATES ONLY TO EXCAVATION/BACKFILL WITHIN OPEN TRENCH WORKS, SURROUNDING MANHOLES, AND THE BACKFILL TO ORIGINAL CONDITIONS/DESIGN REQUIRED PROFILE.

1. SITE VERIFICATION

THE CONTRACTOR SHALL BE DEEMED TO HAVE REVIEWED THE GEOTECHNICAL FACTUAL REPORT AND HAVE READ AND UNDERSTOOD THE INFERRED GROUND CONDITIONS.

2. SITE MANAGEMENT PLAN

THE CONTRACTOR SHALL PREPARE AN EARTHWORKS MANAGEMENT PLAN PRIOR TO THE COMMENCEMENT OF WORKS AND INCLUDING EROSION AND SEDIMENT CONTROL AND DUST CONTROL. THE MANAGEMENT PLAN SHOULD MAKE REFERENCE TO LOCAL AUTHORITY REQUIREMENTS. THIS PLAN SHALL BE SUBMITTED TO THE LOCAL AUTHORITY AND APPROVED PRIOR TO COMMENCING ANY EARTHWORKS.

3. PRIOR TO COMMENCEMENT OF CONSTRUCTION

EXISTING SERVICES

BEFORE COMMENCEMENT OF EXCAVATION, THE CONTRACTOR SHALL ASCERTAIN THE LOCATION OF THE EXISTING SERVICES WITHIN THE WORK AREAS OR AREAS LIKELY TO BE AFFECTED BY THE WORK AND DRAINAGE FOR THEIR CONNECTION AND DIVERSION.

INSTRUCTIONS OR INFORMATION GIVEN TO THE CONTRACTOR BY THE ENGINEER OR SHOWN ON THE DRAWINGS, SHALL IN NO WAY RELEASE HIM FROM LIABILITIES UNDER THIS CLAUSE.

WHEN TRENCHING AND EXCAVATING, CARE IS TO BE TAKEN NOT TO DAMAGE EXISTING DRAINS, WATER MAINS, CABLES, ETC. IF IN SERVICE. SHOULD ANY DAMAGE OCCUR, THE ENGINEER AND LOCAL AUTHORITY SHALL BE NOTIFIED AT ONCE AND THE DAMAGE MADE GOOD.

SURFACE DRAINAGE

TEMPORARY SURFACE DRAINAGE SHALL BE CONSTRUCTED BY THE CONTRACTOR TO MAINTAIN THE NATURAL DRAINAGE AND LIMIT THE INTRODUCTION OF WATER TO THE EARTHWORKS.

4. FILL MATERIAL DEFINITION

GRANULAR FILL

DEFINED AS A WELL GRADED, DURABLE, GRANULAR AGGREGATE WHICH CONTAINS SPECIFIED FINES AND WHICH MEETS SPECIFIED GRADING, STRENGTH, AND DURABILITY CRITERIA AS DEFINED BELOW:

- GRADINGS FOR GAP65, GAP40 AND GAP20 ARE TO CONFORM TO THOSE SPECIFIED IN THE SUMMARY TABLE1
- FREE DRAINING GRANULAR MATERIAL SHALL BE IMPORTED CRUSHED AND GRADED CLEAN MATERIAL, PREFERABLY, WELL GRADED OR UNIFORM, WITH 100% PASSING A 10MM SIEVE, AND 15% PASSING A 0.5MM SIEVE OR OTHER SIMILAR APPROVED.
- IF THE MATERIAL AND GRADING IS NOT SPECIFIED ELSEWHERE, HARDFILL MATERIAL SHALL BE GAP65 MATERIAL OR FILL APPROVED BY THE ENGINEER.

THE CONTRACTOR IS TO SUPPLY THE FOLLOWING DATA RELATED TO THE PROPOSED BACKFILL MATERIALS FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION:

- ADDRESS OF THE SOURCE QUARRY;
- THE GEOLOGICAL DESCRIPTION OF THE PARENT MATERIAL;
- THE CONTRACTOR SHALL PROVIDE A PARTICLE SIZE DISTRIBUTION TEST, COMPACTION TEST AND BROKEN FACE PERCENTAGE TEST RESULTS FROM A REPRESENTATIVE GRAVEL FILL SAMPLE TESTED IN AN INDEPENDENT AND ACCREDITED LABORATORY.
- RESULTS OF COMPACTION TESTS AS SPECIFIED IN NZS 4402:1988 – TEST 4.1.1 OR TEST 4.1.3 ARE TO BE CARRIED OUT ON THE PROPOSED BACKFILL AND THE RESULTS PRESENTED TO THE ENGINEER FOR AGREEMENT PRIOR TO CONSTRUCTION. THESE ARE TO CLEARLY SHOW THE OPTIMUM MOISTURE CONTENT AND MAXIMUM DENSITY ACHIEVED.

BASED ON THE ABOVE DETAILS, THE CONTRACTOR IS TO AGREE THE METHOD OF COMPACTION WITH THE DESIGNER PRIOR TO COMMENCEMENT OF CONSTRUCTION ON SITE.

COHESIVE FILL

DEFINED AS MATERIAL COMPRISED PREDOMINANTLY CLAY AND SILT WITH NON–GRANULAR COMPOSITE.

CLEAN FILL

CLEANFILL MATERIAL IS MATERIAL THAT DOES NOT UNDERGO ANY PHYSICAL, CHEMICAL, OR BIOLOGICAL TRANSFORMATIONS THAT WILL CAUSE ADVERSE ENVIRONMENTAL EFFECTS OR HEALTH EFFECTS ONCE IT IS PLACED IN THE GROUND. CLEANFILL MATERIAL HAS NO POTENTIALLY HAZARDOUS CONTENT AND MUST NOT BE CONTAMINATED BY OR MIXED WITH ANY OTHER NON–CLEANFILL MATERIAL.

UNSUITABLE

DEFINED AS MATERIAL NOT CONSIDERED ACCEPTABLE FOR THE USE AS ENGINEERING FILL WITHIN THE BACKFILL OF THE TRENCH EXCAVATIONS AND/OR ACCESS PLATFORM. THIS WILL COMPRISE:

- o OVERLY ORGANIC / ORGANIC MATERIAL / TOPSOIL
- o NON–ENGINEERED FILL THAT CANNOT BE RECONDITIONED
- o OVERLY SATURATED MATERIAL THAT CANNOT BE RECONDITIONED
- o REFUGE/RUBBISH

SITE WON MATERIAL

MATERIAL THAT IS IN–SITU, AND EXCAVATED FOR CONTRACT WORKS. THIS MATERIAL CAN BE CONDITIONED (DRIED, DISCED

AND BLENDED) AND BE PLACED AS PART OF SITE EARTHWORK TO MEET COMPACTION REQUIREMENTS.

ACCEPTABLE MATERIAL

ACCEPTABLE FILL IS TO BE USED FOR EARTHWORKS WHICH COMPRISES THE FOLLOWING MATERIALS LISTED BELOW FOR VARIOUS AREAS. IN ADDITION, MINIMUM STRENGTHS ALSO REQUIRED TO BE ACHIEVED, AS DEFINED IN SECTIONS 8 & 9 OF THIS SPECIFICATION.

a) TRENCH BACKFILL

- o CLEAN FILL (COHESIVE), WON 100% FROM SITE AND REUSED/RECONDITIONED
- o IMPORTED FILL (COHESIVE), 100% OFFSITE, AND USED
- o MIXED/CONDITIONED FILL (COHESIVE), COMPRISING BOTH LOCALLY WON AND IMPORTED (SECTION 7 FOR CONDITIONING NOTES).

b) MANHOLES

CLEAN IMPORTED GRANULAR FILL, GAP65 OR EQUIVALENT (FOR BULK BACKFILLING OF MANHOLE TRENCH EXCAVATIONS ONLY) OR SAND

5. EXCAVATION – PIPE TRENCH AND MANHOLE

GENERAL REQUIREMENTS

- a) THE BOTTOM OF THE EXCAVATIONS SHALL BE FORMED ON SUITABLE NATURAL MATERIAL AS AGREED BY THE CONTRACTOR AND ENGINEER, AND BE SUITABLY SHORED IF NEEDED TO ALLOW HORIZONTAL PLACEMENT OF FILL. THE ENGINEER MAY REQUIRE ADDITIONAL EXCAVATION TO REMOVE ANY POCKETS OF SOFT SOIL, UNSUITABLE MATERIAL, OR LOOSE ROCK.
- b) TRENCH EXCAVATION SHOULD BE STAGED. MAXIMUM EXCAVATION OF TRENCH EXCAVATION SHOULD BE NO MORE THAN 10 M IN LENGTH EACH STAGE.
- c) EXCAVATION FOR THE PARTICULAR SECTION OF OPEN TRENCH WORK SHALL NOT COMMENCE UNTIL THE CORRESPONDING ADJACENT SECTION OF IN–GROUND RETAINING WALL HAS BEEN CONSTRUCTED AND A MINIMUM OF 7 DAYS HAS LAPSED SINCE THE CONCRETE HAS BEEN POURED
- d) THE EXCAVATIONS SHALL BE KEPT FREE OF WATER.
- e) NO WORK SHALL BE CARRIED OUT UPON PREPARED EXCAVATION SURFACES UNTIL THE ENGINEER HAS APPROVED THE PREPARED SURFACES.
- f) TEMPORARY AND PERMANENT CUT SLOPES SHALL BE ADEQUATELY PROTECTED.
- g) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EFFECT OR DAMAGE THE TEMPORARY WORKS MAY HAVE UPON OR WHICH MAY BE CAUSED TO THE WORKS, ANY EXISTING STRUCTURES OR ANY SURROUNDING PROPERTY AND FOR ANY EFFECT OR DAMAGE THAT MAY BE CAUSED BY THE EXCAVATION OR DISPOSAL OF EXCAVATED MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LANDSLIPS IN THE EXCAVATION AND ANY INJURIOUS EFFECTS CAUSED THEREBY AND SHALL MAKE GOOD ALL SUCH DAMAGE WHETHER TO THE WORKS, THE ADJOINING PROPERTY OR ADJACENT STRUCTURES TO THE SATISFACTION OF THE ENGINEER AND / OR LOCAL REGULATORY AUTHORITY.
- h) THE CONTRACTOR SHALL EMPLOY ONLY THOSE PLANT AND WORKING METHODS WHICH ARE SUITED TO THE MATERIALS TO BE HANDLED AND TRAVERSED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE NATURE OF THE SUITABLE MATERIAL SO THAT WHEN IT IS PLACED AND COMPACTED IT REMAINS ACCEPTABLE.

EXCAVATION IN SOIL, NON ENGINEERED FILL AND ROCK

THE CONTRACTOR SHALL ACCOUNT FOR ALL MATERIALS ENCOUNTERED, THAT COULD REASONABLY BE ANTICIPATED FROM THE GEOTECHNICAL INFORMATION PROVIDED. THIS SHALL INCLUDE VARIABLE MATERIAL IN THE NON–ENGINEERED FILL.

EXCAVATION SUPPORT

THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT WHERE NECESSARY. AS A MINIMUM, IT IS EXPECTED THAT ANY PROPOSED TRENCH IS PROTECTED BY TRENCH SHIELDS DURING EXCAVATION AND ALL PROPOSED MANHOLE / LAUNCH–RETRIEVAL SHAFTS BE SUPPORTED BE ADEQUATE STEEL RING CAISSONS. .

ALTERNATIVE SUPPORT MAY BE PROVIDED BY THE CONTRACTORS ENGINEER, SUBJECT TO PRIOR APPROVAL / VERIFICATION FROM THE DESIGN ENGINEER.

6. FILL CONDITIONING

FOR COHESIVE FILL, IN THE EVENT THAT SITE WON MATERIAL OR IMPORTED MATERIAL IS OVERLY SATURATED, REQUIRES BLENDING, OR DOES NOT DISPLAY SUFFICIENT PLASTICITY FOR ACHIEVING PROPER COMPACTION, THE CONTRACTOR MAY CONSIDER CONDITIONING OF THE MATERIAL PRIOR TO PLACEMENT AS ACCEPTABLE FILL. CONDITIONING INCLUDING SPECIFIC METHODOLOGIES SHOULD BE DISCUSSED AND AGREED BY THE CONTRACTOR AND THE DESIGNER AS REQUIRED, AT THE TIME.

7. PLACEMENT AND COMPACTION OF FILL – TRENCH AND MANHOLE EXCAVATION

- a. THE GENERAL PRINCIPLE TO BE ACHIEVED IN BACKFILLING OF THE TRENCH IS TO MAINTAIN AS BEST AS PRACTICAL THE ORIGINAL PERMEABILITY OF THE SOILS BELOW THE SLOPE. APPROVED LOCALLY WON MATERIAL, IMPORTED OR BLENDED MATERIAL MAY BE USED.
- b. PIPE BEDDING REQUIREMENTS SHOULD BE FOLLOWED AS PER PIPE DESIGN AND AS SPECIFIED ON DRAWING 2013654.017.

FOR TRENCH BACKFILL WORKS:

- a) MATERIAL TO COMPRISE COHESIVE, PREFERABLY LOCALLY WON, IMPORTED OR BLENDED (AT THE DIGRESSION OF THE DESIGN ENGINEER).
- b) RECONDITIONING OF LOCALLY WON MATERIAL OK, PROVIDED SITE PLATEAU TESTING AND/OR LABORATORY TESTING OF SAMPLE CAN BE PERFORMED AND PROVIDED BY CONTRACTOR
- c) PLACEMENT OF FILL IN LOOSE LAYERS NOT EXCEEDING 200 MM

- d) COMPACTION VIA THE USE OF MACHINE PLANT, SUFFICIENTLY WEIGHTED AND WITH A STUDDED SURFACE, I.E. A PAD–FOOT OR EQUIVALENT. FLAT PLATES NOT TO BE USED.
- e) CARE TO BE TAKEN DURING THE FIRST 1–2 LIFTS ABOVE THE PIPE BEDDING MATERIAL TO AVOID DAMAGE TO THE UNDERLYING PIPE
- f) COMPACTION OF THE TRENCH BACKFILL SHOULD ACHIEVE THE MINIMUM STRENGTH VALUES (TO BE VERIFIED ON SITE): COMPACTION REQUIREMENTS AS SET OUT BELOW:
 - o 5% AIR VOIDS
 - o TESTING AT NOMINAL LOCATIONS ALONG TRENCH, AND MINIMUM ONE TEST APPROXIMATELY HALF WAY UP, AND ONE AT FINISH LEVEL.

FOR MANHOLE BACKFILL:

- a) USE OF APPROPRIATELY SIZED GRANULAR FILL ACCEPTABLE
- b) TO BE COMPACTED IN LOOSE LAYERS NOT EXCEED TWICE THE AVERAGE PARTICLE DIAMETER
- c) USE OF VIBRATION COMPACTING EQUIPMENT
- d) ALTERNATIVELY THE USE OF SAND BACKFILL MAY BE CONSIDERED, IF COMPACTION OF GRANULAR FILL DEEMED IMPRACTICAL WITH THE SITE CONSTRAINTS

8. COMPACTION TESTING

COMPACTION REQUIREMENTS

ONE "SET" OF NUCLEAR DENSOMETER TESTS (WHERE ONE "SET" = 3 INDIVIDUAL TESTS) IS TO BE CARRIED OUT FOR EACH 30M² OF FILL PLACED. 95% OF THE TESTS CARRIED OUT MUST MEET THE REQUIRED DENSITY SPECIFICATION."

WHERE FIELD TESTS INDICATE THAT THE SPECIFIED STANDARD OF COMPACTION HAS NOT BEEN ACHIEVED, CORRECTIVE ACTION SHALL BE TAKEN TO BRING THE FILL TO THE REQUIRED STANDARD AND AS REQUIRED BY THE ENGINEER. THIS MAY REQUIRE EXCAVATION AND REMOVAL OF THE FAILED FILL.

COMPACTION STANDARDS

AT ANY TIME EITHER PRIOR TO OR DURING THE COURSE OF CONSTRUCTION, THE ENGINEER MAY DIRECT MODIFICATIONS TO THE FOLLOWING COMPACTION CRITERIA, WITH THE OBJECT OF ENSURING THAT THE COMPACTION CRITERIA FOR THE PARTICULAR MATERIALS AND CONDITIONS BEING ENCOUNTERED OR LIKELY TO BE ENCOUNTERED ARE ACHIEVED.

9. FILL CONTROL AND TEST METHODS

GENERAL

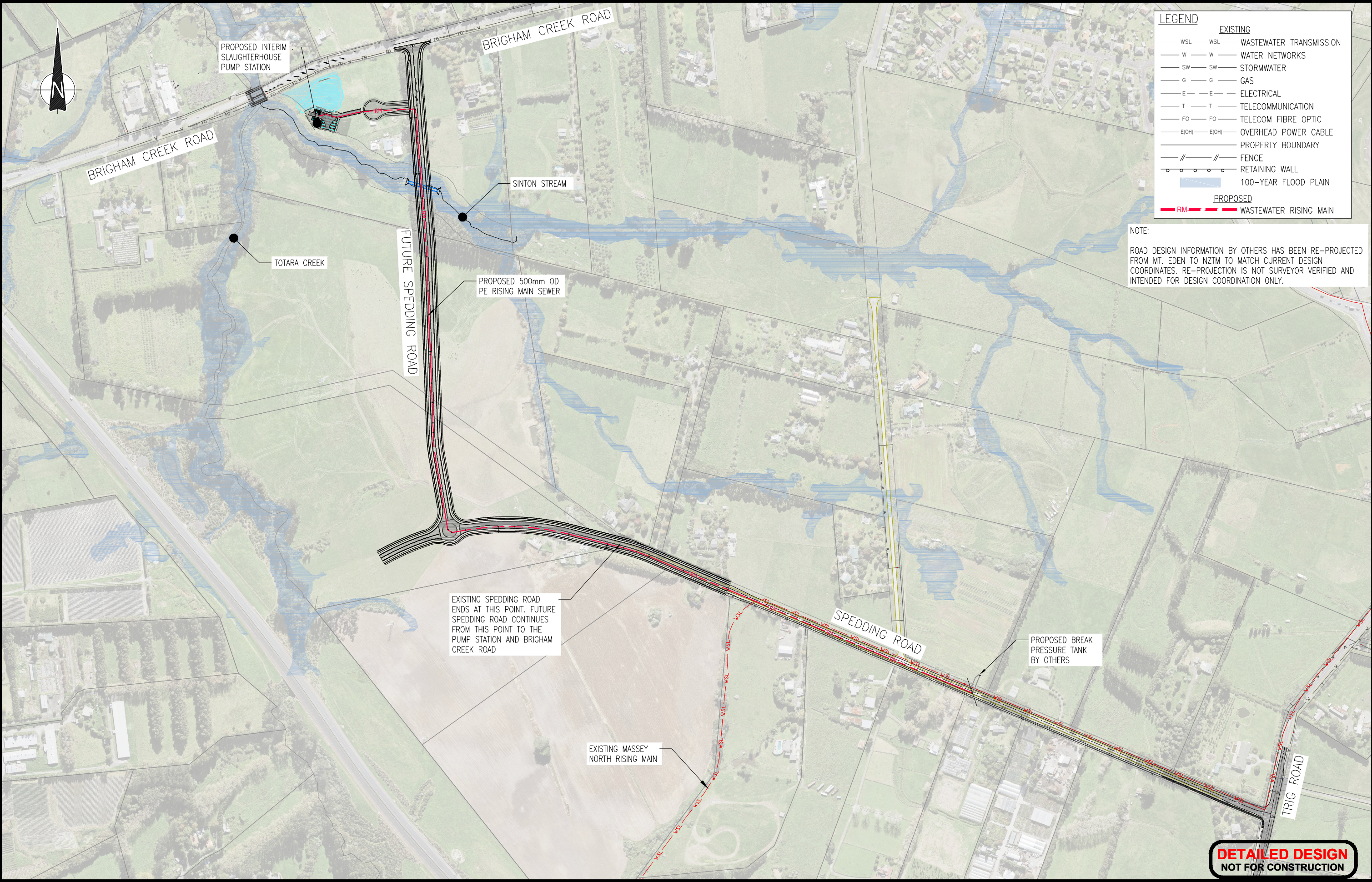
NUCLEAR DENSOMETER TESTS WILL BE USED TO DETERMINE THE CLASSIFICATION AND COMPACTION STANDARDS OF FILL MATERIALS. APPROXIMATE TEST METHODS, SUCH AS A HAND SHEAR VANE, MAY BE EMPLOYED TO OBTAIN RAPID INDICATIVE RESULTS, BUT APPROXIMATE METHODS SHALL NOT BE USED FOR ACCEPTANCE PURPOSES WHERE THE ADEQUACY OF MATERIALS, PROCESSING OR WORKMANSHIP IS IN DOUBT OR THE AMOUNT BY WHICH THE TEST RESULT FAILS FALLS WITHIN THE CONFIDENCE LIMITS OF THE APPROXIMATE TEST RESULT. NUCLEAR DENSOMETER SHOULD BE COMPLETED IN ACCORDANCE WITH TEST METHOD NZS4407 TEST 4.2.1 AND BE CALIBRATED IN ACCORDANCE WITH TEST 4.2.4 OF NZS4407: 1991 AT A FREQUENCY NOT EXCEEDING 2 YEARS IN AN IANZ ACCREDITED LABORATORY.

PRIOR TO PLACEMENT OF FILL, CONTRACTOR IS TO OBTAIN A SITE SPECIFIC BULK HEAVY COMPACTION TEST FOR EACH REPRESENTATIVE FILL MATERIAL PROPOSED TO BE USED. A MINIMUM OF 1 TEST PER MATERIAL IS REQUIRED. THE TESTING SHALL BE CARRIED OUT BY A IANZ VERIFIED LABORATORY. THE RESULTS SHALL BE PROVIDED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO COMPACTION COMMENCING.

TABLE 1: GRADING OF MATERIAL								
GAP 65	PERCENTAGE PASSING		GAP40	PERCENTAGE PASSING		GAP20	PERCENTAGE PASSING	
APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT	APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT	APERTURE SIZE(MM)	LOWER LIMIT	UPPER LIMIT
65	100	100	37.5	100	100	19	100	100
37.5	80	90	19	61	80	13.2	80	95
19	50	70	9.5	38	57	9.5	64	76
9.5	30	55	4.75	23	43	4.75	37	48
4.75	20	40	2.36	10	33	2.36	26	36
2.36	15	30	1.18	7	25	1.18	18	28
1.18	10	22	0.6	2	19	0.6	12	22
0.6	6	18	0.3	0	14	0.3	6	14
0.3	4	14	0.15	0	10	0.15	2	7
0.15	2	10	0.075	0	7	0.075	0	3
0.075	0	7						

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5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	S. WANG	9-22		BRIGHAM CREEK ROAD, WHENUAPAI					ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484-6934
4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DRAWN	S. VASOL	9-22		INTERIM SLAUGHTERHOUSE PS – WASTEWATER RISING MAIN – GENERAL NOTES					REF No.	12508391 3-AWD32		
3	12-21	ISSUED FOR DETAILED DESIGN	J.C	P.H.	DWG. APPROVED	D. XIE	9-22							DWG No.	2013654.003		ISSUE
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL DESIGN MGMT.												
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.	WSL PROJ. LEAD												
ISSUE	DATE	AMENDMENT	BY	APPD.			BY	DATE									



ISSUE	DATE	AMENDMENT	BY	APPD.
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DESIGNED	P. HOUGHTON	9-22
DES. APPROVED	S. WANG	9-22
DRAWN	S. VASOL	9-22
DWG. APPROVED	D. XIE	9-22
WSL DESIGN MGMT.		
WSL PROJ. LEAD		

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WHENUAPAI-REDHILLS WASTEWATER SERVICING

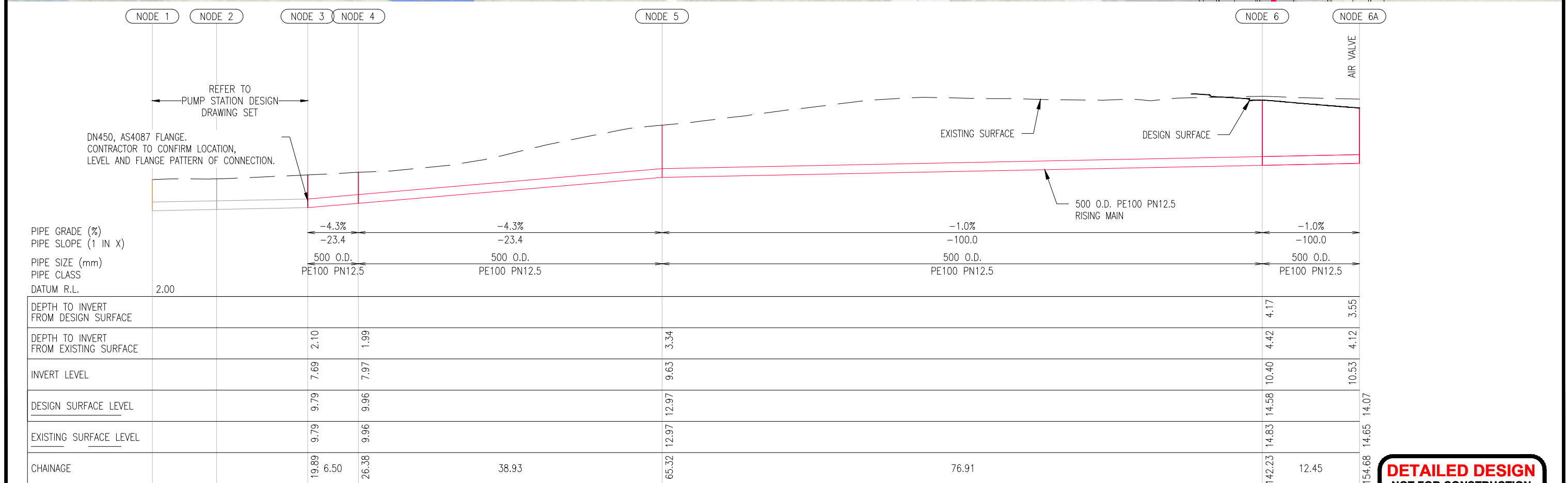
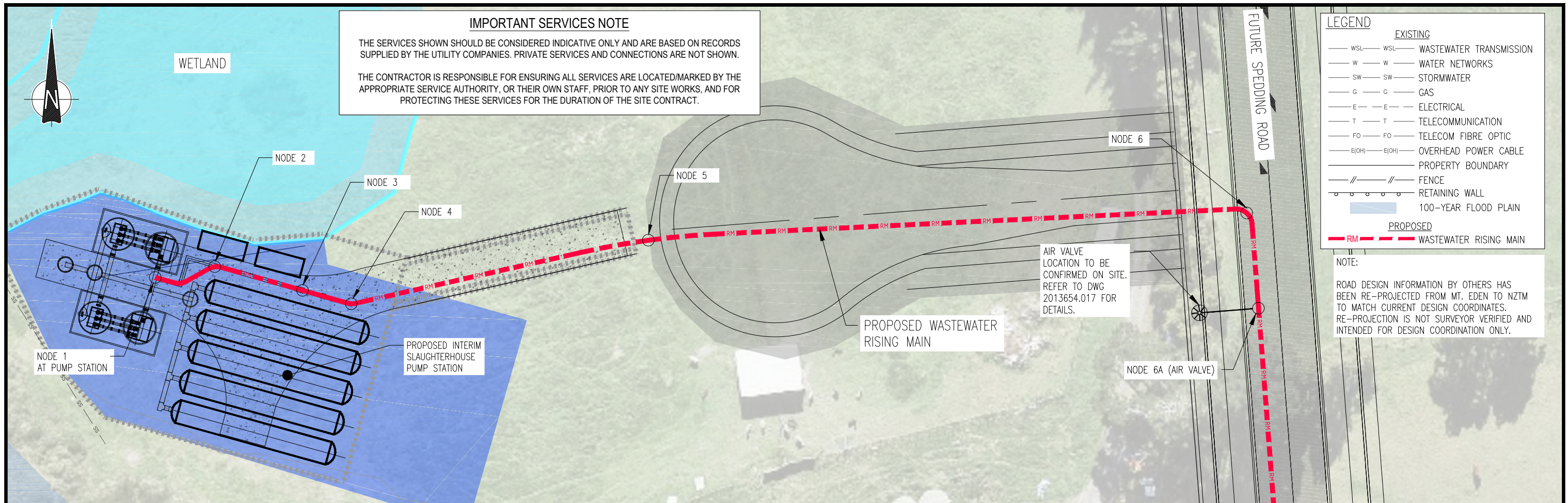
BRIGHAM CREEK ROAD, WHENUAPAI

INTERIM SLAUGHTERHOUSE PS – WASTEWATER RISING MAIN – GENERAL LAYOUT

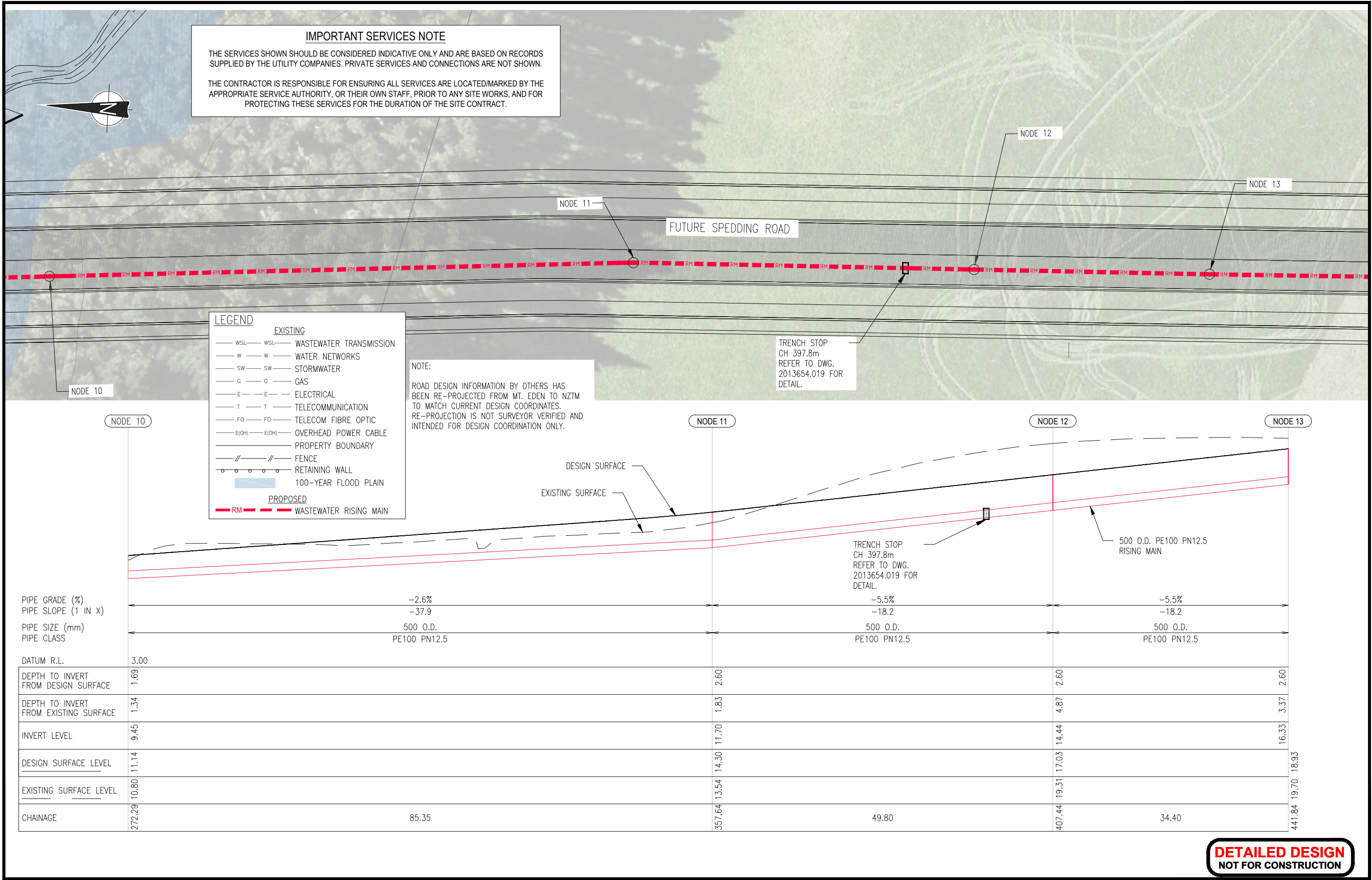
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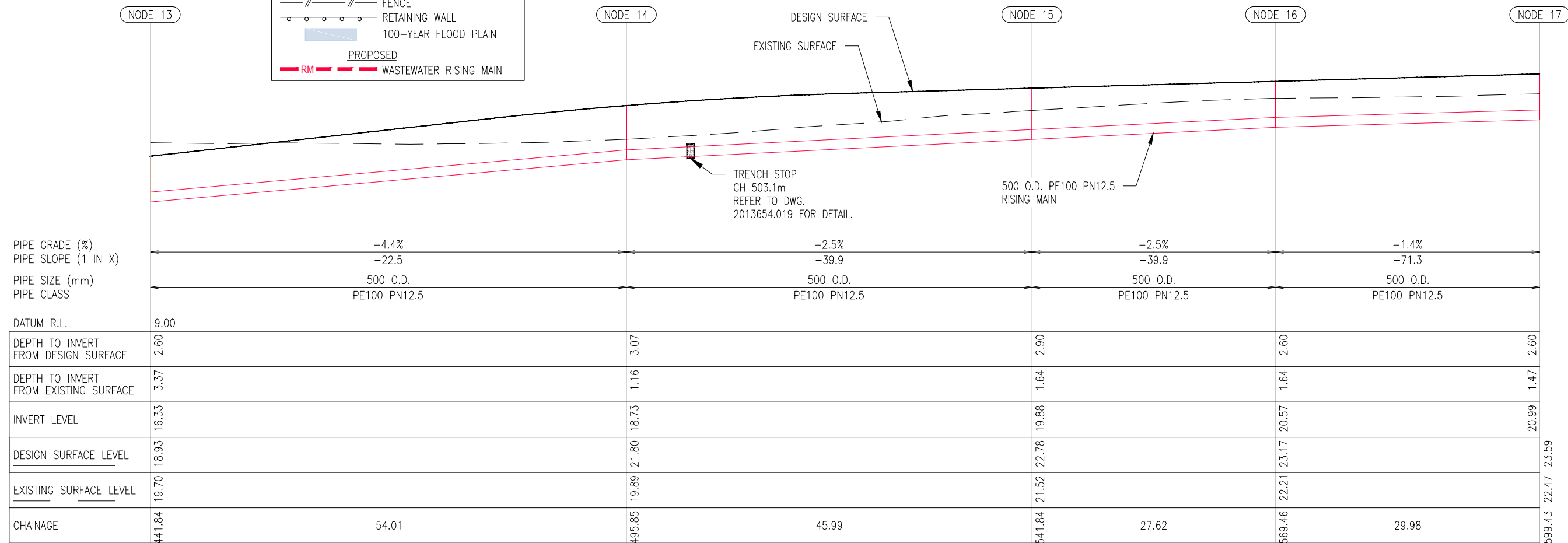
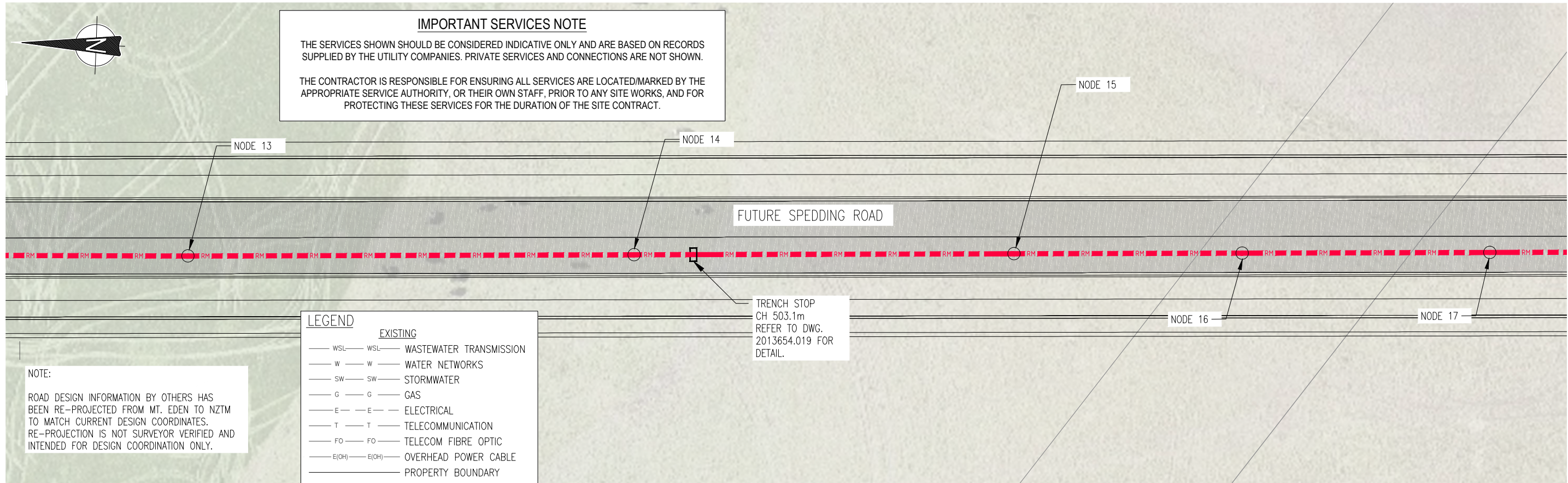
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CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE	A3 1:5000	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.004	ISSUE	5



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4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DRAWN	S. VASOL
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ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

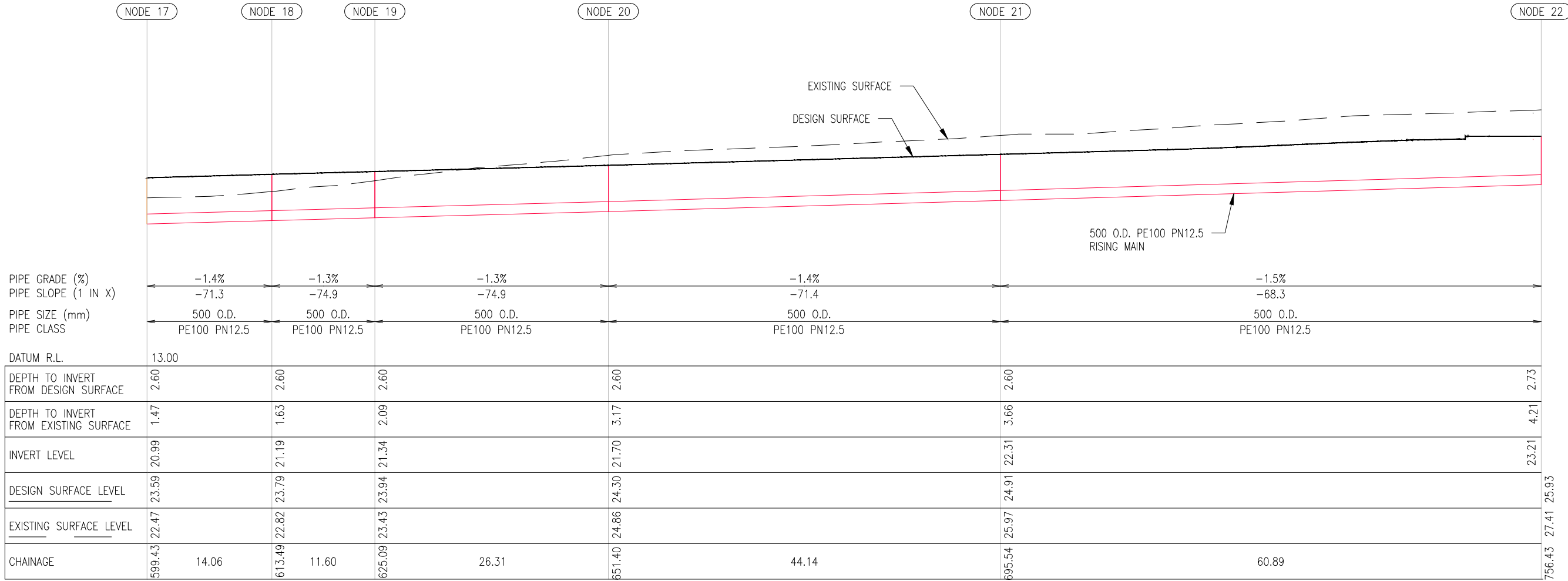
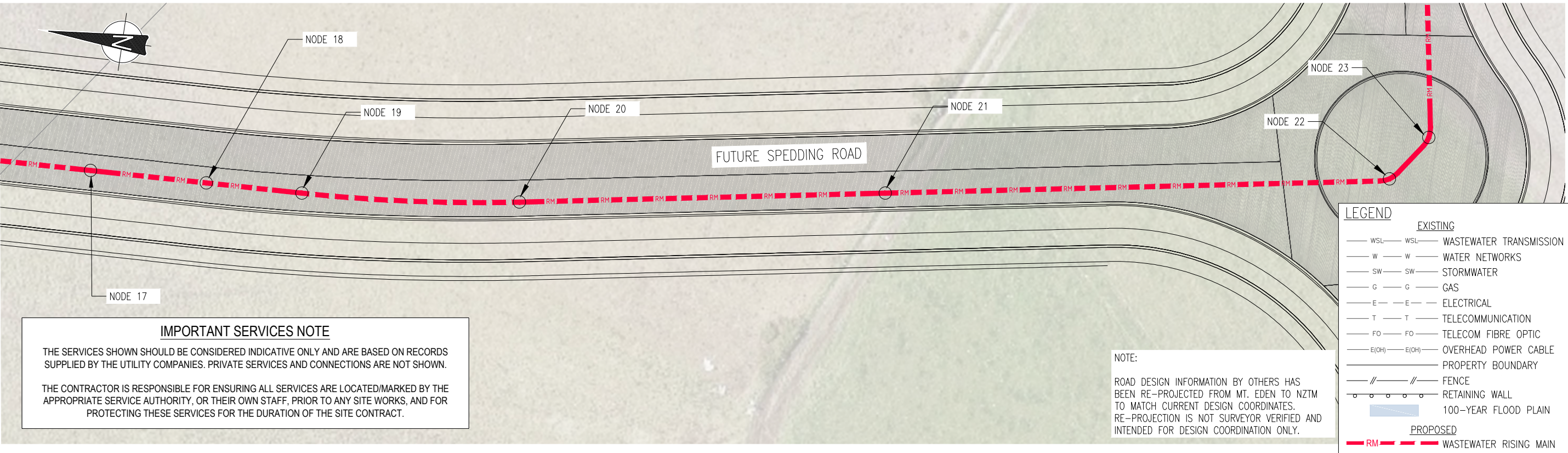
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WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 4 OF 12



CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.008	ISSUE	5



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ISSUE	DATE	AMENDMENT	BY	APPD.
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.
4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	P.H.
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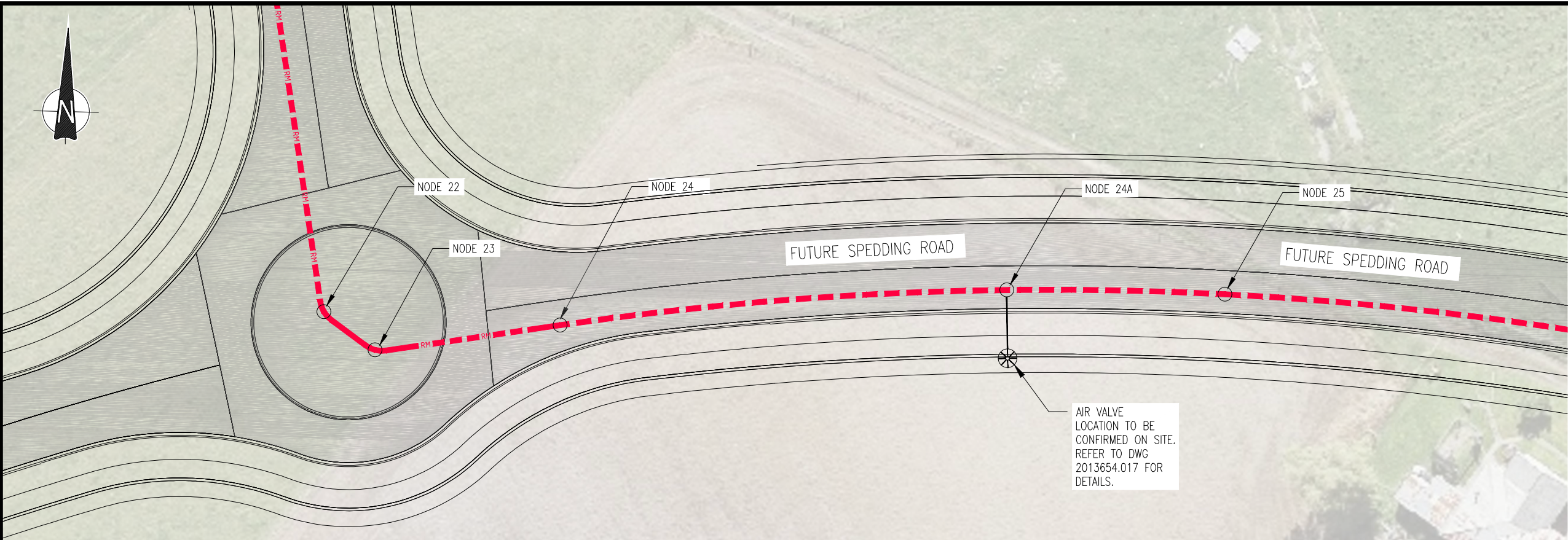
DESIGNED	P. HOUGHTON	9-22
DES. APPROVED	S. WANG	9-22
DRAWN	S. VASOL	9-22
DWG. APPROVED	D. XIE	9-22
WSL DESIGN MGMT.		
WSL PROJ. LEAD		



WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 5 OF 12



CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.009	ISSUE	5



LEGEND

EXISTING

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o-o-o-o

WASTEWATER TRANSMISSION

WATER NETWORKS

STORMWATER

GAS

ELECTRICAL

TELECOMMUNICATION

TELECOM FIBRE OPTIC

OVERHEAD POWER CABLE

PROPERTY BOUNDARY

FENCE

RETAINING WALL

100-YEAR FLOOD PLAIN

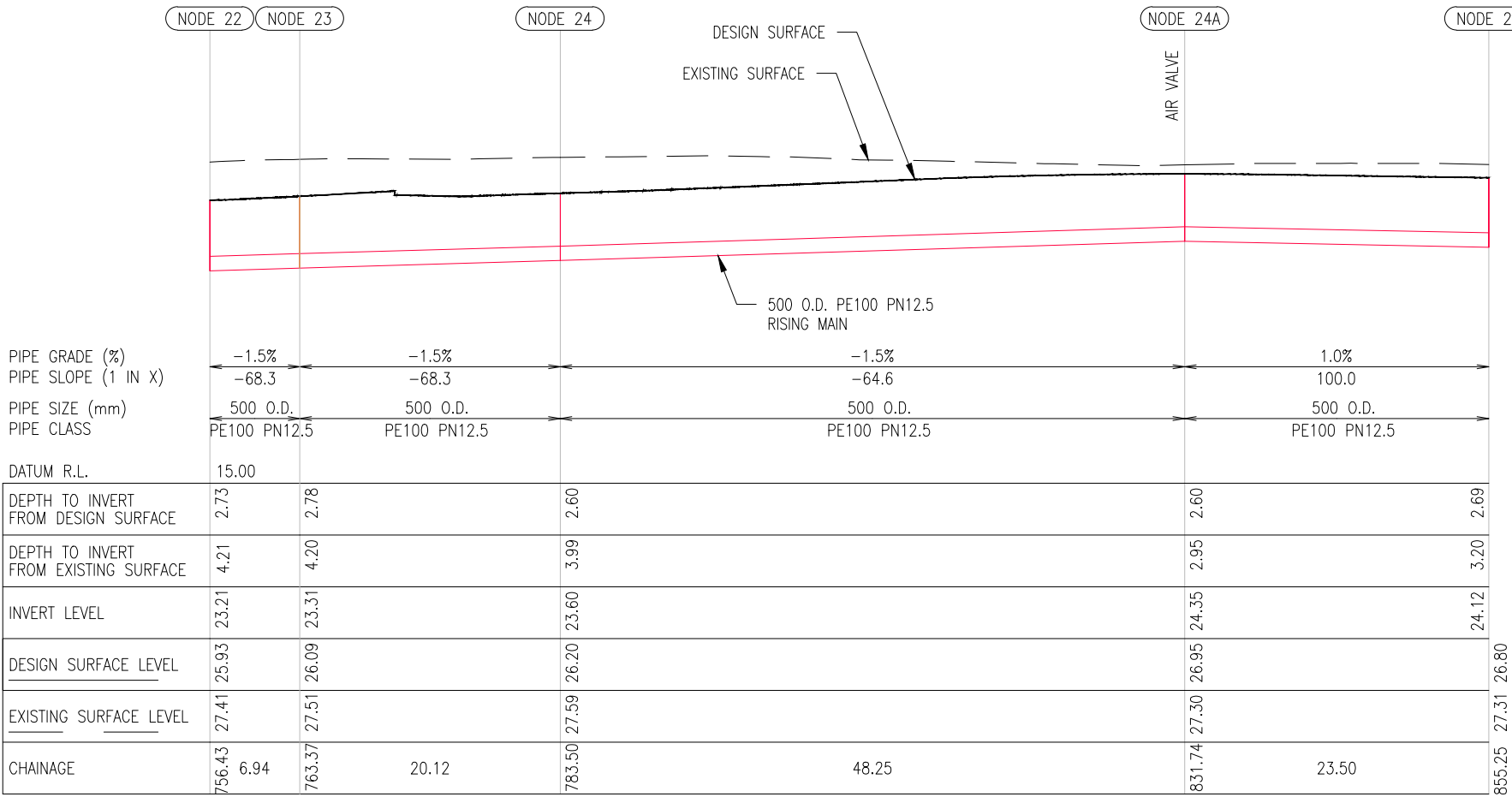
PROPOSED

RM

WASTEWATER RISING MAIN

NOTE:

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IMPORTANT SERVICES NOTE

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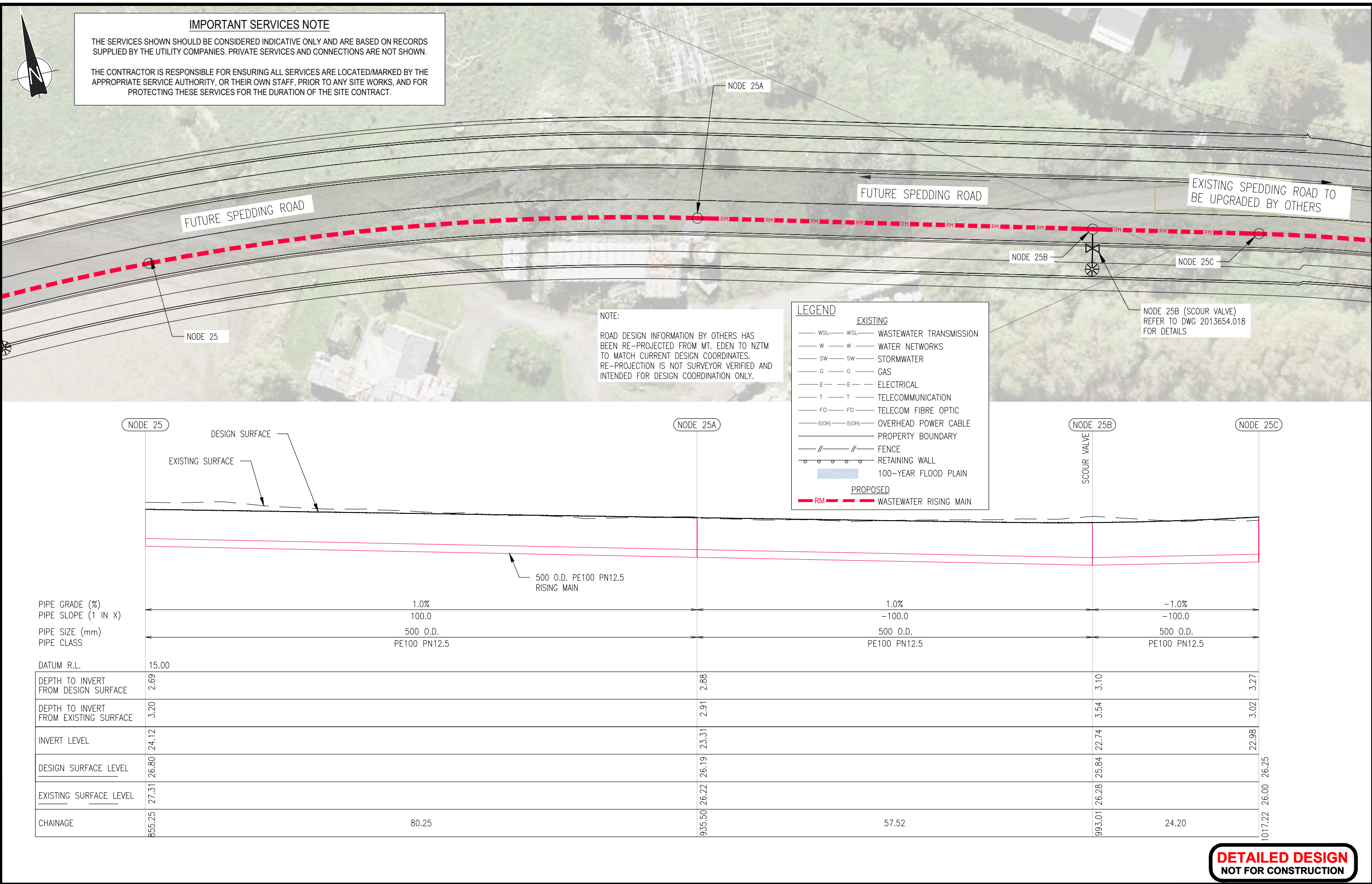
				DESIGNED	P. HOUGHTON	9-22
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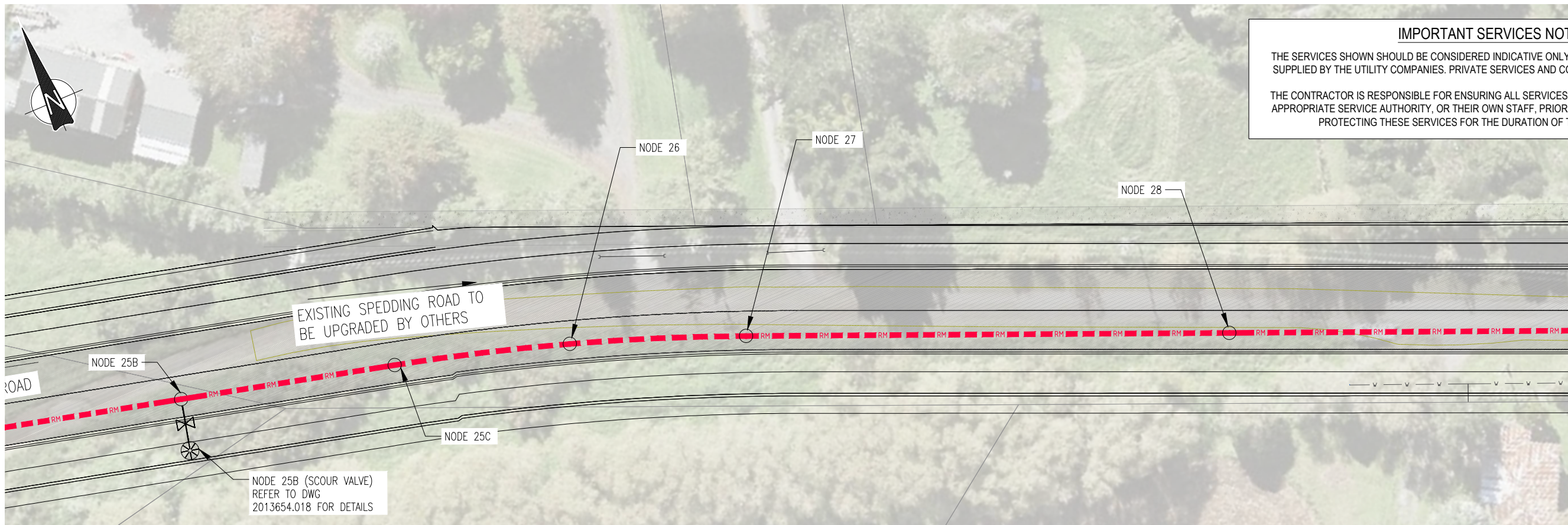
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 6 OF 12



CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.010	ISSUE	5



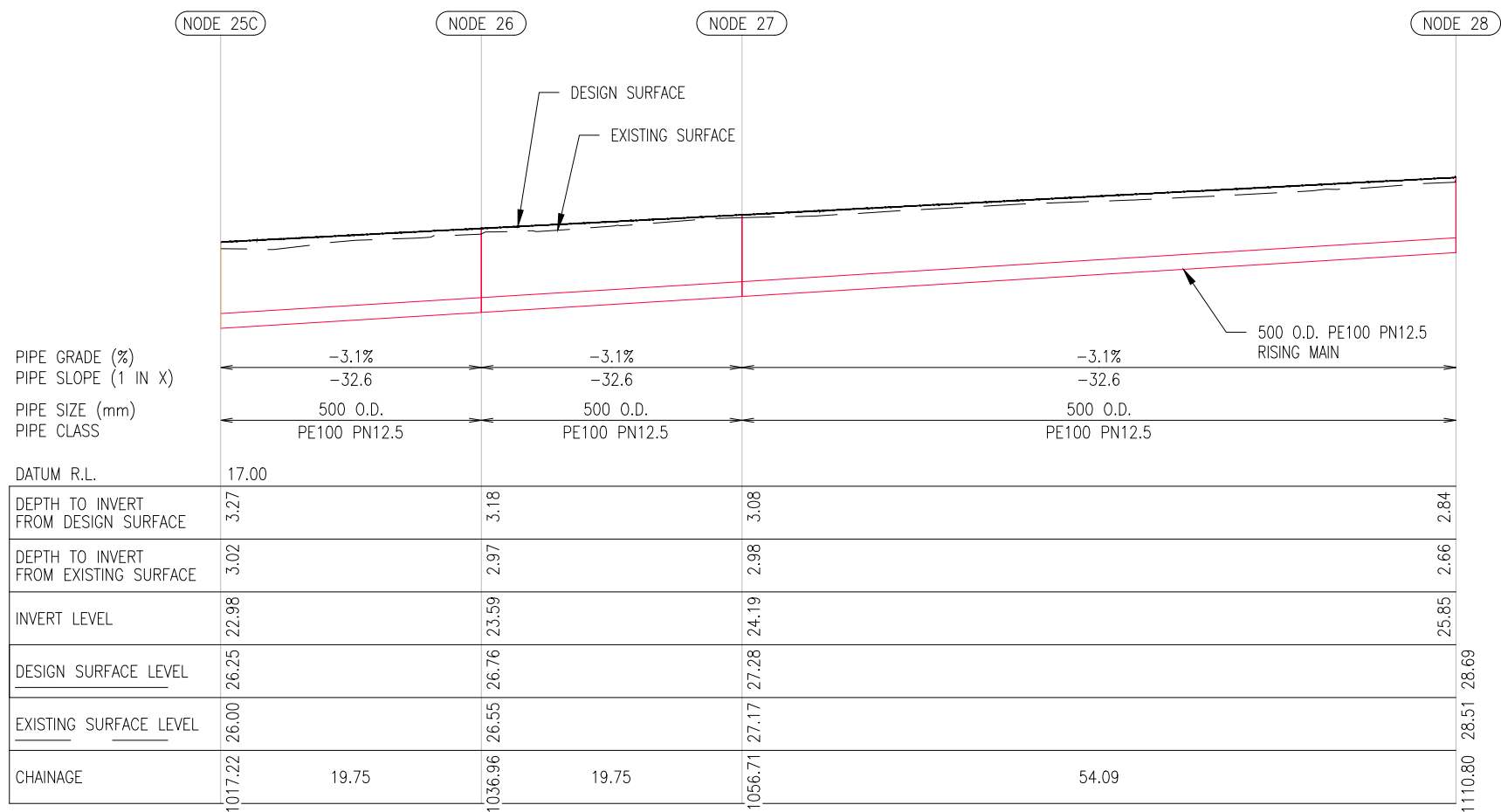
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LEGEND

EXISTING

- WSL — WSL — WASTEWATER TRANSMISSION
- W — W — WATER NETWORKS
- SW — SW — STORMWATER
- G — G — GAS
- E — E — ELECTRICAL
- T — T — TELECOMMUNICATION
- FO — FO — TELECOM FIBRE OPTIC
- E(OH) — E(OH) — OVERHEAD POWER CABLE
- — — — — PROPERTY BOUNDARY
- // — // — FENCE
- o — o — RETAINING WALL
- — — — — 100-YEAR FLOOD PLAIN

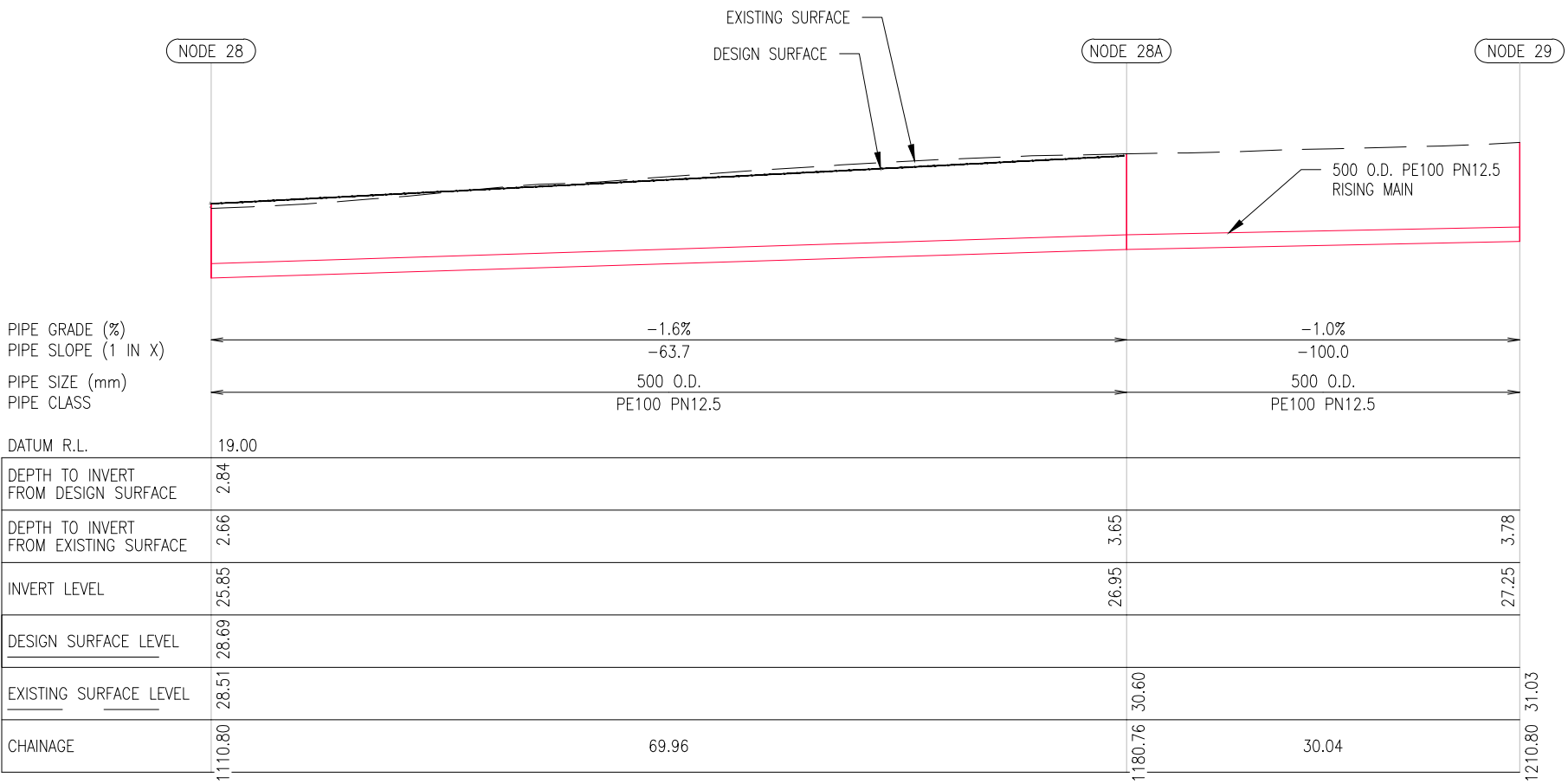
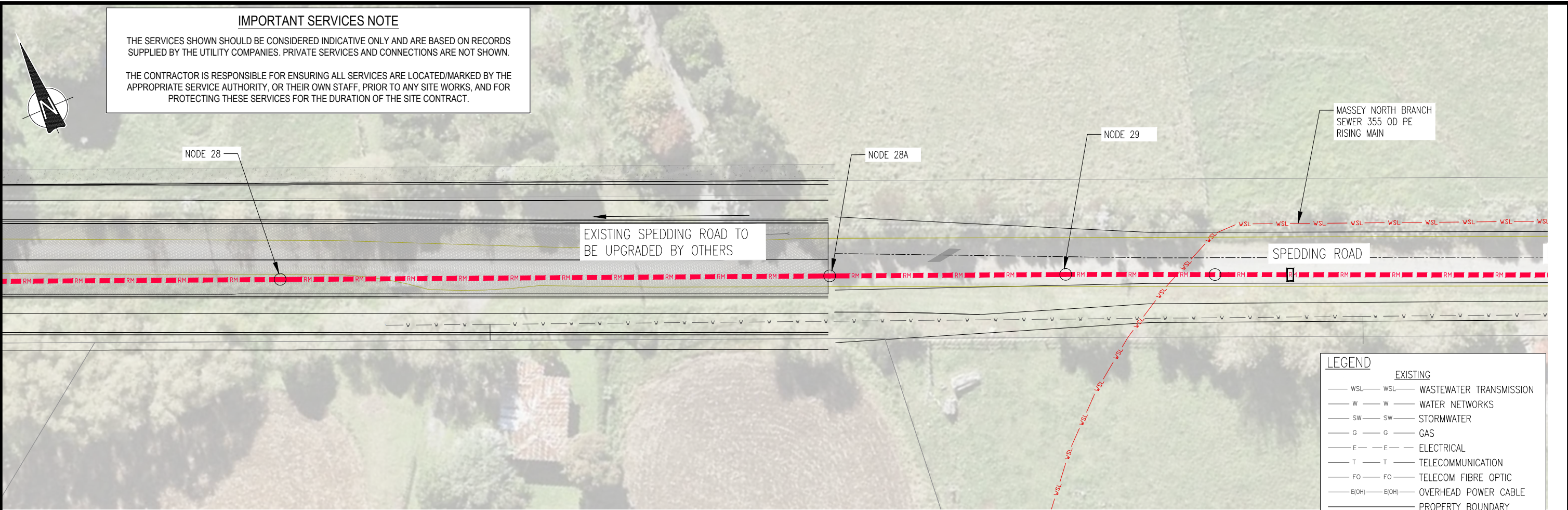
PROPOSED

- RM — RM — WASTEWATER RISING MAIN

NOTE:

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ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE



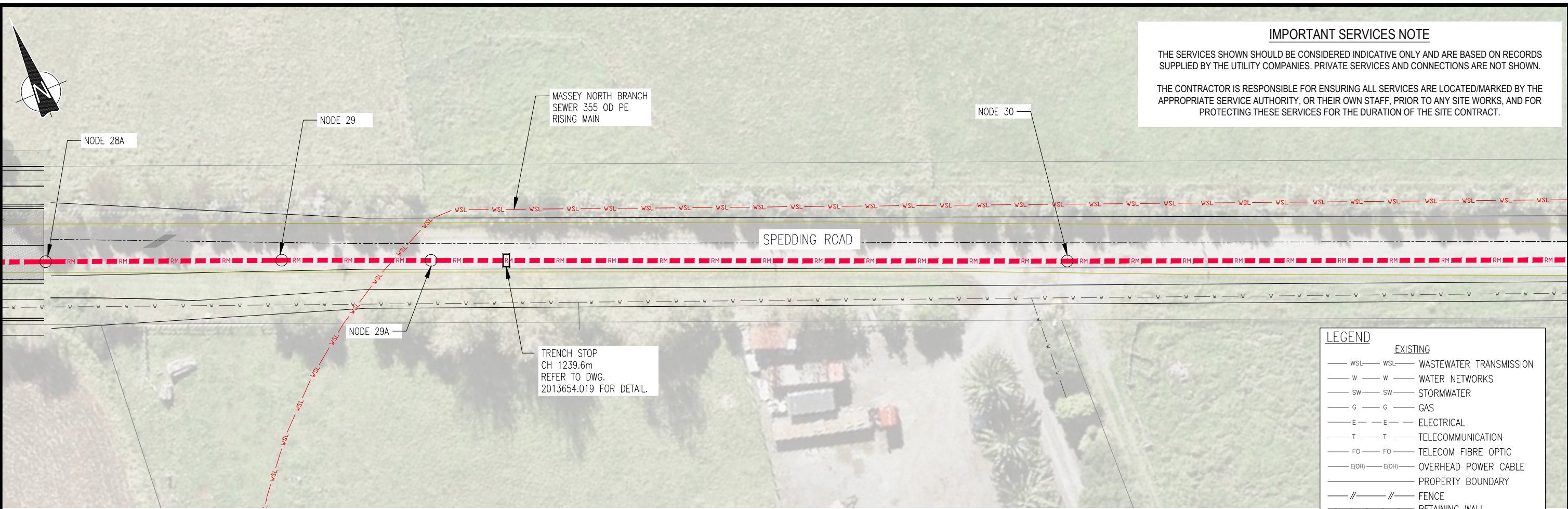
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WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 9 OF 12



CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE A3	1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.013	ISSUE	5



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LEGEND

EXISTING

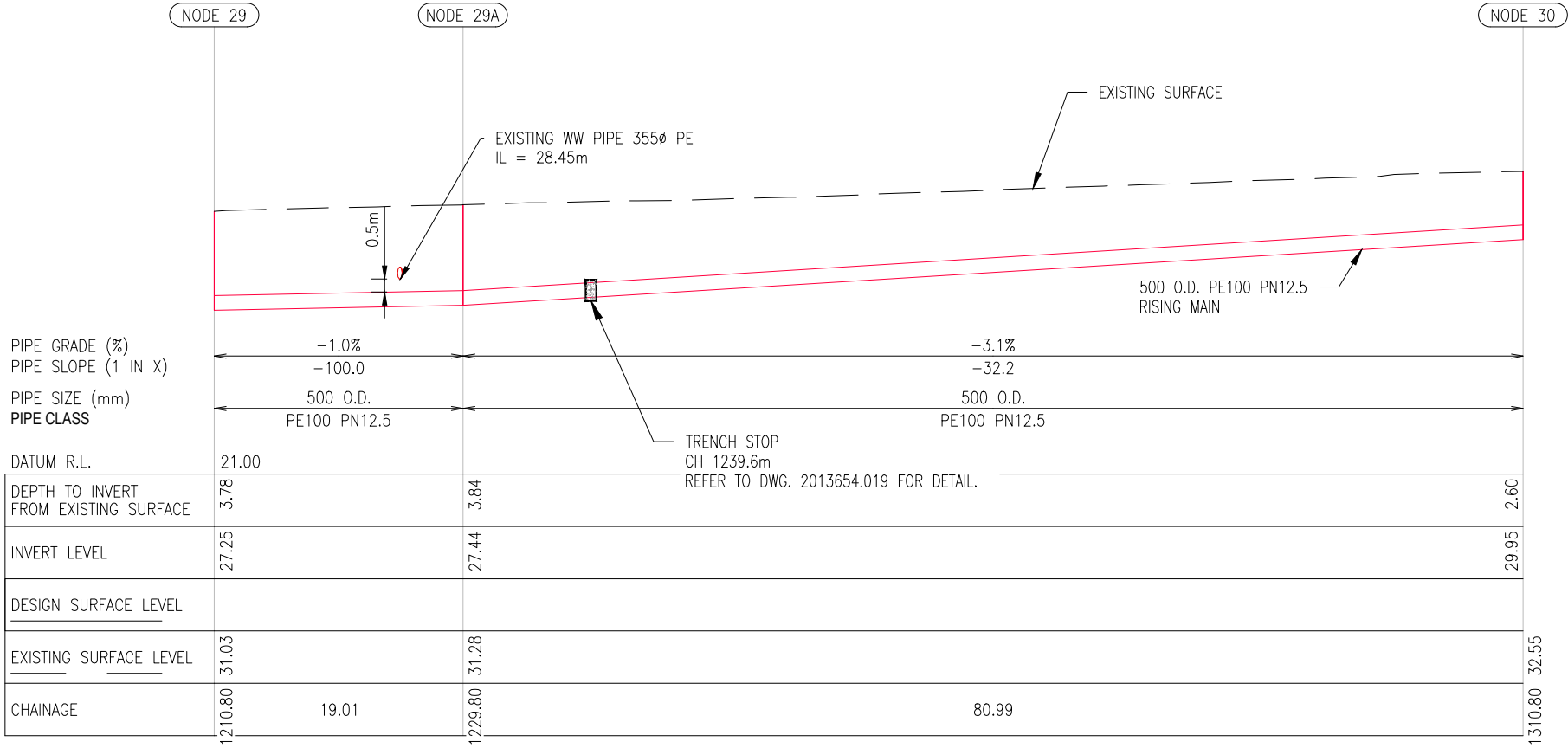
- WSL — WSL — WASTEWATER TRANSMISSION
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- // — // — FENCE
- o — — — — — RETAINING WALL
- — — — — 100-YEAR FLOOD PLAIN

PROPOSED

- RM — RM — WASTEWATER RISING MAIN

NOTE:

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PIPE GRADE (%)	-1.0%	-3.1%
PIPE SLOPE (1 IN X)	-100.0	-32.2
PIPE SIZE (mm)	500 O.D.	500 O.D.
PIPE CLASS	PE100 PN12.5	PE100 PN12.5
DATUM R.L.	21.00	
DEPTH TO INVERT FROM EXISTING SURFACE	3.78	2.60
INVERT LEVEL	27.25	29.95
DESIGN SURFACE LEVEL		
EXISTING SURFACE LEVEL	31.03	32.55
CHAINAGE	1210.80 19.01 1229.80	80.99 1310.80

DETAILED DESIGN
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IMPORTANT SERVICES NOTE

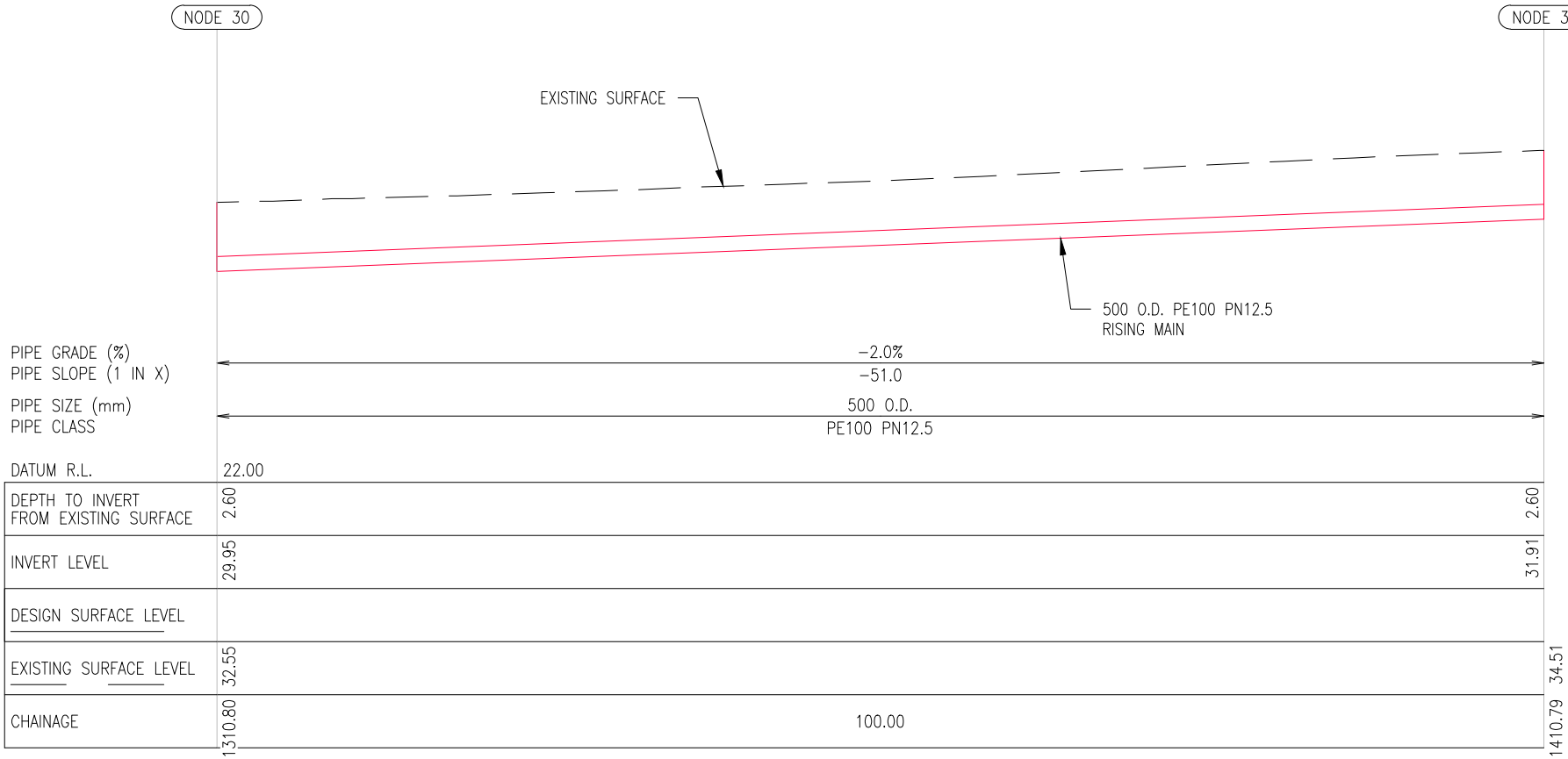
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EXISTING	
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— W — W —	WATER NETWORKS
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— o — o — o — o —	RETAINING WALL
— — —	100-YEAR FLOOD PLAIN
PROPOSED	
— RM — RM —	WASTEWATER RISING MAIN

NOTE:

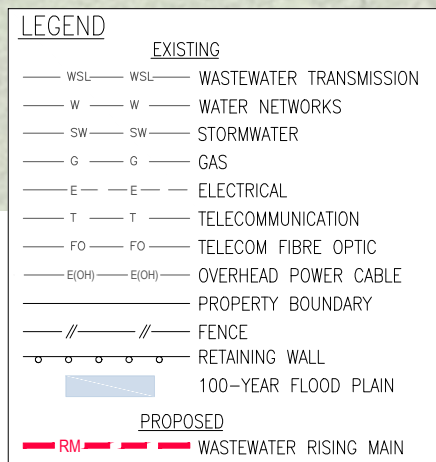
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PROPOSED BREAK PRESSURE TANK,
CONNECTION, AND DIVERSIONS TO BE
DESIGNED AND COMPLETED BY OTHERS

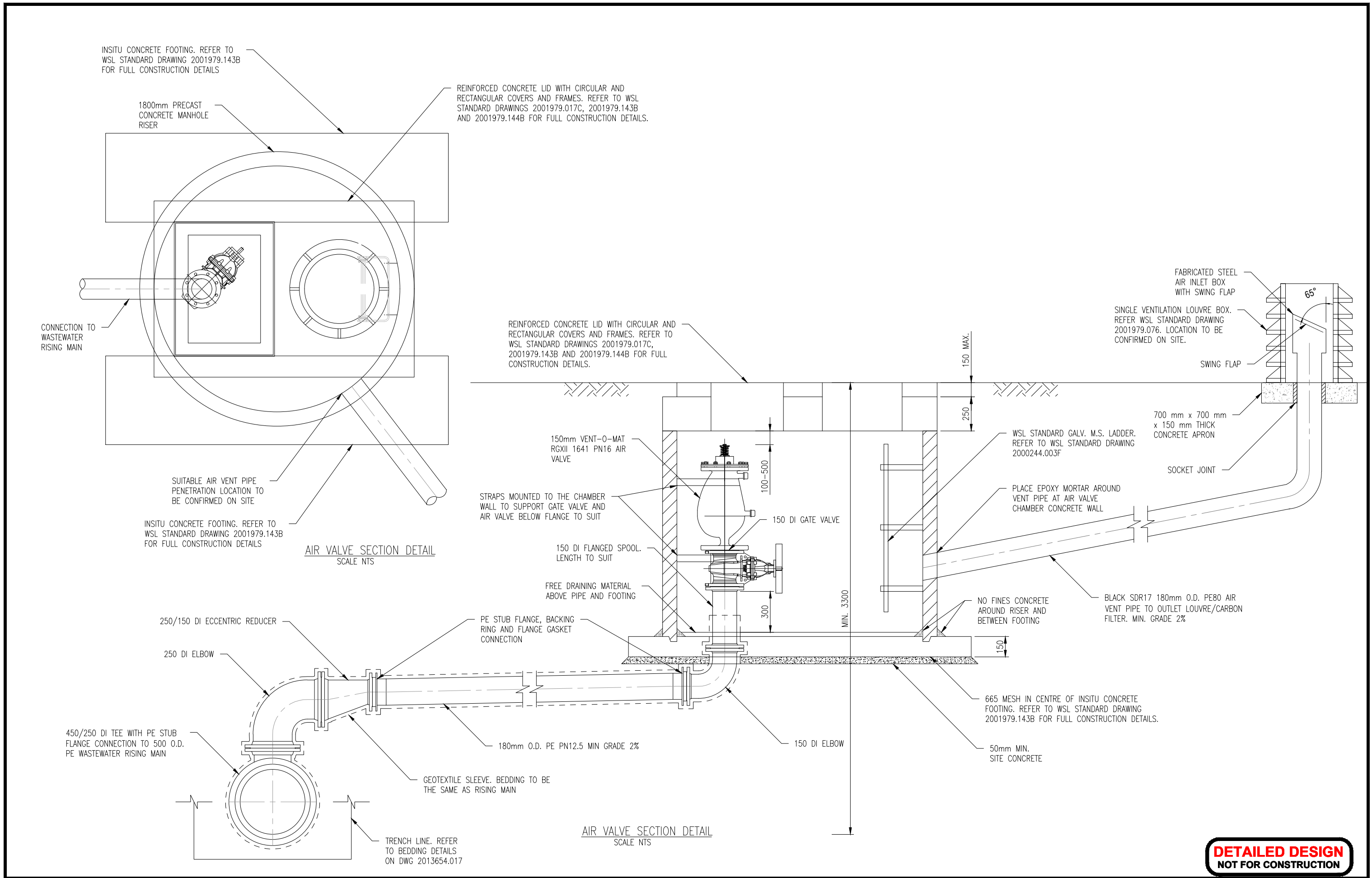


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4	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT		S.V.	P.H.	DES. APPROVED	S. WANG			9-22	ORIGINAL SCALE	A3	CONTRACT No.	6484-6934
3	12-21	ISSUED FOR DETAILED DESIGN		D.X.		DRAWN	S. VASOL			9-22	1:500			
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN		D.X.		DWG. APPROVED	D. XIE			9-22	REF No.	12508391 3-AWD32		
1	5-21	ISSUED FOR PRELIMINARY DESIGN		D.X.		WSL DESIGN MGMT.					DWG No.	2013654.016	ISSUE	4
ISSUE	DATE	AMENDMENT		BY	APPD.	WSL PROJ. LEAD		BY	DATE					

WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN PLAN AND LONG SECTION - SHEET 12 OF 12



DETAILED DESIGN
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5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.
4	4-22	RE-ISSUED FOR DETAILED DESIGN	K.T.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	K.T.	P.H.
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.

DESIGNED	P. HOUGHTON	9-22
DES. APPROVED	S. WANG	9-22
DRAWN	S. VASOL	9-22
DWG. APPROVED	D. XIE	9-22
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-



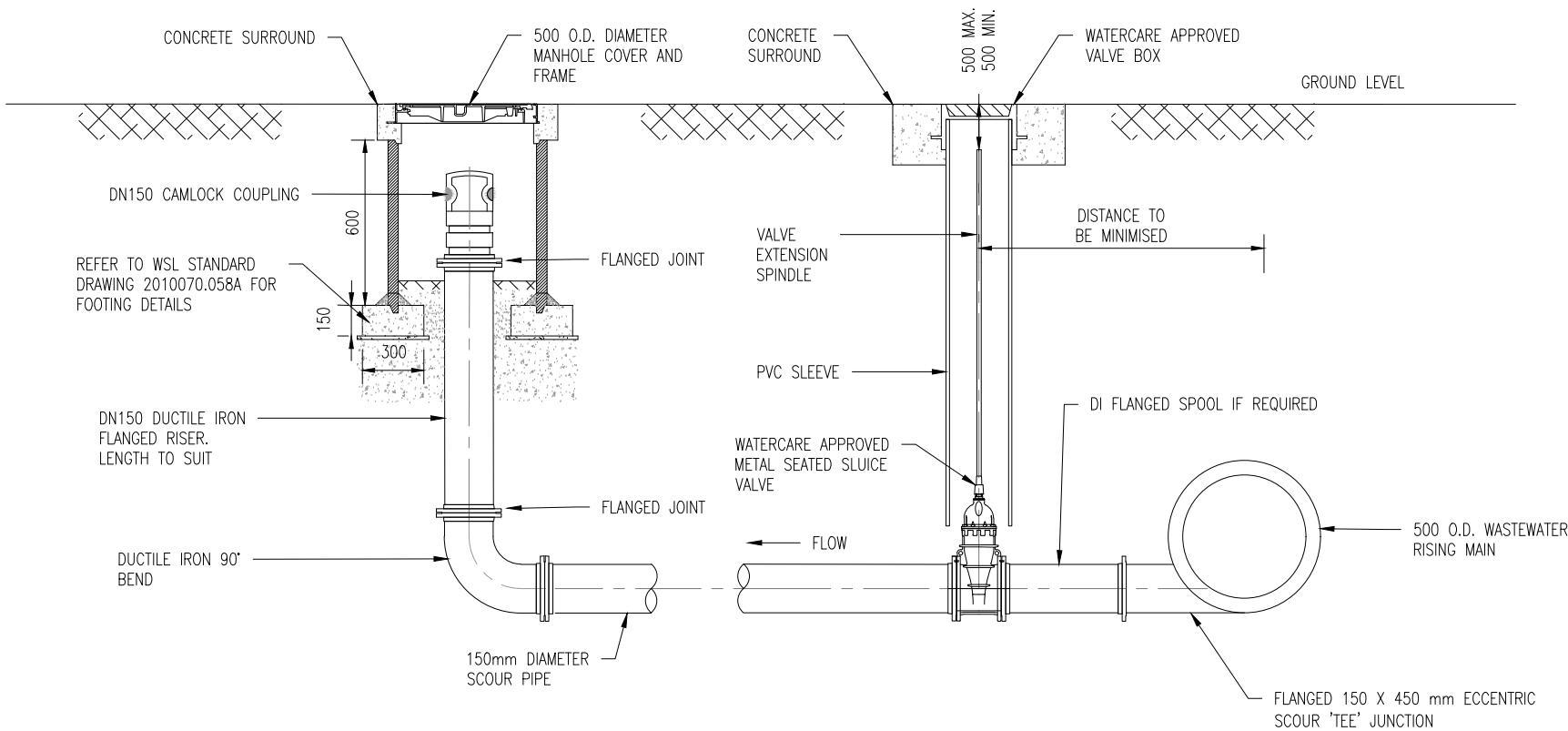
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN AIR VALVE DETAILS



CAD FILE	2013654.017	DATE	09-09-22
ORIGINAL SCALE	A3 1:25	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.017	ISSUE	5

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. REFER TO WATERCARE STANDARD DRAWINGS 2010070.058A WW23 AND 2010070.055 WW20 FOR FULL CONSTRUCTION DETAILS.
3. MANHOLE VALVE AND OUTLET TO BE IN BERM. 50 mm OFFSET PIPE REQUIRED WHERE MAIN IS IN CARRIAGEWAY.
4. REFER TO DRAWING 2013654.019 FOR PIPE BEDDING DETAILS.
5. DENSO MASTIC PROFILING FOUR STEP SYSTEM TO BE USED FOR CORROSION PROTECTION ON DI PIPING AND FLANGES



SCOUR VALVE DETAIL
SCALE NTS

DETAILED DESIGN
NOT FOR CONSTRUCTION

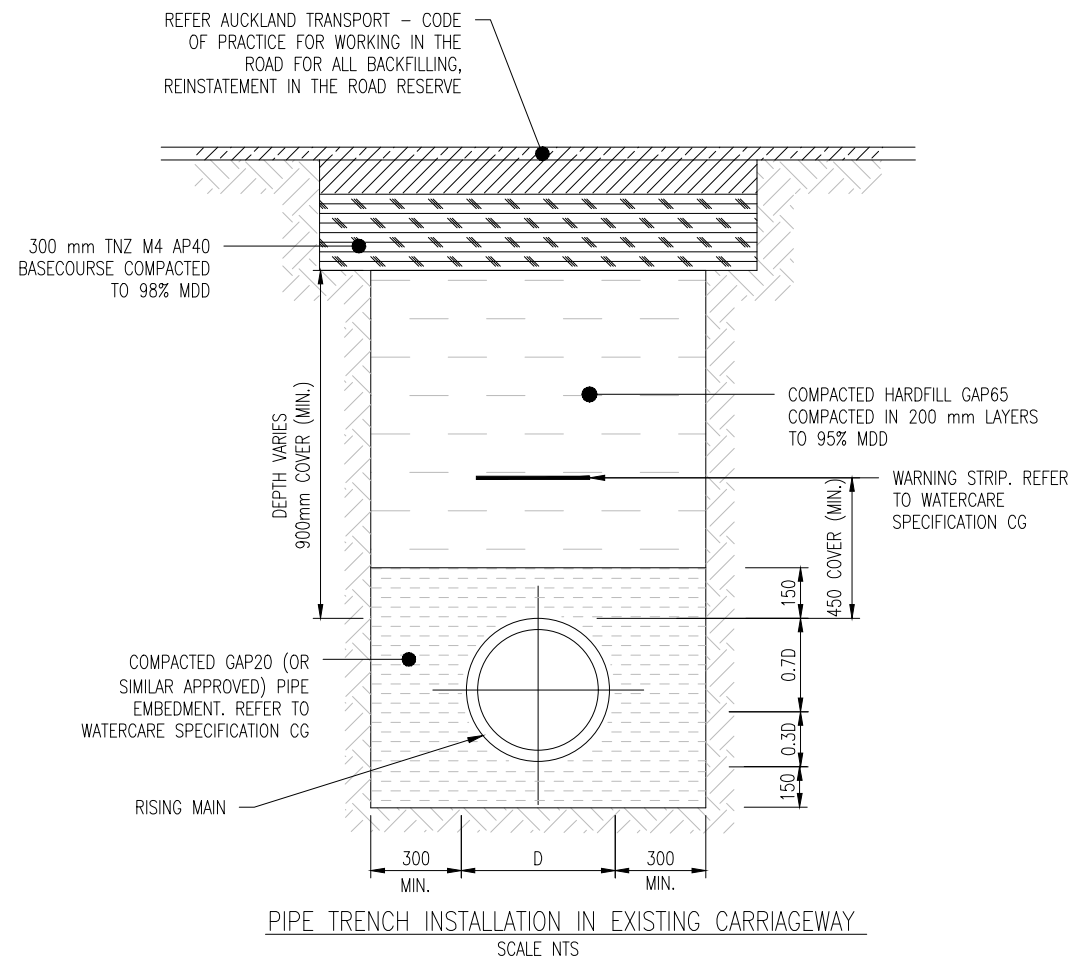
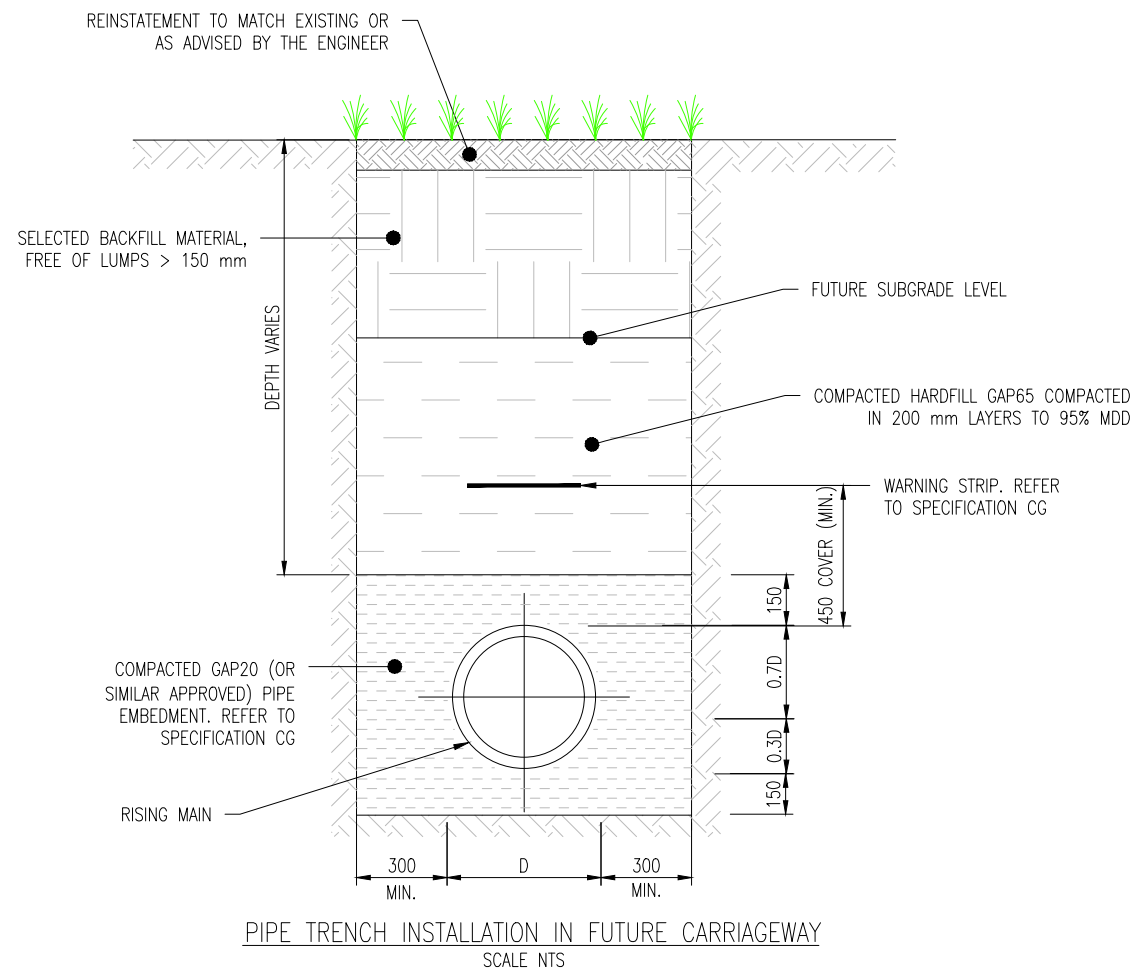
ISSUE	DATE	AMENDMENT	BY	APPD.
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.
4	4-22	RE-ISSUED FOR DETAILED DESIGN	D.J.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	D.J.	P.H.
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.

DESIGNED	P. HOUGHTON	9-22
DES. APPROVED	S. WANG	9-22
DRAWN	S. VASOL	9-22
DWG. APPROVED	D. XIE	9-22
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-

WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN SCOUR VALVE DETAILS

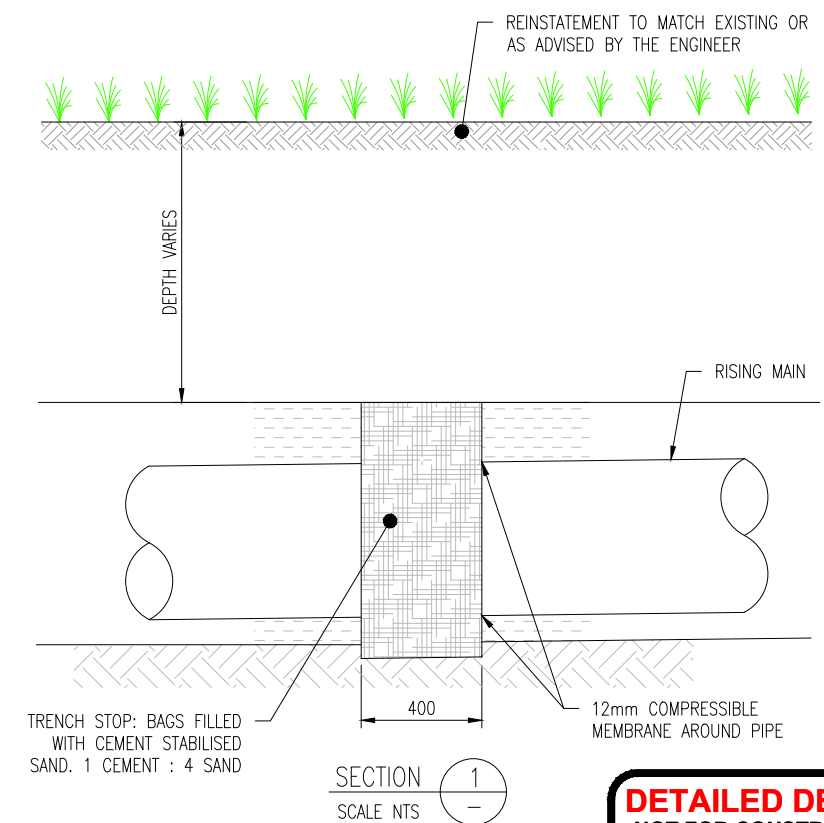
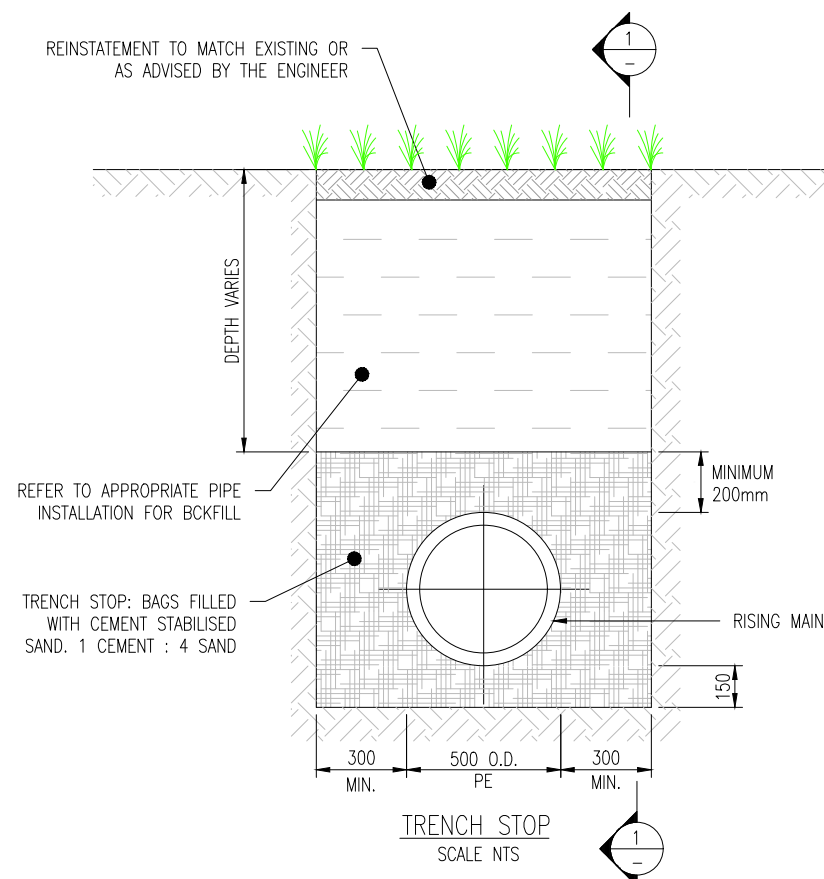
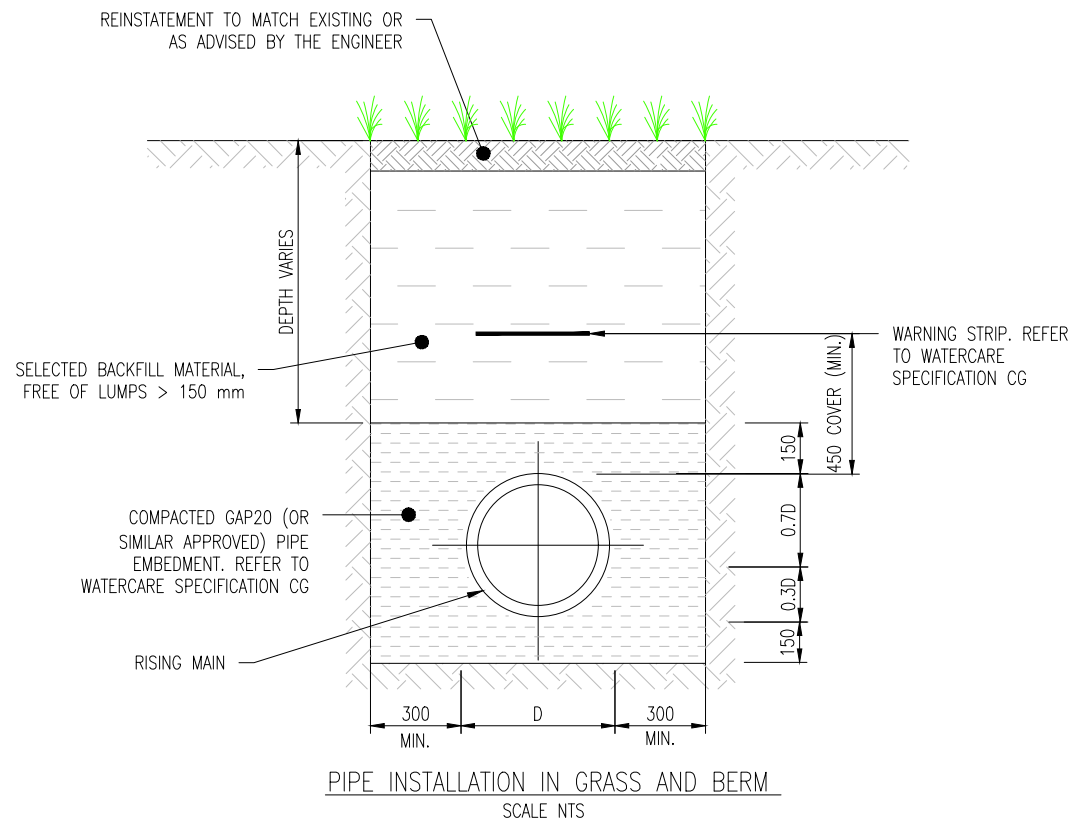


CAD FILE	2013654.018	DATE	09-09-22
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.018	ISSUE	5



NOTES:

1. MINIMUM HORIZONTAL AND VERTICAL CLEARANCE TO OTHER SERVICES TO COMPLY WITH WATERCARE CODE OF PRACTICE.
2. FOR SELECTED BACKFILL MATERIAL REFER TO WATERCARE'S STANDARD.
3. DIMENSION 'D' REFERS TO THE EXTERNAL PIPE DIAMETER.



DETAILED DESIGN
NOT FOR CONSTRUCTION

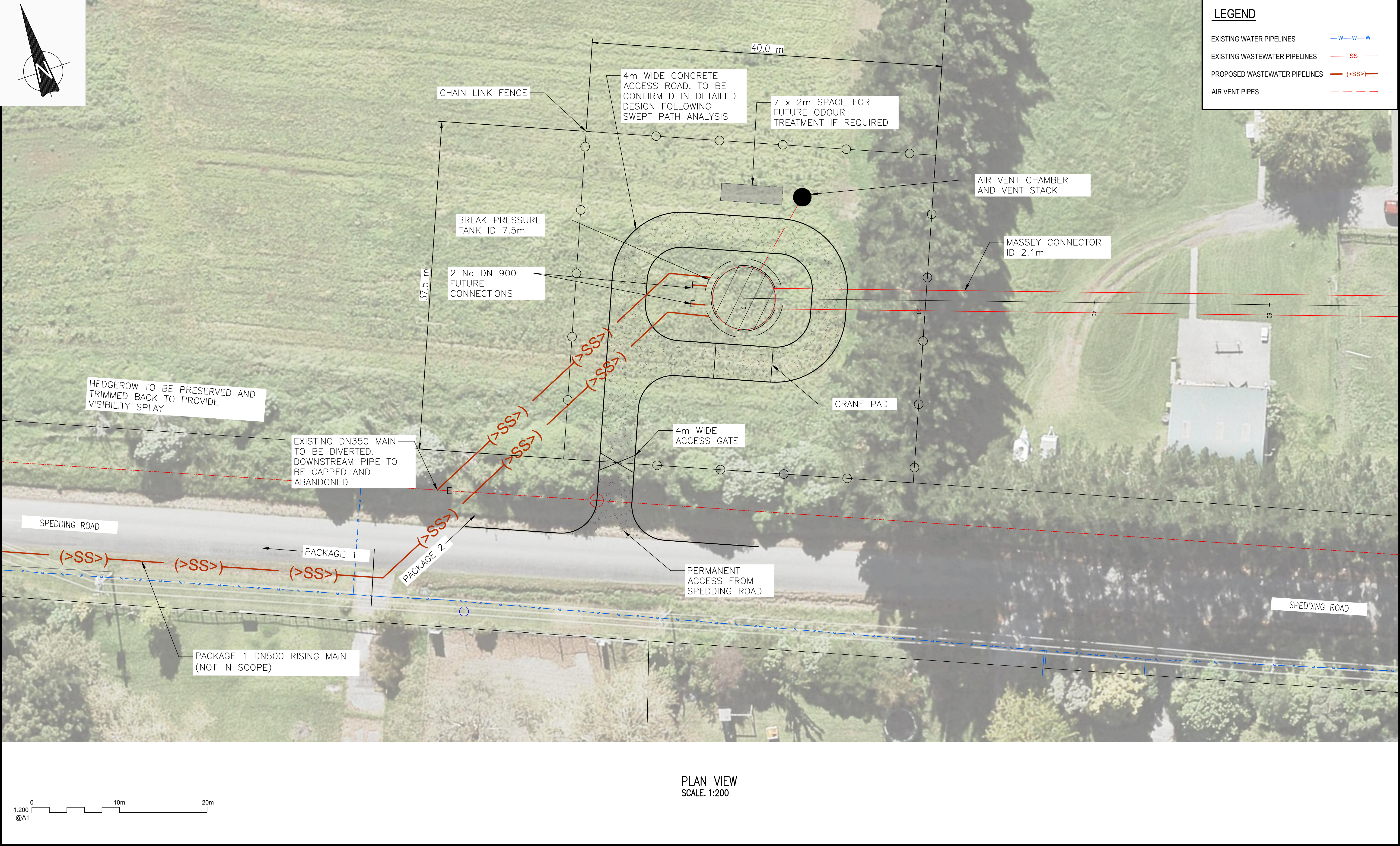
ISSUE	DATE	AMENDMENT	BY	APPD.
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.
4	4-22	RE-ISSUED FOR DETAILED DESIGN	D.J.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	D.J.	P.H.
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.

DESIGNED	P. HOUGHTON	9-22
DRAWN	S. WANG	9-22
DWG. APPROVED	S. VASOL	9-22
WSL DESIGN MGMT.	D. XIE	9-22
WSL PROJ. LEAD		

WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN TRENCH DETAILS



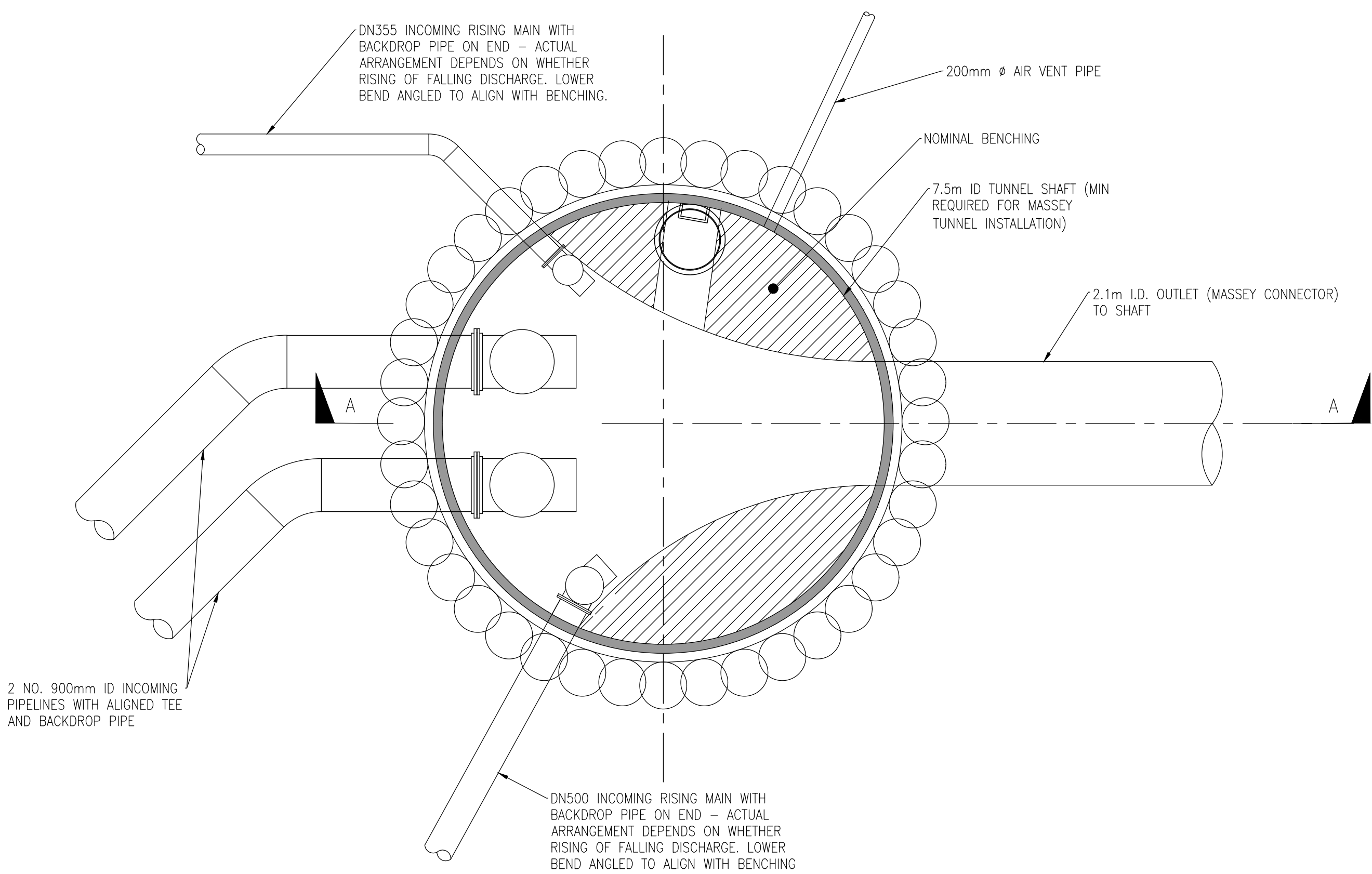
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REF No.	12508391 3-AWD32		
DWG No.	2013654.019	ISSUE	5



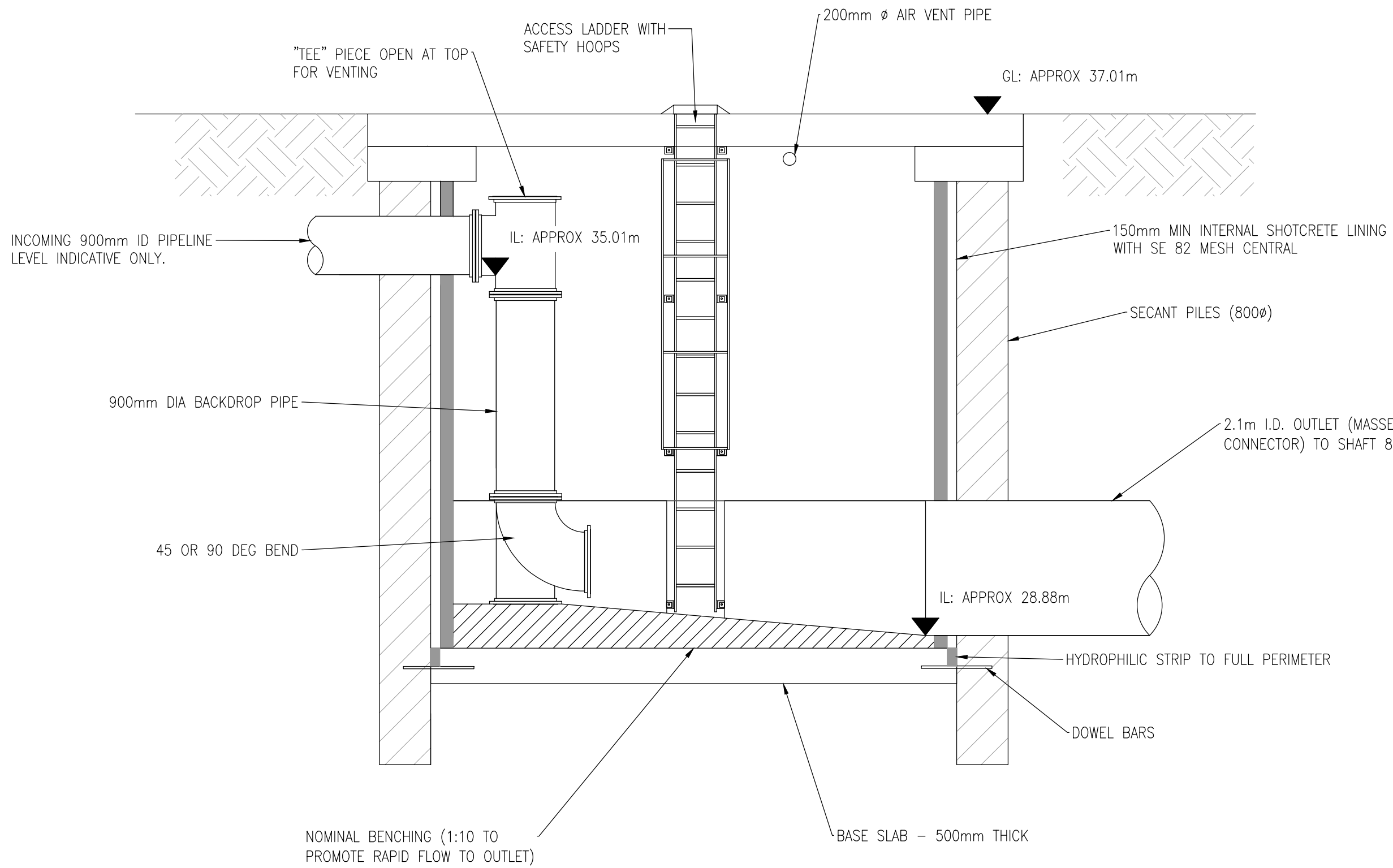
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NOTES

- 1. DESIGN PHASE IS PRELIMINARY DESIGN. DRAWING NOT FOR CONSTRUCTION
- 2. DO NOT OBTAIN DIMENSIONS BY SCALING FROM THE DRAWING
- 3. LEVELS ARE IN TERMS OF DATUM AUCKLAND 1946
- 4. ALLOW FOR 200mm (MIN)
- 5. SECANT PILES:
 - SOFT PILES = UN-REINFORCED, F'C = 3 MPA
 - HARD PILES = REINFORCED, F'C = 40 MPA
 - SOFT EYE FOR TUNNEL PENETRATION



PLAN



SECTION A-A

						DESIGNEDC. UNDERDOWN05-22 DES. APPROVEDP. CORRIS05-22 DRAWNF. MISPLON05-22 DWG. APPROVEDP. CORRIS05-22 WSL DESIGN MGMT. WSL PROJ. LEAD			CAD FILE 2013661.801 DATE 13-05-22 ORIGINAL SCALE A1 CONTRACT No. — REF. No. 417039-MMD-02-XX-DR-C-0001 DWG. No. 2013661.801 ISSUE 1		
1	05-22	PRELIMINARY DESIGN – FOR REVIEW	FM	PC		COPYRIGHT – This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.			NORTHERN INTERCEPTOR PHASE 2		
AMENDMENT						BY			WESTGATE TO HOBSONVILLE		
						DATE			BREAK PRESSURE TANK LAYOUT AND SECTION		



**WATERCARE SERVICES LIMITED
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)**

DETAILED DESIGN ISSUE

Project No: 3-AWD32.00
Date: 14/01/2022

Plot Date: Jan 24, 2022 - 5:45pm U:\Project\NZ13\13-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\Civil-AutoCAD\2013646.001.dwg

DRAWING INDEX		
DRAWING NUMBER	SHEET	DRAWING TITLE
		GENERAL
2013646	000	COVER SHEET
2013646	001	DRAWING INDEX
2013646	002	LOCATION MAP & LOCATION PLAN
		CIVIL
2013646	003	OVERALL PLAN
2013646	004	SITE PLAN
2013646	005	SITE ROADING – PLAN
2013646	006	SITE ROADING – TYPICAL SECTION AND DETAILS
2013646	007	SITE ROADING – LARGE TRUCK VEHICLE TURNING
2013646	008	SITE ROADING – MEDIUM TRUCK VEHICLE TURNING
2013646	009	SITE ROADING – ROAD MARKING AND BOLLARDS
2013646	010	PUMP STATION THRUST BLOCK TYPE 1 DETAILS
2013646	011	PUMP STATION THRUST BLOCK TYPE 2 DETAILS
2013646	012	EMERGENCY OVERFLOW – LONG SECTION
2013646	013	EMERGENCY OVERFLOW – OUTFALL AND RIPRAP DETAIL
2013646	014	WET WELL GANTRY LIFTING PLAN
		MECHANICAL
2013650	001	PUMP STATION LAYOUT PLAN
2013650	002	WET WELL, VALVE CHAMBER – DETAILED SECTIONS
2013650	003	INLET MANHOLE – DETAIL SECTIONS
2013650	004	STORAGE TANK – DETAIL SECTIONS
2013650	005	AIR VALVE AND FLOW METER CHAMBER – SECTION AND DETAILS
2013650	006	PUMP STATION ODOUR DUCTING PLAN
2013650	007	PUMP STATION EQUIPMENT SCHEDULE AND GENERAL NOTES
		STRUCTURAL
2013648	001	GENERAL NOTES
2013648	002	REINFORCED CONCRETE NOTES
2013648	003	STRUCTURAL STEELWORK NOTES
2013648	010	GENERAL ARRANGEMENT
2013648	011	WET WELL PUMP BUND SLAB AND DETAILS
2013648	012	WET WELL PUMP LIFTING GANTRY
2013648	013	WET WELL PUMP LIFTING GANTRY DETAILS
		LANDSCAPE
2013649	001	PLANTING PLAN
2013649	002	PLANT SCHEDULE
2013649	003	PLANTING DETAILS

DRAWING INDEX		
DRAWING NUMBER	SHEET	DRAWING TITLE
		PROCESS AND INSTRUMENTATION
203651	000	PIPING AND INSTRUMENTATION DIAGRAM – SYMBOL SHEET
203651	001	PIPING AND INSTRUMENTATION SHEET 1 OF 2
203651	002	PIPING AND INSTRUMENTATION SHEET 2 OF 2
		ELECTRICAL
2013647	003	01–RTU–X01 KINGFISHER RTU CONNECTION SCHEMATIC (SHEET 1 OF 2)
2013647	004	01–RTU–X01 KINGFISHER RTU CONNECTION SCHEMATIC (SHEET 2 OF 2)
2013647	005	SINGLE LINE DIAGRAM
2013647	006	06–PSU X01 24VDC DISTRIBUTION
2013647	007	80–PU–11 PUMP 1 MOTOR SCHEMATIC
2013647	008	80–PU–12 PUMP 2 MOTOR SCHEMATIC
2013647	009	80–PU–21 PUMP 1 MOTOR SCHEMATIC
2013647	010	80–PU–22 PUMP 2 MOTOR SCHEMATIC
2013647	011	PANEL ALARMS
2013647	012	WET WELL 1 ULTRASONIC LEVEL SENSOR 011A
2013647	013	WET WELL 1 ULTRASONIC LEVEL SENSOR 011B
2013647	014	WET WELL 1 80–LSH–012 ALARM FLOAT SWITCH AND 80–SOV–X01 SOLENOID VALVE
2013647	015	WET WELL 2 ULTRASONIC LEVEL SENSOR 021A
2013647	016	WET WELL 2 ULTRASONIC LEVEL SENSOR 021B
2013647	017	WET WELL 2 80–LSH–022 ALARM FLOAT SWITCH
2013647	018	80–FIT–X01 DISCHARGE FLOWMETER
2013647	019	STORAGE TANK 1 WASHER 80–SOV–X03 SOLENOID VALVE
2013647	020	STORAGE TANK 2 WASHER 80–SOV–X04 SOLENOID VALVE
2013647	021	STORAGE TANK 3 WASHER 80–SOV–X05 SOLENOID VALVE
2013647	022	STORAGE TANK 4 WASHER 80–SOV–X06 SOLENOID VALVE
2013647	023	STORAGE TANK 5 WASHER 80–SOV–X07 SOLENOID VALVE
2013647	024A	STORAGE INLET MANHOLE 80–MH–02 LEVEL SWITCH 80–LSH–021
2013647	024B	STORAGE INLET MANHOLE 80–MH–02 LEVEL SWITCH 80–LSH–022
2013647	024C	STORAGE INLET MANHOLE 80–MH–02 LEVEL SWITCH 80–LSH–023
2013647	025	CONTAINER LAYOUT
2013647	026	TYPICAL GENERATOR CONNECTION TERMINAL BOX

DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	AJ	05–21
					DES. APPROVED	BR	05–21
					DRAWN	EW	05–21
3	01–22	DETAILED DESIGN ISSUE	JG	MG	DWG. APPROVED	EW	05–21
2	08–21	RE–ISSUE FOR PRELIMINARY DESIGN	EVV	MK	WSL DESIGN MGMT.	–	–
1	05–21	PRELIMINARY DESIGN ISSUE	AJ	BR	WSL PROJ. LEAD	–	–
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE



Watercare

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WHENUAPAI–REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
DRAWING INDEX

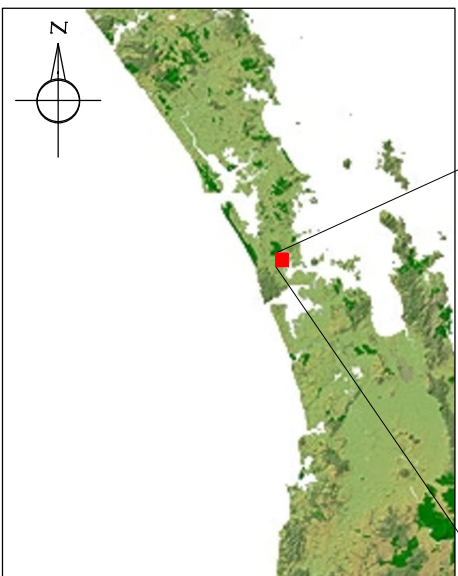


CAD FILE	2013646.001	DATE	14–01–22
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484–6934
REF No.	12508391	3–AWD32	
DWG No.	2013646.001	ISSUE	3

WATERCARE SERVICES LIMITED

WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

WASTEWATER PUMP STATION (DPISH)



LOCATION MAP



LOCATION PLAN
SCALE 1:25,000 (A1)
1:50,000 (A3)

				DESIGNED	AJ	05-21
				DES. APPROVED	BR	05-21
				DRAWN	EW	05-21
				DWG. APPROVED	EW	05-21
3	01-22	DETAILED DESIGN ISSUE	JG MG	WSL DESIGN MGMT.	-	-
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	EV MK	WSL PROJ. LEAD	-	-
1	05-21	PRELIMINARY DESIGN ISSUE	AJ BR			
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE



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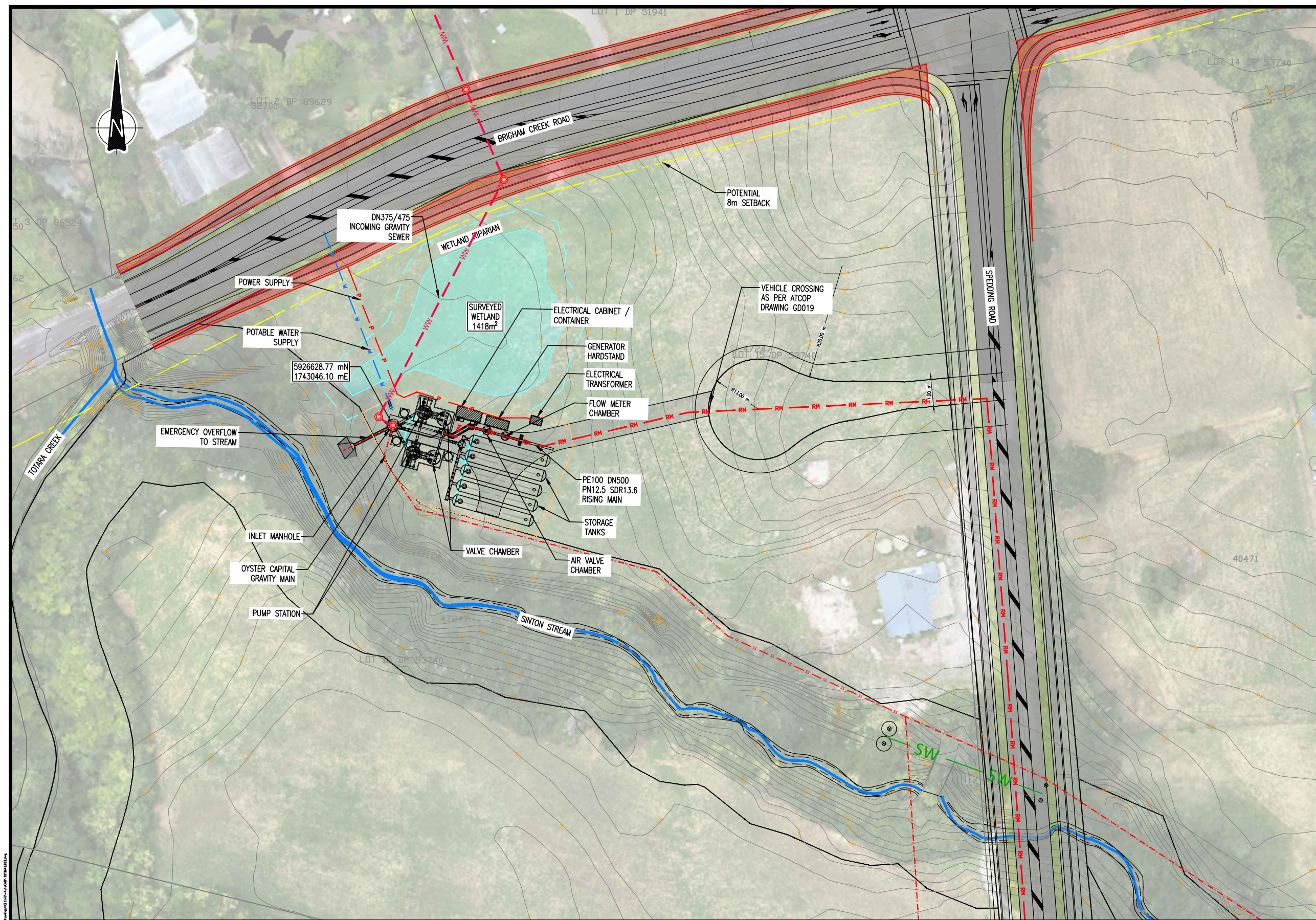
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

WASTEWATER PUMP STATION (DPISH)

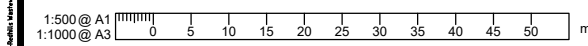
LOCATION MAP AND LOCATION PLAN



CAD FILE	2013646.002	DATE	14-01-22
ORIGINAL SCALE	A3	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013646.002	ISSUE	3



- LEGEND:**
- EXISTING LOT BOUNDARY
 - 8.00 EXISTING GROUND LEVEL
 - 8.10
 - POTENTIAL SETBACK
 - RM RM RISING MAIN
 - P P POWER SUPPLY
 - // // SECURITY FENCE AND WSL OWNED
 - W W WATER SUPPLY
 - WETLAND BOUNDARY
 - STREAM
 - WW WASTEWATER GRAVITY SEWER
 - SS OYSTER CAPITAL GRAVITY SEWER (TBC)



DETAILED DESIGN
NOT FOR CONSTRUCTION

ISSUE	DATE	AMENDMENT	BY	APPD.
4	01-22	DETAILED DESIGN ISSUE	SA	MG
3	10-21	SAFETY IN DESIGN	SA	MK
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	Ev	MK
1	03-21	PRELIMINARY DESIGN ISSUE	AJ	BR

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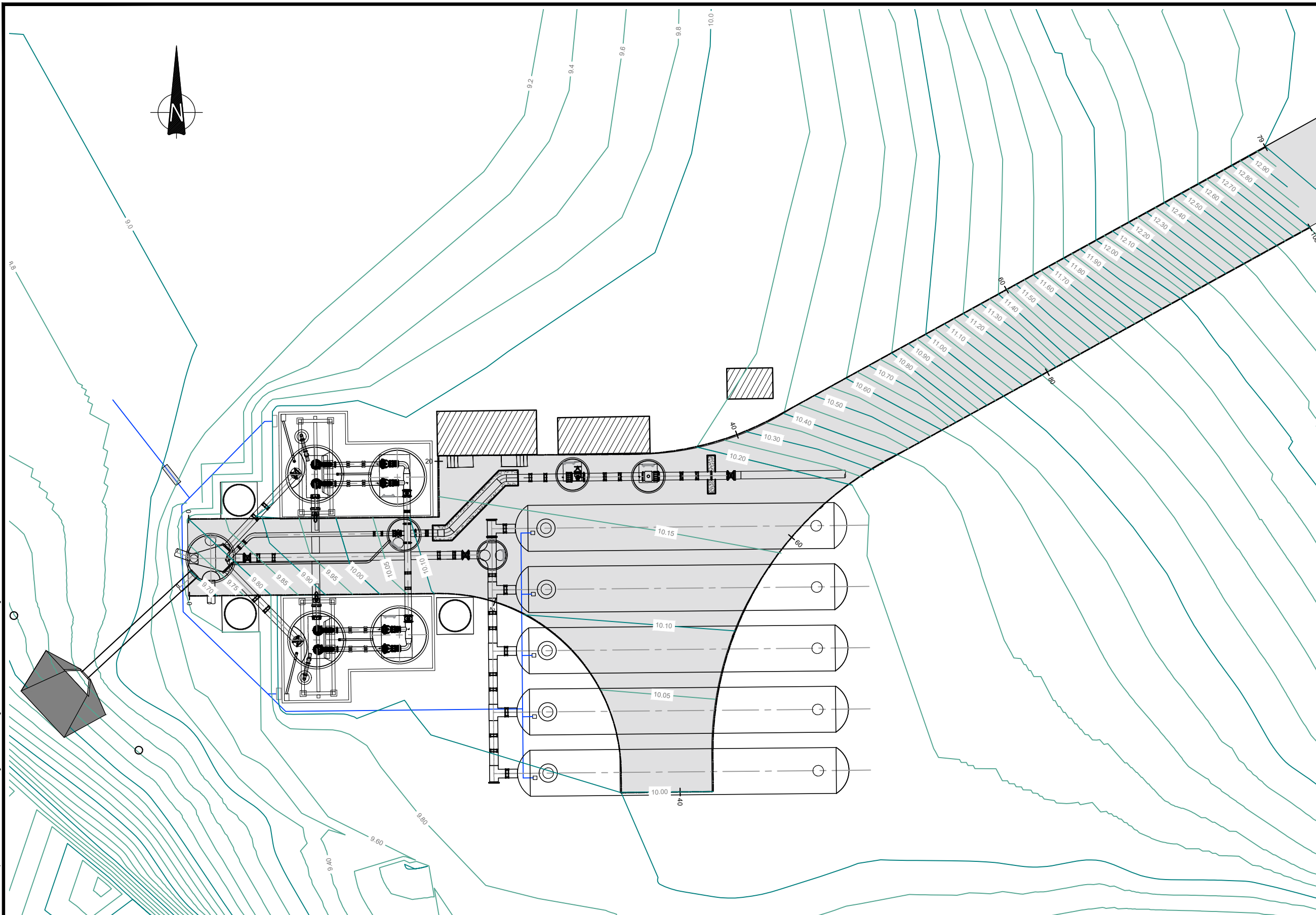
DESIGNED	AJ	03-21
DES. APPROVED	BR	03-21
DRAWN	EW	03-21
DWG. APPROVED	EW	03-21
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-

WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

WASTEWATER PUMP STATION (DPISH)

OVERALL PLAN

CAD FILE	2013646.003	DATE	14-01-2022
ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32	DWG No.	2013646.003
ISSUE	4		



NOTE:

1. CO-ORDINATES ARE NEW ZEALAND TRANSVERSE MERCATOR - NZTM.
2. LEVELS ARE IN TERMS OF NZVD1946.

DETAILED DESIGN
NOT FOR CONSTRUCTION

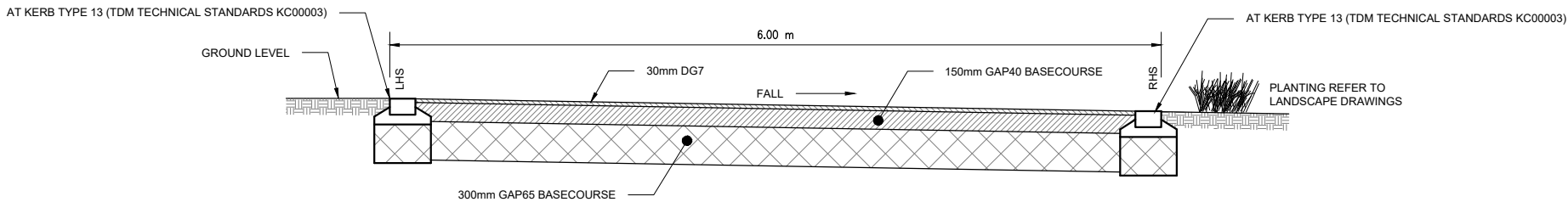
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					DRAWN	SA	11-21
					DWG. APPROVED	WC	11-21
					WSL DESIGN MGMT.	RB	11-21
1	01-22	DETAILED DESIGN ISSUE	SA	WC	WSL PROJ. LEAD	RB	11-21
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE



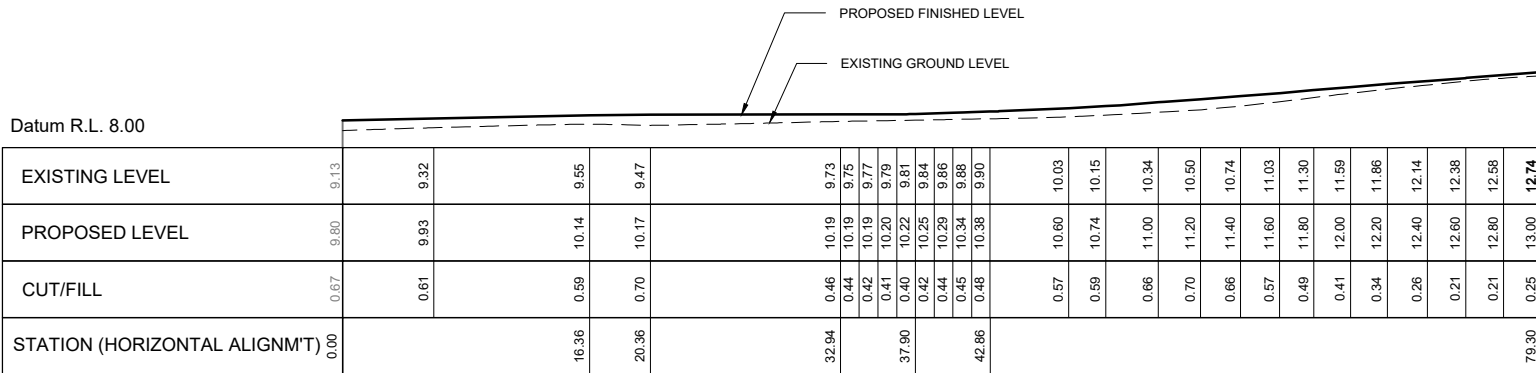
WHENUAPAI—REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)



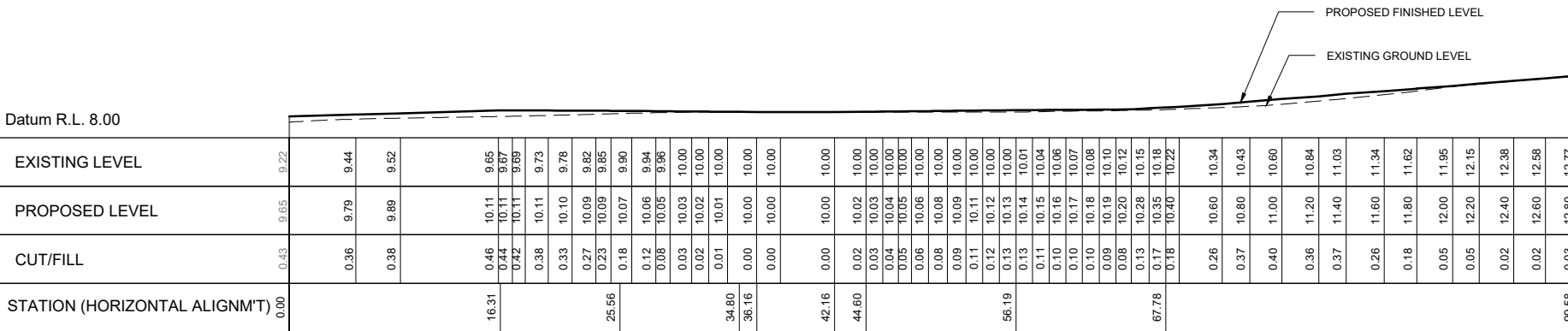
CAD FILE	2013646.005	DATE	14-01-22
ORIGINAL SCALE	A3	CONTRACT No.	-
	AS SHOWN		
REF No.	12508391	3-AWD32	
DWG No.	2013646.005	ISSUE	1



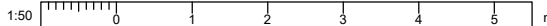
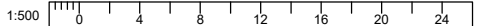
TYPICAL ACCESS ROAD SECTION



Alignment - LHS KERB
SECTION BETWEEN CH: 0.00 AND 79.30
SCALE 1500



Alignment - RHS KERB
SECTION BETWEEN CH: 0.00 AND 99.58
SCALE 1500



DETAILED DESIGN
NOT FOR CONSTRUCTION

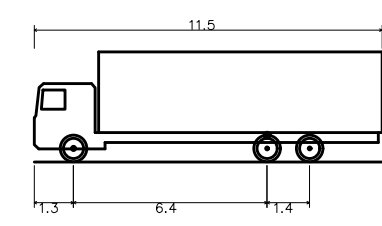
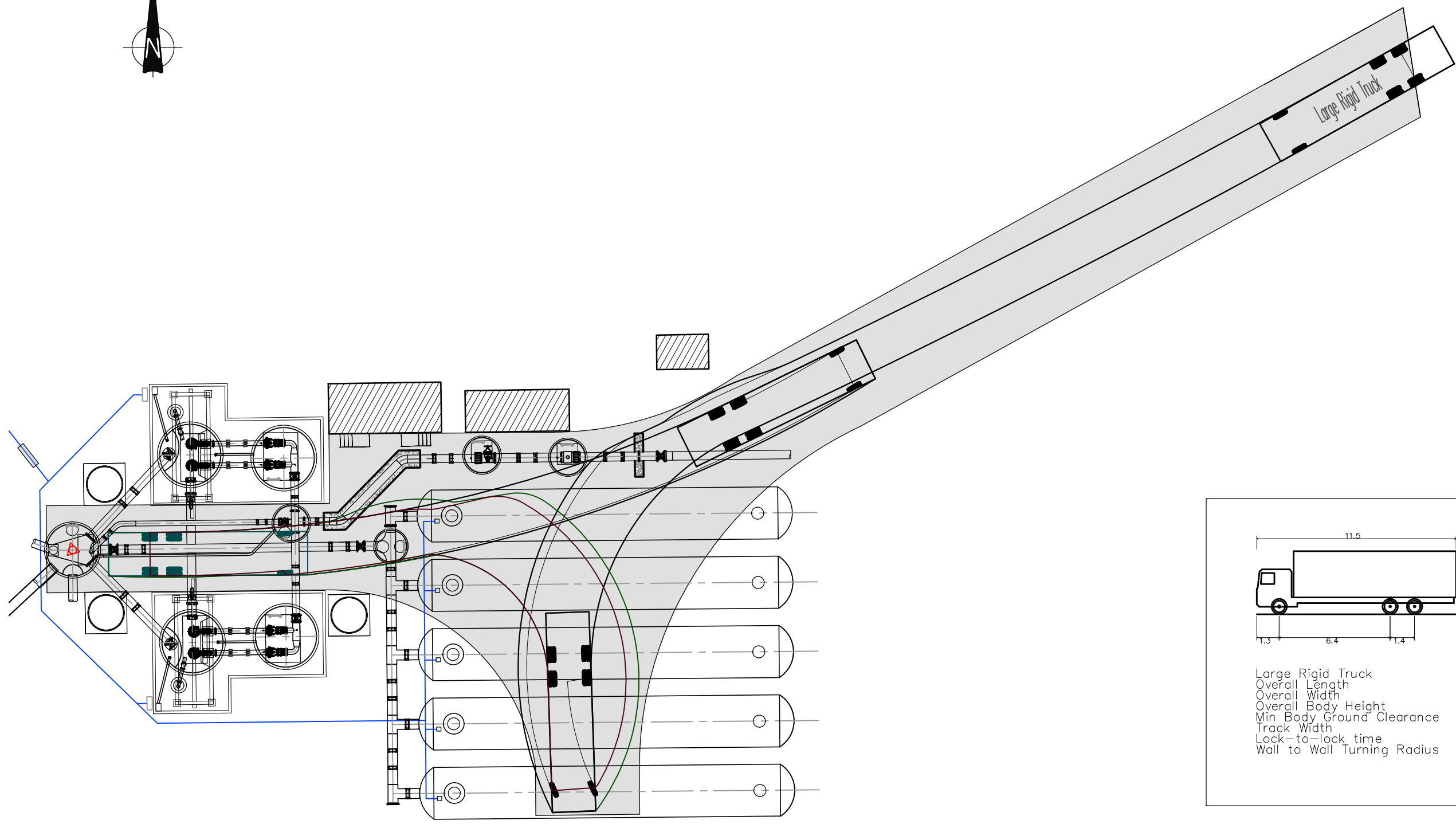
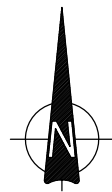
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1	01-22	DETAILED DESIGN ISSUE	SA	WC	WSL PROJ. LEAD	RB	11-21
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE



WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE
WASTEWATER PUMP STATION (DPISH)
SITE ROADING – TYPICAL SECTION AND DETAILS



CAD FILE	2013646.006	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013646.006	ISSUE	1



Large Rigid Truck
Overall Length 11.500m
Overall Width 2.500m
Overall Body Height 3.632m
Min Body Ground Clearance 0.427m
Track Width 2.500m
Lock-to-lock time 6.00s
Wall to Wall Turning Radius 12.000m

1:250 0 2 4 6 8 10 12 m

DETAILED DESIGN
NOT FOR CONSTRUCTION

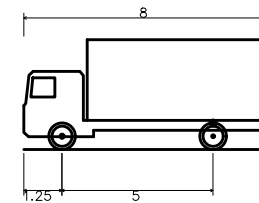
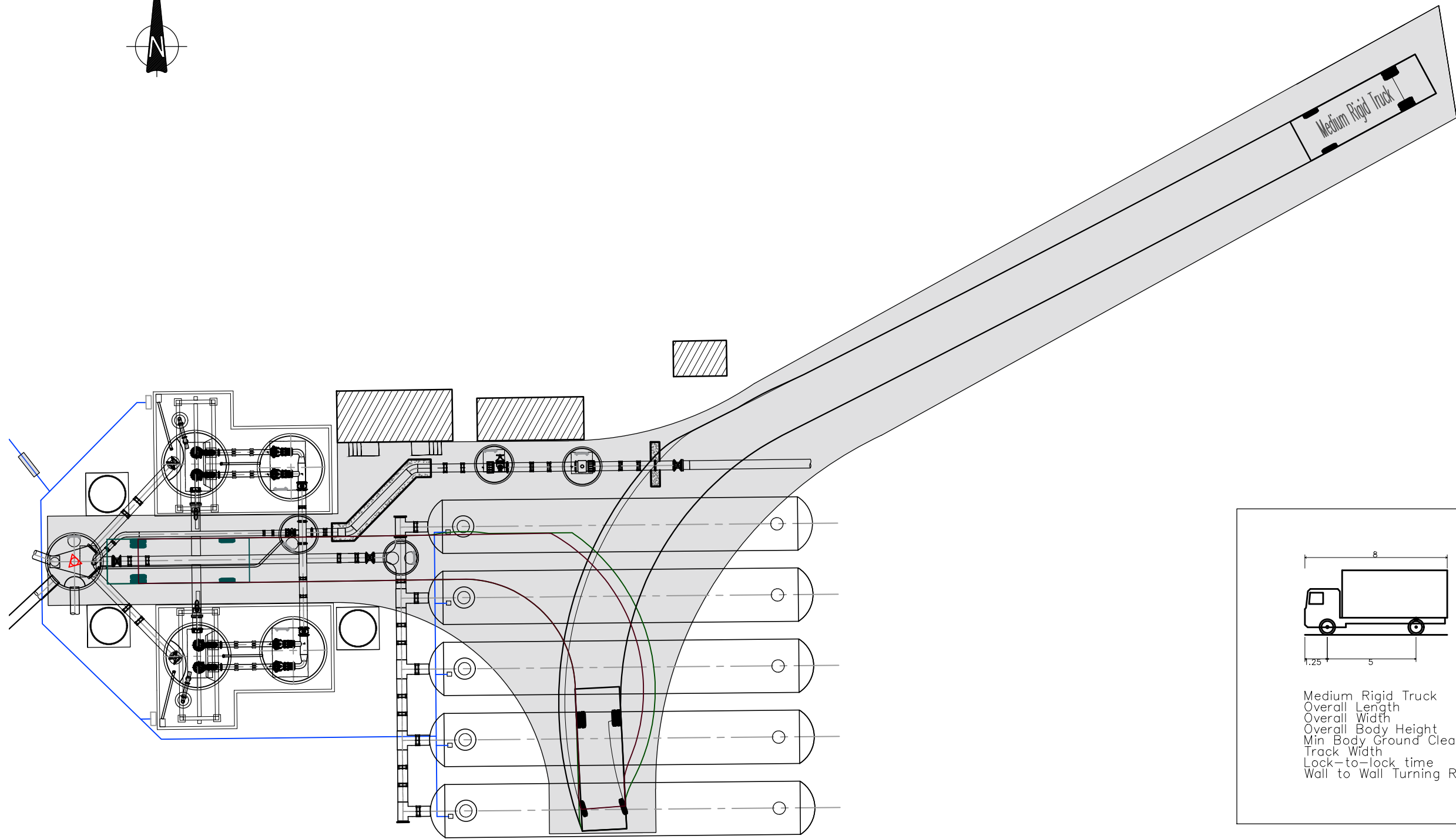
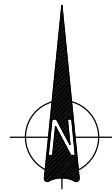
U:\Project\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing Home 800 Drawings\NC\Civil-AutoCAD\2013646.007.dwg

				DESIGNED	SA	11-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.
				DES. APPROVED	RG	11-21	
				DRAWN	SA	11-21	
				DWG. APPROVED	WC	11-21	
				WSL DESIGN MGMT.	RB	11-21	
				WSL PROJ. LEAD	RB	11-21	
1	01-22	DETAILED DESIGN ISSUE		SA	WC		
ISSUE	DATE	AMENDMENT		BY	APPD.	BY	DATE

WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
SITE ROADING - LARGE RIGID TRUCK VEHICLE TURNING



CAD FILE	2013646.007	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391 3-AWD32		
DWG No.	2013646.007	ISSUE	1



Medium Rigid Truck
Overall Length 8.000m
Overall Width 2.500m
Overall Body Height 3.632m
Min Body Ground Clearance 0.427m
Track Width 2.500m
Lock-to-lock time 6.00s
Wall to Wall Turning Radius 10.000m

DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	SA	11-21
				DES. APPROVED	RG	11-21
				DRAWN	SA	11-21
				DWG. APPROVED	WC	11-21
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ISSUE	DATE	AMENDMENT	BY	APPD.		DATE

Watercare

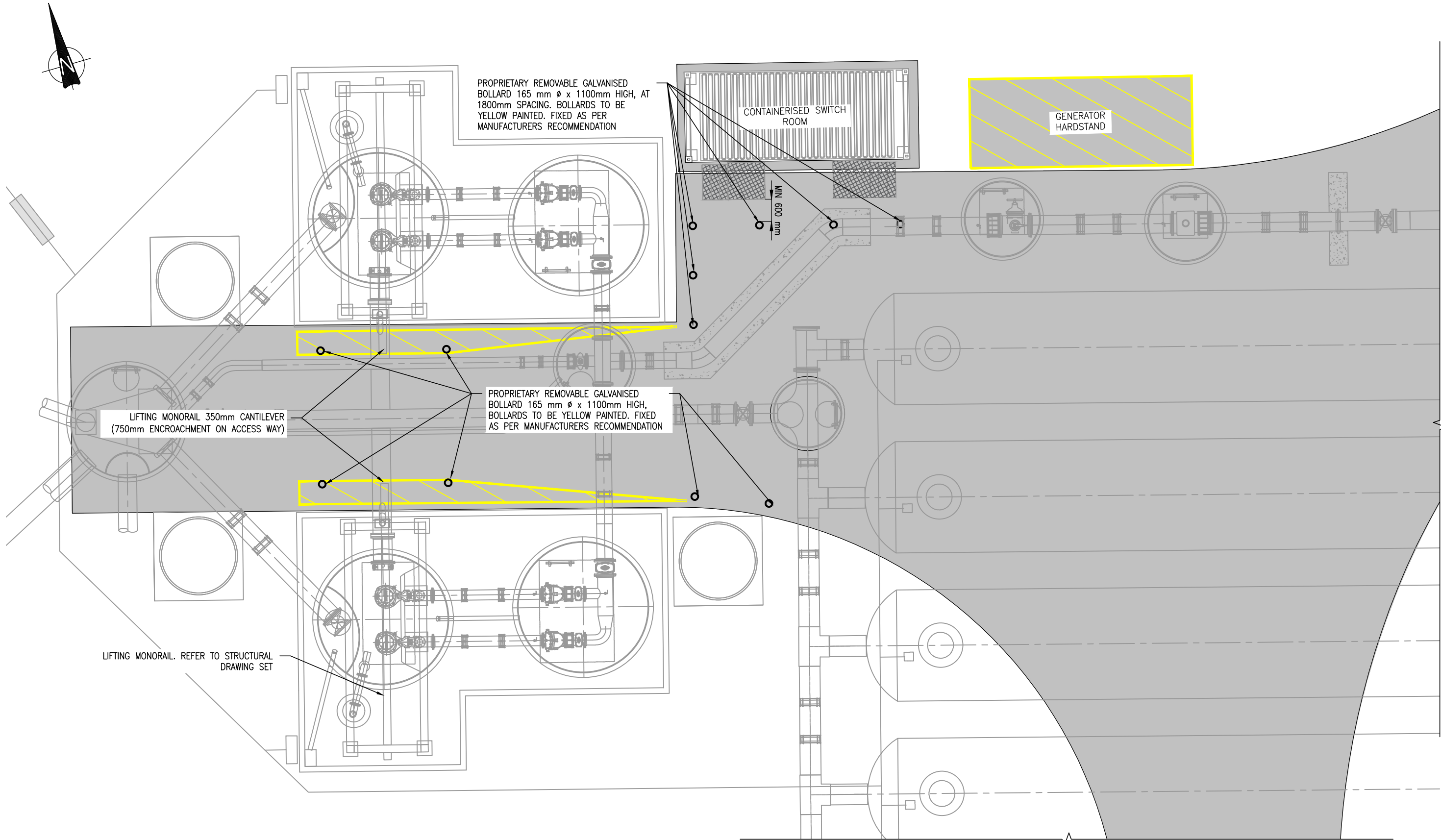
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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
SITE ROADING - MEDIUM RIGID TRUCK VEHICLE TURNING



CAD FILE	2013646.008	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391 3-AWD32		
DWG No.	2013646.008	ISSUE	1

NOTE:
1. REFER TO DRAWING 2013650.001 FOR PIPEWORK DETAILS



PUMP STATION ROAD MARKING AND BOLLARDS
SCALE 1:100 (A3)

U:\Projects\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing Home 800 Drawings\NCI Civil-AutoCAD\2013646.009.dwg

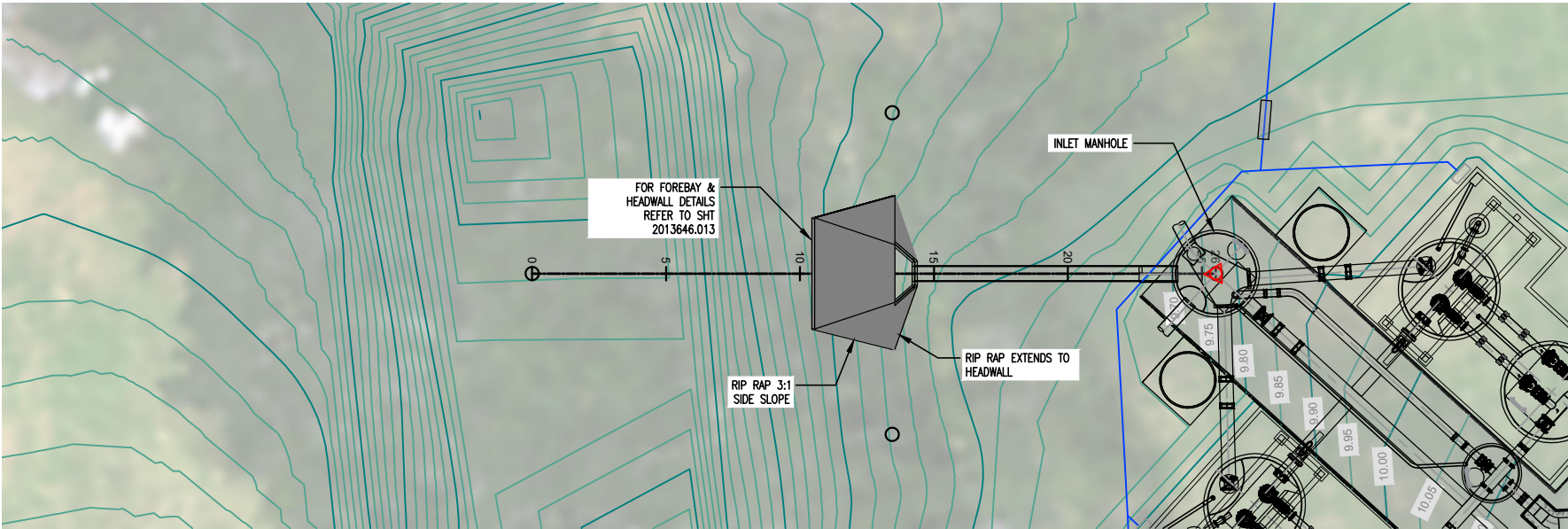
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				WSL PROJ. LEAD	RB	-
1	01-22	DETAILED DESIGN ISSUE	JG	WC		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

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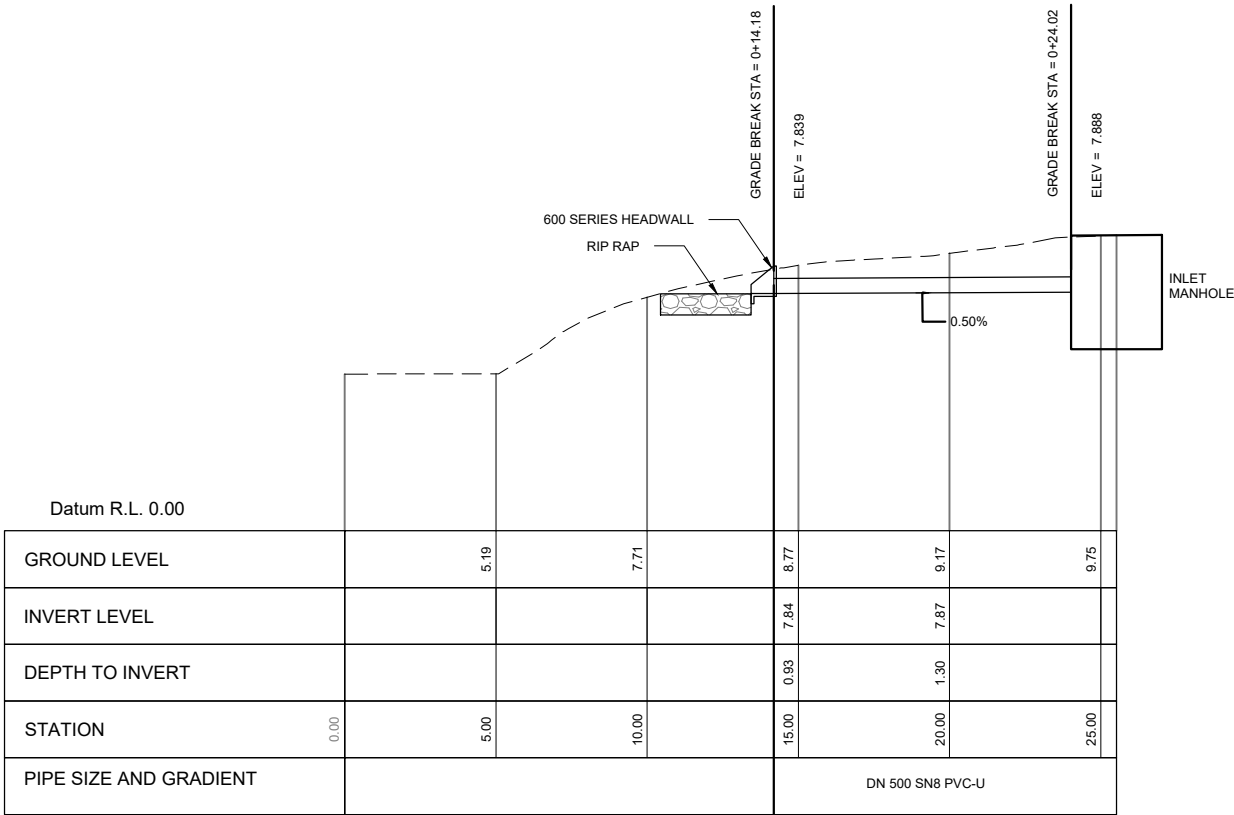
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
SITE ROADING - ROAD MARKING AND BOLLARDS



CAD FILE	2013646.006	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013646.009	ISSUE	1



PLAN
SCALE: 1:250



EMERGENCY OVERFLOW LONGITUDINAL SECTION
SCALE: 1:250

DETAILED DESIGN
NOT FOR CONSTRUCTION

U:\Projects\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\VC\Civil-AutoCAD\2013646.012.dwg

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1	01-22	DETAILED DESIGN ISSUE	SA	WC		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE



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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
EMERGENCY OVERFLOW PLAN & LONGITUDINAL SECTION



CAD FILE	2013646.012	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013646.012	ISSUE	1

1. RIP-RAP APRON IS TO BE PLACED FLAT LONGITUDINALLY (0% GRADE), WHEREVER POSSIBLE.
2. GEOTEXTILE MATERIAL SHOULD OVERLAP 300mm AND EXTEND 300mm BEYOND ROCK. SECURE THE FILTER CLOTH AT THE EDGES VIA SECURE PINS.
3. WINGWALL TO INCLUDE PROPRIETARY SAFETY GRILLE



DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	RG	11-21
					DES. APPROVED	MG	11-21
					DRAWN	JG	11-21
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ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE



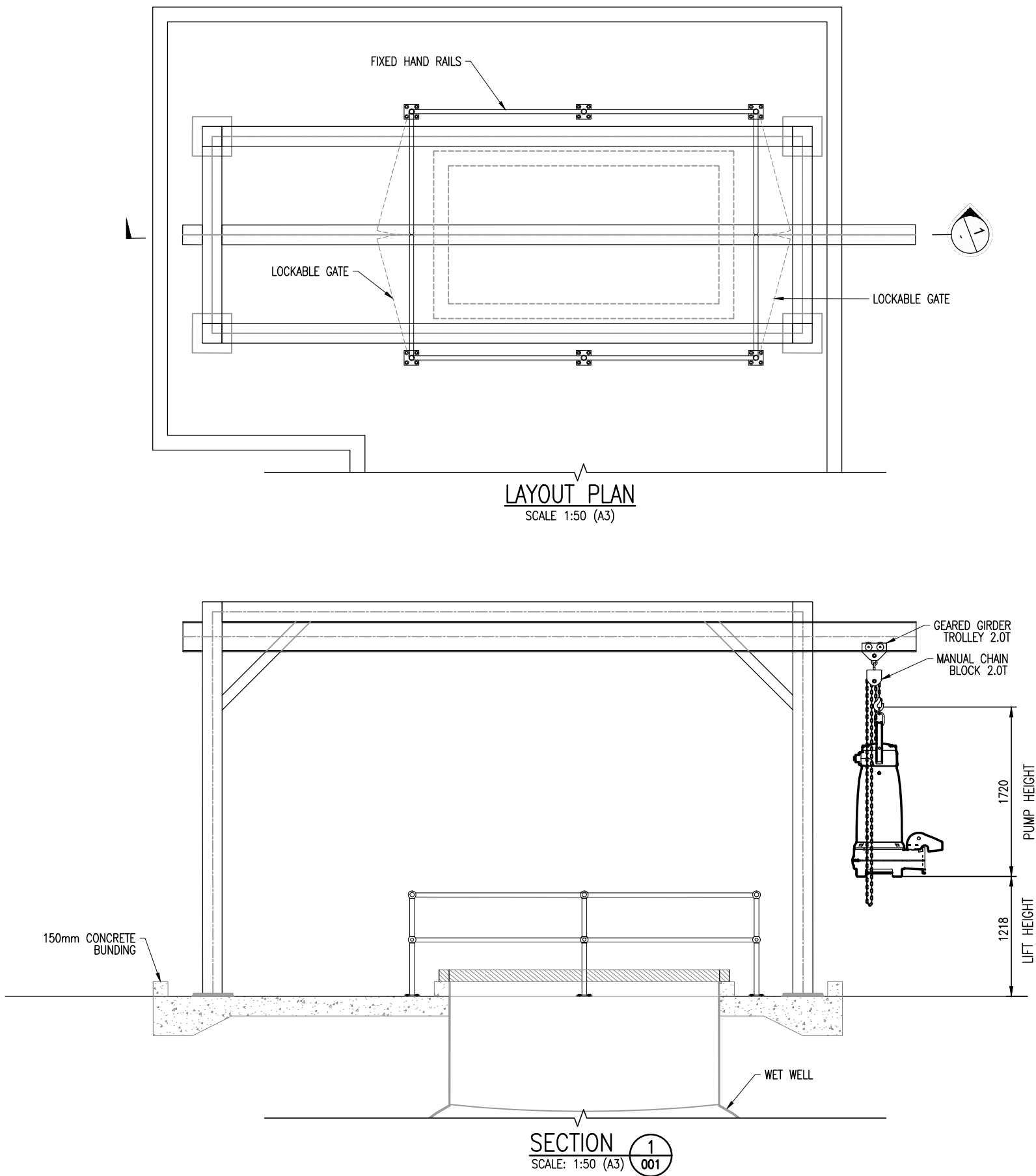
WHENUAPAI—REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
EMERGENCY OVERFLOW – OUTFALL AND RIPRAP DETAIL



CAD FILE	2013646.013	DATE	14-01-2022
ORIGINAL SCALE	A3	CONTRACT No.	-
	AS SHOWN		
REF No.	12508391 3-AWD32		
DWG No.	2013646.013	ISSUE	1

U:\Project\NZ\13\13-AWD32-00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\13 Civil-AutoCAD\2013646.014.dwg
Plot Date: Jan 13, 2022 - 11:09pm

NOTE:
1. REFER TO STRUCTURAL DRAWINGS FOR GANTRY DIMENSIONS



DETAILED DESIGN
NOT FOR CONSTRUCTION

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				DES. APPROVED	MG	11-21
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				DWG. APPROVED	MG	05-21
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1	01-22	DETAILED DESIGN ISSUE	JG	MG		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

**Watercare**

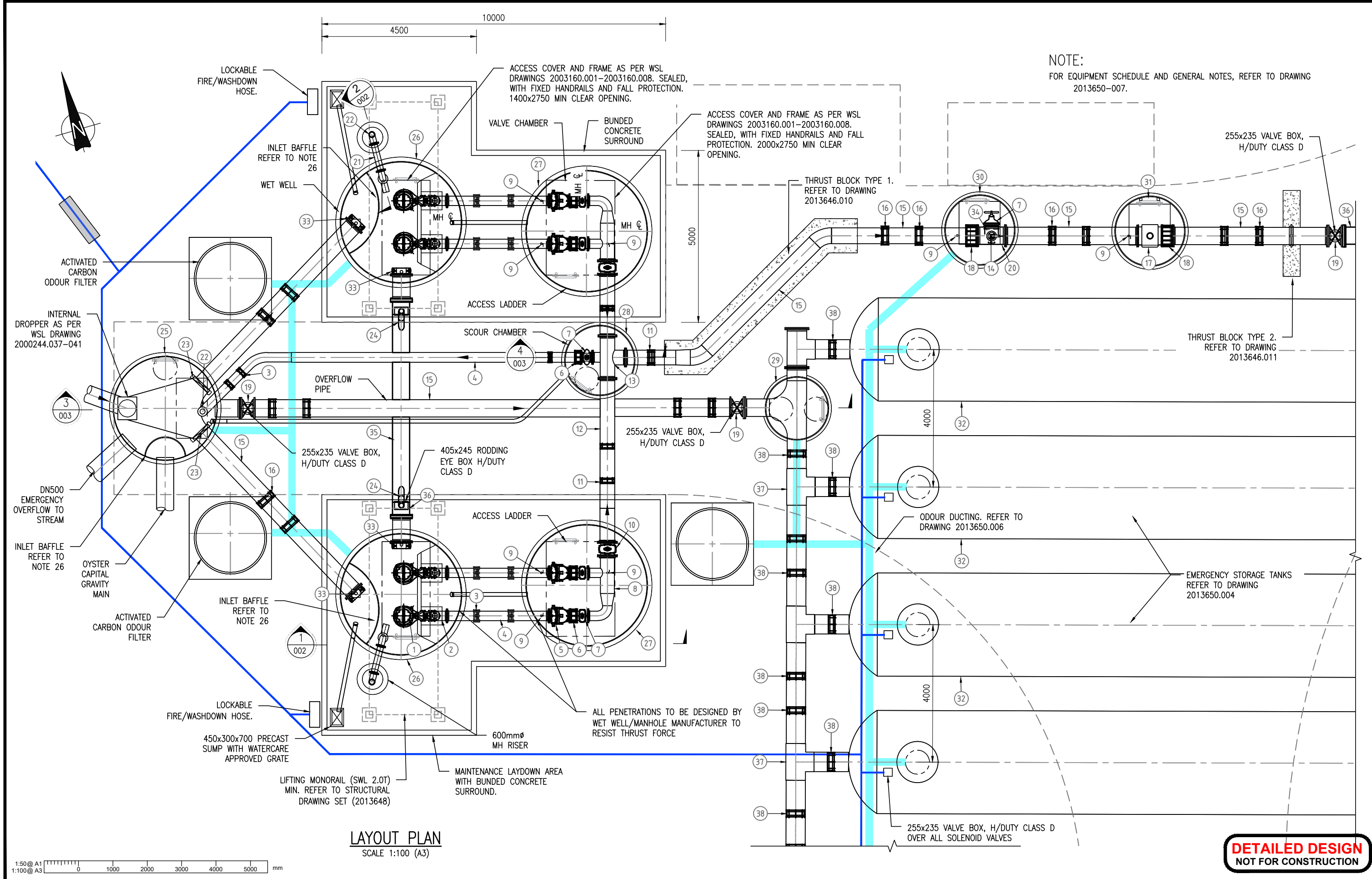
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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
WET WELL GANTRY LIFTING PLAN



CAD FILE	201346.014	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013646.014	ISSUE	4

Plot Date: Jan 21, 2022 - 11:52am U:\Project\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\CI Civil-AutoCAD\2013650.001.dwg



ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	DES. APPROVED	DRAWN	DWG. APPROVED	WSL DESIGN MGMT.	WSL PROJ. LEAD	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	JG	MG	AJ	BR	EW	EW	-	-	-	05-21
3	10-21	SAFETY IN DESIGN	SA	MK	SA	MK	EW	EW	-	-	-	05-21
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	EVV	MK	EVV	MK	EW	EW	-	-	-	05-21
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	AJ	BR	EW	EW	-	-	-	05-21
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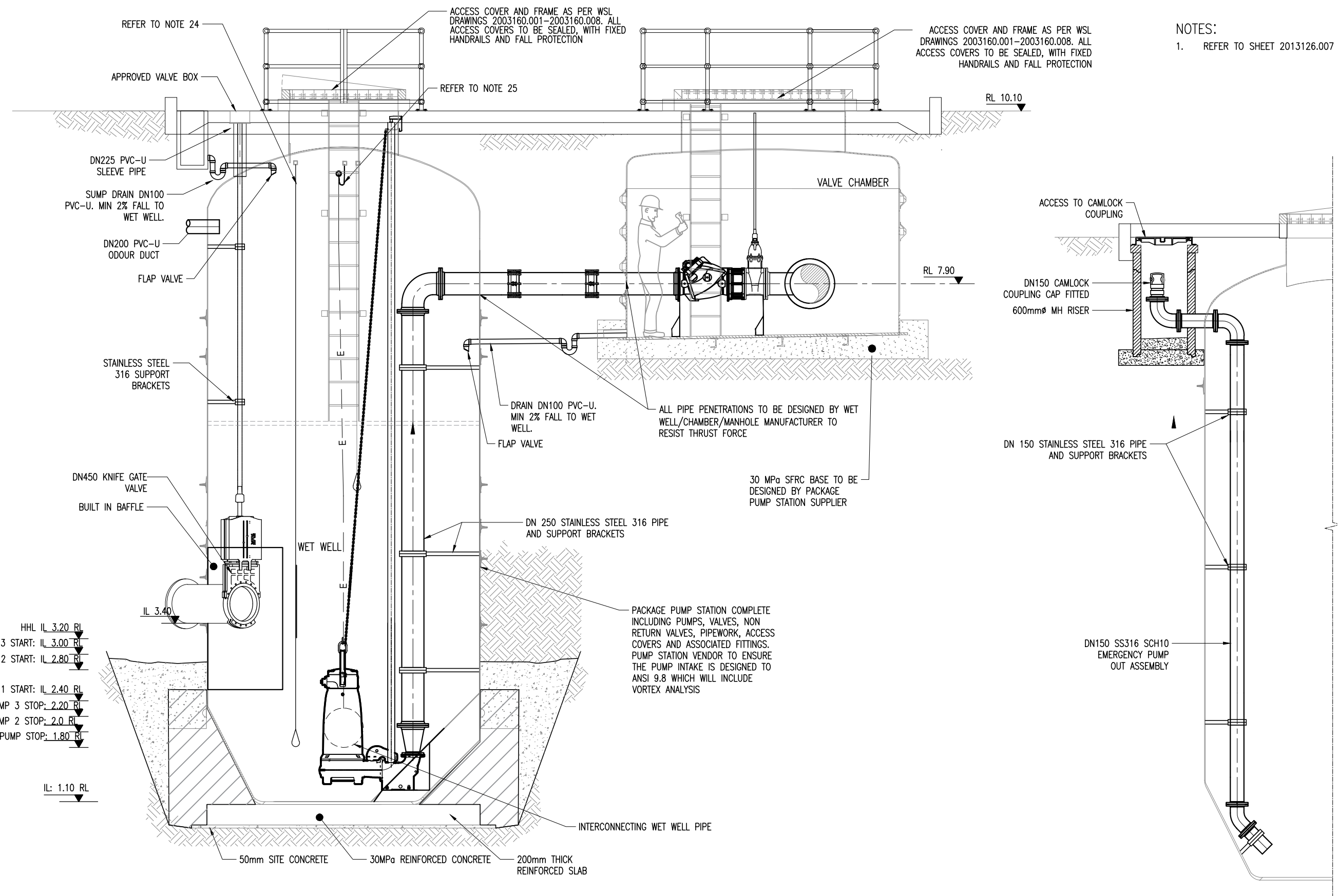
**Watercare**

WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
PUMP STATION LAYOUT PLAN



CAD FILE 2013650.001	DATE 14-01-2022
ORIGINAL SCALE A3 AS SHOWN	CONTRACT No. 6484-6934
REF No. 12508391	3-AWD32
DWG No. 2013650.001	ISSUE 4

Plot Date: Jan 21, 2022 - 12:06pm U:\Project\NZ\13\13-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\13 Civil-AutoCAD\2013650.002.dwg



NOTES:
1. REFER TO SHEET 2013126.007 FOR NOTES.

SECTION 1
SCALE: 1:50 (A3) 001

SECTION 2
SCALE: 1:50 (A3) 001

DETAILED DESIGN
NOT FOR CONSTRUCTION

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	DES. APPROVED	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	JG	MG	DESIGNED	DES. APPROVED	AJ	05-21
3	10-21	SAFETY IN DESIGN	SA	MK	DRAWN	DWG. APPROVED	EW	05-21
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	EV	MK	WSL DESIGN MGMT.			
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	WSL PROJ. LEAD			



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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

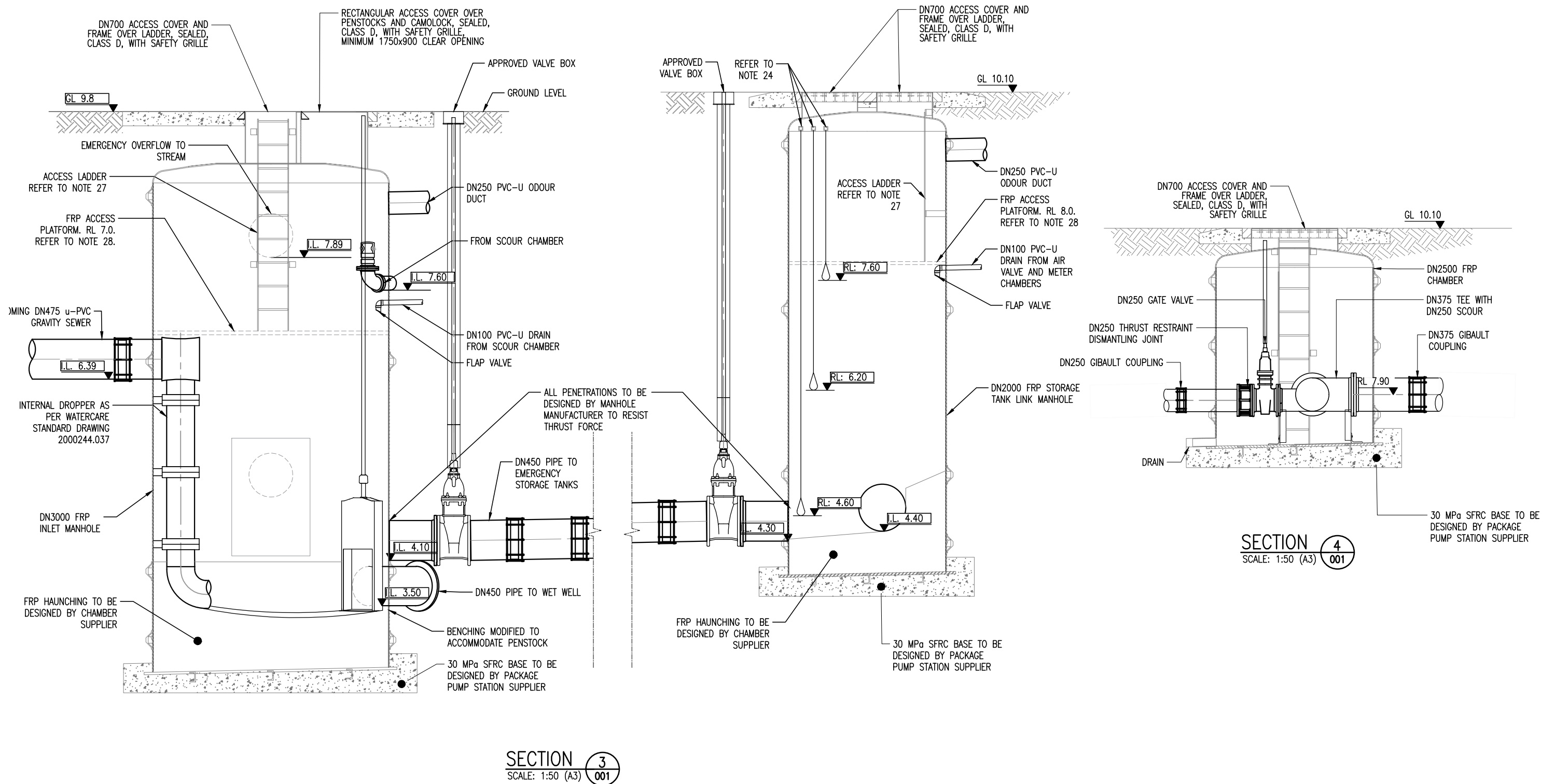
WASTEWATER PUMP STATION (DPISH)

WET WELL, FLOW METER CH. - DETAILED SECTIONS



CAD FILE 2013650.002	DATE 14-01-2022
ORIGINAL SCALE A3 AS SHOWN	CONTRACT No. 6484-6934
REF No. 12508391	3-AWD32
DWG No. 203650.002	ISSUE 4

Plot Date: Jan 21, 2022 - 12:48pm U:\Project\NZ\3\3-AWD32-00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\3 Civil\AutoCAD\2013650.003.dwg



1:50 @ A3 0 400 800 1200 1600 2000 2400 mm

DETAILED DESIGN
NOT FOR CONSTRUCTION

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	SA	BR		
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2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	EvV	MK		
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR		

DESIGNED	AJ	05-21
DES. APPROVED	BR	05-21
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DWG. APPROVED	EW	05-21
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WSL PROJ. LEAD	-	-

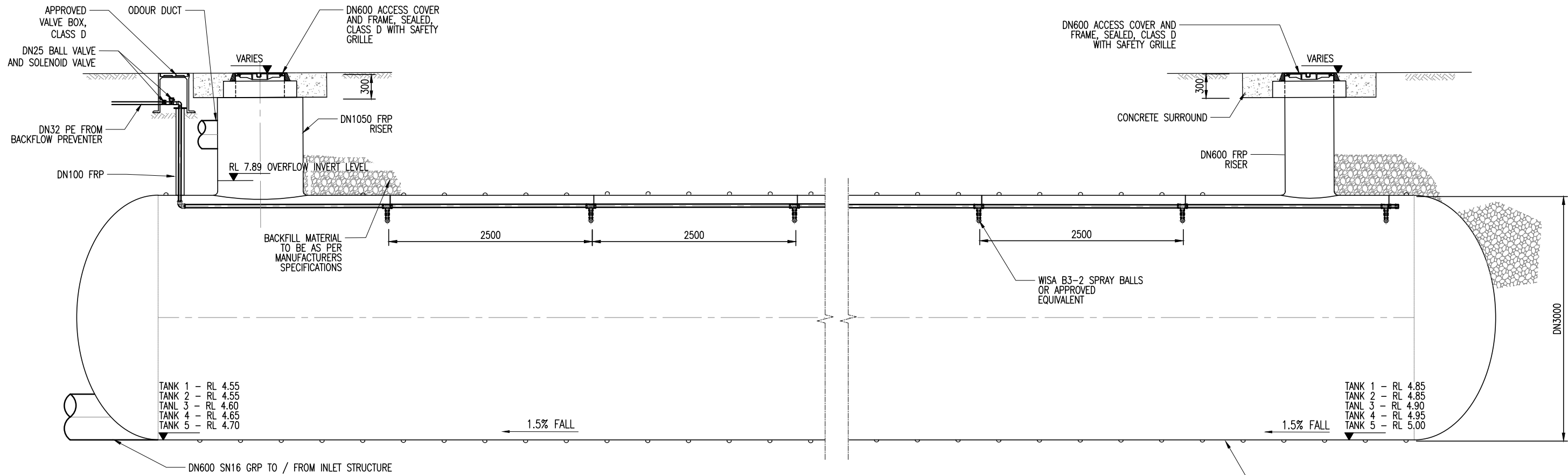
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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
INLET MANHOLE - SECTION DETAILS



CAD FILE	2013650.003	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013650.003	ISSUE	4

U:\Project\NZ\13\13-AWD32-00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\13 Civil-AutoCAD\2013650.004.dwg Plot Date: Jan 13, 2022 - 3:58pm



STORAGE TANK TYPICAL SECTION
SCALE 1:50 (A3)

1:25 @ A1
1:50 @ A3

DETAILED DESIGN
NOT FOR CONSTRUCTION

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	DES. APPROVED	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	JG	BR	DRAWN	EW	05-21	
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1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	WSL PROJ. LEAD	-	-	

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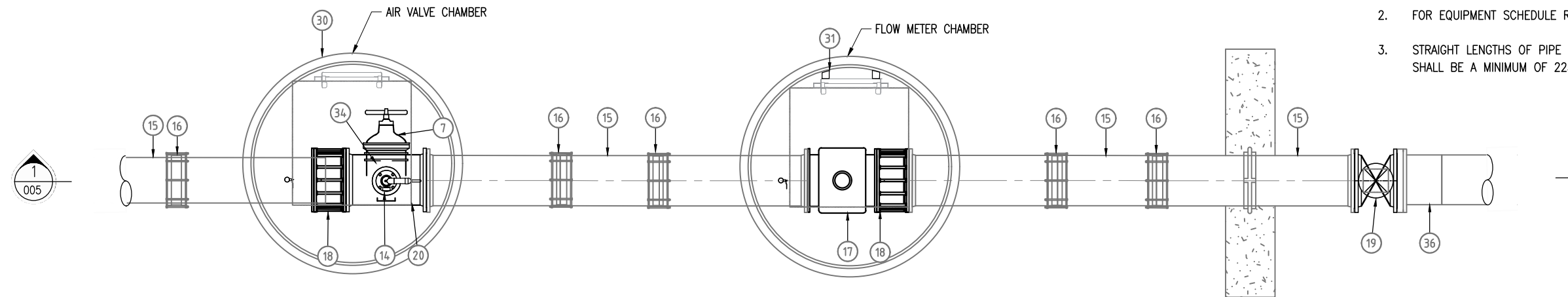
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
22m STORAGE TANK - SECTION DETAILS



CAD FILE	2013650.004	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013650.004	ISSUE	4

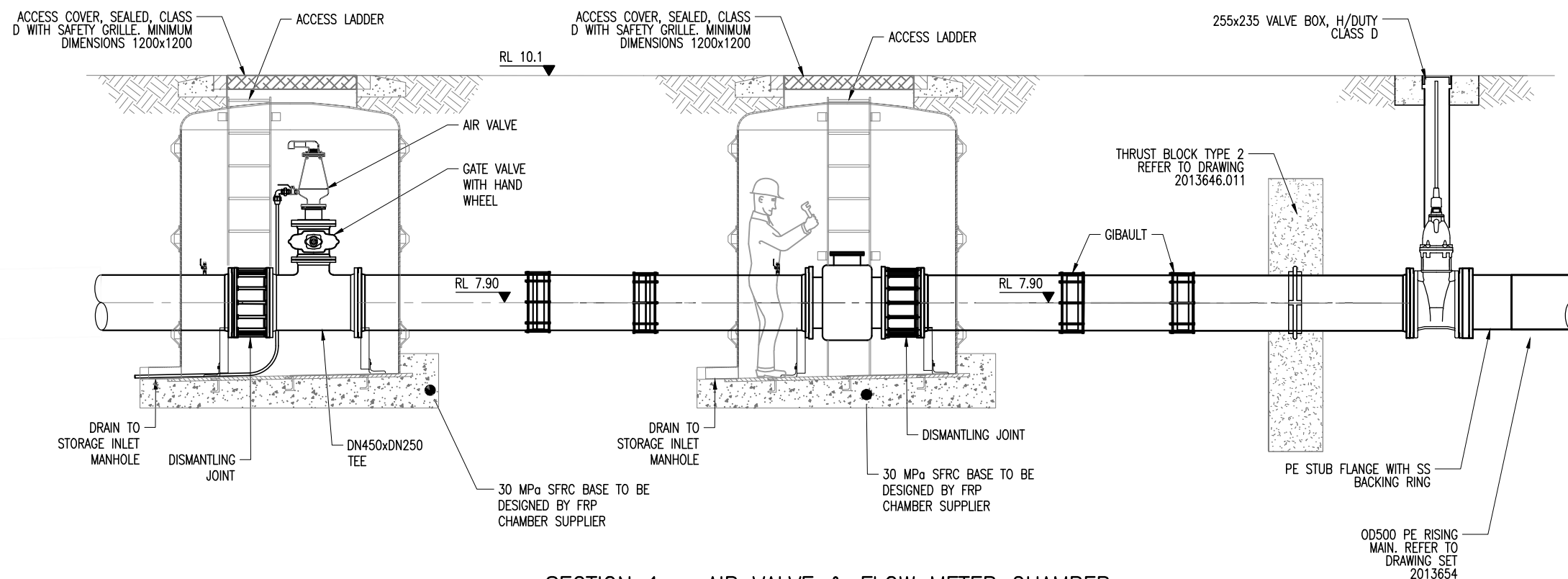
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING 2013650-002
- FOR EQUIPMENT SCHEDULE REFER TO DRAWING 2013650-007.
- STRAIGHT LENGTHS OF PIPE BEFORE AND AFTER FLOW METER SHALL BE A MINIMUM OF 2250mm AND 950mm RESPECTIVELY



PLAN – AIR VALVE & FLOW METER CHAMBER

SCALE 1:50 (A3)



SECTION 1 – AIR VALVE & FLOW METER CHAMBER

SCALE 1:50 (A3)

DETAILED DESIGN
NOT FOR CONSTRUCTION

U:\Project\NZ\3\A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing Home 800 Drawings\1(C) Civil-AutoCAD\ 2013650.005.dwg

1:50 @ A3 0 1000 2000 3000 4000 5000 mm

				DESIGNED	JG	03-21
				DES. APPROVED	MG	03-21
				DRAWN	SA	11-21
				DWG. APPROVED	JG	03-21
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ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

Watercare

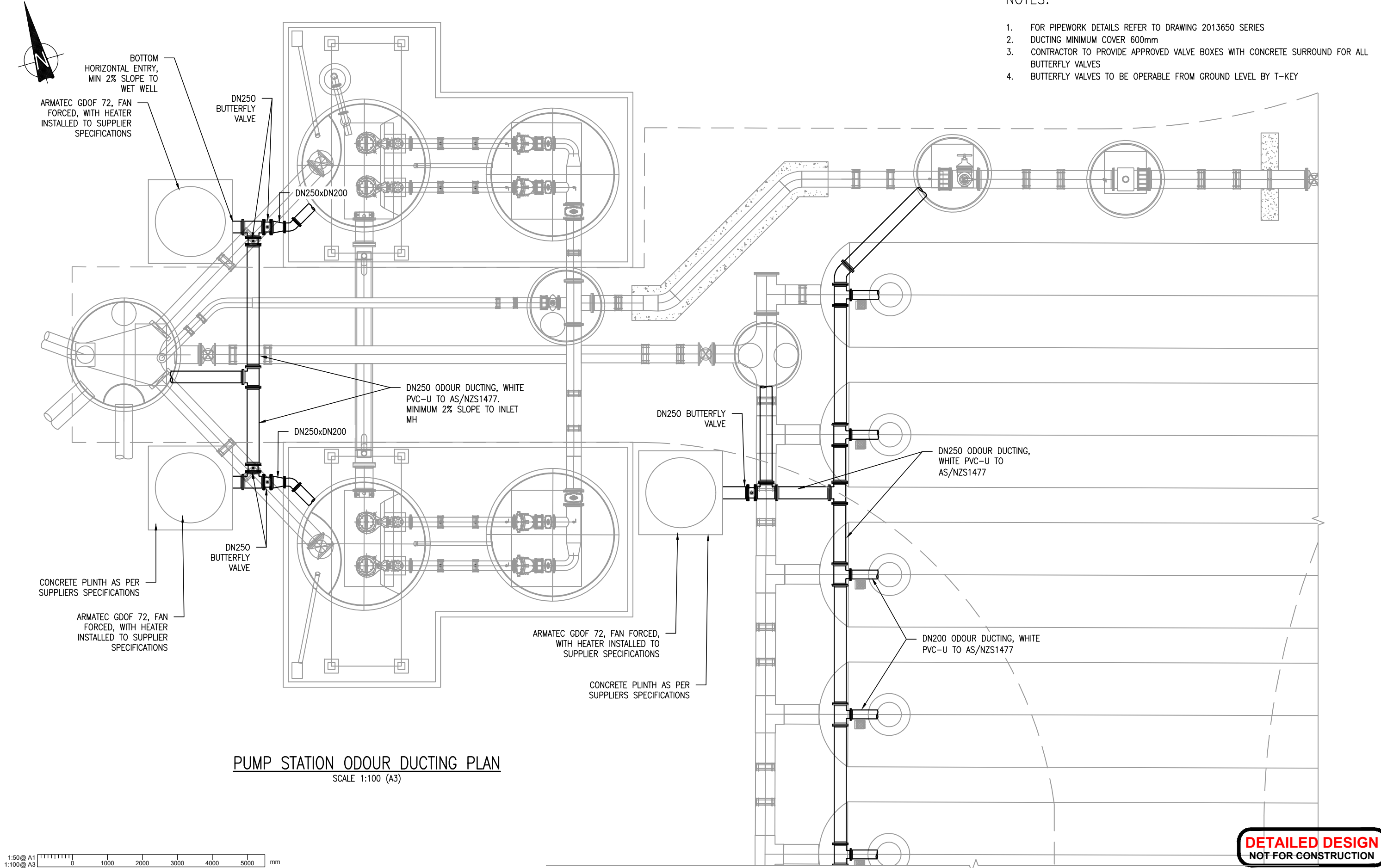
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WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
AIR VALVE & FLOW METER CHAMBER – SECTION AND DETAILS

CAD FILE	2013650.005	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013650.005	ISSUE	1

NOTES:

1. FOR PIPEWORK DETAILS REFER TO DRAWING 2013650 SERIES
2. DUCTING MINIMUM COVER 600mm
3. CONTRACTOR TO PROVIDE APPROVED VALVE BOXES WITH CONCRETE SURROUND FOR ALL BUTTERFLY VALVES
4. BUTTERFLY VALVES TO BE OPERABLE FROM GROUND LEVEL BY T-KEY



PUMP STATION ODOUR DUCTING PLAN

SCALE 1:100 (A3)

DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	JG	11-21
				DES. APPROVED	MG	11-21
				DRAWN	JG	11-21
				DWG. APPROVED	MG	11-21
				WSL DESIGN MGMT.	RB	-
				WSL PROJ. LEAD	RB	-
1	01-22	DETAILED DESIGN ISSUE	JG	MG		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

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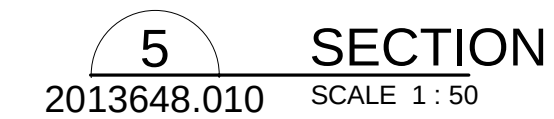
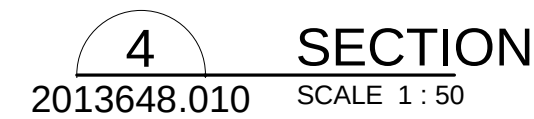
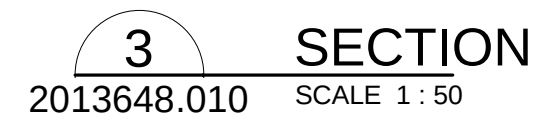
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
PUMP STATION ODOUR DUCTING PLAN



CAD FILE	2013650.006	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013650.006	ISSUE	1



- ## LEGEND:
- | | |
|-----|---|
| 200 | 200 THK SLAB WITH SE82 TOP & BTM. ON DPC ON 25 NOM SAND BLINDING ON 150 MIN WELL COMPACTED GAP65 HARDFILL ON WELL COMPACTED SUBGRADE. |
| 250 | 250 THK SLAB WITH SE82 TOP & BTM. ON DPC ON 25 NOM SAND BLINDING ON 150 MIN WELL COMPACTED GAP65 HARDFILL ON WELL COMPACTED SUBGRADE. |



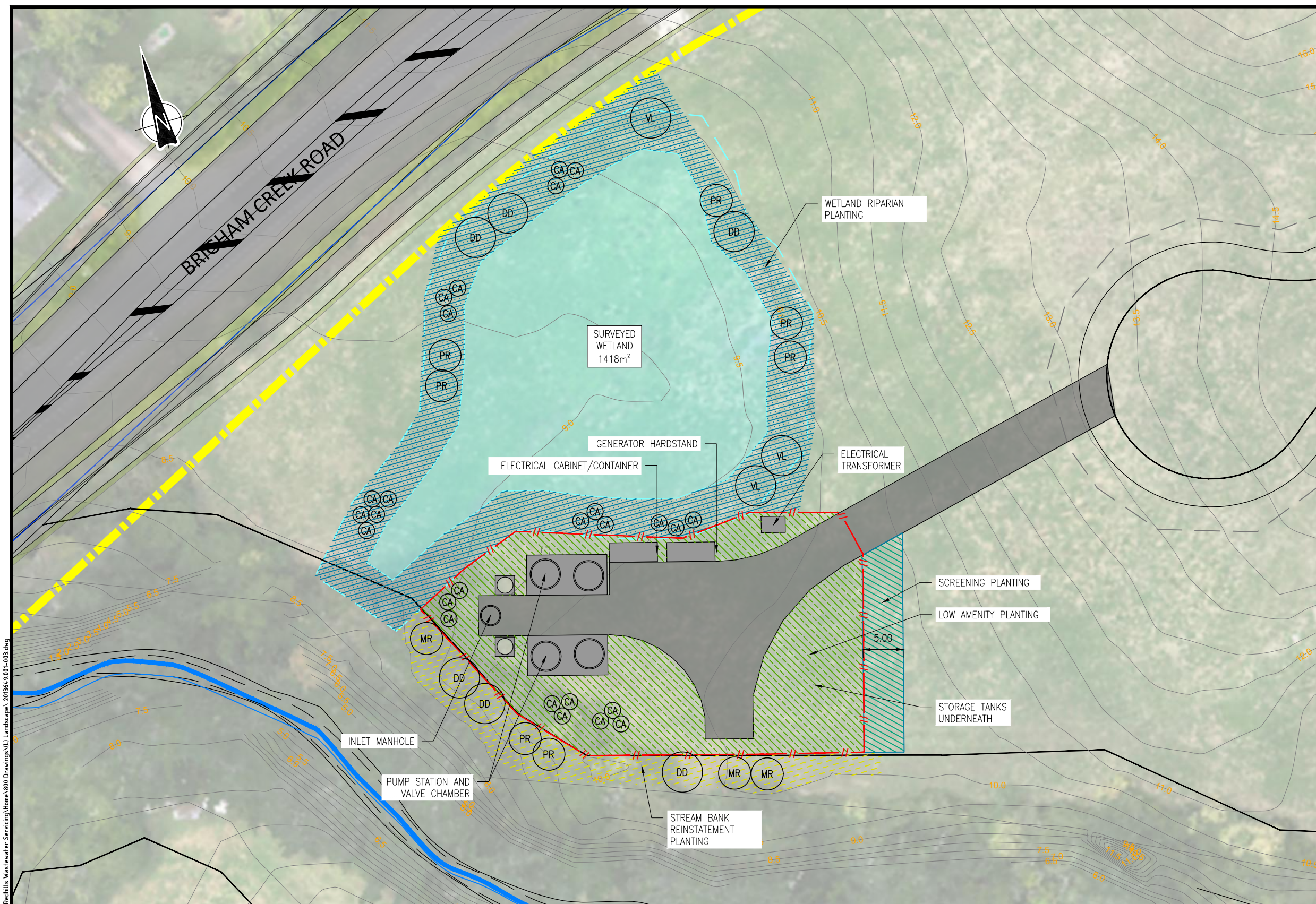
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						DES. APPROVED	A. SIMPSON	21/12/21
						DRAWN	V.CARTER	21/12/21
						DWG. APPROVED	S.JIANG	21/12/21
						WSL DESIGN MGMT.		
						WSL PROJ. LEAD		
A	01-22	DETAILED DESIGN ISSUE			SJ	AS		
ISSUE	DATE	AMENDMENT			BY	APPD.	BY	DATE



WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1 WET WELL PUMP LIFTING GANTRY



CAD FILE	2013648.012	DATE	14-01-2022
ORIGINAL SCALE A1	As indicated @ A1	CONTRACT No.	-
REF. No.	2013648 3-AWD32		
DWG. No.	2013648.012	ISSUE A	



- LEGEND:**
- EXISTING LOT BOUNDARY
 - EXISTING GROUND LEVEL
 - POTENTIAL 8m SET BACK
 - SITE SECURITY FENCE
 - WETLAND BOUNDARY
 - STREAM
- TREES**
- CORDYLINE AUSTRALIS
 - DACRYCARPUS DACRYDIODES
 - MYRSINE AUSTRALIS
 - PLAGIANTHUS REGIUS
 - VITEX LUCENS

PLANTING PLAN
SCALE 1:500(A3)

1:250 @ A1
1:500 @ A3

DETAILED DESIGN
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				DWG. APPROVED	CN	07-21		
				WSL DESIGN MGMT.	-	-		
1	01-22	DETAILED DESIGN ISSUE		WSL PROJ. LEAD	-	-		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE		
							WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1 WASTEWATER PUMP STATION (DPISH) PLANTING PLAN	
							CAD FILE 2013646.001-003 ORIGINAL SCALE A3 AS SHOWN REF No. 12508391 3-AWD32 DWG No. 2013649.001	
							DATE 14-01-2022 CONTRACT No. 6484-6934 ISSUE 1	

U:\Projects\NZ-SA-13-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\LU Landscape\ 2013649.001-003.dwg

GENERAL NOTES:

THE GENERAL PHILOSOPHY FOR THE LANDSCAPE DESIGN ON THE PROJECT IS TO PROMOTE BIODIVERSITY AND ADD AMENITY VALUES THROUGH AN ENVIRONMENT SENSITIVE AND PLACE-BASED APPROACH. THE DESIGN WILL LOOK TO INCORPORATE LOW MAINTENANCE, SUSTAINABLE AND ENVIRONMENTALLY INTERVENTIONS.

THE PLANTING AREAS WITHIN THE PROJECT ARE THE IMMEDIATE SURROUNDING OF THE PUMP STATION AND WETLAND AND WILL BE DESIGNED WITH A NATIVE PLANT PALETTE.

PLANTING AREAS TO BE DEFINED AS:

- WETLAND RIPARIAN PLANTING
- PUMP STATION LOW AMENITY PLANTING
- PUMP STATION SCREENING PLANTING
- STREAM BANK REINSTATEMENT PLANTING

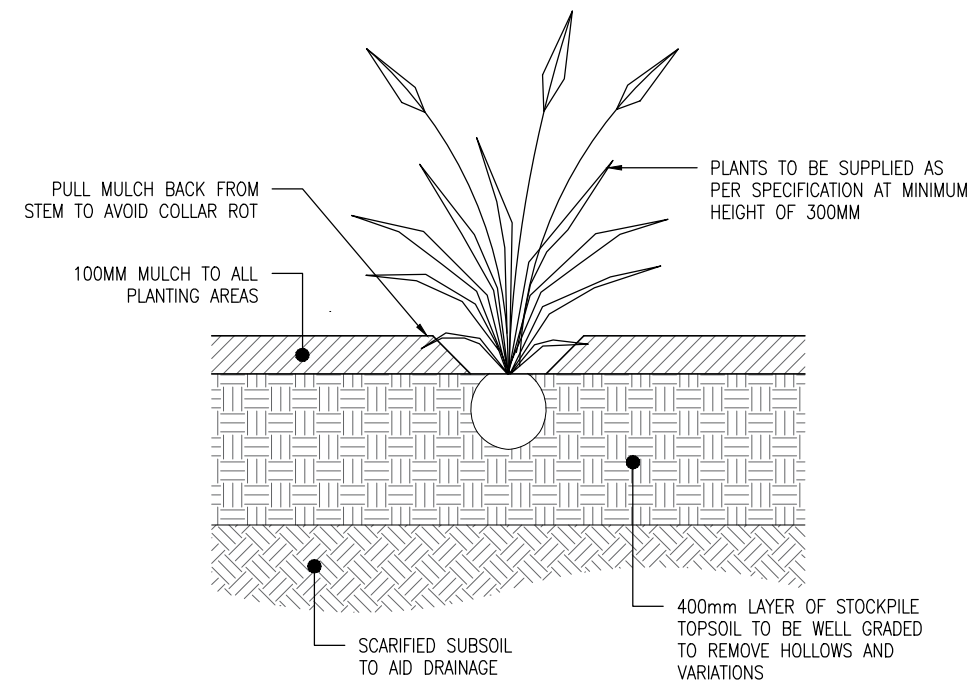
TREES WILL BE PLACED WITHIN PLANTING AREAS TO ADD AMENITY VALUE AND TO PROVIDE SCREENING EFFECTS AND BIODIVERSITY. THE TREES SELECTED ARE WET SOIL TOLERANT SPECIES INCLUDING CABBAGE TREE, KAHIKATEA, MAHOE, RIBBONWOOD AND PURIRI. THEY WILL BE POSITIONED TO AVOID OBSTRUCTING THE UNDERGROUND SERVICES.

PLANT SCHEDULE							
Code	Botanical Name	Common Name	Unit/ Grade	Max. Growth Size (H x W)	Plant Spacing (mm)	Percentage Mix	TOTAL (no.)
Wetland Riparian Planting							
CAR GEM	Carex geminata	Cutty Grass	1L/PB2	1.0 x 1.0m	750	10%	180
CAR VIR	Carex virgata	Pukio / Swamp Sedge	1L/PB2	1.0 x 1.0m	750	20%	360
COR FUL	Cortaderia fulvida	Toetoe	1L/PB2	1.5 x 1.5m	1000	30%	300
PHO COO	Phormium cookianum	Wharariki / Mountain Flax	1L/PB2	1.5 x 1.5m	1000	10%	100
PHO TEN	Phormium tenax	Harakeke / NZ Flax	1L/PB2	3.0 x 2.0m	1000	30%	300
Pump Station Low Amenity Planting							
CAR TES	Carex testacea	Grass / Sedge	2L/PB3	0.6 x 0.6m	500	20%	530
CAR VIR	Carex virgata	Pukio / Swamp Sedge	1L/PB2	1.0 x 1.0m	500	20%	530
COR FUL	Cortaderia fulvida	Toetoe	1L/PB2	1.5 x 1.5m	1000	10%	66
DIA NIG	Dianella nigra	Turutu	2L/PB3	0.5 x 0.5m	500	10%	265
PHO 'EG'	Phormium 'Emerald Gem'	Dwarf Flax	2L/PB3	0.6 x 0.6m	500	20%	530
PHO 'JS'	Phormium 'Jack Spratt'	Ornamental Flax	2L/PB3	0.6 x 0.6m	500	20%	530
Pump Station Screening Planting							
HEB STR	Hebe stricta	Koromiko	2L/PB3	2.5 x 1.5m	1000	25%	31
KUN ERI	Kunzea ericoides	Kanuka	2L/PB3	10.0 x 4.0m	2000	25%	31
LEP SCO	Leptospermum scoparium	Manuka	2L/PB3	4.0 x 3.0m	2000	25%	31
PHO TEN	Phormium tenax	Harakeke / NZ Flax	1L/PB2	3.0 x 2.0m	1000	25%	31
		Mahoe					
Stream Bank Reinstatement Planting							
COR FUL	Cortaderia fulvida	Toetoe	1L/PB2	1.5 x 1.5m	1000	30%	92
PHO COO	Phormium cookianum	Wharariki / Mountain Flax	1L/PB2	1.5 x 1.5m	1000	30%	92
PHO TEN	Phormium tenax	Harakeke / NZ Flax	1L/PB2	3.0 x 2.0m	1000	40%	122
						Sub Total	4121

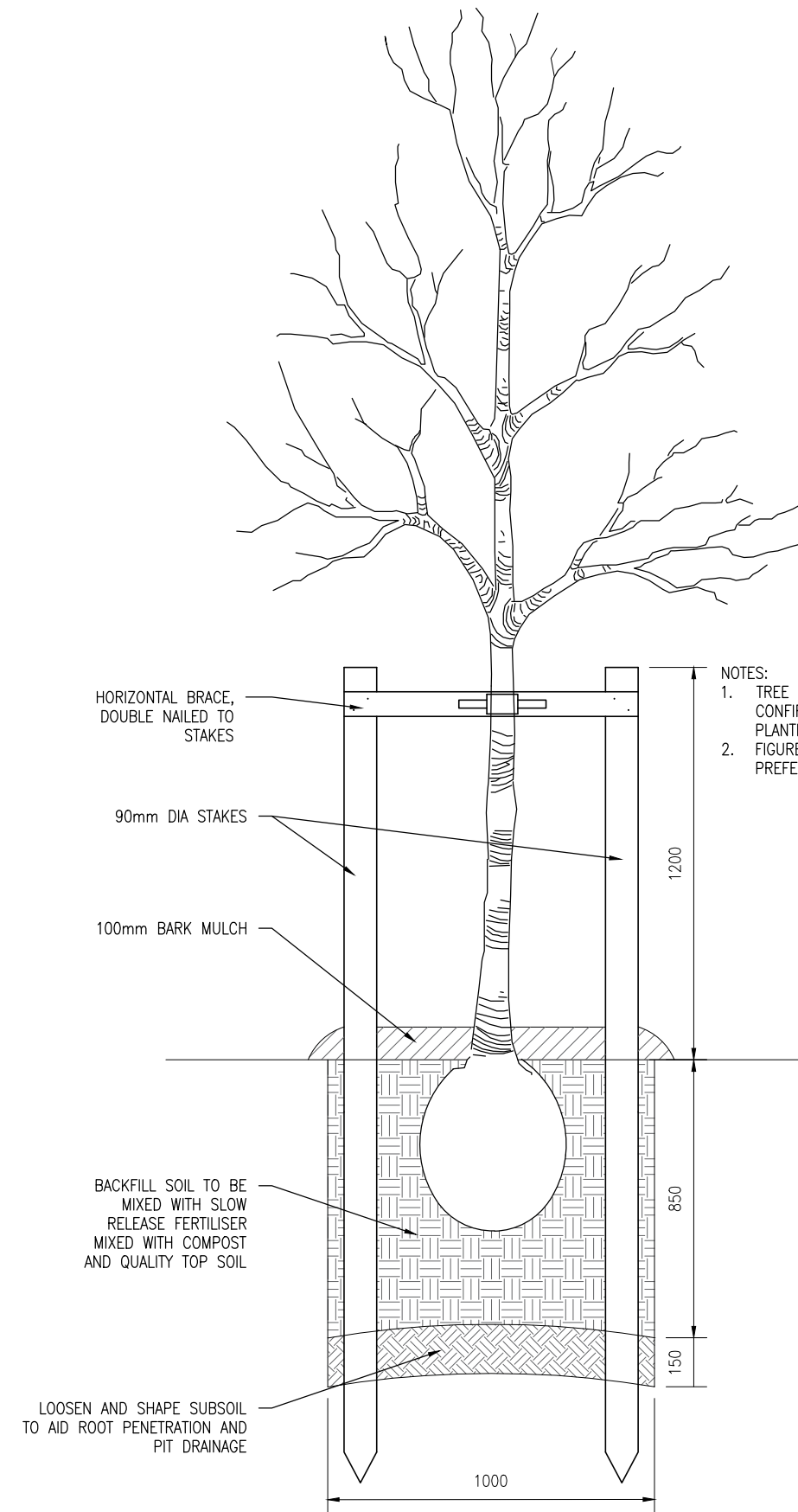
TREE SCHEDULE						
Code	Botanical Name	Common Name	Unit/ Grade	Max. Growth Size (H x W)	Plant Spacing (mm)	TOTAL
CA	Cordyline asutralis	Cabbage Tree / Ti Kouka	PB18	10.0 x 2.0m	as shown	26
DD	Dacrycarpus dacrydioides	Kahikatea / White Pine	PB18	30.0 x 10.0m	as shown	6
MR	Melicytus ramiflorus	Mahoe / Whiteywood	PB18	5.0 x 4.0m	as shown	3
PR	Plagianthus regius	Manatu / Ribbonwood	PB18	12.0 x 4.0m	as shown	7
VL	Vitex lucens	Puriri	PB18	10.0 x 10.0m	as shown	3
					Sub Total	45

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					DES. APPROVED	CN	07-21				ORIGINAL SCALE	A3	CONTRACT No.	6484-6934
					DRAWN	AL	07-21				NOT TO SCALE			
					DWG. APPROVED	CN	07-21				REF No.	12508391	3-AWD32	
					WSL DESIGN MGMT.	-	-				DWG No.	2013649.002	ISSUE	1
1	01-22	DETAILED DESIGN ISSUE		AL	CN	WSL PROJ. LEAD	-							
ISSUE	DATE	AMENDMENT		BY	APPD.			BY	DATE					



TYPICAL SHRUB PLANTING DETAIL
SCALE 1:20(A3)



- NOTES:
1. TREE AND PLANTING LOCATIONS TO BE CONFIRMED ON SITE ON SITE PRIOR TO PLANTING.
 2. FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS.

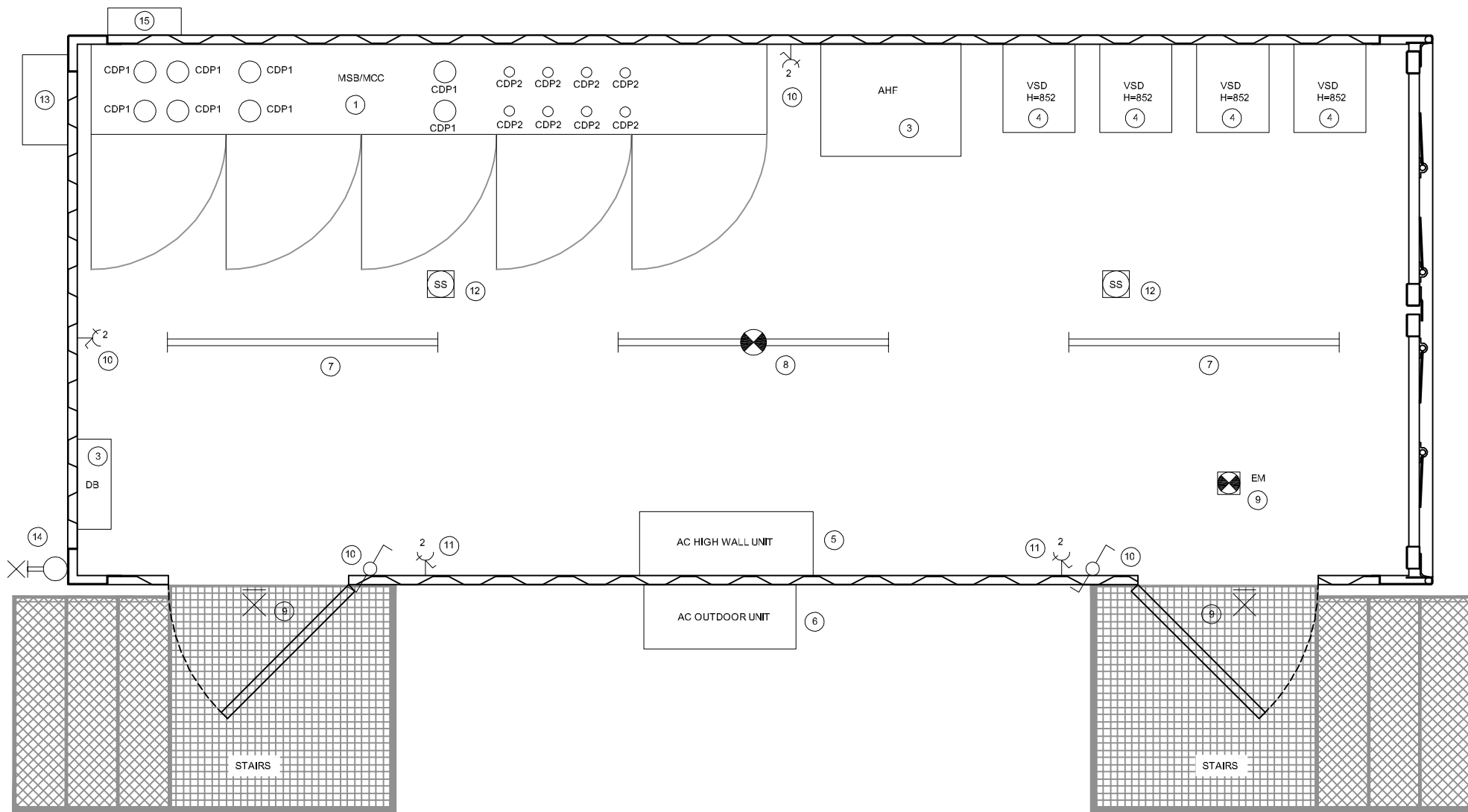
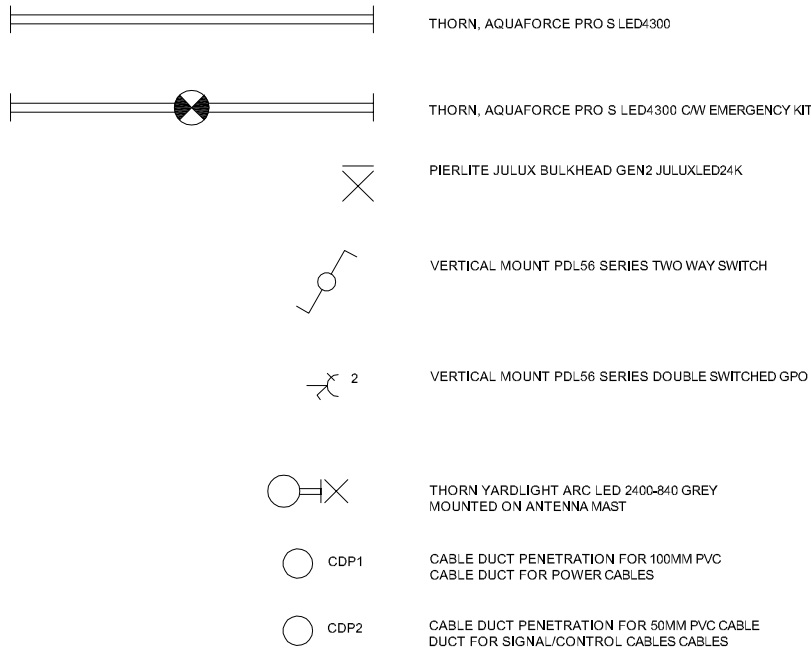
TYPICAL TREE PLANTING DETAIL
SCALE 1:20(A3)

1:10 @ A1
1:20 @ A3
0 100 200 300 400 500 600 700 800 900 1000 mm

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					DES. APPROVED	CN	07-21				ORIGINAL SCALE	A3	CONTRACT No.	6484-6934
					DRAWN	AL	07-21				AS SHOWN	REF No.	12508391	3-AWD32
					DWG. APPROVED	CN	07-21					DWG No.	2013649.003	ISSUE
					WSL DESIGN MGMT.	-	-						1	
1	01-22	DETAILED DESIGN ISSUE		AL	CN									
ISSUE	DATE	AMENDMENT		BY	APPD.		BY	DATE						

KEY TO SYMBOLS



EQUIPMENT SCHEDULE	
ID	DESCRIPTION
1	MAIN SWITCHBOARD, DISTRIBUTION BOARD, MOTOR CONTROL CENTRE
2	DISTRIBUTION BOARD
3	ACTIVE HARMONIC FILTER
4	VARIABLE SPEED DRIVE
5	HEAT PUMP HIGH WALL INDOOR UNIT
6	HEAT PUMP GROUND MOUNTED OUTDOOR UNIT
7	SURFACE MOUNT LED BATTEN LIGHTS
8	SURFACE MOUNT LED BATTEN LIGHT WITH INTEGRAL EMERGENCY KIT
9	WALL MOUNTED EXTERIOR LED IP44 LIGHTS
10	TWO WAY LIGHT SWITCH
11	VERTICAL DOUBLE SWITCHED GENERAL PURPOSE OUTLET
12	SMOKE DETECTORS
13	GENERATOR CONNECTION TERMINAL BOX
14	AREA FLOOD LIGHT MOUNTED ON ANTENNA MAST
15	CABLE DRAW PIT

TYPICAL CONTAINER INSTALLATION FOR A PUMP STATION



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				DWG. APPROVED	PW	11-21	
				WSL DESIGN MGMT.	-	-	
2	01-22	CABLE DUCT PENETRATION DETAILS	BL	PW	WSL PROJ. LEAD	-	
1	11-21	DETAIL DESIGN ISSUE	BL	PW			
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE

DPISH WHENUAPAI – REDHILLS WASTEWATER SERVICING
BRINGHAM CREEK ROAD, WHENUAPAI
CONTAINER LAYOUT



CAD FILE	2013647.025-026	DATE	05-11-21
ORIGINAL SCALE	A3 NTS	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013647.025	ISSUE	2