

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
R0017910	002	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN – LOCATION PLAN	1
R0017910	003	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN – GENERAL NOTES	3
R0017910	004	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN – GENERAL LAYOUT	3
R0017910	005	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION – SHEET 1 OF 5	3
R0017910	006	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION – SHEET 2 OF 5	3
R0017910	007	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION – SHEET 3 OF 5	3
R0017910	008	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION – SHEET 4 OF 5	3
R0017910	009	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION – SHEET 5 OF 5	3
R0017910	010	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN MANHOLE DIMENSIONS AND SETOUT	2
R0017910	011	INTERIM SLAUGHTERHOUSE PS – WASTEWATER GRAVITY MAIN TRENCH DETAIL	3

DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	PH	12-21	 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 GRAVITY PIPE – DRAWING INDEX	 	CAD FILE	R0017910.001	DATE	15-12-21
					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						

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:

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

- CLEAN FILL (COHESIVE), WON 100% FROM SITE AND REUSED/RECONDITIONED
- IMPORTED FILL (COHESIVE), 100% OFFSITE, AND USED
- 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

- 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.
- TRENCH EXCAVATION SHOULD BE STAGED. MAXIMUM EXCAVATION OF TRENCH EXCAVATION SHOULD BE NO MORE THAN 10 M IN LENGTH EACH STAGE.
- 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
- THE EXCAVATIONS SHALL BE KEPT FREE OF WATER.
- NO WORK SHALL BE CARRIED OUT UPON PREPARED EXCAVATION SURFACES UNTIL THE ENGINEER HAS APPROVED THE PREPARED SURFACES.
- TEMPORARY AND PERMANENT CUT SLOPES SHALL BE ADEQUATELY PROTECTED.
- 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.
- 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

- 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.
- PIPE BEDDING REQUIREMENTS SHOULD BE FOLLOWED AS PER PIPE DESIGN AND AS SPECIFIED ON DRAWING R0017910.010.

FOR TRENCH BACKFILL WORKS:

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

- PLACEMENT OF FILL IN LOOSE LAYERS NOT EXCEEDING 200 MM
- 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.
- CARE TO BE TAKEN DURING THE FIRST 1–2 LIFTS ABOVE THE PIPE BEDDING MATERIAL TO AVOID DAMAGE TO THE UNDERLYING PIPE
- COMPACTION OF THE TRENCH BACKFILL SHOULD ACHIEVE THE MINIMUM STRENGTH VALUES (TO BE VERIFIED ON SITE): COMPACTION REQUIREMENTS AS SET OUT BELOW:
 - 5% AIR VOIDS
 - TESTING AT NOMINAL LOCATIONS ALONG TRENCH, AND MINIMUM ONE TEST APPROXIMATELY HALF WAY UP, AND ONE AT FINISH LEVEL.

FOR MANHOLE BACKFILL:

- USE OF APPROPRIATELY SIZED GRANULAR FILL ACCEPTABLE
- TO BE COMPACTED IN LOOSE LAYERS NOT EXCEED TWICE THE AVERAGE PARTICLE DIAMETER
- USE OF VIBRATION COMPACTING EQUIPMENT
- 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						

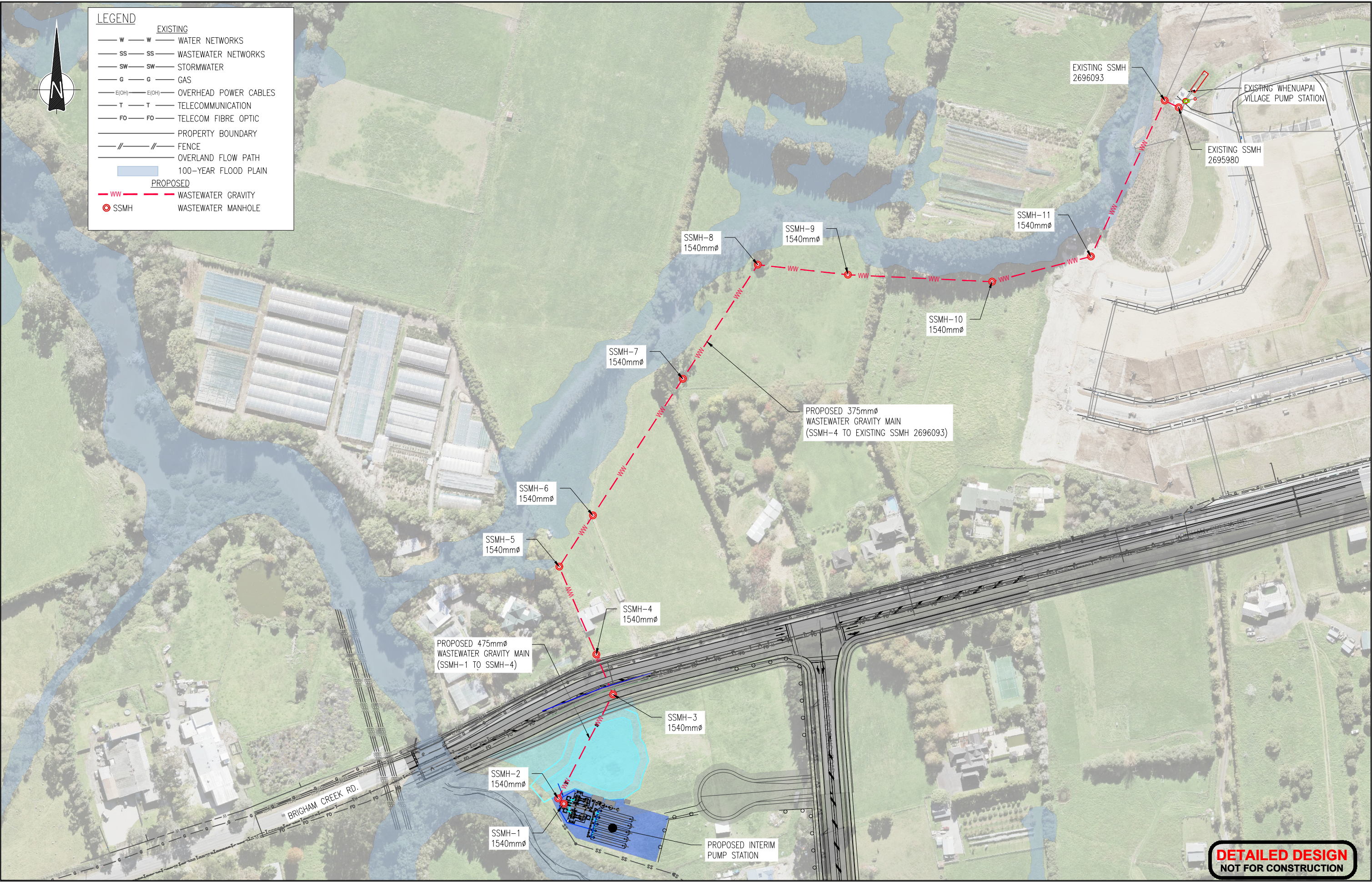
DETAILED DESIGN
NOT FOR CONSTRUCTION

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

WHENUAPAI–REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS – GRAVITY MAIN – GENERAL NOTES

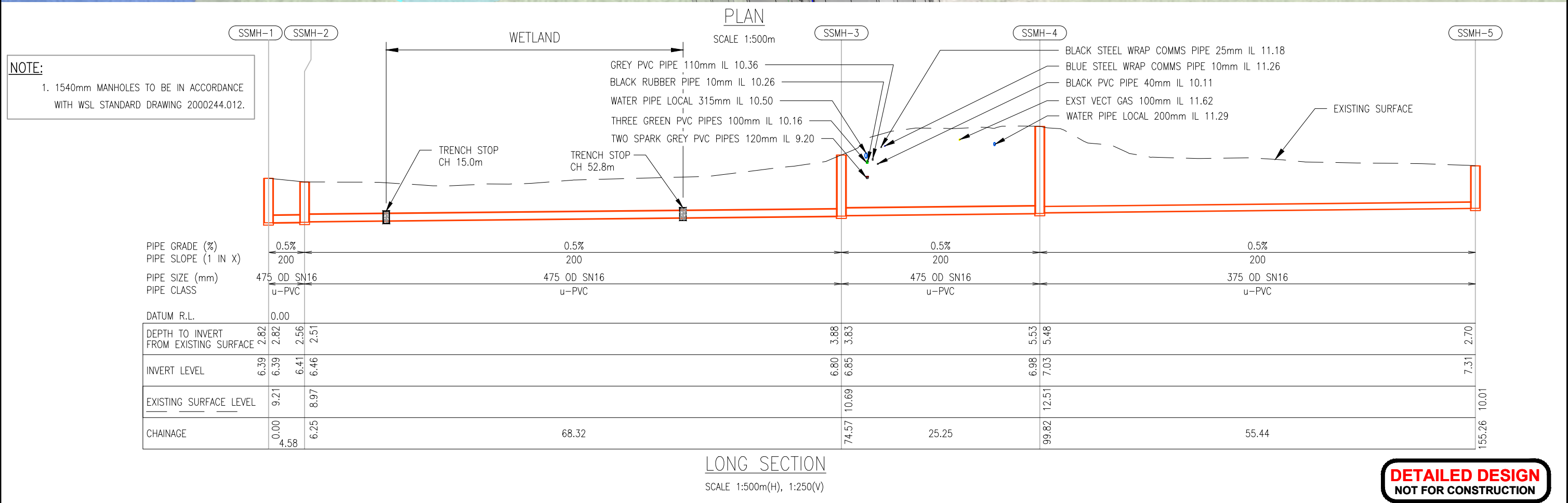
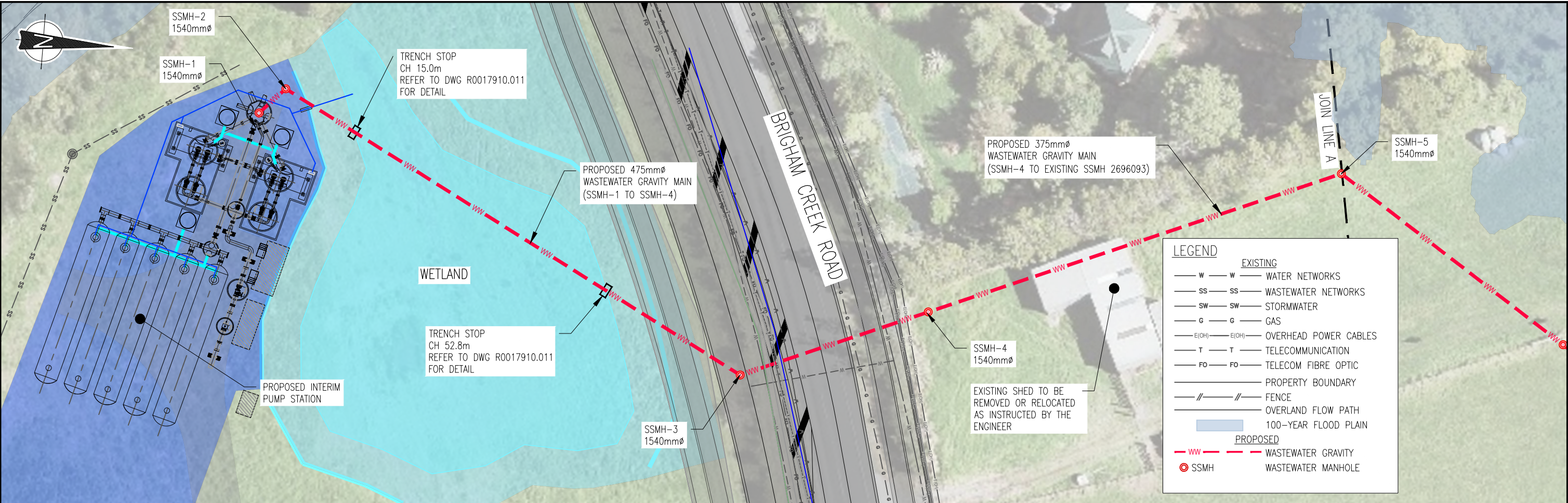


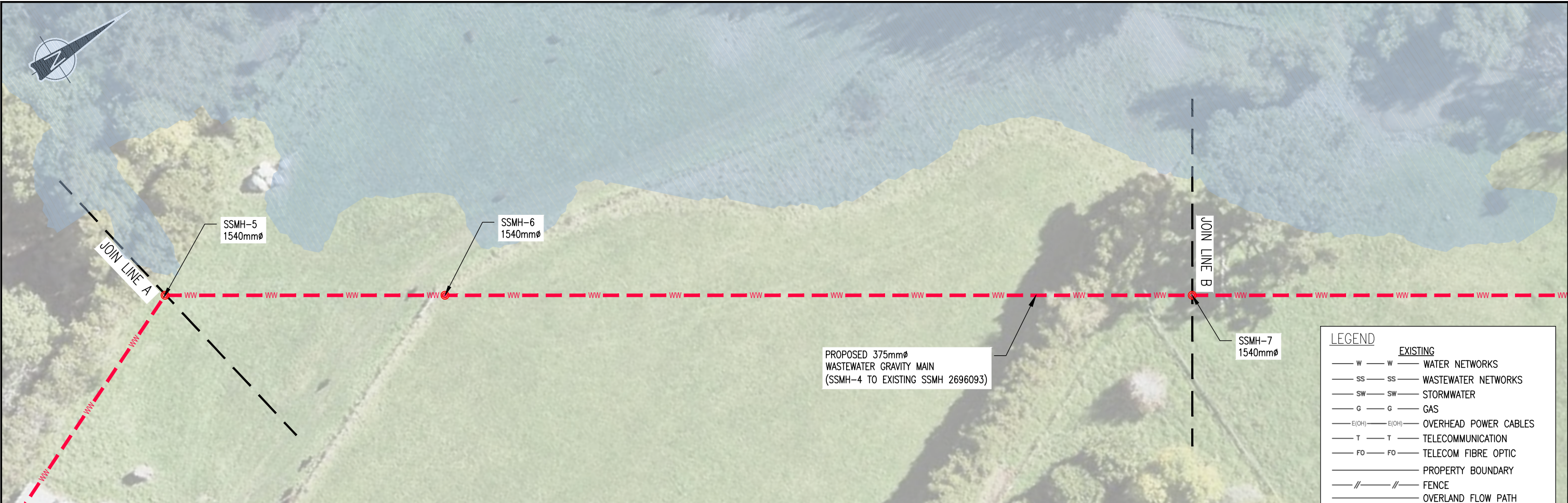
CAD FILE	R0017910.003	DATE	10–12–21
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484–6934
REF No.	12508391 3–AWD32		
DWG No.	R0017910.003	ISSUE	3



					DESIGNED	PH	12-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	 	CAD FILE	R0017910.002	DATE	10-12-21
					DES. APPROVED	SW	12-21			ORIGINAL SCALE	A3 1:2000	CONTRACT No.	6484-6934
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.		DRAWN	JC	12-21			REF No.	12508391 3-AWD32		
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.		DWG. APPROVED	DJ	12-21			DWG No.	R0017910.004		ISSUE
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.		WSL DESIGN MGMT.								
					WSL PROJ. LEAD								
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE						

WHENUAPAI-REDHILLS WASTEWATER SERVICING	
BRIGHAM CREEK ROAD, WHENUAPAI	
INTERIM SLAUGHTERHOUSE PS - WASTEWATER GRAVITY MAIN - GENERAL LAYOUT	





LEGEND

EXISTING

— W — W —

— SS — SS —

— SW — SW —

— G — G —

— E(OH) — E(OH) —

— T — T —

— FO — FO —

— — —

— // — // —

— — —

WATER NETWORKS

WASTEWATER NETWORKS

STORMWATER

GAS

OVERHEAD POWER CABLES

TELECOMMUNICATION

TELECOM FIBRE OPTIC

PROPERTY BOUNDARY

FENCE

OVERLAND FLOW PATH

100-YEAR FLOOD PLAIN

PROPOSED

— WW —

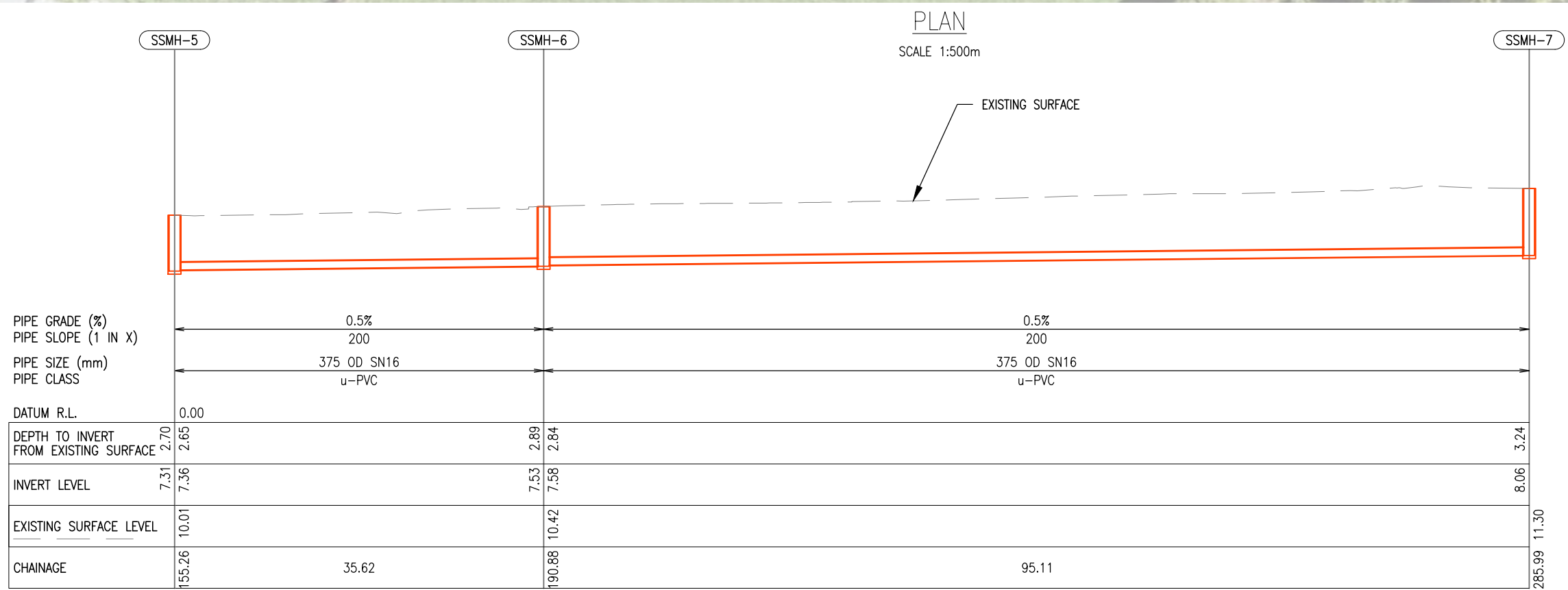
⊙ SSMH

WASTEWATER GRAVITY

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)

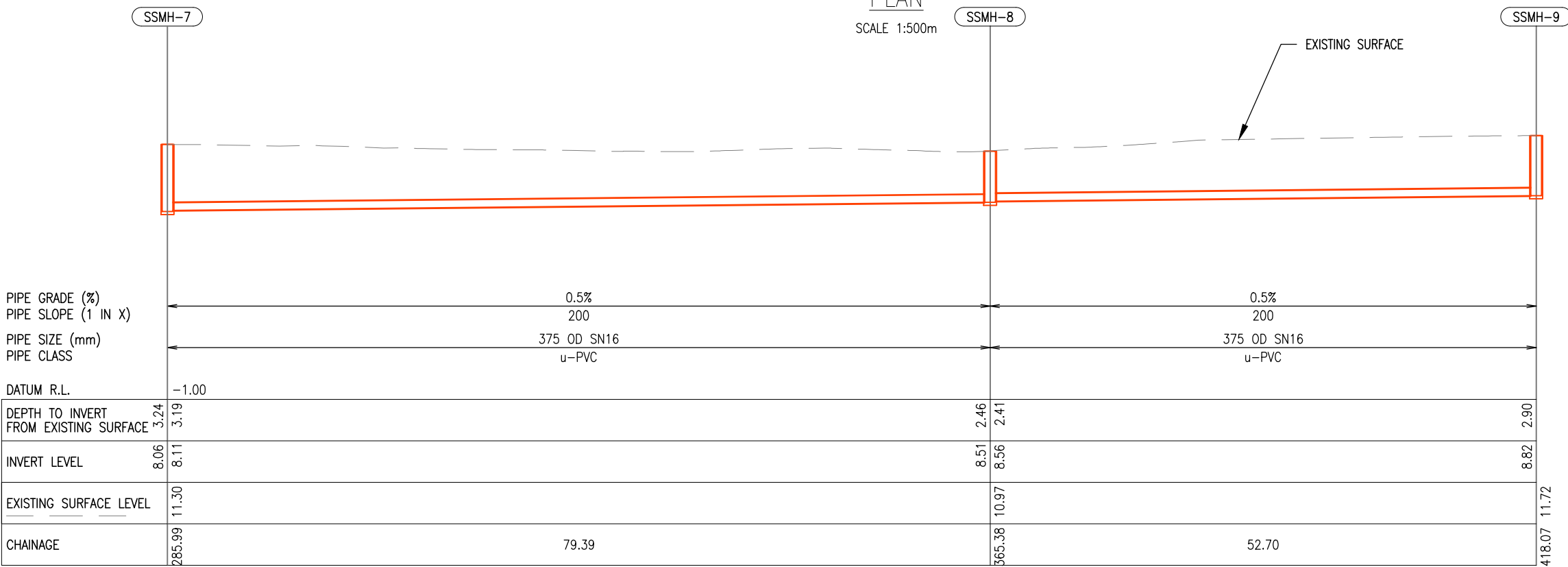
DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	PH	12-21		WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER GRAVITY MAIN PLAN AND LONG SECTION - SHEET 2 OF 5			CAD FILE	R0017910.002	DATE	10-12-21
			DES. APPROVED	SW	12-21	ORIGINAL SCALE					A3	1:500	CONTRACT No.	6484-6934
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	DRAWN	JC	12-21					REF No.	12508391 3-AWD32		
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	DWG. APPROVED	DJ	12-21					DWG No.	R0017910.006	ISSUE	3
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.	WSL DESIGN MGMT.										
ISSUE	DATE	AMENDMENT	BY	APPD.		DATE								



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 —	WASTEWATER GRAVITY
● SSMH	WASTEWATER MANHOLE

PLAN
SCALE 1:500m

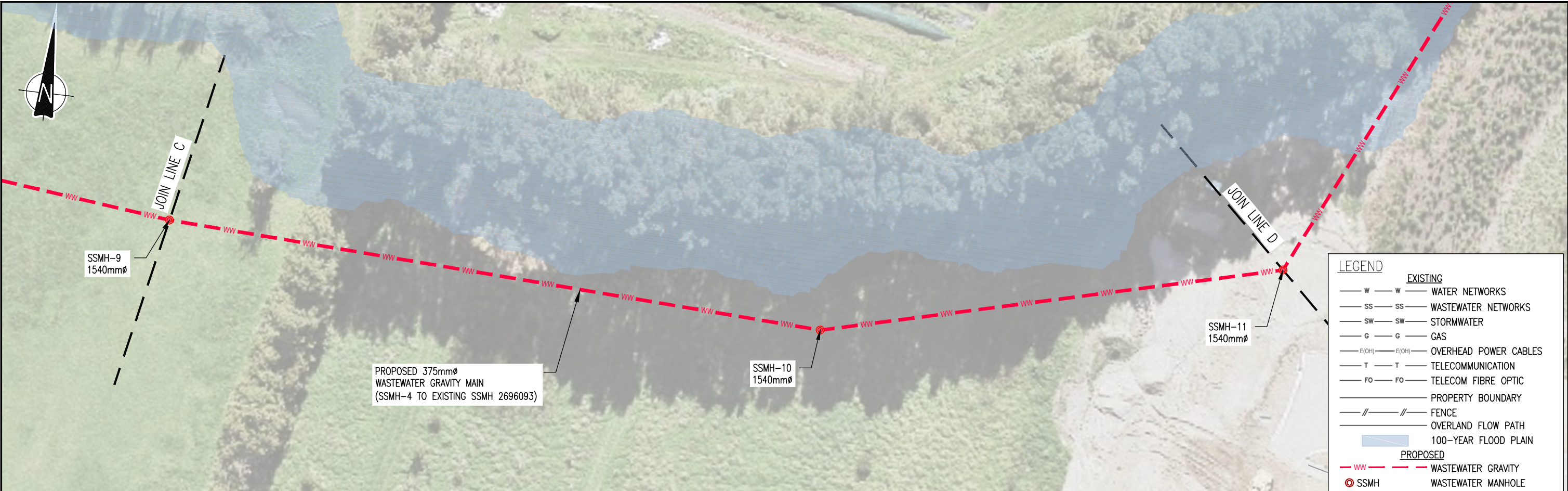


NOTE:
1. 1540MM MANHOLES TO BE IN ACCORDANCE WITH WSL STANDARD DRAWING 2000244.012.

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

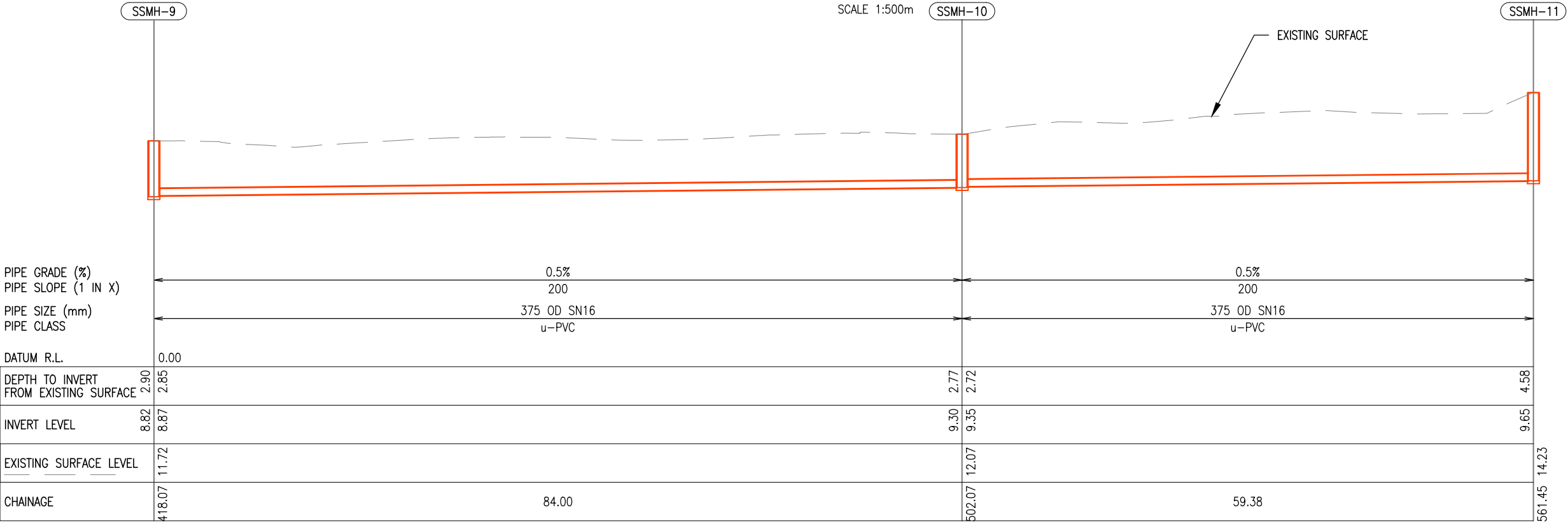
DETAILED DESIGN
NOT FOR CONSTRUCTION

		DESIGNED		PH	12-21	 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 GRAVITY MAIN PLAN AND LONG SECTION- SHEET 3 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.	R0017910.007			
		WSL DESIGN MGMT.							ISSUE	3			
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.										
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.										
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.										
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE						



PLAN

SCALE 1:500m



LONG SECTION

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

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

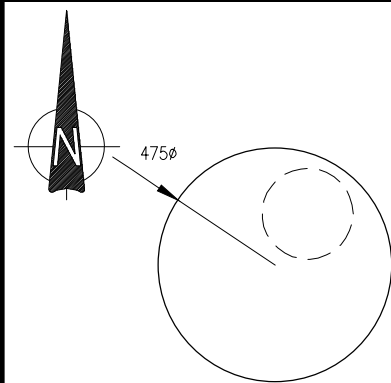
- WW — WW — WASTEWATER GRAVITY
- SSMH — SSMH — WASTEWATER MANHOLE

NOTE:

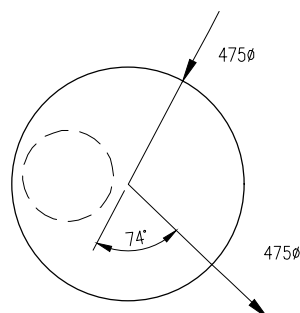
1. 1540MM MANHOLES TO BE IN ACCORDANCE WITH WSL STANDARD DRAWING 2000244.012.

DETAILED DESIGN
NOT FOR CONSTRUCTION

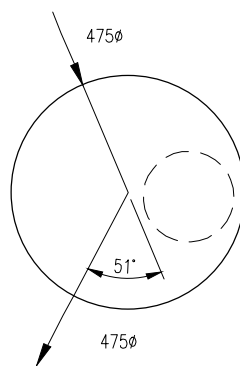
		DESIGNED		PH	12-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	WHENUAPAI-REDHILLS WASTEWATER SERVICING BRIGHAM CREEK ROAD, WHENUAPAI INTERIM SLAUGHTERHOUSE PS - WASTEWATER 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			
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.										
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.										
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.										
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE						



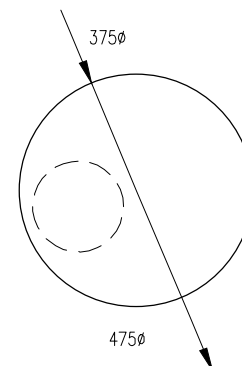
SSMH-1



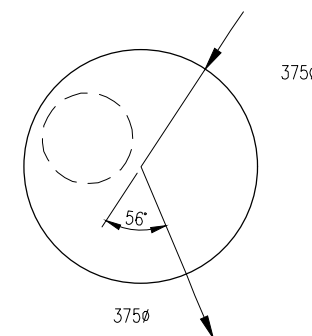
SSMH-2



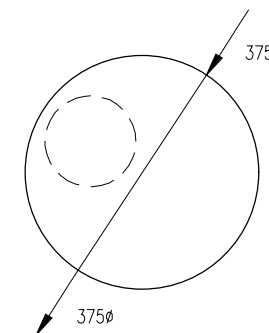
SSMH-3



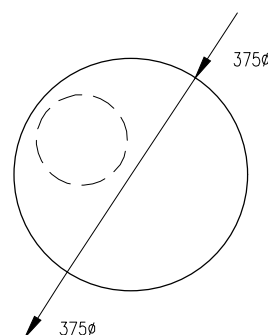
SSMH-4



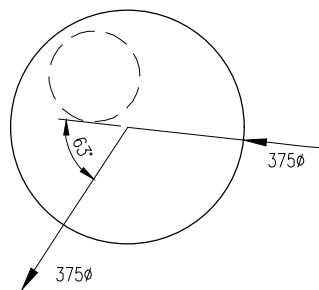
SSMH-5



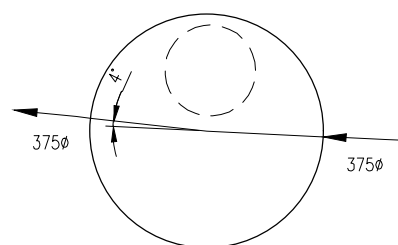
SSMH-6



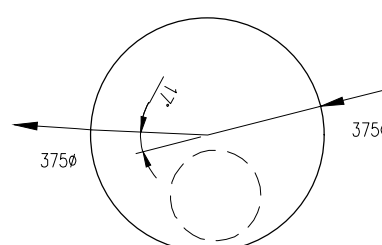
SSMH-7



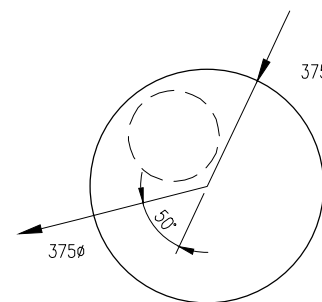
SSMH-8



SSMH-9



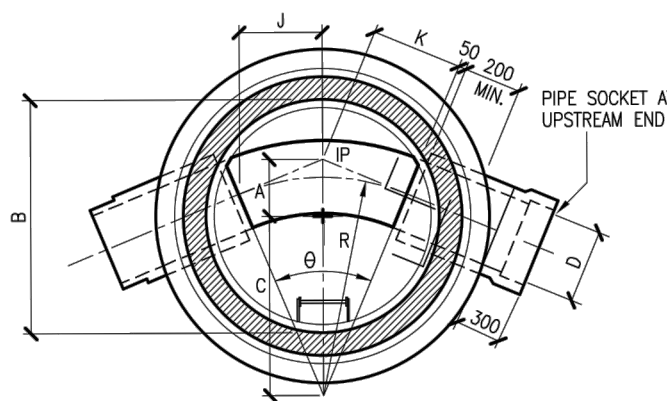
SSMH-10



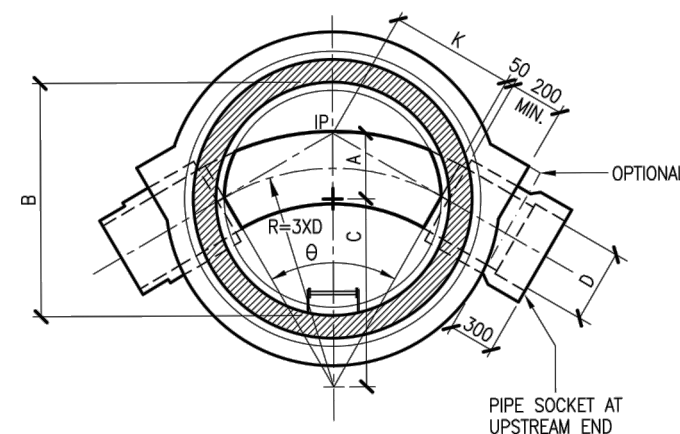
SSMH-11

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

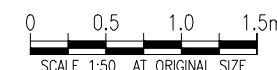
MANHOLE DIMENSION DETAIL										
MH No.	TYPE	PIPE ID	θ	J	R	K	A	B	C	NOTES
SSMH-1	A1	460		616		616	201	1540		
SSMH-2	A2	460	84°	616	1380	1243	548	1540	1149	
SSMH-3	A1	460	51°	616	1431	682	385	1540	1201	
SSMH-4	A1	460	0°	616		616	201	1540		STRAIGHT
SSMH-5	A1	370	56.4°	616	1312	698	442	1540	1044	
SSMH-6	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.



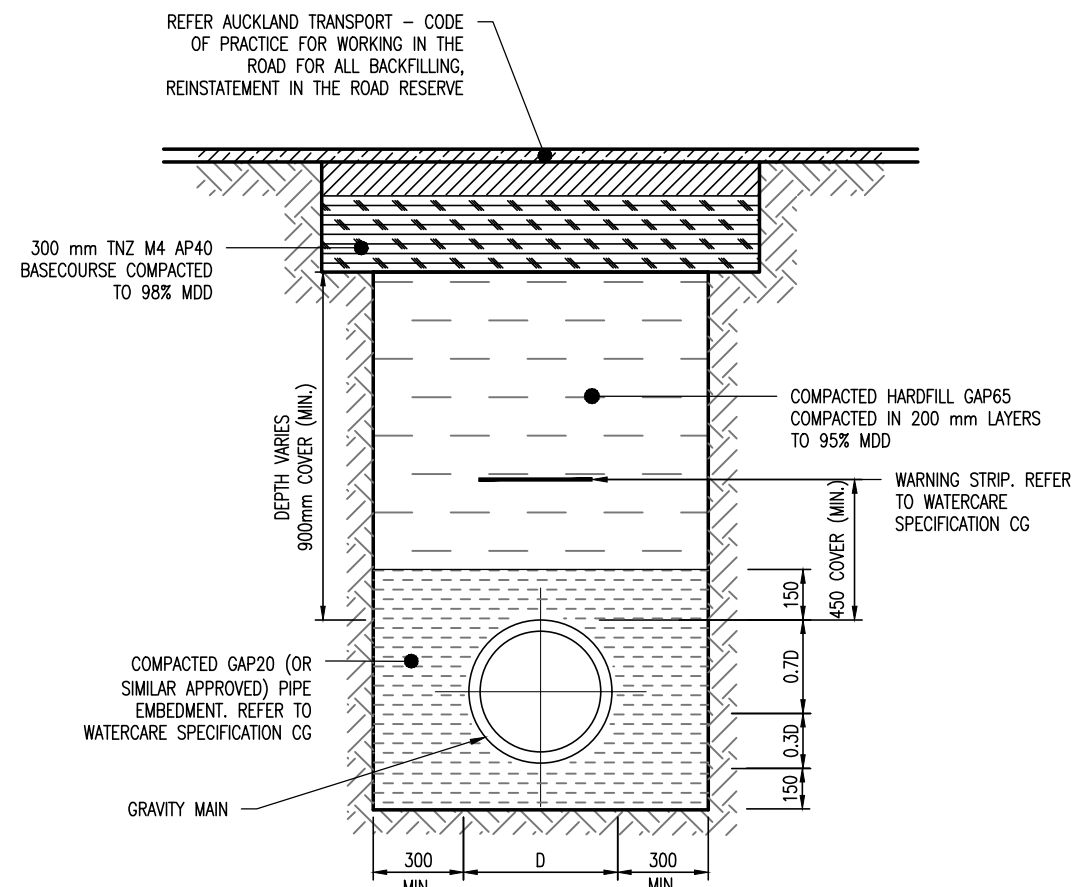
DETAILED DESIGN
NOT FOR CONSTRUCTION

DESIGNED	PH	12-21		
DES. APPROVED	SW	12-21		
DRAWN	DX	12-21		
DWG. APPROVED	JC	12-21		
WSL DESIGN MGMT.			COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	
WSL PROJ. LEAD				
BY	DATE			

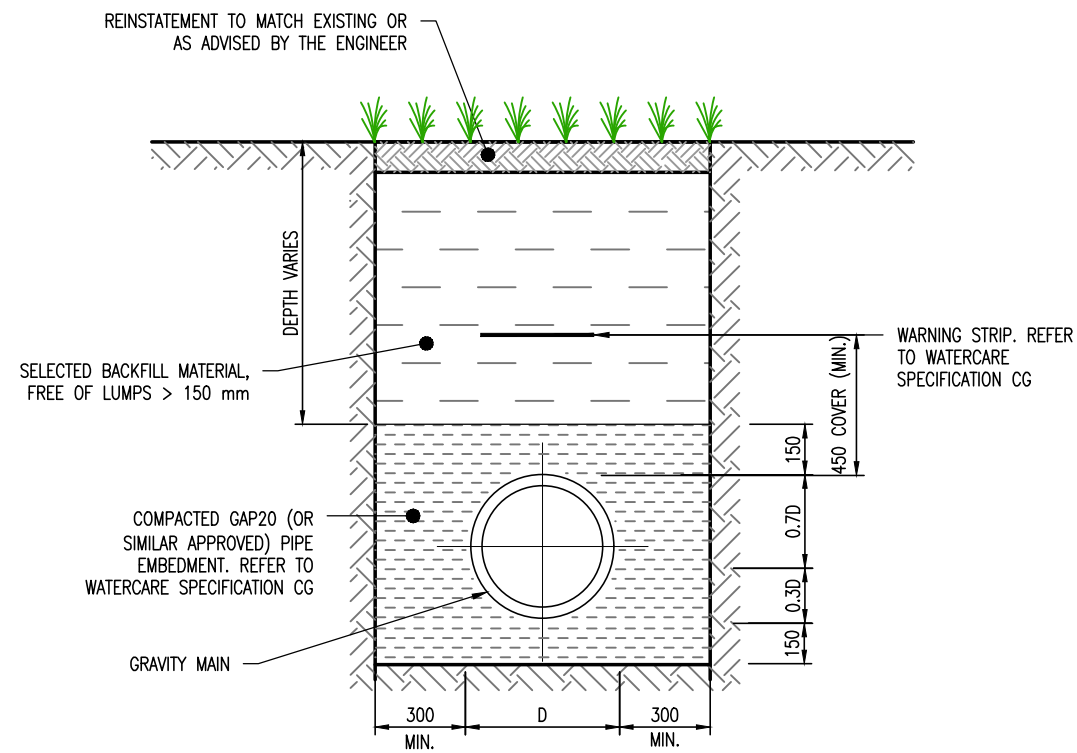
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WATER GRAVITY MAIN MANHOLE DIMENSIONS AND SETOUT



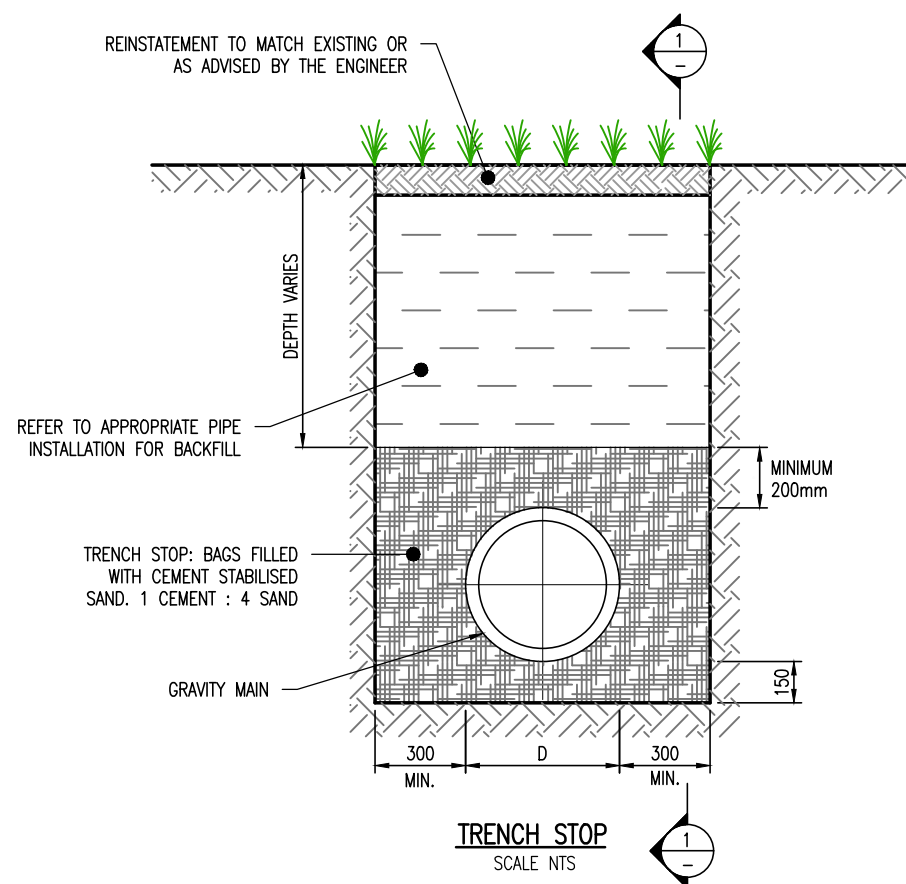
CAD FILE	R0017910.010	DATE	10-12-21
ORIGINAL SCALE	A3 1:50	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	R0017910.010	ISSUE	2



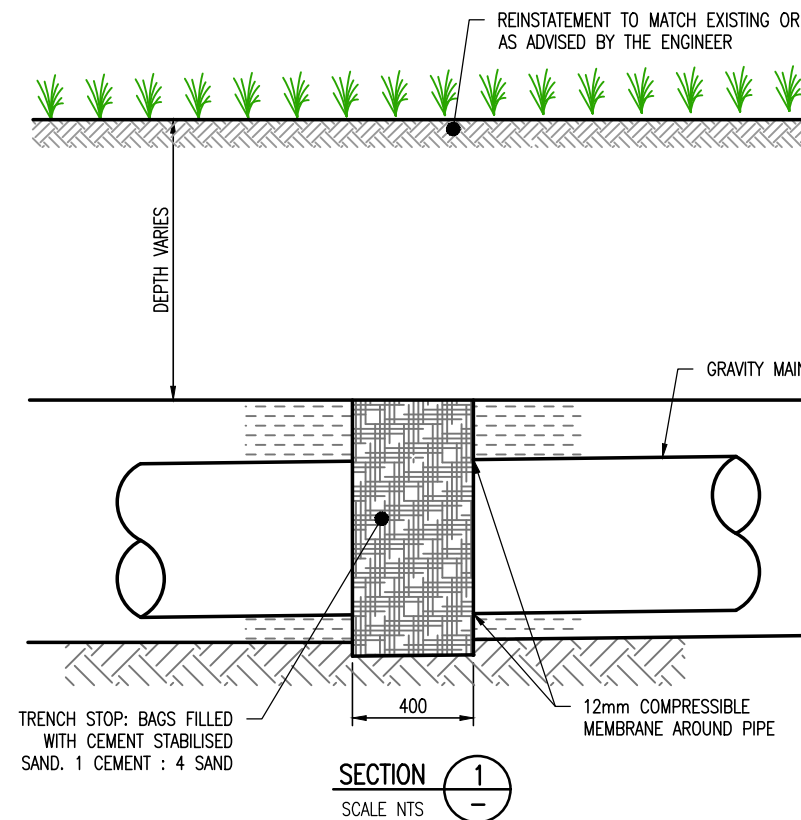
PIPE TRENCH INSTALLATION IN EXISTING CARRIAGEWAY



PIPE INSTALLATION IN GRASS AND BERM
SCALE NTS



TRENCH STOP
SCALE NTS



SECTION 1
SCALE NTS —

DETAILED DESIGN
NOT FOR CONSTRUCTION

						DESIGNED	PH	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	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	

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		

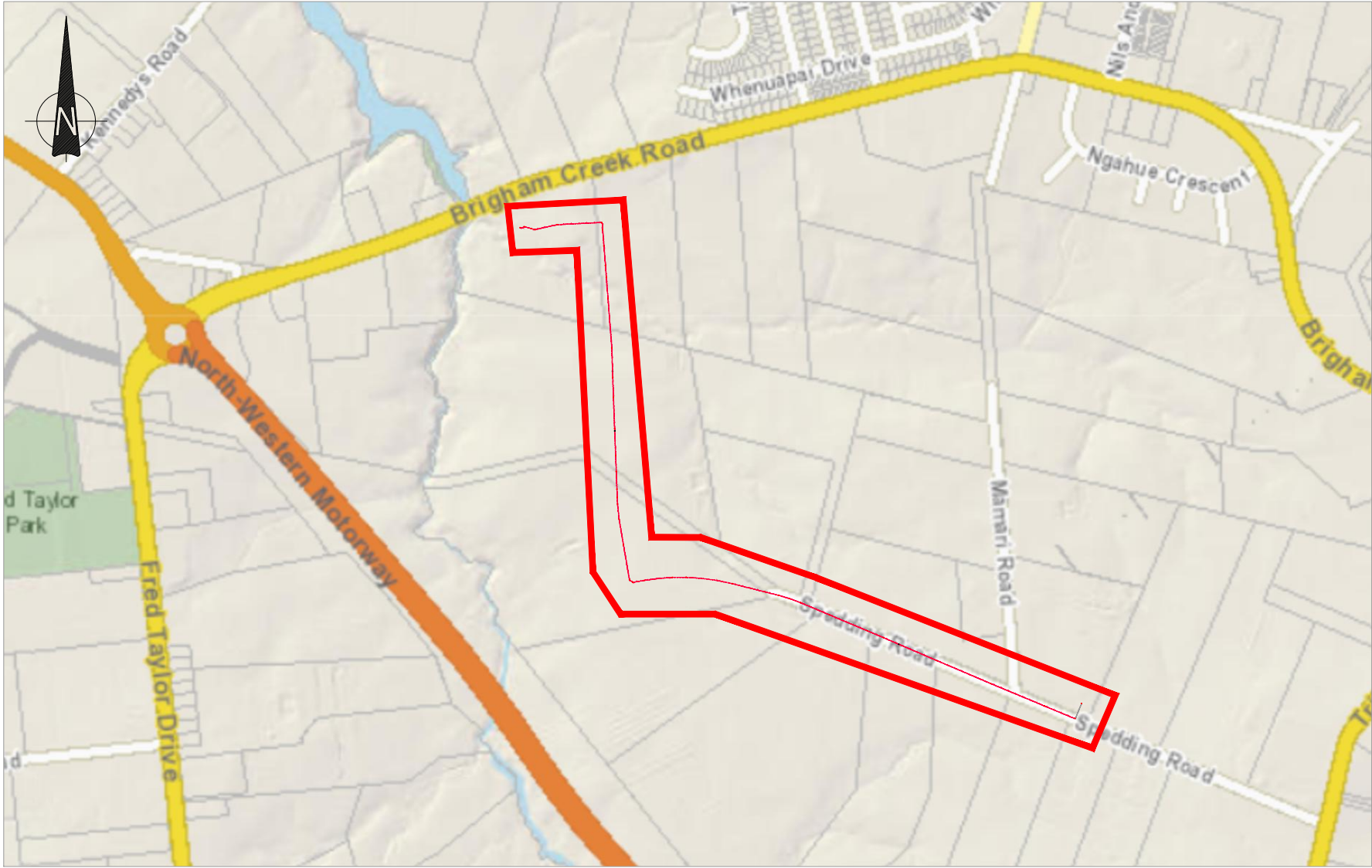
WHENUAPAI - REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN

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
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 - DRAWING INDEX	 	CAD FILE	2013654.001	DATE	09-09-22	
					DES. APPROVED	S. WANG	9-22				ORIGINAL SCALE	A3		CONTRACT No.	6484-6934
					DRAWN	S. VASOL	9-22					N.T.S.			
					DWG. APPROVED	D. XIE	9-22				REF No.	12508391 3-AWD32			
3	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	WSL DESIGN MGMT.						DWG No.	2013654.001		ISSUE	3
2	4-22	RE-ISSUED FOR DETAILED DESIGN	D.X	P.H.	WSL PROJ. LEAD										
1	12-21	ISSUED FOR DETAILED DESIGN	D.X.	P.H.											
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE								

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



LOCALITY PLAN

DETAILED DESIGN
NOT FOR CONSTRUCTION

			DESIGNED		P. HOUGHTON	9-22	 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 N.T.S.	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.	WSL DESIGN MGMT.							
2	4-22	RE-ISSUED FOR DETAILED DESIGN	D.X.	P.H.	WSL PROJ. LEAD							
1	12-21	ISSUED FOR DETAILED DESIGN	D.X.	P.H.								
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

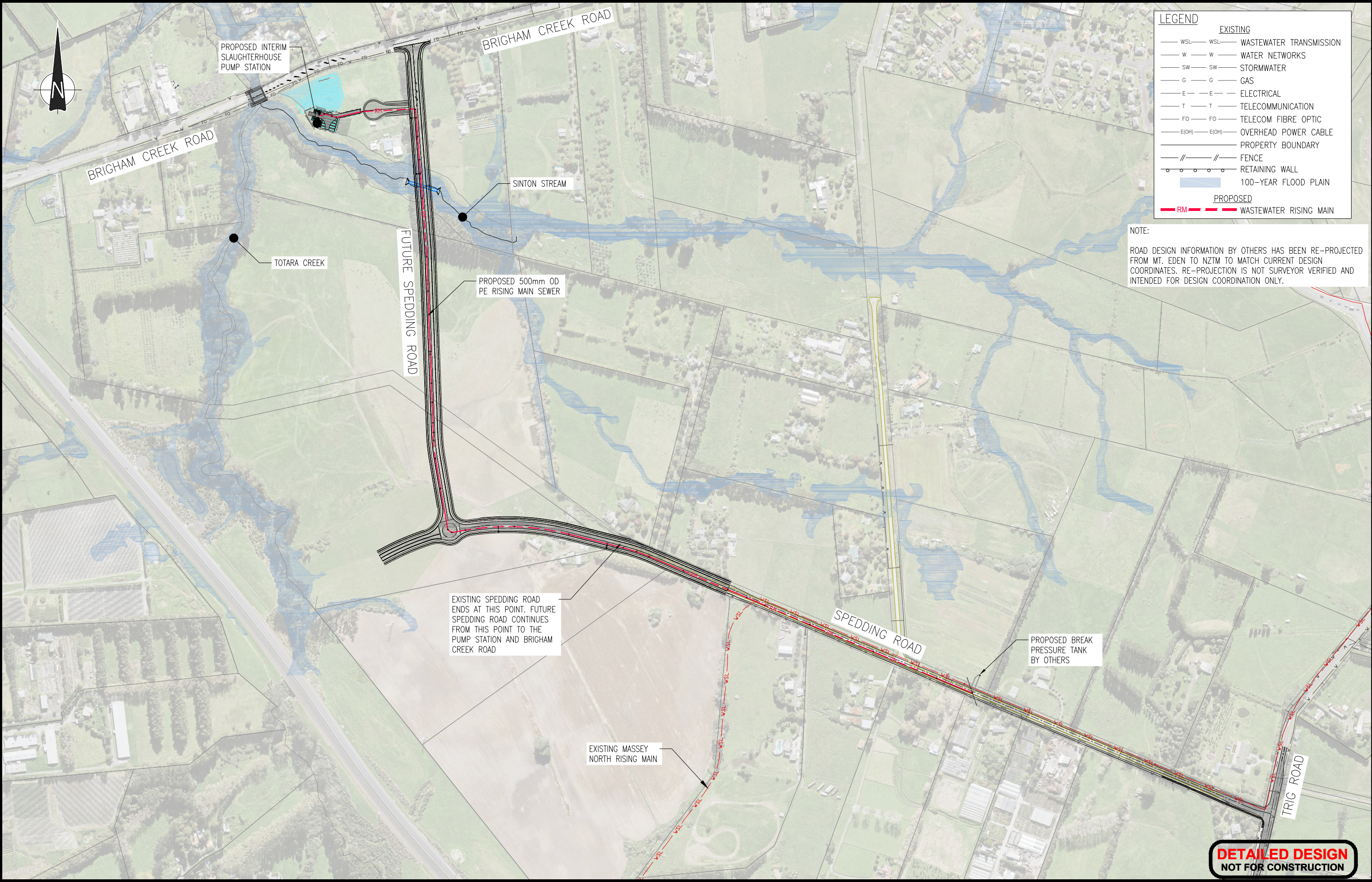
NUCLEAR DENSOMETER TESTS WILL BE USED TO DETERMINE THE CLASSIFICATION AND COMPACTION STANDARDS OF FILL MATERIALS. APPROXIMATE TEST METHODS, SUCH AS A HAND SHEAR VANE, MAY BE EMPLOYED TO OBTAIN RAPID INDICATIVE RESULTS, BUT APPROXIMATE METHODS SHALL NOT BE USED FOR ACCEPTANCE PURPOSES WHERE THE ADEQUACY 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						

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 – GENERAL NOTES	 	CAD FILE	2013654.003	DATE	09-09-22
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT		S.V.	P.H.	DES. APPROVED	S. WANG	9-22				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							
3	12-21	ISSUED FOR DETAILED DESIGN		J.C	P.H.	DWG. APPROVED	D. XIE	9-22							
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							



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	J.C.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	P.H.
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.

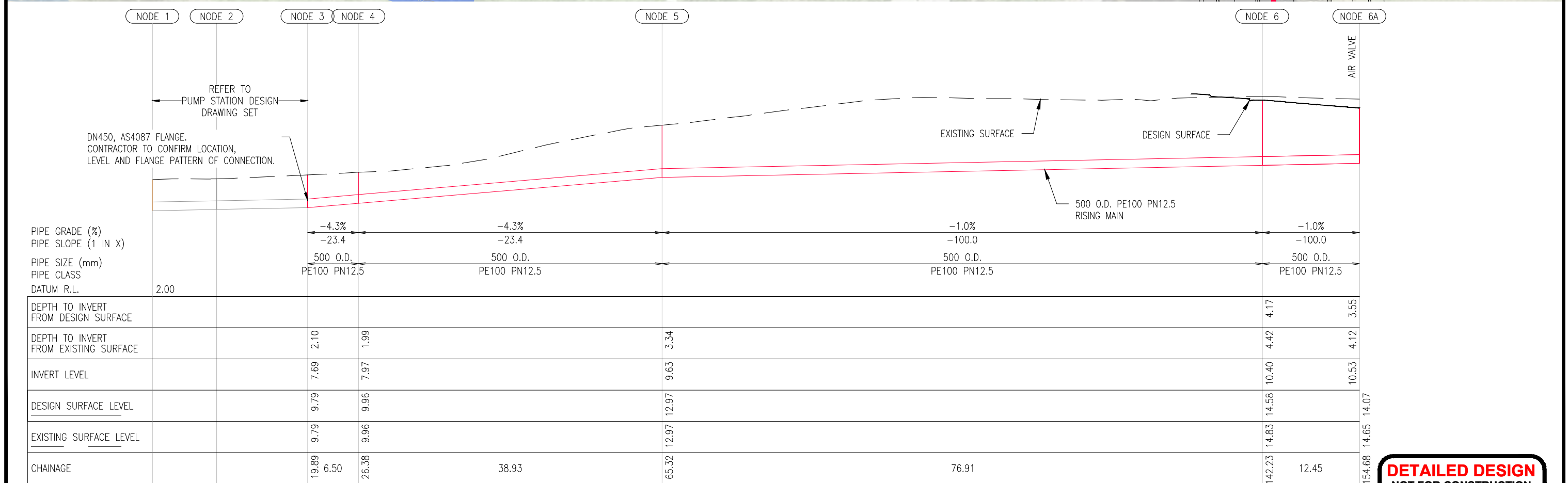
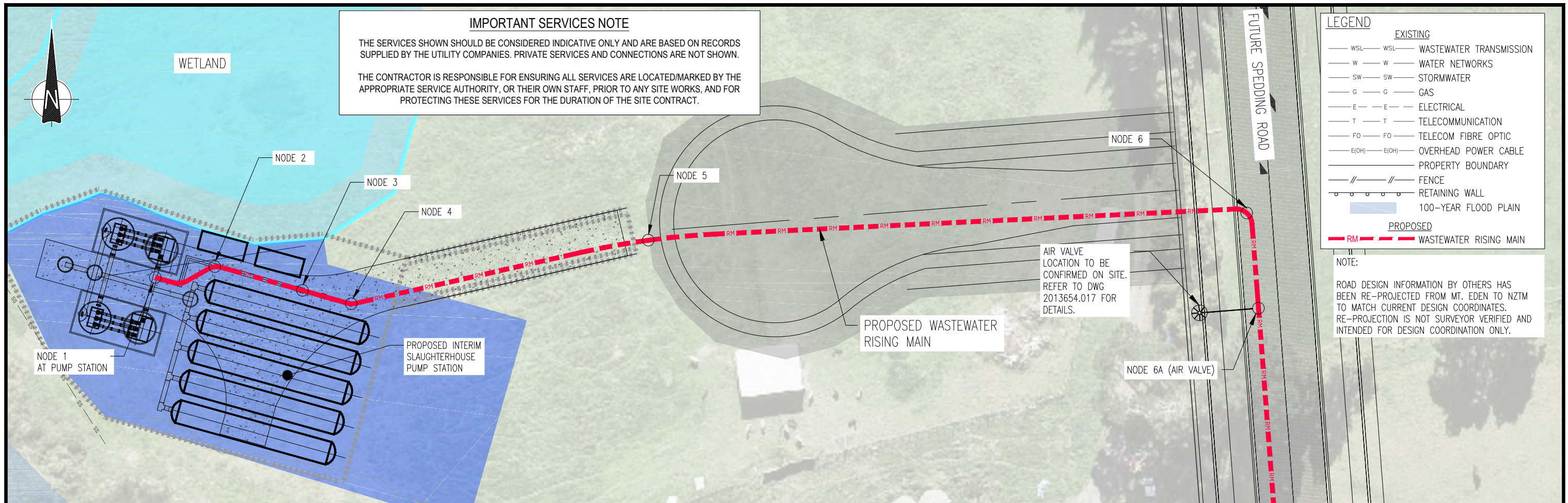
DESIGNED	P. HOUGHTON	9-22
DES. APPROVED	S. WANG	9-22
DRAWN	S. VASOL	9-22
DWG. APPROVED	D. XIE	9-22
WSL DESIGN MGMT.		
WSL PROJ. LEAD		

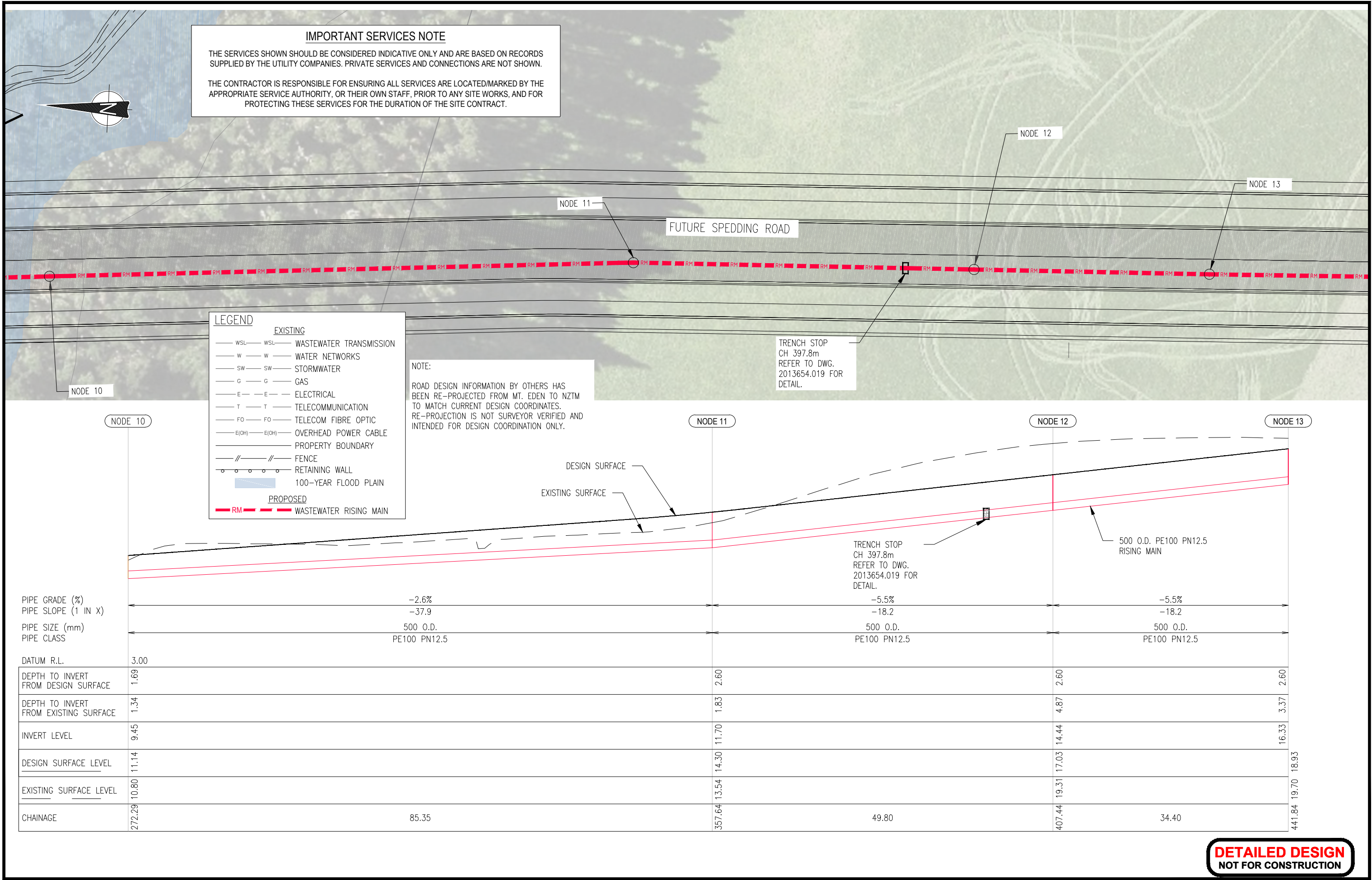
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

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



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





DESIGN SURFACE

EXISTING SURFACE

NOTE:

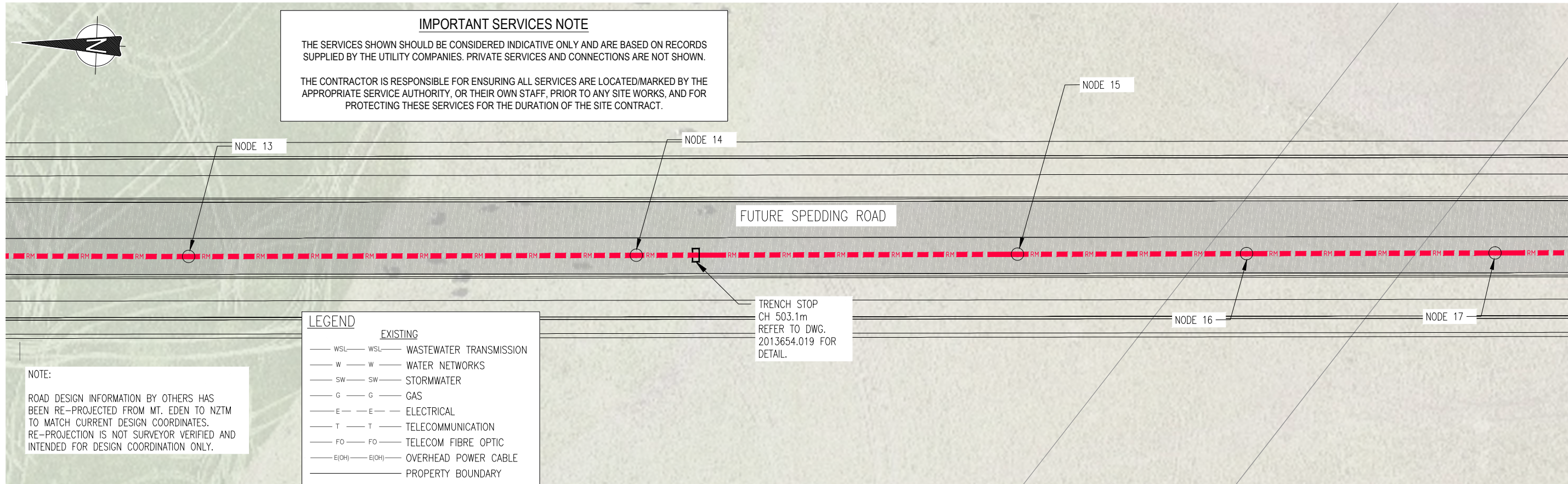
ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.

TRENCH STOP

CH 397.8m

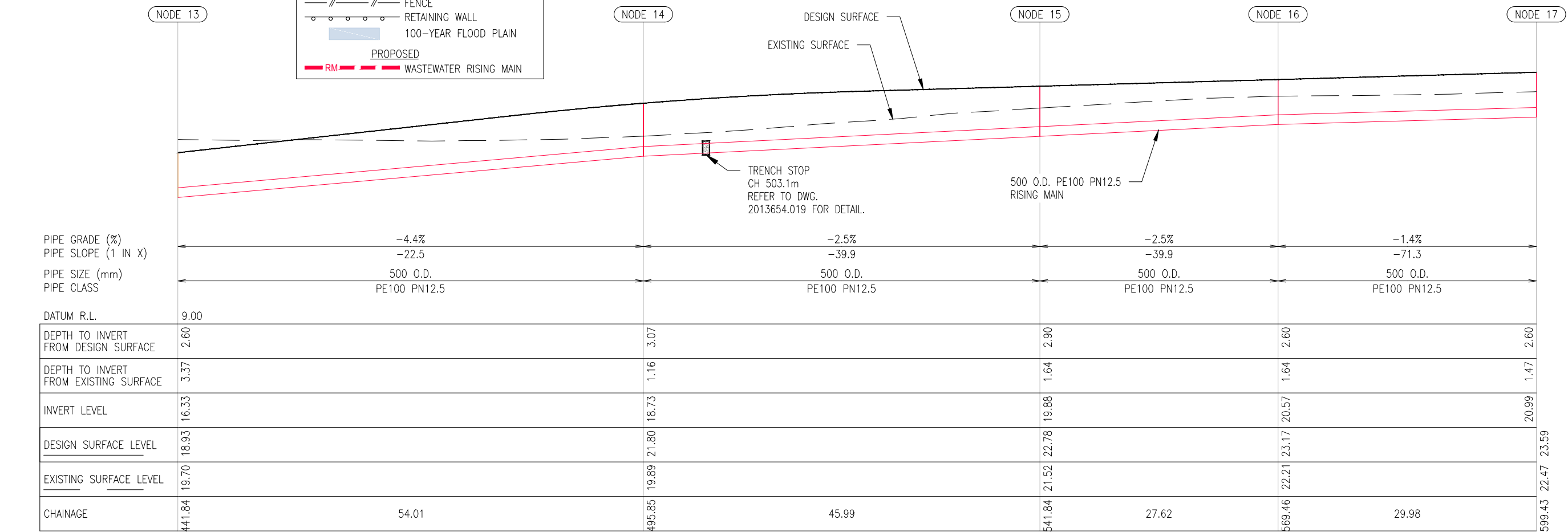
REFER TO DWG. 2013654.019 FOR DETAIL.

500 O.D. PE100 PN12.5 RISING MAIN



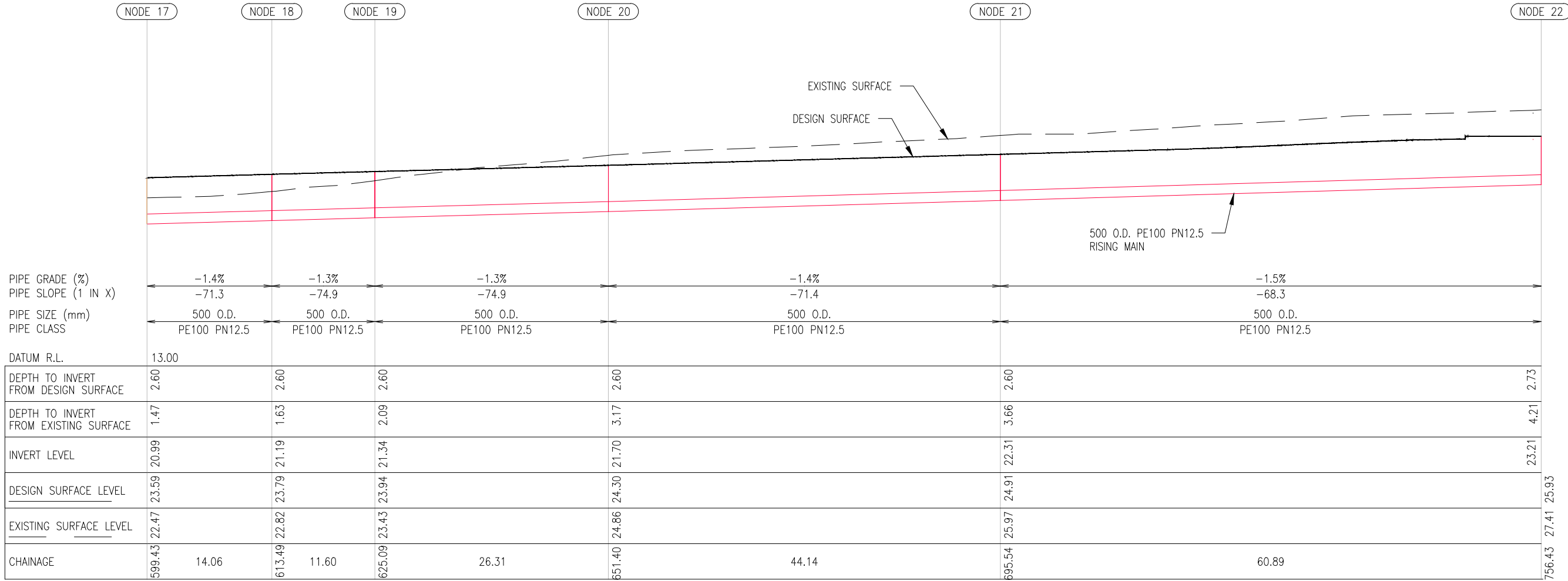
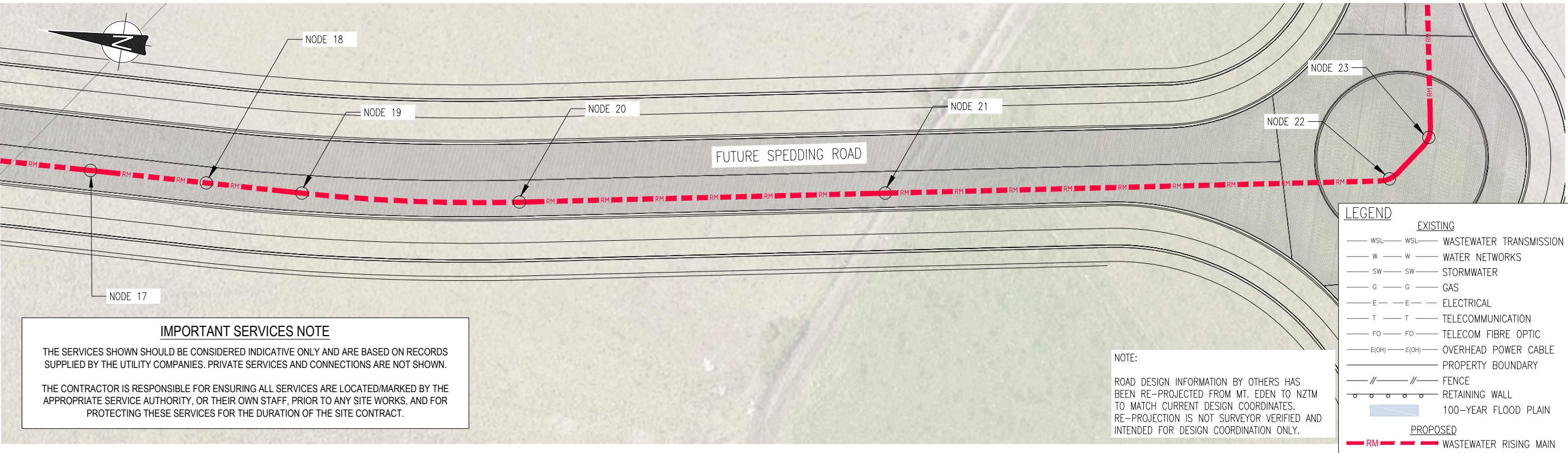
NOTE:
ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.

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

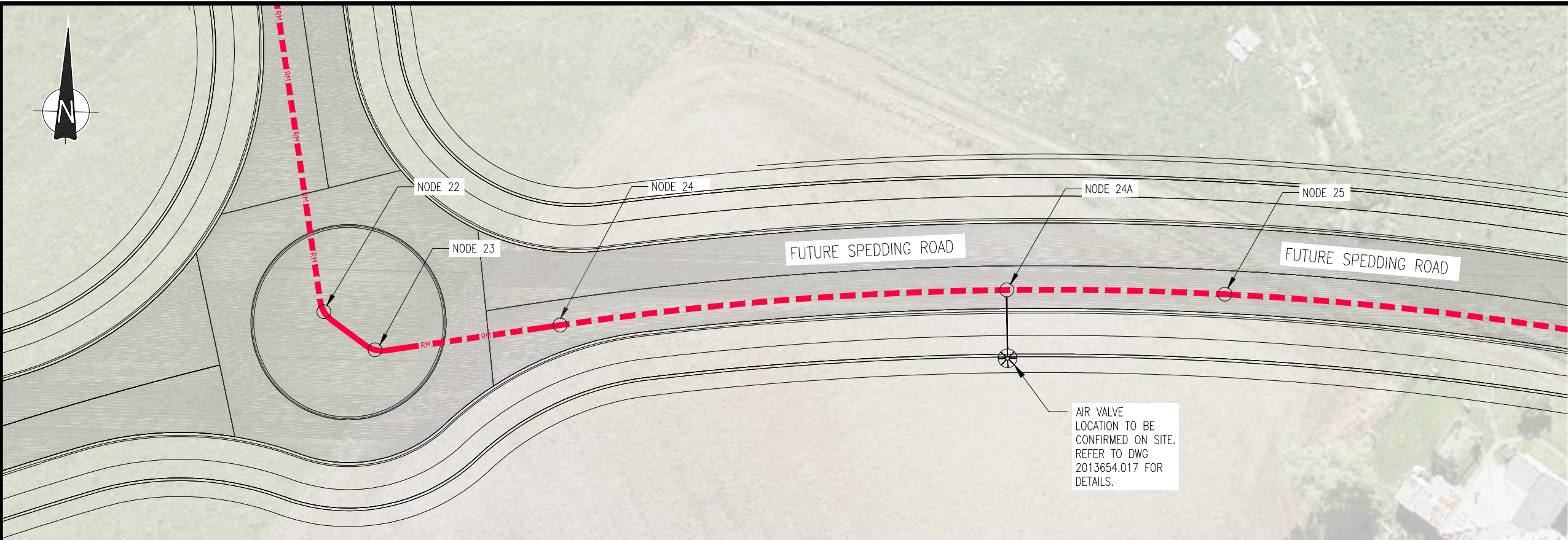


DETAILED DESIGN
NOT FOR CONSTRUCTION

5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	P. HOUGHTON	9-22	 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 PLAN AND LONG SECTION - SHEET 4 OF 12	 	CAD FILE	2013654.004-016	DATE	09-09-22	
4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DRAWN	S. VASOL	9-22				ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934	
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DWG. APPROVED	D. XIE	9-22				REF No.	12508391 3-AWD32			
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL DESIGN MGMT.						DWG No.	2013654.008	ISSUE	5	
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL PROJ. LEAD										
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE								



DETAILED DESIGN
NOT FOR CONSTRUCTION



LEGEND

EXISTING

WSL

W

SW

G

E

T

FO

E(OH)

//

o-o-o-o

WSL

W

SW

G

E

T

FO

E(OH)

//

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

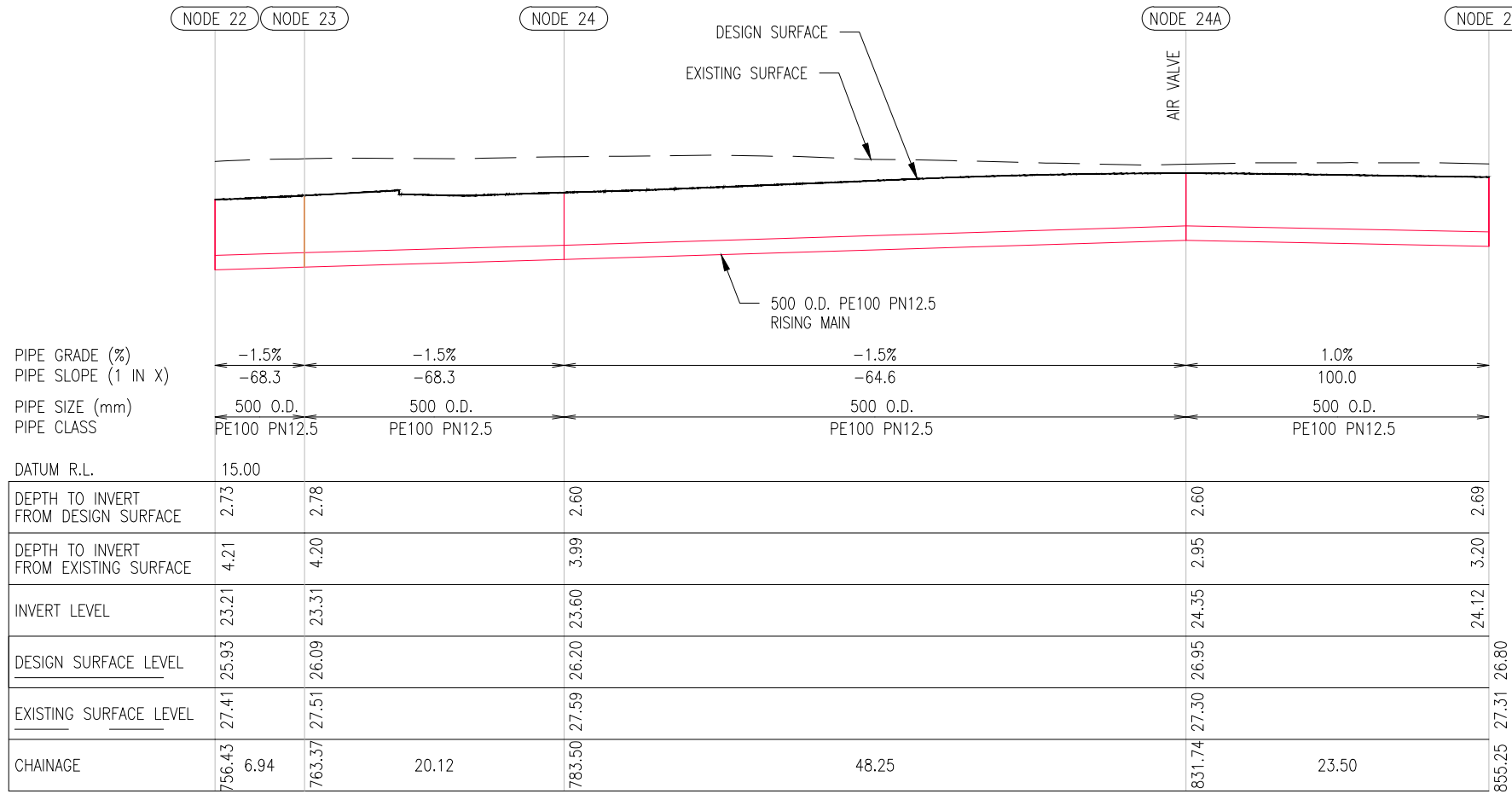
PROPOSED

RM

WASTEWATER RISING MAIN

NOTE:

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.



IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	P. HOUGHTON	9-22
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	S. WANG
4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DRAWN	S. VASOL
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DWG. APPROVED	D. XIE
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL DESIGN MGMT.	
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL PROJ. LEAD	
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

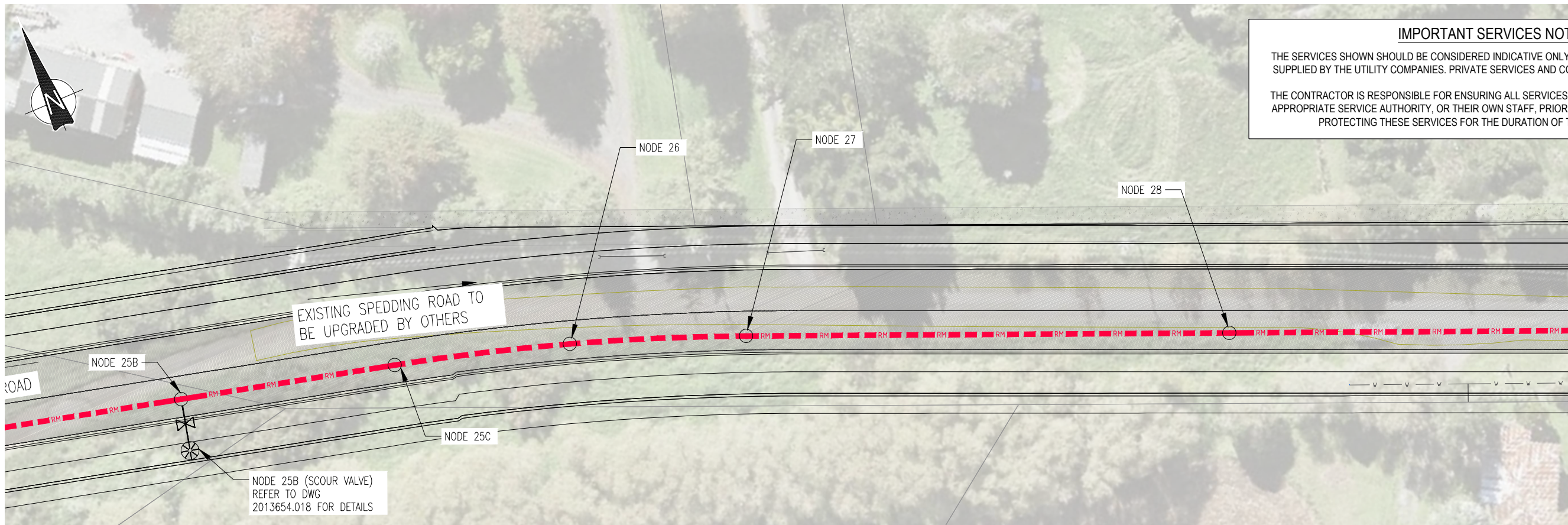
**Watercare**

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 PLAN AND LONG SECTION - SHEET 6 OF 12



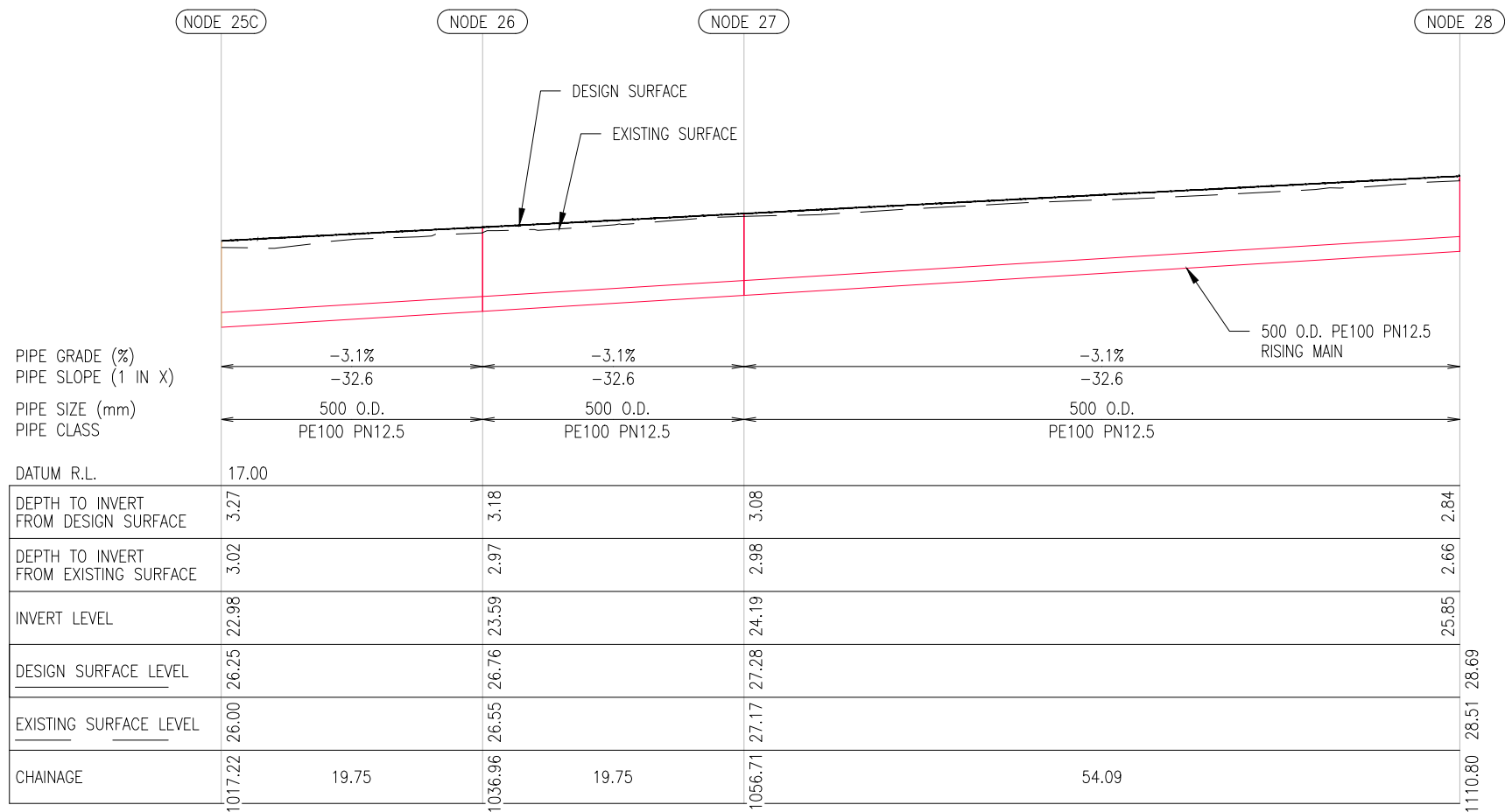
CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE	A3 1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.010	ISSUE	5



IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.



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
- — — — — RETAINING WALL
- — — — — 100-YEAR FLOOD PLAIN

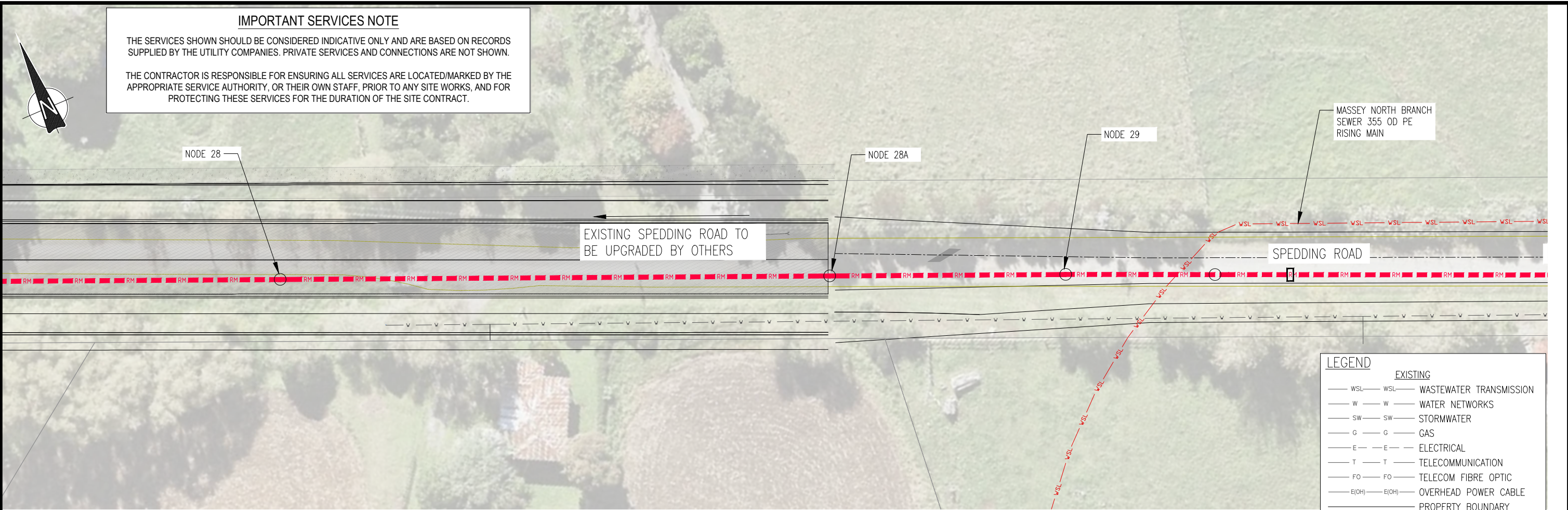
PROPOSED

- RM — RM — WASTEWATER RISING MAIN

NOTE:

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.

DETAILED DESIGN
NOT FOR CONSTRUCTION



LEGEND

EXISTING

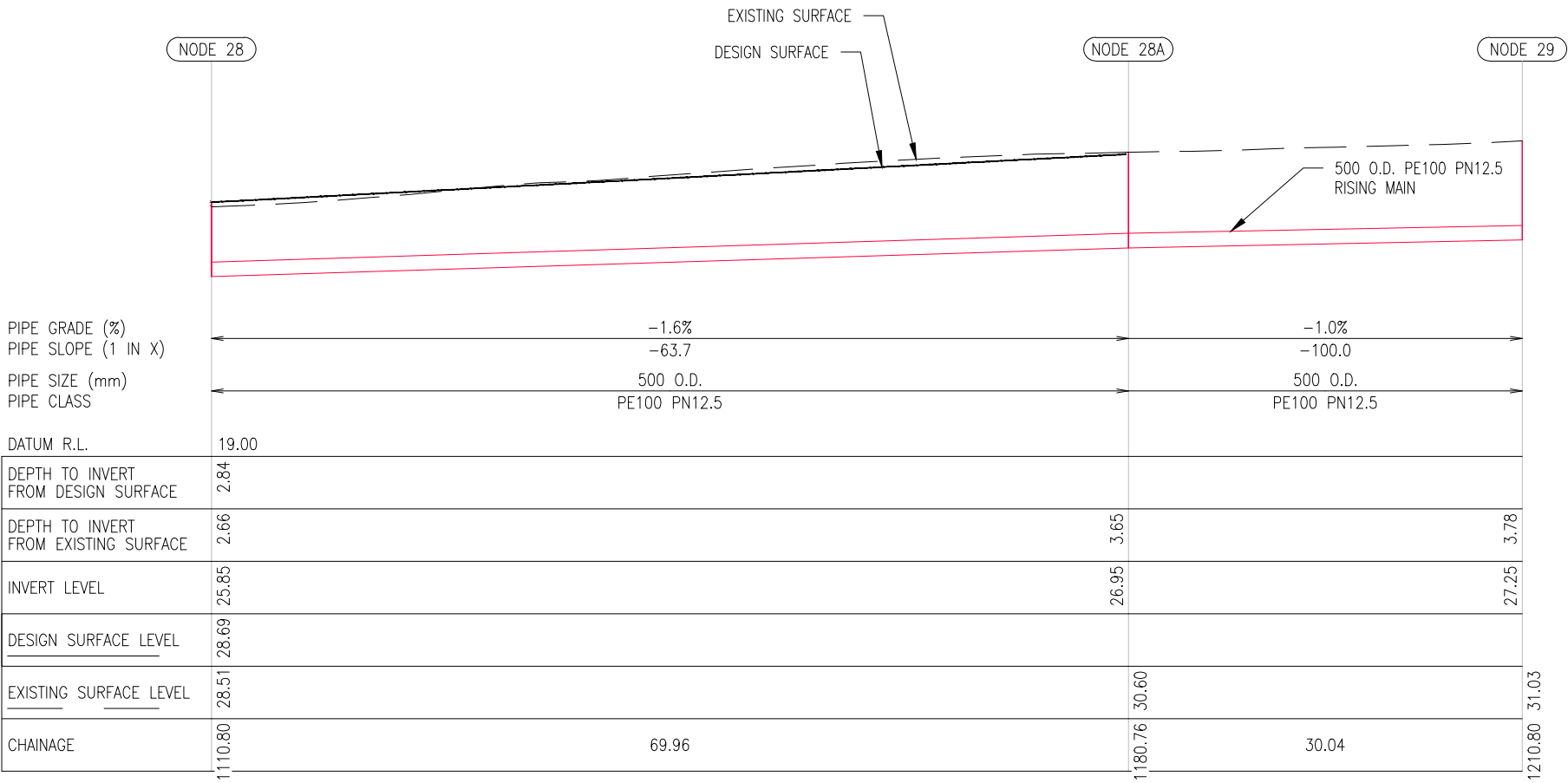
- WSL — WSL — WASTEWATER TRANSMISSION
- W — W — WATER NETWORKS
- SW — SW — STORMWATER
- G — G — GAS
- E — E — ELECTRICAL
- T — T — TELECOMMUNICATION
- FO — FO — TELECOM FIBRE OPTIC
- E(OH) — E(OH) — OVERHEAD POWER CABLE
- — — — — PROPERTY BOUNDARY
- // — // — FENCE
- — — — — RETAINING WALL
- 100-YEAR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

PROPOSED

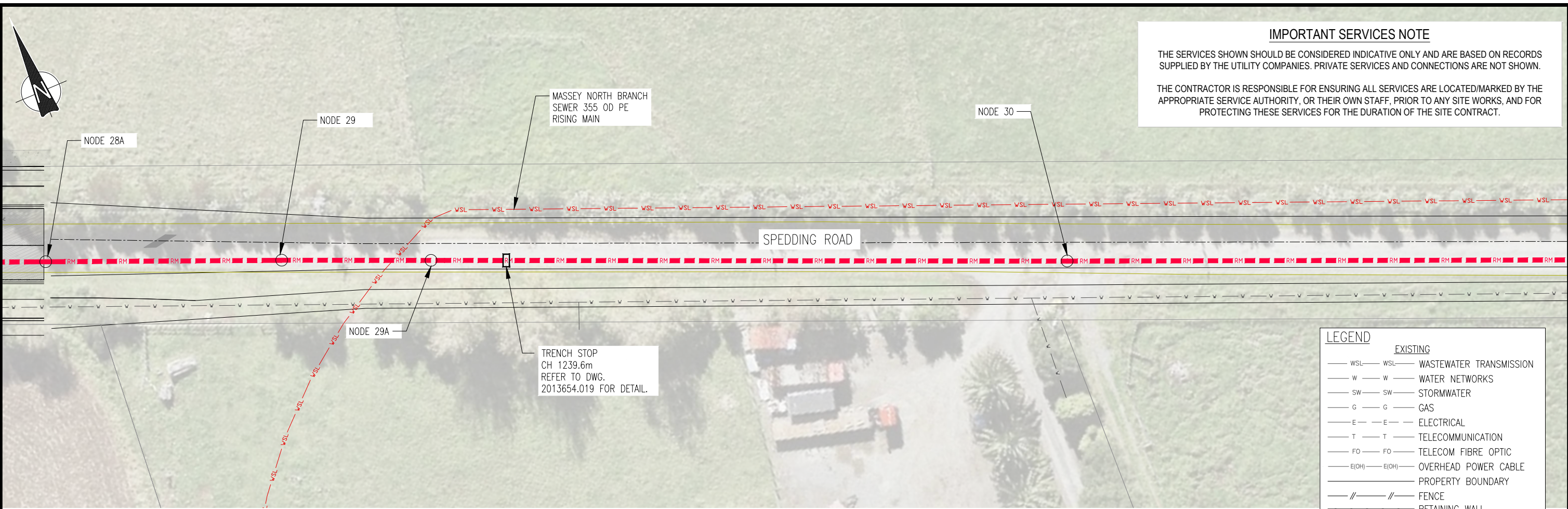
- RM — RM — WASTEWATER RISING MAIN

NOTE:

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.



DETAILED DESIGN
NOT FOR CONSTRUCTION



IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

LEGEND

EXISTING

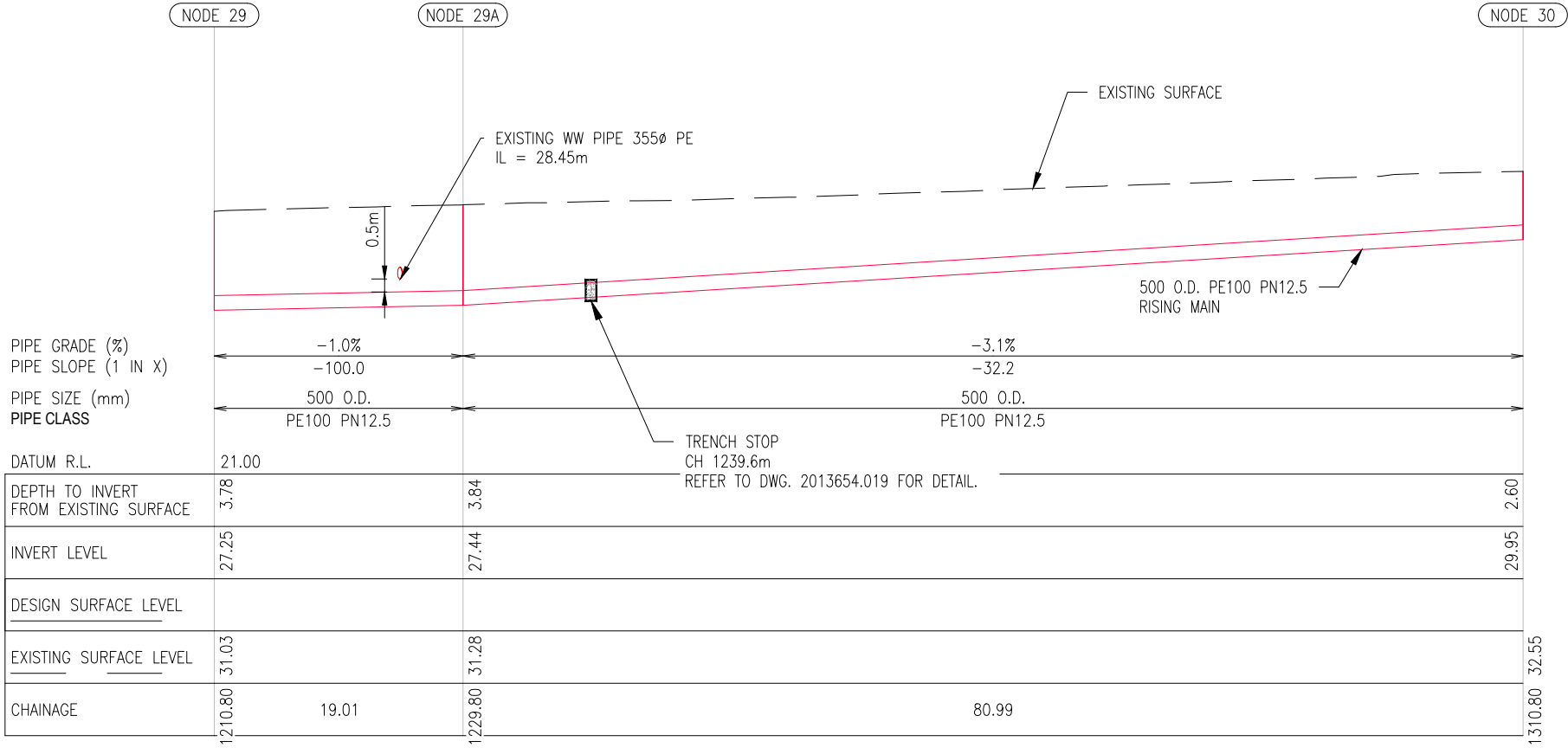
- WSL — WSL — WASTEWATER TRANSMISSION
- W — W — WATER NETWORKS
- SW — SW — STORMWATER
- G — G — GAS
- E — E — ELECTRICAL
- T — T — TELECOMMUNICATION
- FO — FO — TELECOM FIBRE OPTIC
- E(OH) — E(OH) — OVERHEAD POWER CABLE
- — — — — PROPERTY BOUNDARY
- // — // — FENCE
- o — o — RETAINING WALL
- 100-YEAR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

PROPOSED

- RM — RM — WASTEWATER RISING MAIN

NOTE:

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.



DETAILED DESIGN
NOT FOR CONSTRUCTION

5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	P. HOUGHTON	9-22
4	4-22	RE-ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DRAWN	S. WANG	9-22
3	12-21	ISSUED FOR DETAILED DESIGN	J.C.	P.H.	DWG. APPROVED	S. VASOL	9-22
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL DESIGN MGMT.	D. XIE	9-22
1	5-21	ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL PROJ. LEAD		
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE

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 PLAN AND LONG SECTION - SHEET 10 OF 12

wsp **GHD**

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.	2013654.014	ISSUE	5



IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

LEGEND

EXISTING

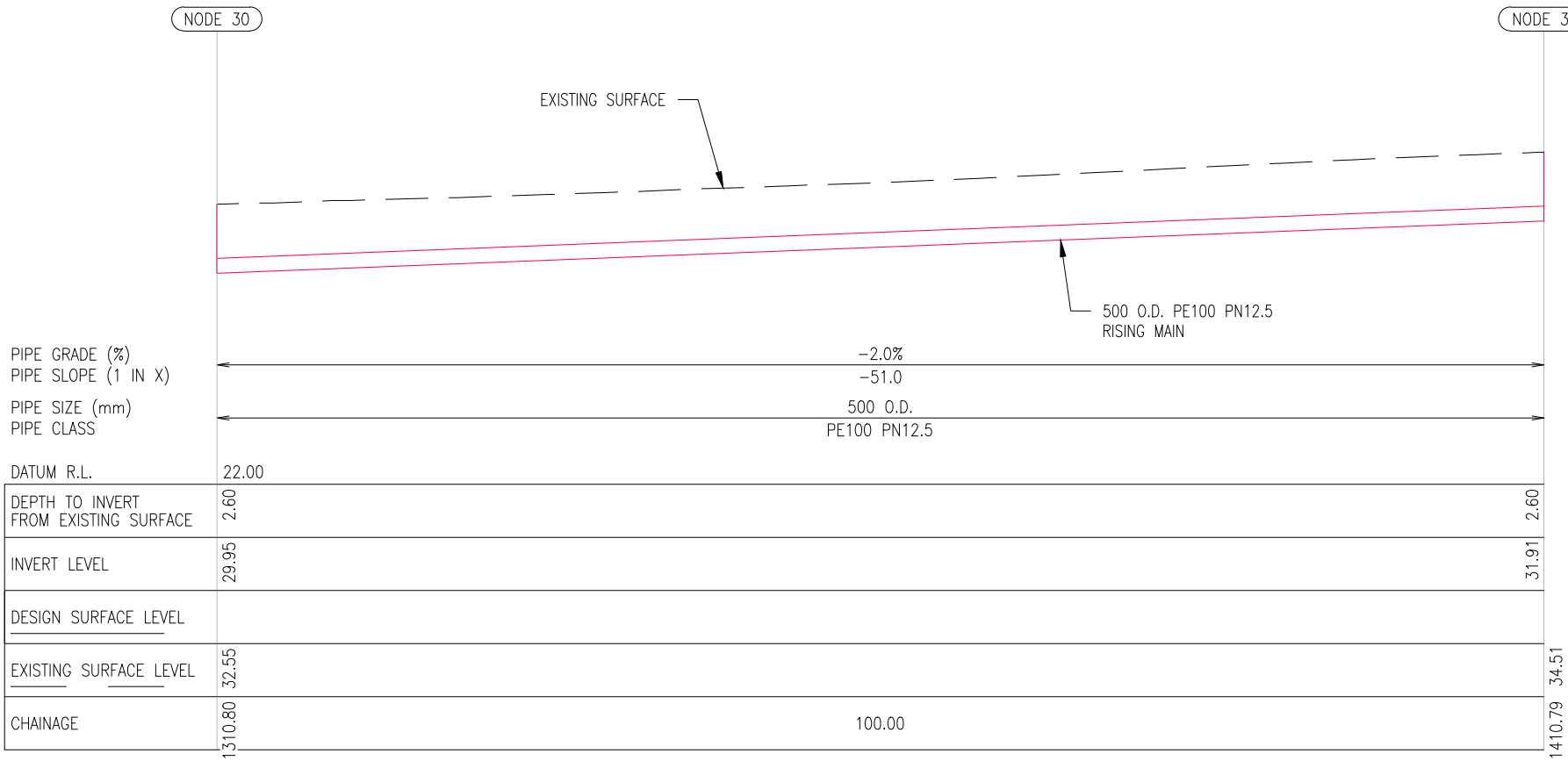
- WSL WSL WASTEWATER TRANSMISSION
- W W WATER NETWORKS
- SW SW STORMWATER
- G G GAS
- E E ELECTRICAL
- T T TELECOMMUNICATION
- FO FO TELECOM FIBRE OPTIC
- E(OH) E(OH) OVERHEAD POWER CABLE
- PROPERTY BOUNDARY
- // // FENCE
- o o o o RETAINING WALL
- 100-YEAR FLOOD PLAIN

PROPOSED

- RM RM WASTEWATER RISING MAIN

NOTE:

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.



DETAILED DESIGN
NOT FOR CONSTRUCTION

IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

Diagram illustrating a road layout with a roundabout. The roundabout is marked with a dashed line labeled 'RM' (Right of Way) and a solid line labeled 'WSL' (Width of Street Line). A dashed line labeled 'LIMIT OF' is also shown, indicating the boundary of the road.

PROPOSED PIPE TO
BE CAPPED AT END

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
○ ○ ○ ○ ○	RETAINING WALL
100 — YEAR FLOOD PLAIN	

PROPOSED

RM	RETAINING WALL RISING MAIN
----	----------------------------

ROAD DESIGN INFORMATION BY OTHERS HAS BEEN RE-PROJECTED FROM MT. EDEN TO NZTM TO MATCH CURRENT DESIGN COORDINATES. RE-PROJECTION IS NOT SURVEYOR VERIFIED AND INTENDED FOR DESIGN COORDINATION ONLY.

EXISTING WATER PIPE 500 AC
IL = 34.72m

EXISTING SW PIPE
IL = 34.88m

PROPOSED PIPE TO
BE CAPPED AT END

DATUM R.L.	25.00
DEPTH TO INVERT FROM EXISTING SURFACE	2.60
INVERT LEVEL	31.91
<u>DESIGN SURFACE LEVEL</u>	
<u>EXISTING SURFACE LEVEL</u>	34.51
CHAINAGE	410.79

-1.0%
-100.0
500 O.D.
PE100 PN12.5

				33.55	2.76
1566.97	36.31				

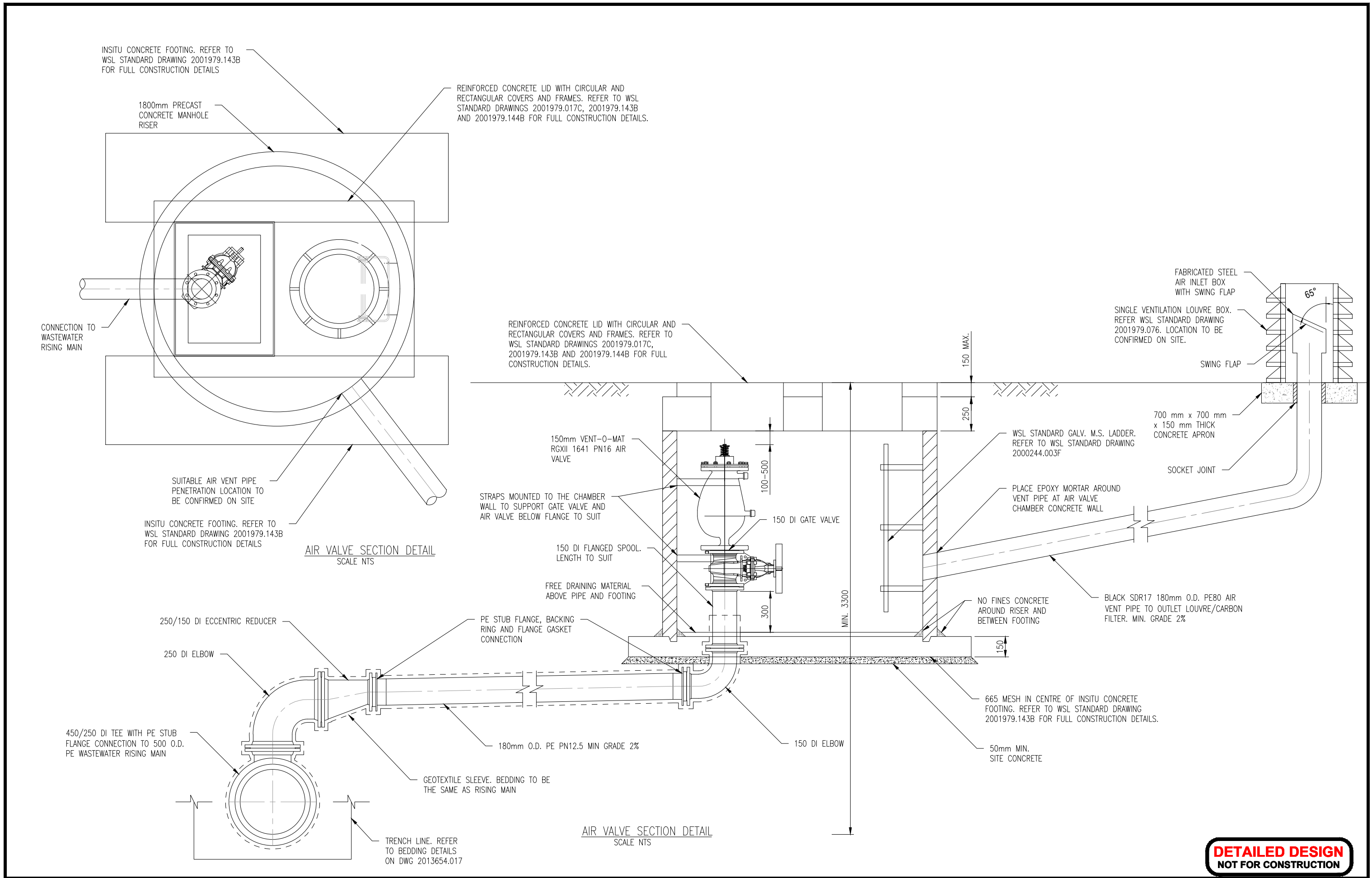
CAD FILE	2013654.004-016	DATE	09-09-22
ORIGINAL SCALE A3	1:500	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.016		ISSUE 4

					DESIGNED	P. HOUGHTON	9-22
4	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	S. WANG	9-22
3	12-21	ISSUED FOR DETAILED DESIGN	D.X.		DRAWN	S. VASOL	9-22
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	D.X.		DWG. APPROVED	D. XIE	9-22
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.		WSL DESIGN MGMT.		
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE



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





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	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	-	-

BY	DATE
BY	DATE

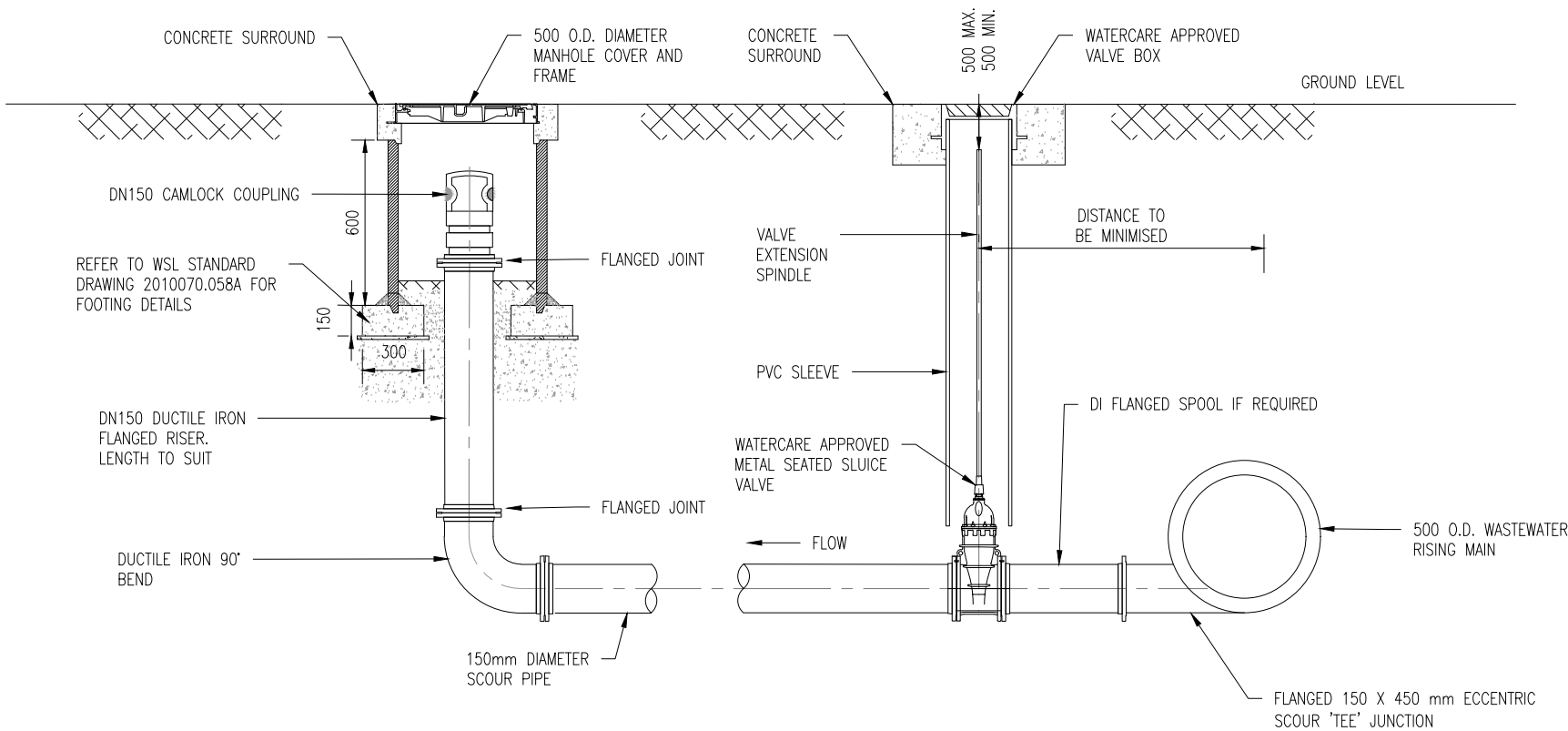
WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI
INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN AIR VALVE DETAILS



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.	DESIGNED	BY	DATE
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.	DES. APPROVED	P. HOUGHTON	9-22
4	4-22	RE-ISSUED FOR DETAILED DESIGN	D.J.	P.H.	DRAWN	S. WANG	9-22
3	12-21	ISSUED FOR DETAILED DESIGN	D.J.	P.H.	DWG. APPROVED	S. VASOL	9-22
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	J.C.	P.H.	WSL DESIGN MGMT.	D. XIE	9-22
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.	WSL PROJ. LEAD	-	-

Watercare

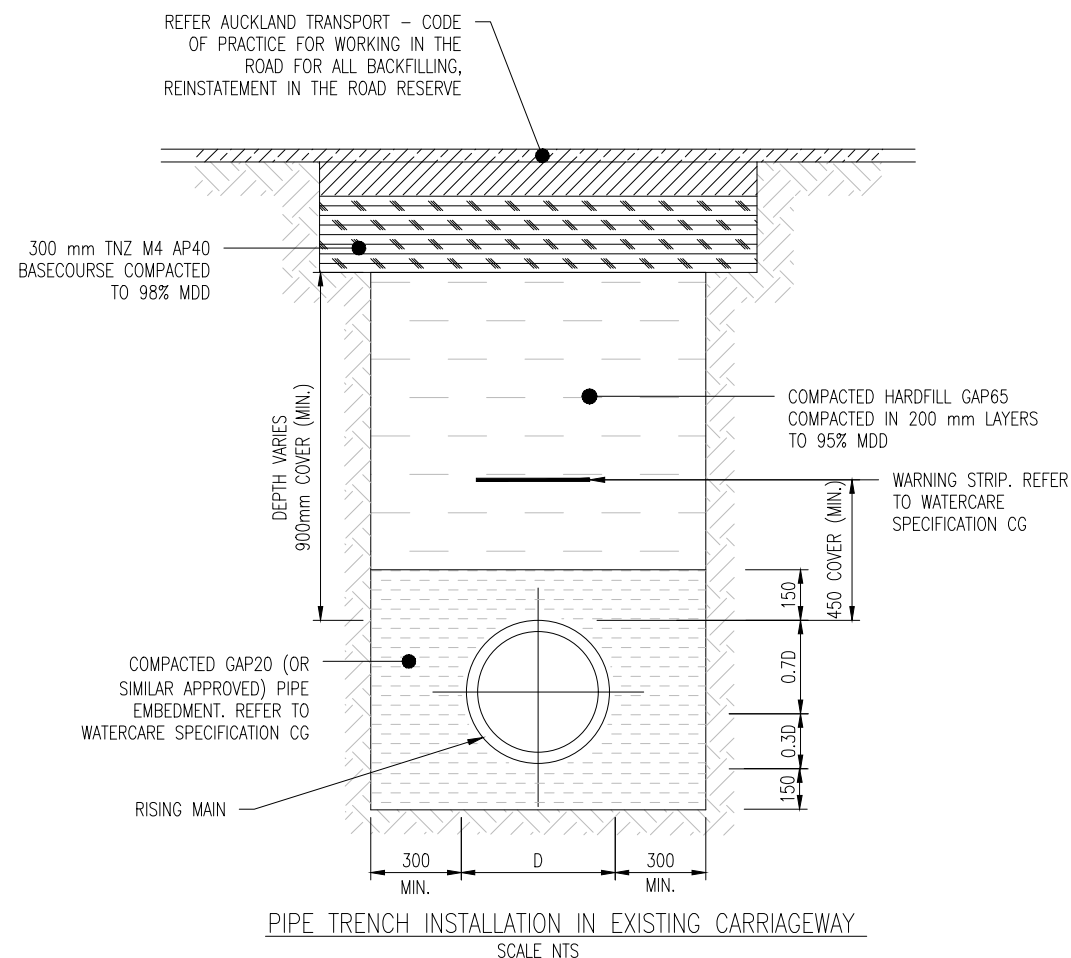
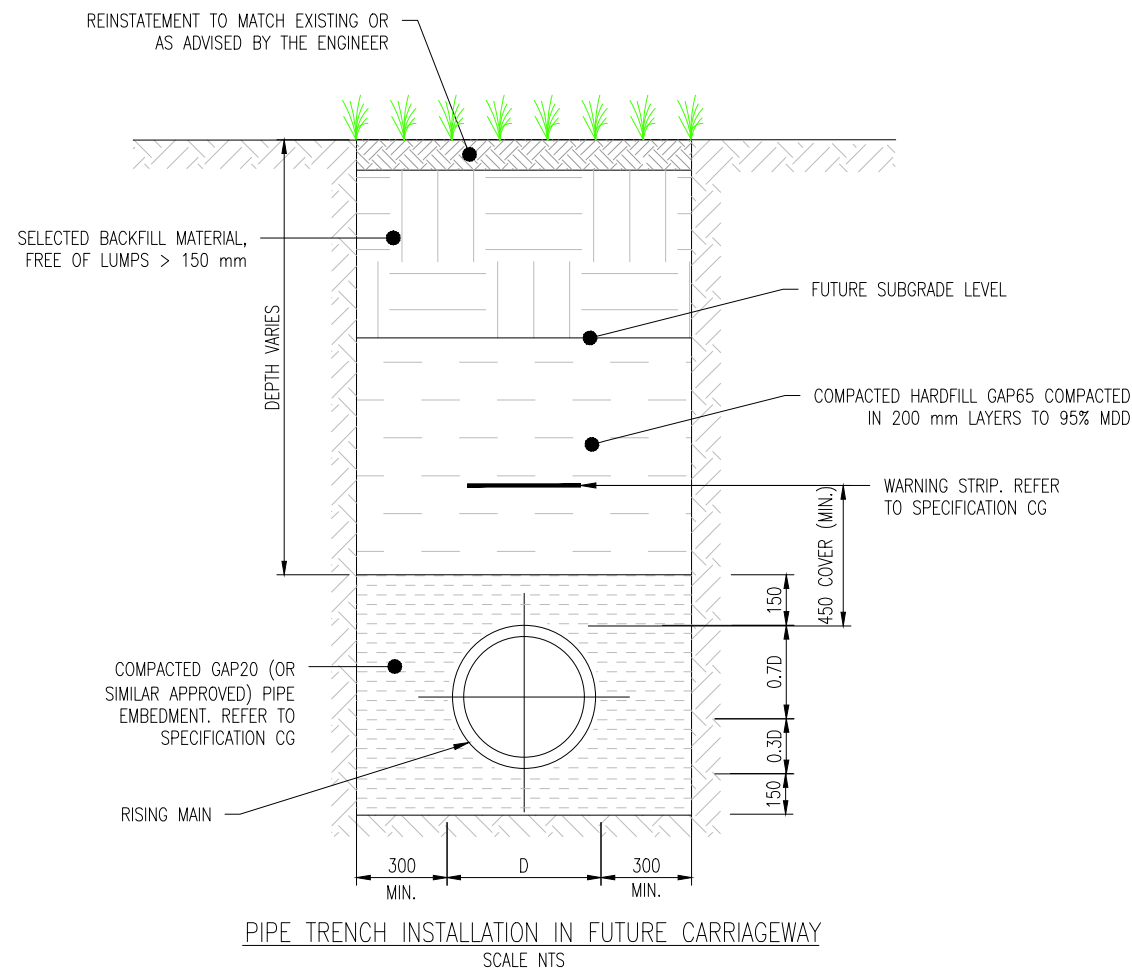
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

WHENUAPAI-REDHILLS WASTEWATER SERVICING
BRIGHAM CREEK ROAD, WHENUAPAI

INTERIM SLAUGHTERHOUSE PS - WASTEWATER RISING MAIN SCOUR VALVE DETAILS

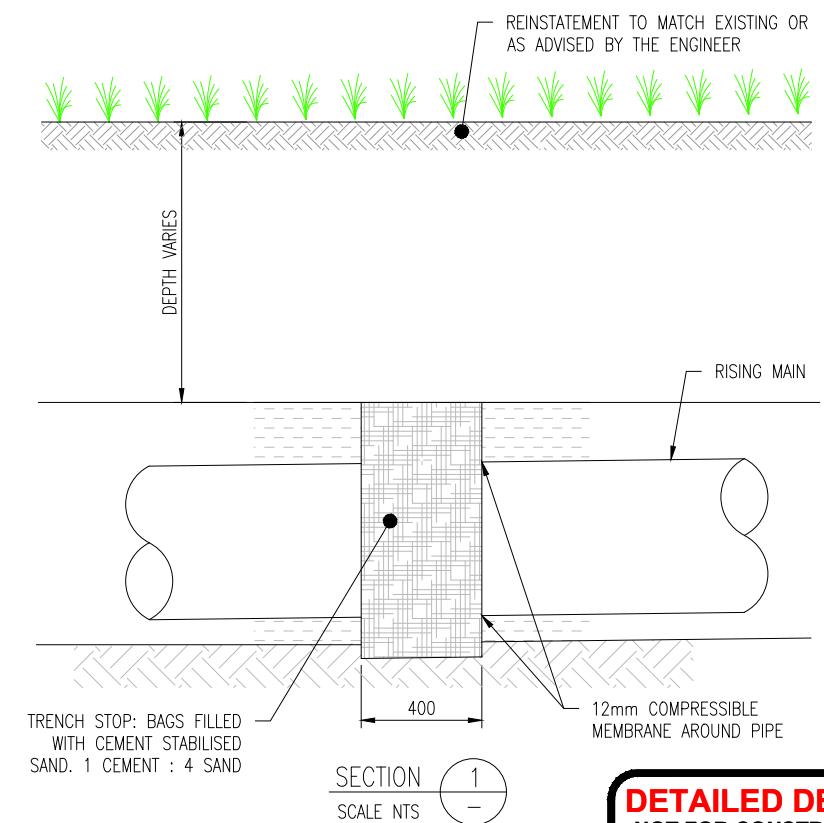
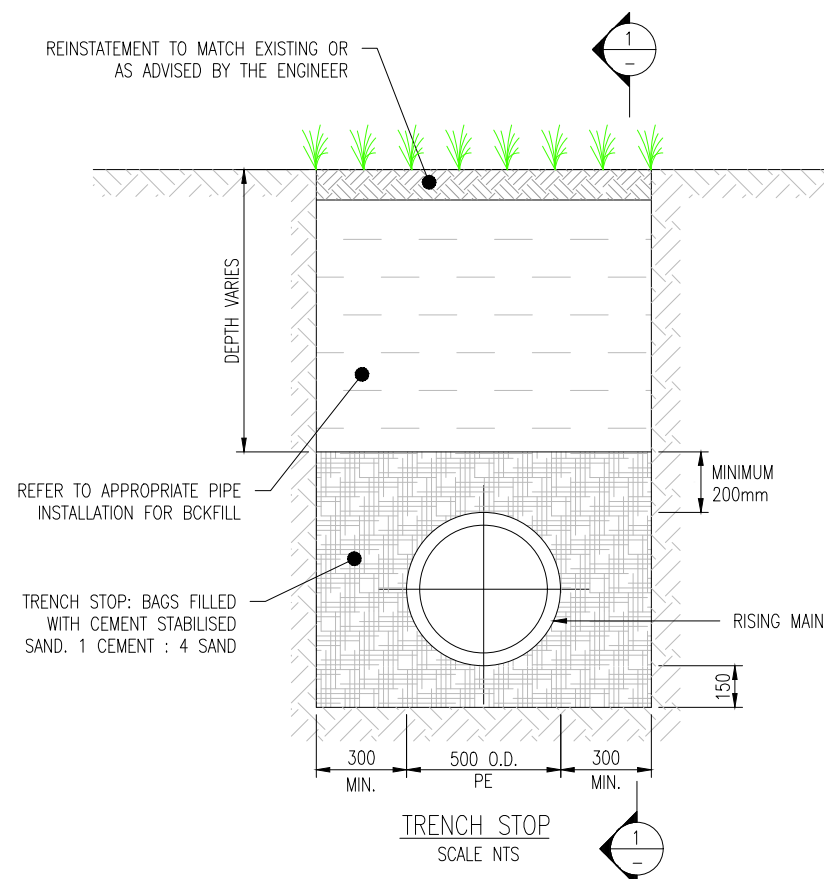
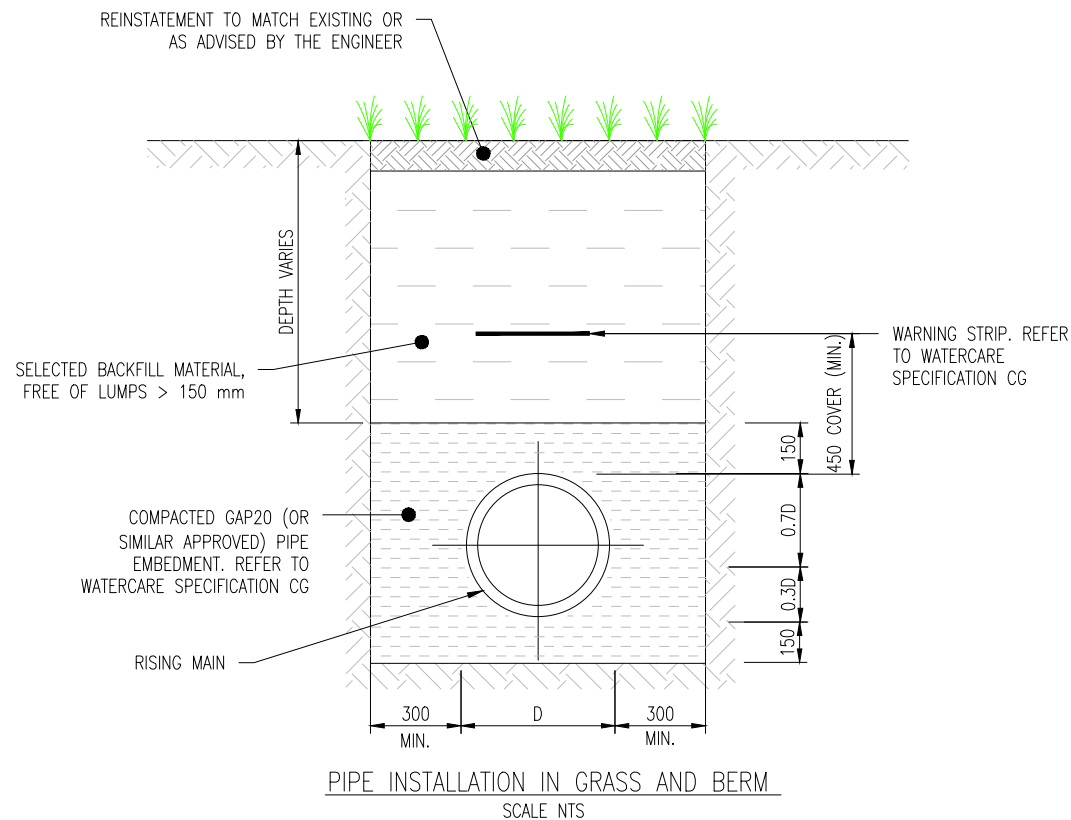


CAD FILE	2013654.018	DATE	09-09-22
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.018	ISSUE	5



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

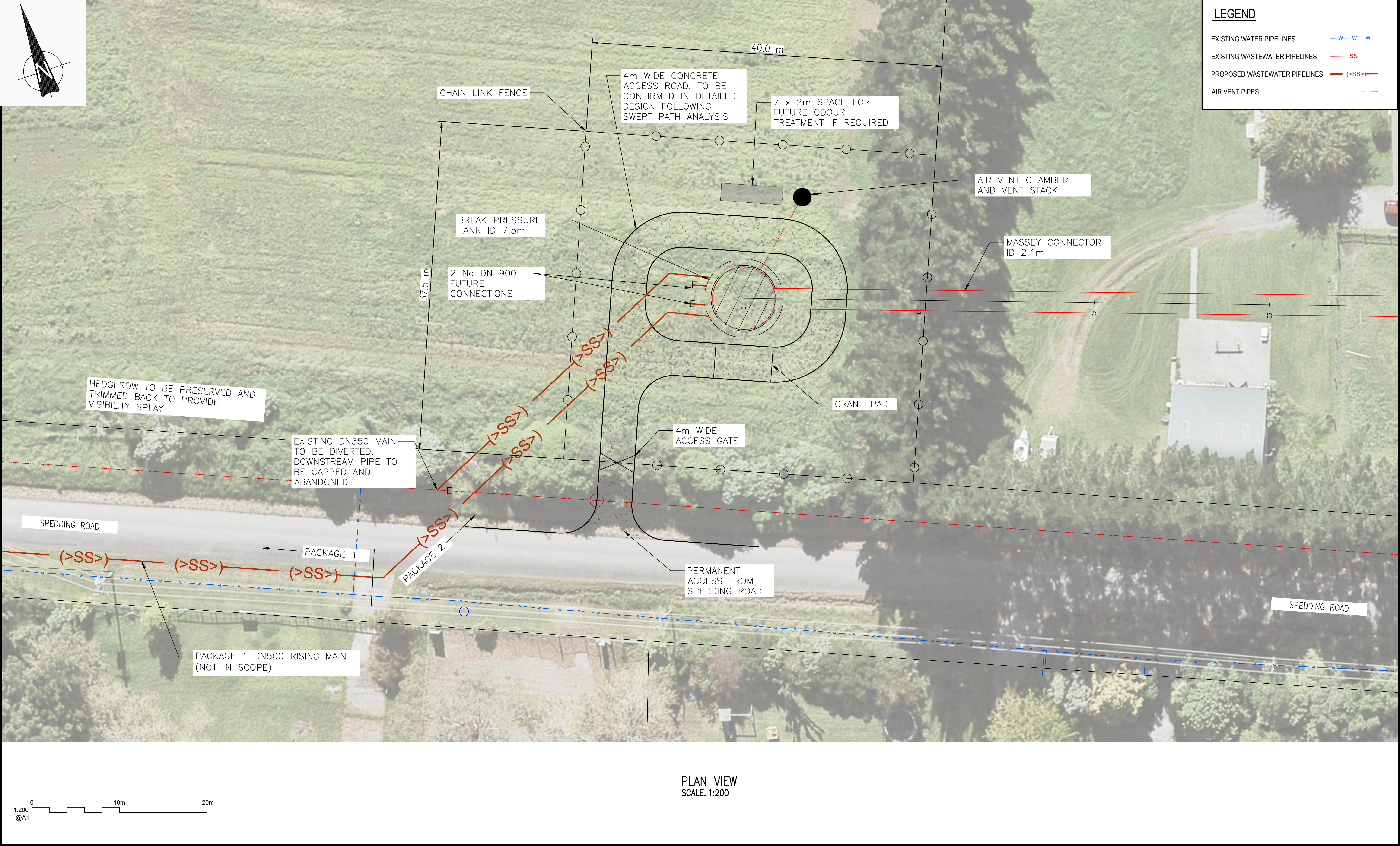
ISSUE	DATE	AMENDMENT	BY	APPD.
5	9-22	UPDATED RISING MAIN ROUTE ALIGNMENT	S.V.	P.H.
4	4-22	RE-ISSUED FOR DETAILED DESIGN	D.J.	P.H.
3	12-21	ISSUED FOR DETAILED DESIGN	D.J.	P.H.
2	8-21	RE-ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.
1	5-21	ISSUED FOR PRELIMINARY DESIGN	D.X.	P.H.

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



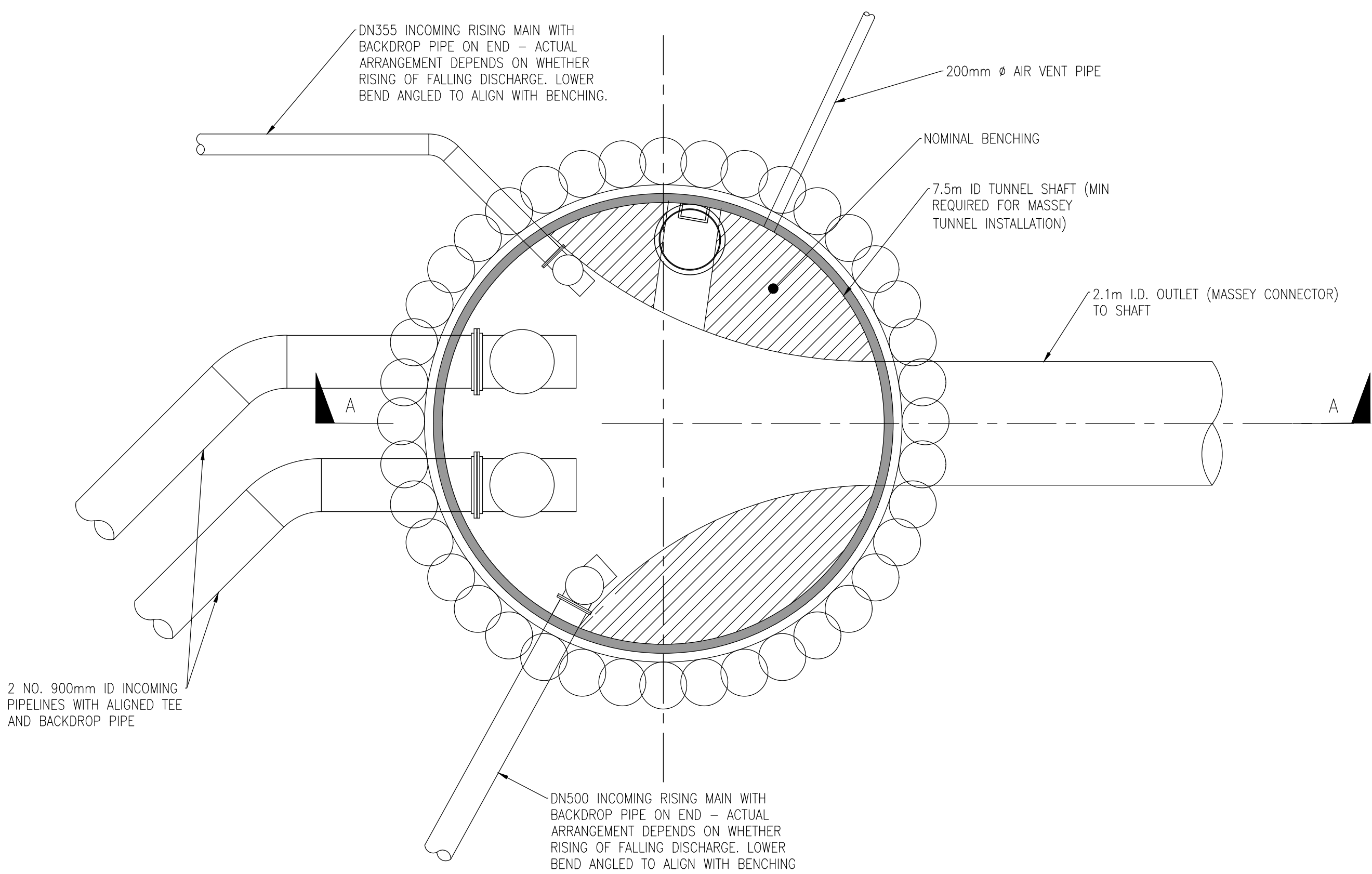
CAD FILE	2013654.019	DATE	09-09-22
ORIGINAL SCALE	A3 NTS	CONTRACT No.	6484-6934
REF No.	12508391 3-AWD32		
DWG No.	2013654.019	ISSUE	5



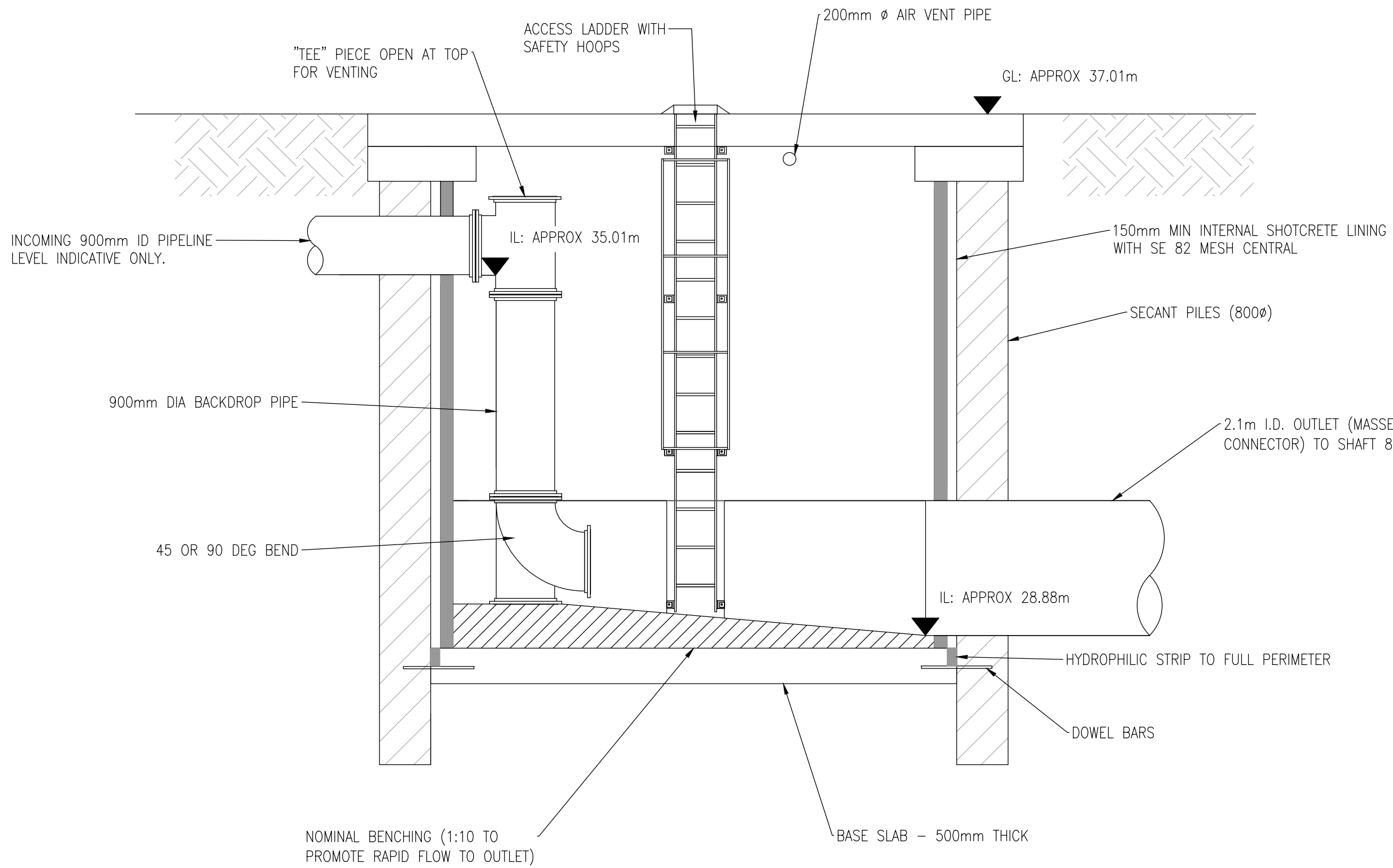
							DESIGNED	C. UNDERDOWN	05-22	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	 MOTT MACDONALD	NORTHERN INTERCEPTOR PHASE 2 WESTGATE TO HOBSONVILLE BREAK PRESSURE TANK SITE LAYOUT	CAD FILE	2013661.302	DATE	11-05-22
						DES. APPROVED	P. CORRIS	05-22	ORIGINAL SCALE				A1 1:2000	CONTRACT No.	—	
						DRAWN	F. MISPLON	05-22	REF. No.				417039-MMD-02-XX-DR-C-0100			
						DWG. APPROVED	P. CORRIS	05-22	DWG. No.				2013661.800			
1	05-22	PRELIMINARY DESIGN - FOR REVIEW				FM	PC			ISSUE 1						
ISSUE	DATE	AMENDMENT				BY	APPD.		BY	DATE						

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

						DESIGNED	C. UNDERDOWN	05-22	 Watercare COPYRIGHT – This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	 MOTT MACDONALD	NORTHERN INTERCEPTOR PHASE 2 WESTGATE TO HOBSONVILLE BREAK PRESSURE TANK LAYOUT AND SECTION	CAD FILE	2013661.801	DATE	13-05-22		
					DES. APPROVED	P. CORRIS	05-22	ORIGINAL SCALE				A1	CONTRACT No.	—			
					DRAWN	F. MISPLON	05-22	AS SHOWN									
					DWG. APPROVED	P. CORRIS	05-22	REF. No.				417039-MMD-02-XX-DR-C-0001					
					WSL DESIGN MGMT.			DWG. No.				2013661.801					
1	05-22	PRELIMINARY DESIGN – FOR REVIEW			FM	PC										ISSUE	1
ISSUE	DATE	AMENDMENT			BY	APPD.		BY	DATE								



**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

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 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



Watercare

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

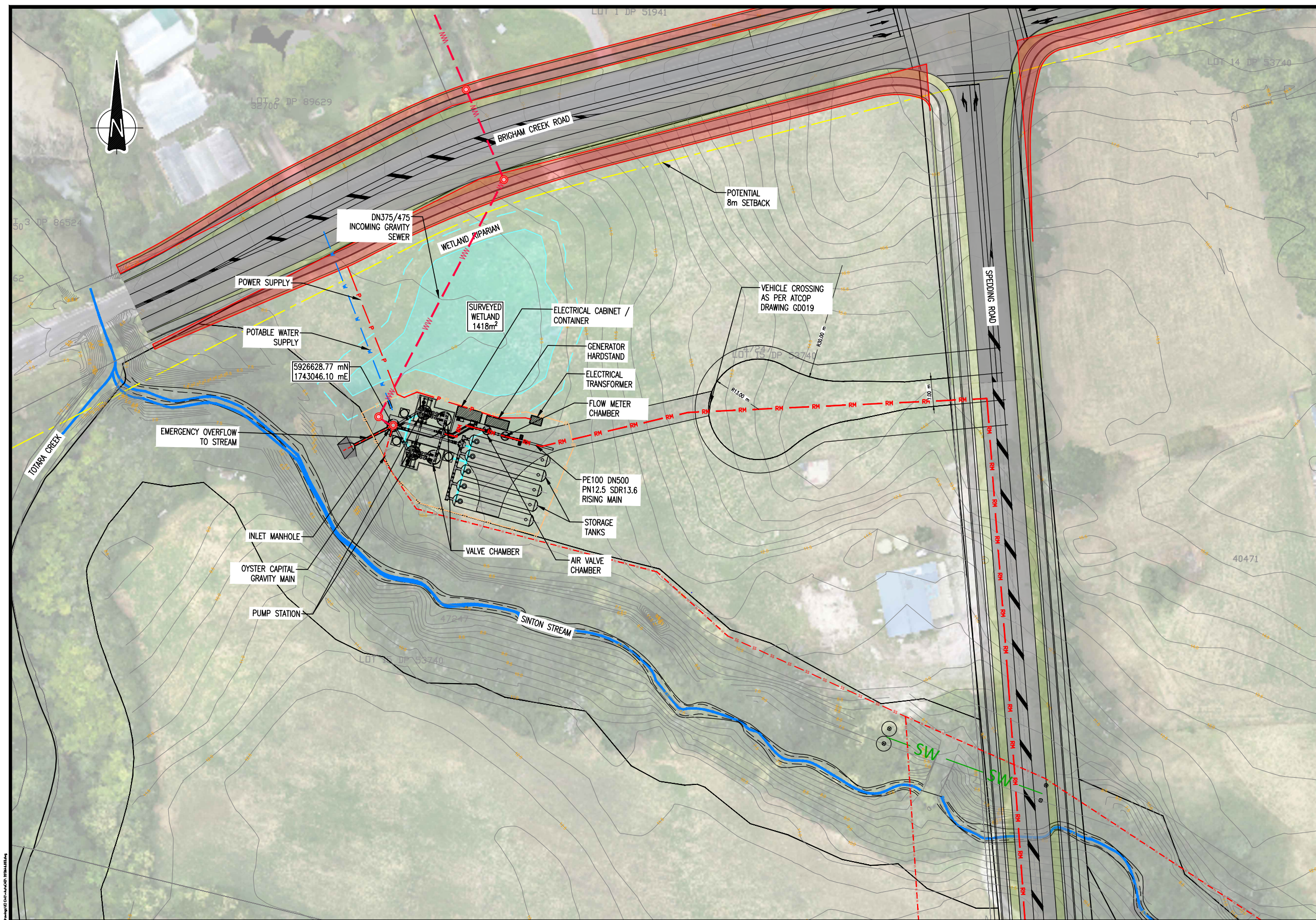
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

WASTEWATER PUMP STATION (DPISH)

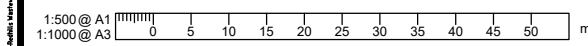
LOCATION MAP AND LOCATION PLAN



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.	DESIGNED	DES. APPROVED	DRAWN	DWG. APPROVED	WSL DESIGN MGMT.	WSL PROJ. LEAD	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	SA	MG	AJ	BR	EW	EW	-	-	-	03-21
3	10-21	SAFETY IN DESIGN	SA	MK	SA	MK	EW	EW	-	-	-	03-21
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	Ev	MK	SA	MK	EW	EW	-	-	-	03-21
1	03-21	PRELIMINARY DESIGN ISSUE	AJ	BR	SA	MK	EW	EW	-	-	-	03-21

Watercare

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

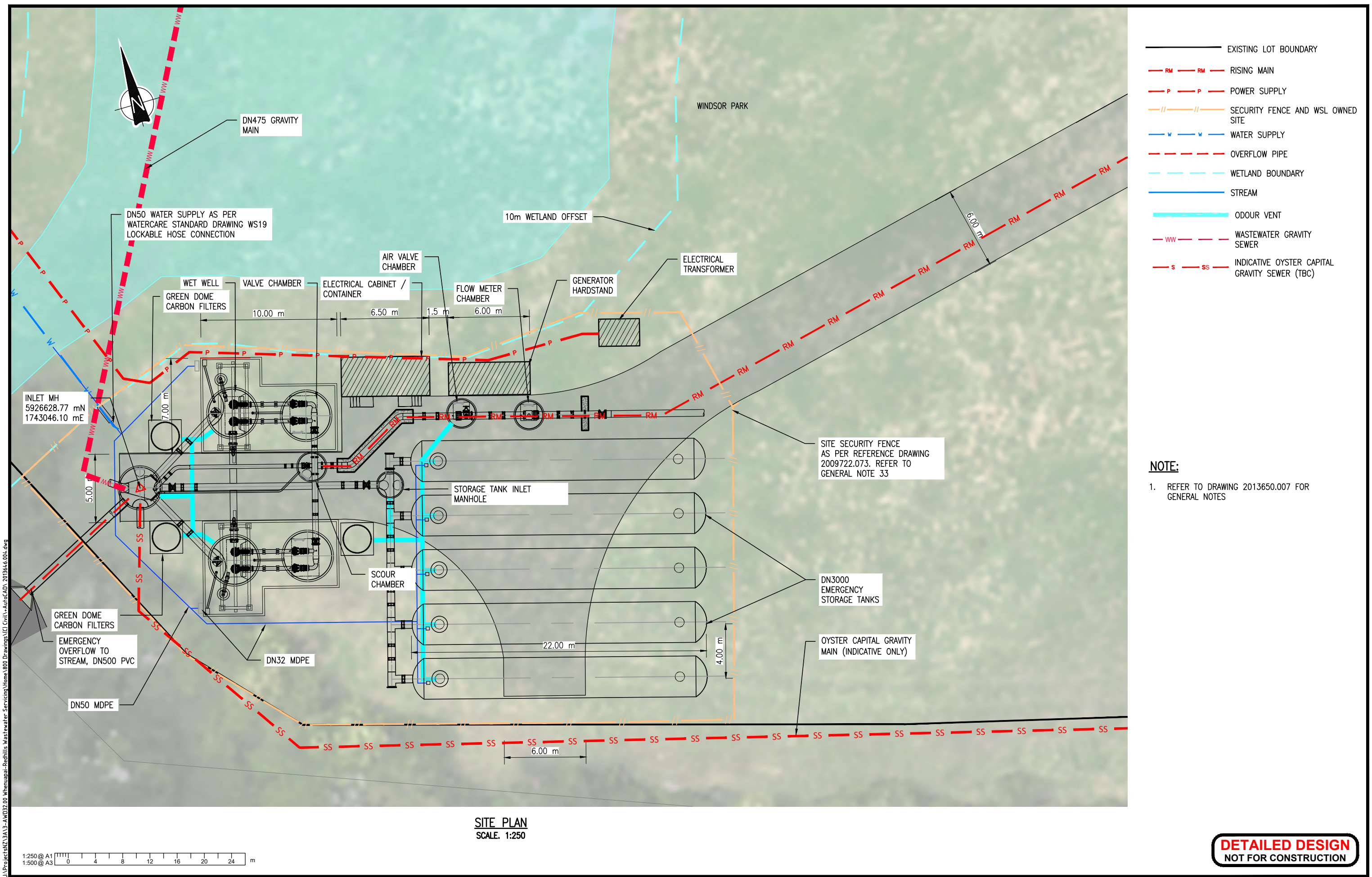
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1

WASTEWATER PUMP STATION (DPISH)

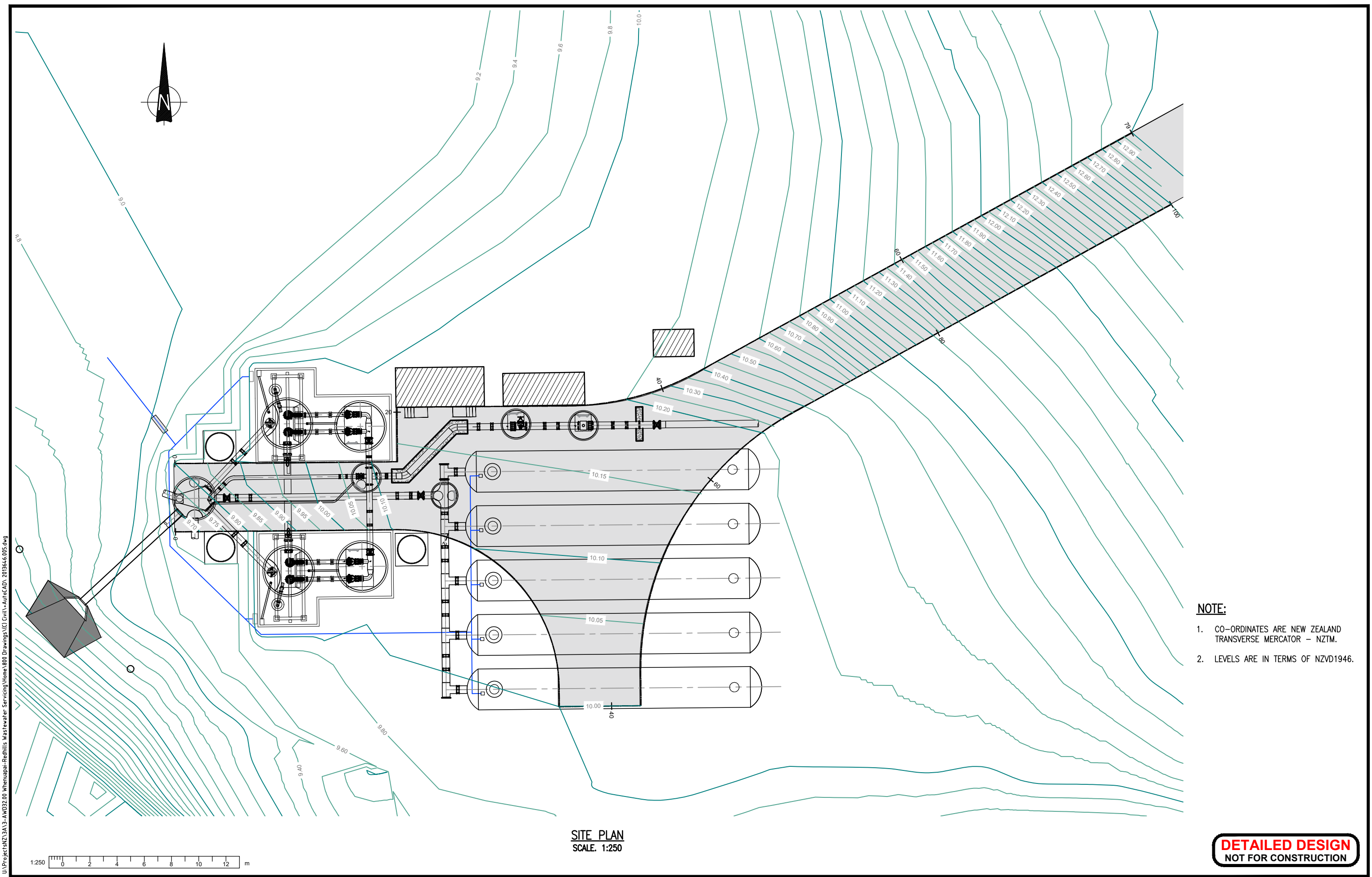
OVERALL PLAN



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



						DESIGNED	AJ	05-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1 WASTEWATER PUMP STATION (DPISH) SITE PLAN	 	CAD FILE	2013646.004	DATE	14-01-2022	
4	01-22	DETAILED DESIGN ISSUE		SA	MG	DES. APPROVED	BR	05-21				ORIGINAL SCALE	A3	CONTRACT NO.	6484-6934	
3	10-21	SAFETY IN DESIGN		SA	MK	DRAWN	EW	05-21				AS SHOWN				
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN		EvV	MK	DWG. APPROVED	EW	05-21				REF No.	12508391	3-AWD32		
1	05-21	PRELIMINARY DESIGN ISSUE		AJ	BR	WSL DESIGN MGMT.	-	-				DWG No.	2013646.004		ISSUE	4
ISSUE	DATE	AMENDMENT		BY	APPD.			BY				DATE				



U:\Project\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing Home 800 Drawings\NCI\Civil-AutoCAD\2013646.005.dwg

				DESIGNED	SA	11-21
				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

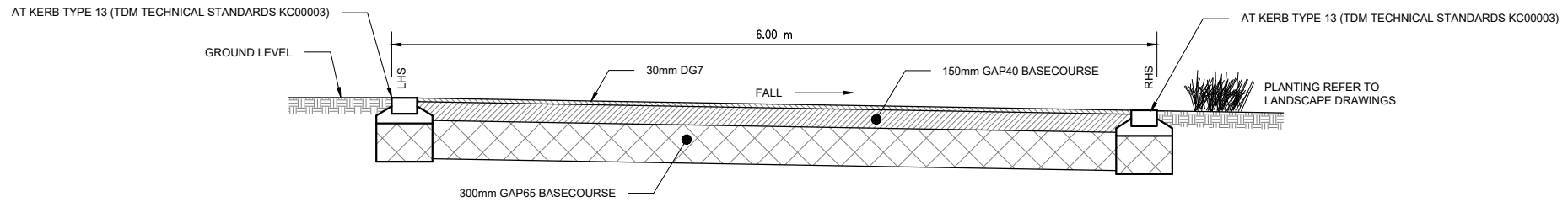

Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

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

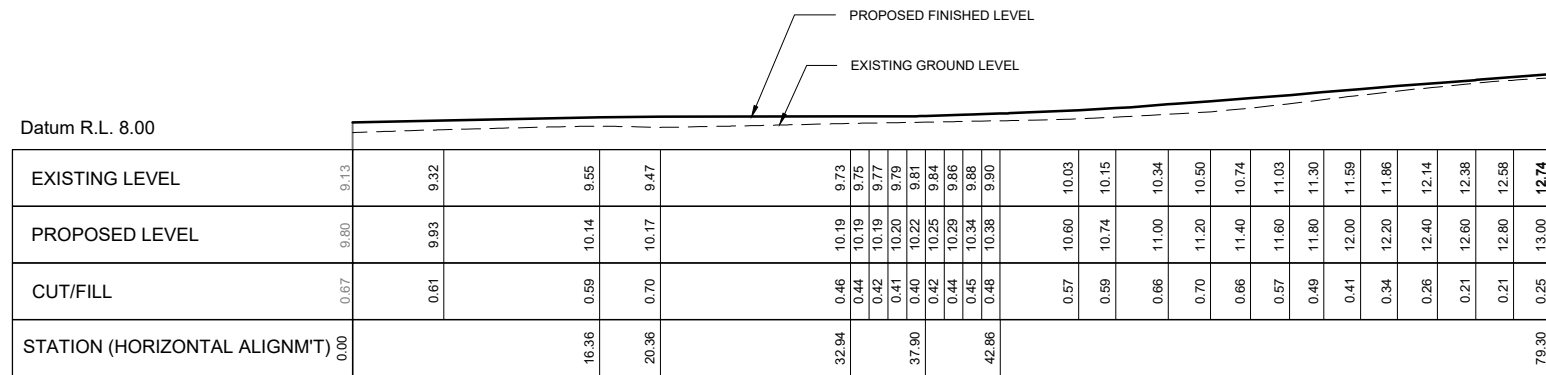


CAD FILE	2013646.005	DATE	14-01-22
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391 3-AWD32	DWG No.	2013646.005
		ISSUE	1

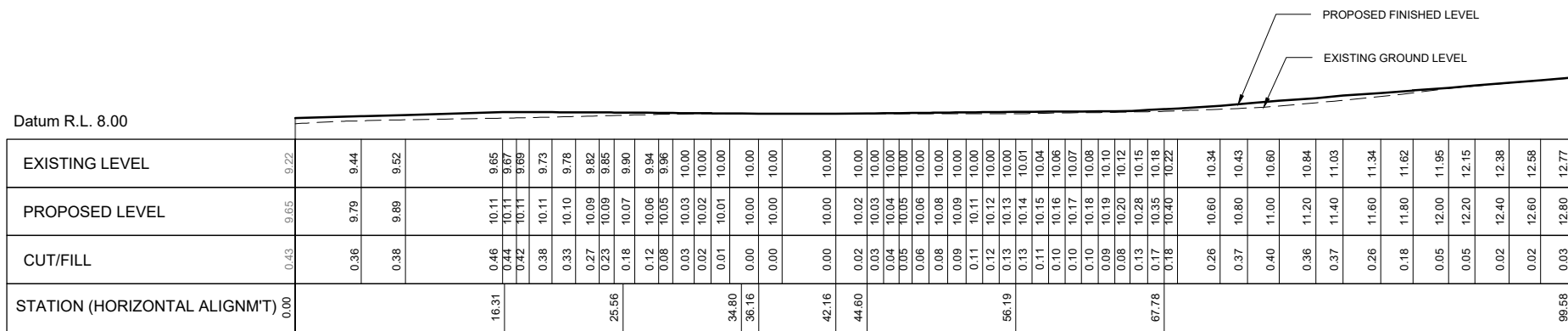
U:\Projects\NZ\3A\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home 800 Drawings\NC (Civil)\AutoCAD\ 2013646.006.dwg



TYPICAL ACCESS ROAD SECTION
SCALE: 1:50



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

1:500 0 4 8 12 16 20 24 m

1:50 0 1 2 3 4 5 m

DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	SA	11-21
				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



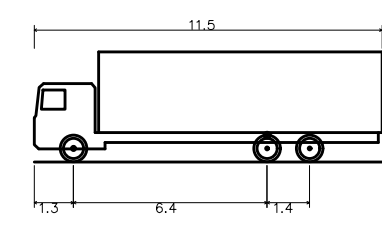
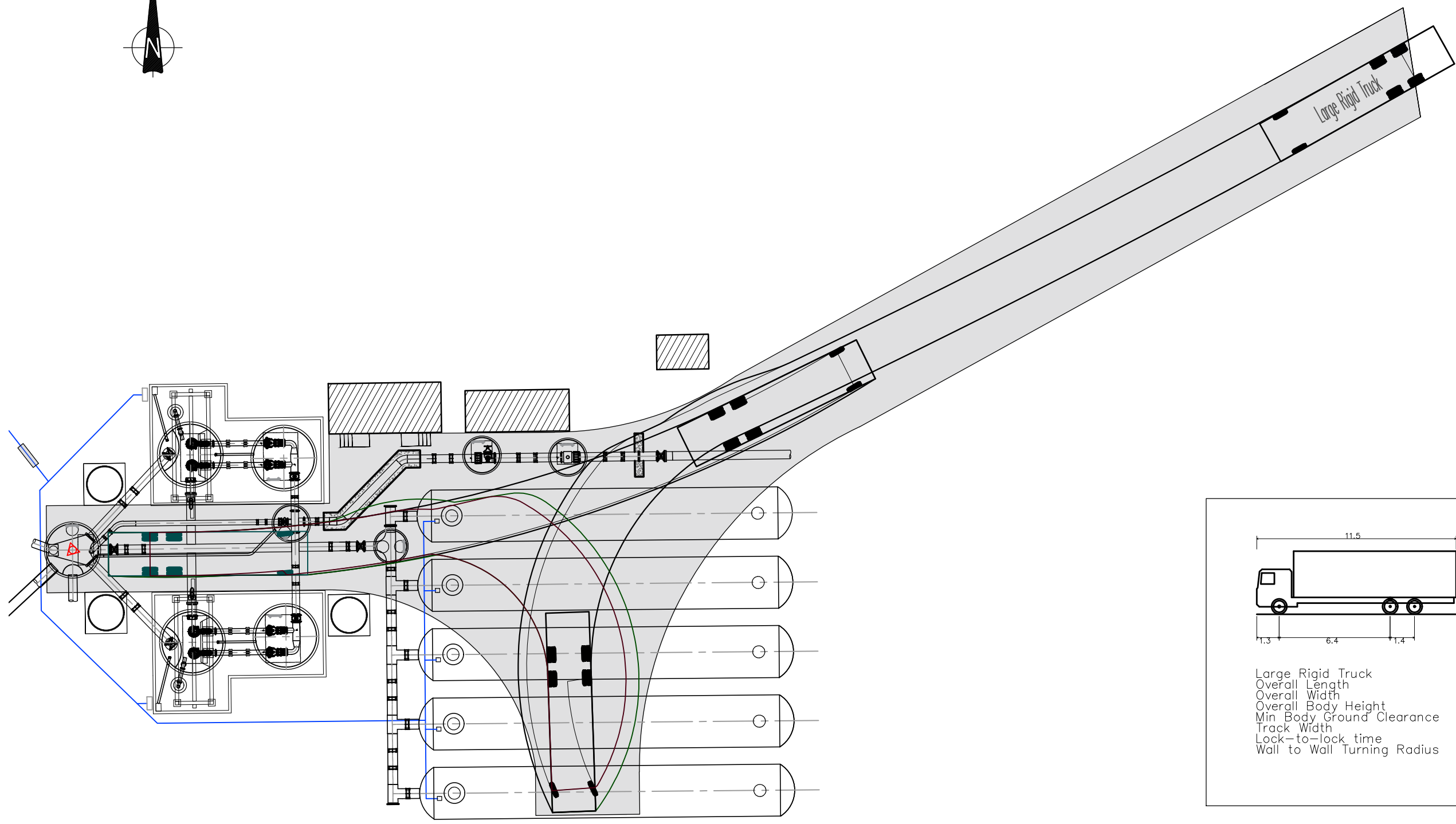
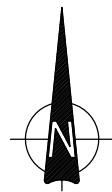
Watercare

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 PACKAGE 1
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

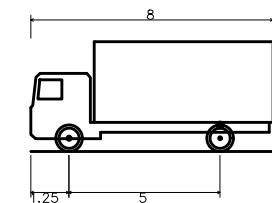
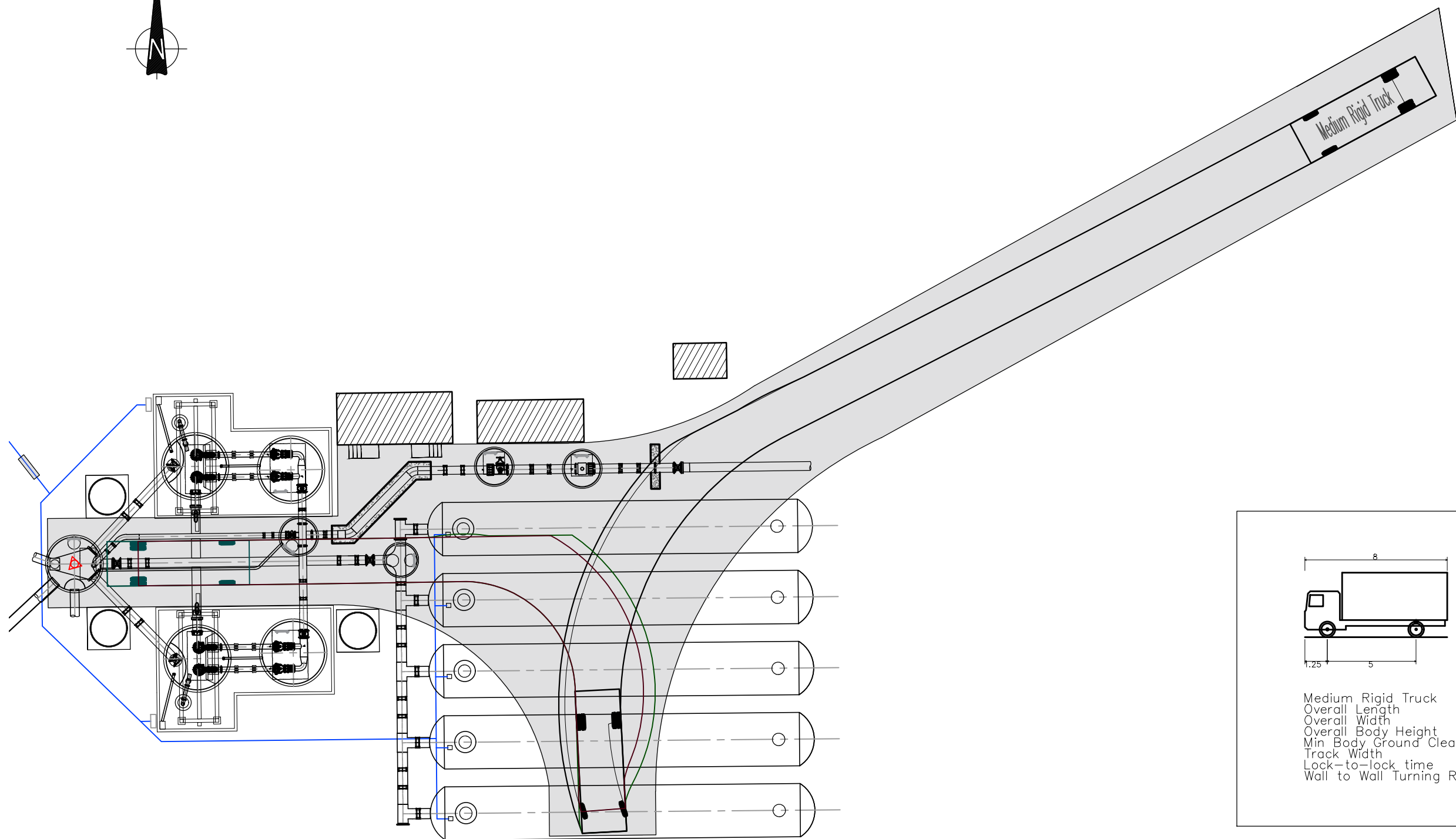
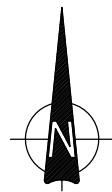
DETAILED DESIGN
NOT FOR CONSTRUCTION

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	CONTRACT No.	-
AS SHOWN			
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

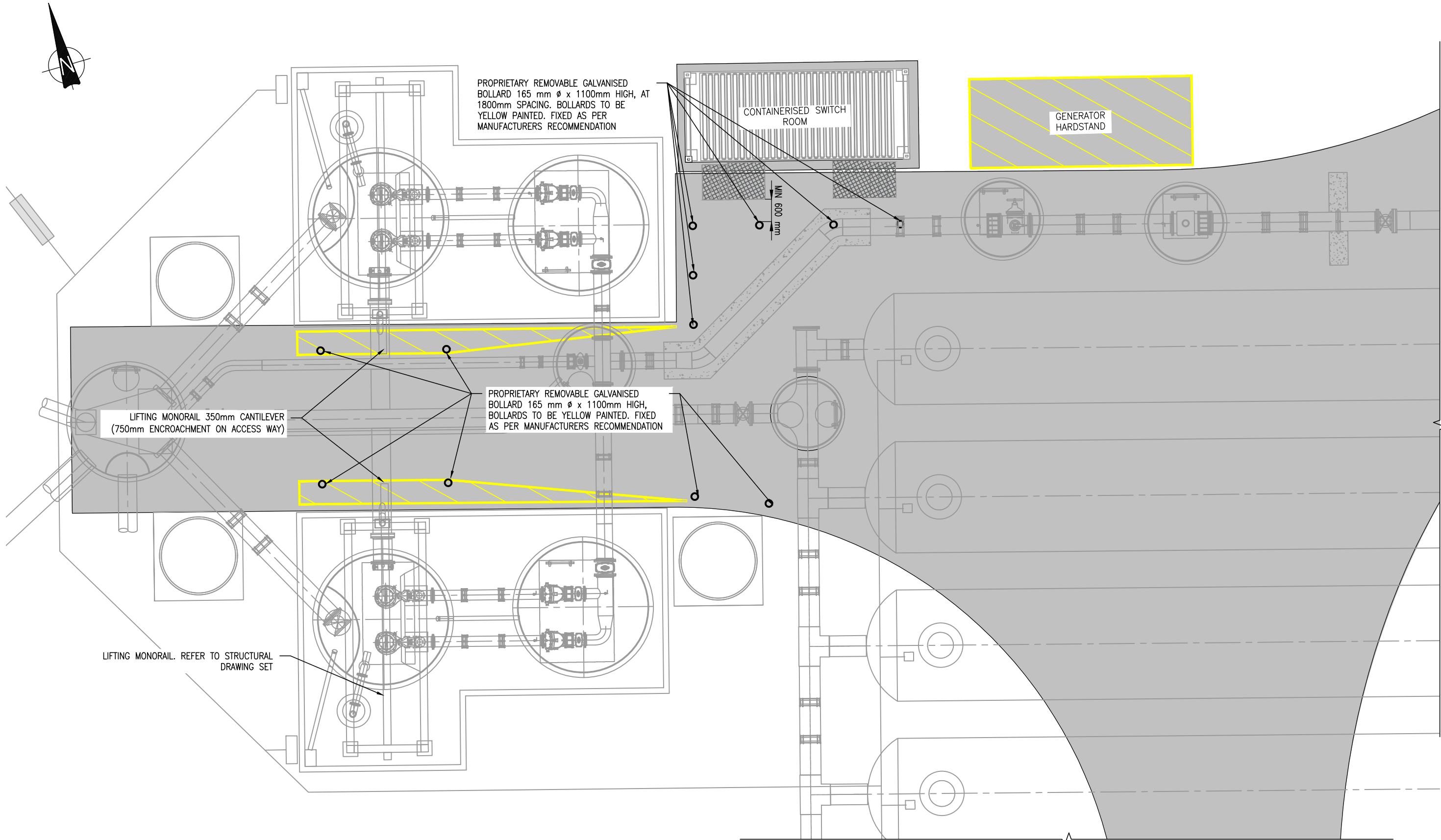
1:250 0 2 4 6 8 10 12 m

DETAILED DESIGN
NOT FOR CONSTRUCTION

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

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)

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	WC		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

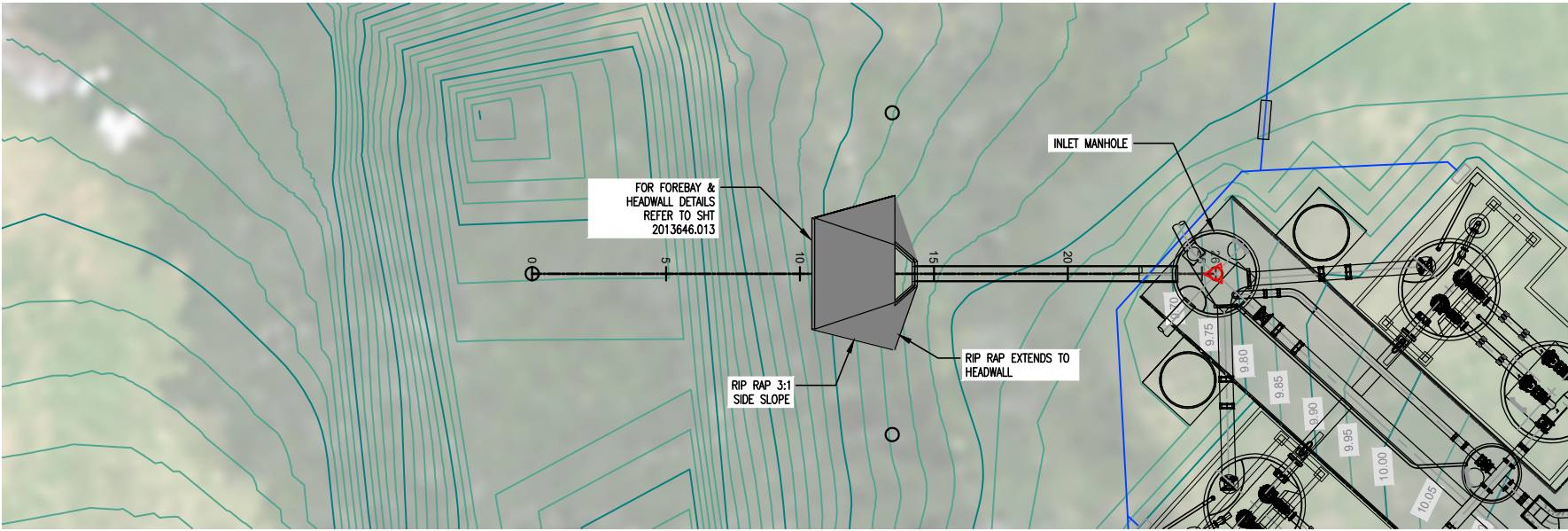
**Watercare**

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

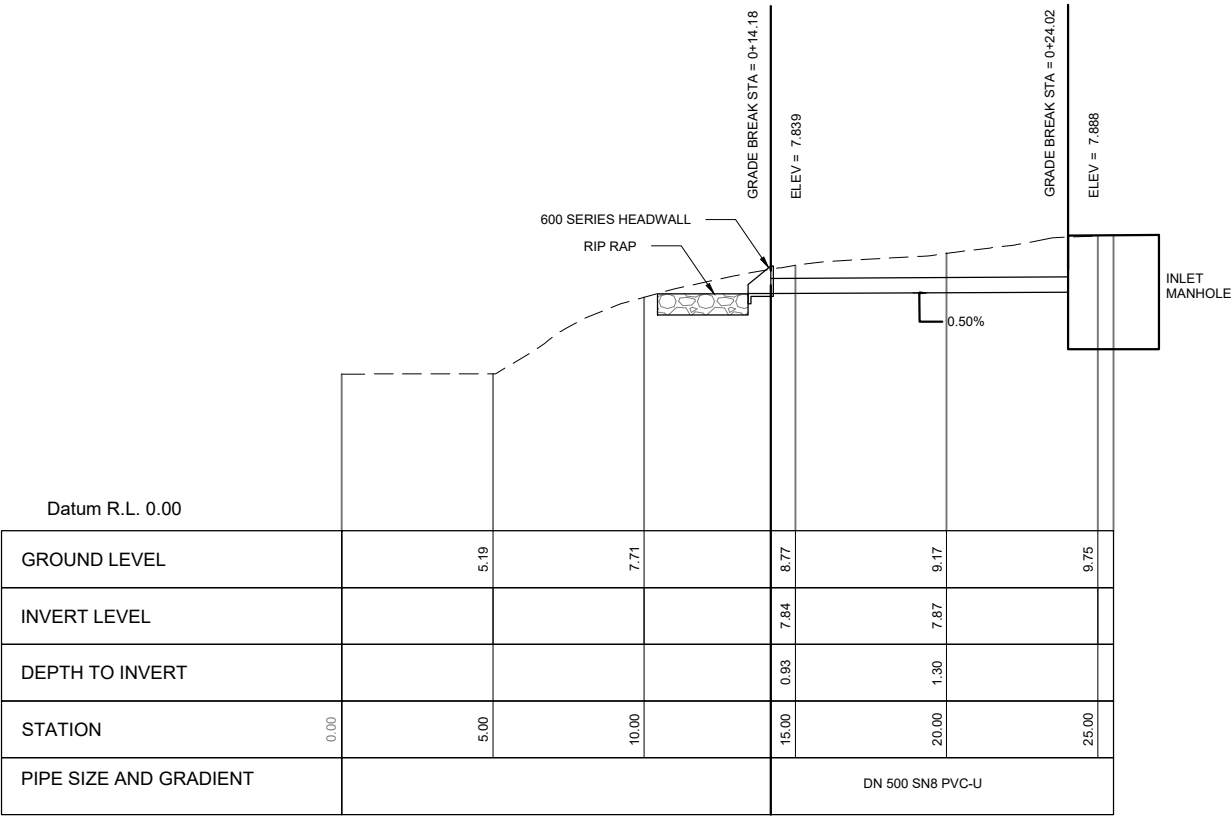
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
SITE ROADING - ROAD MARKING AND BOLLARDS



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



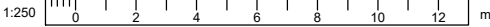
PLAN
SCALE: 1:250



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



				DESIGNED	SA	11-21
				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

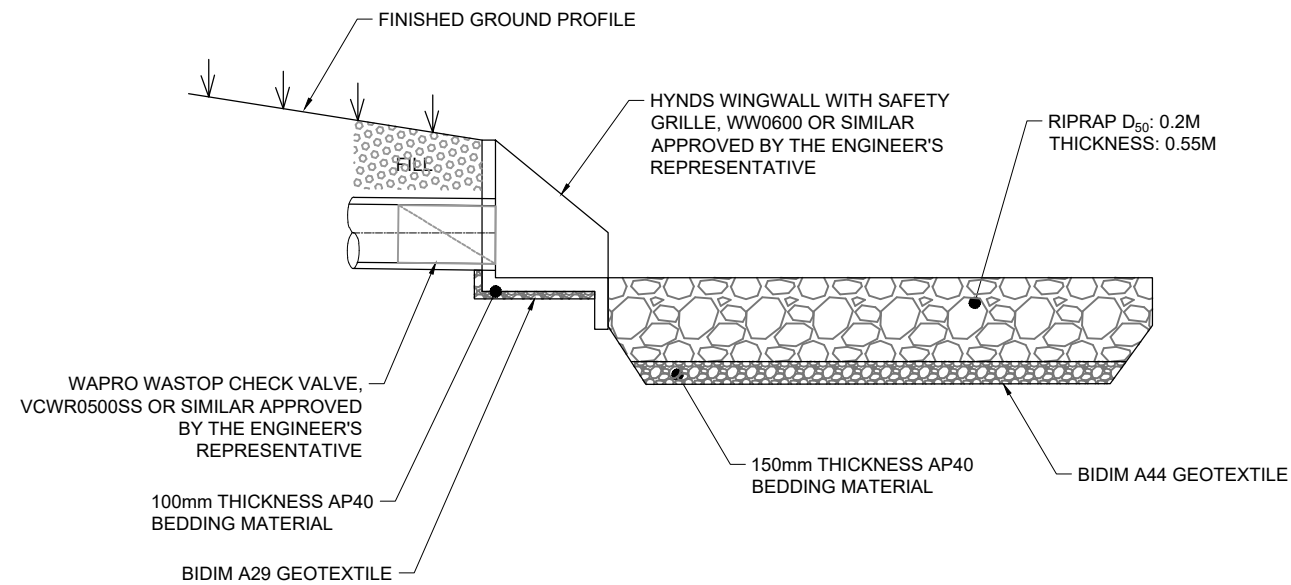

Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

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

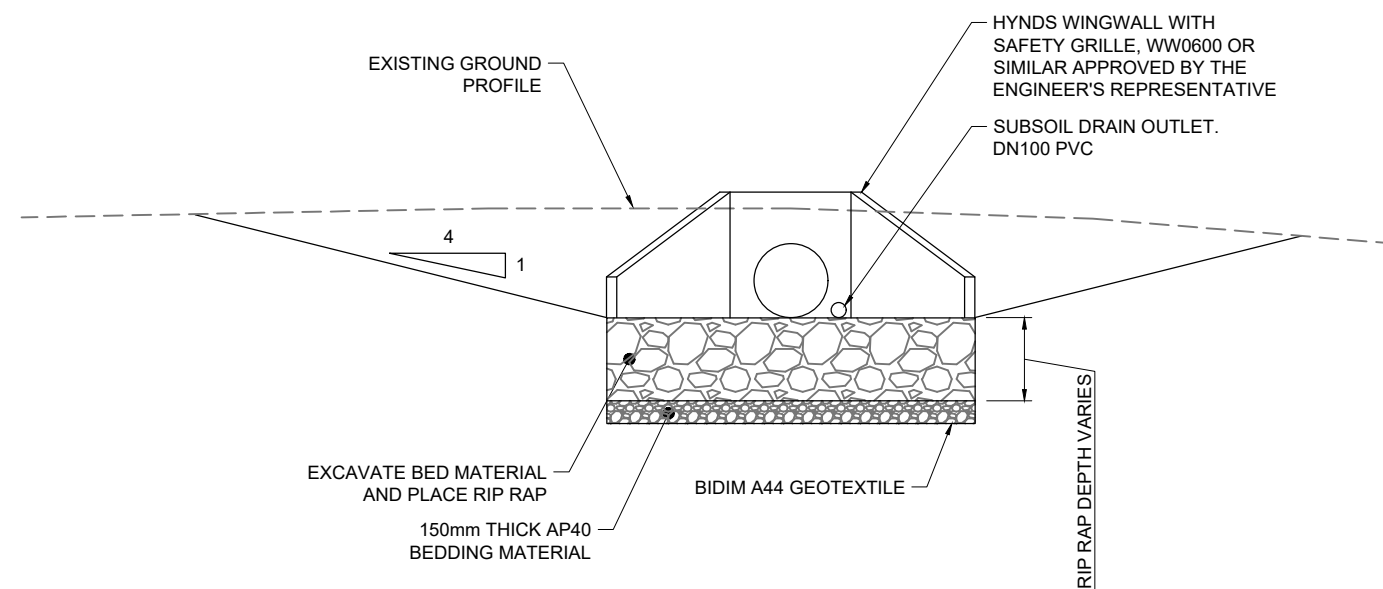


CAD FILE	2013646.012	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391 3-AWD32		
DWG No.	2013646.012	ISSUE	1

U:\Project\NZ\3a\3-AWD32.00 Whenuapai-Redhills Wastewater Servicing Home 800 Drawings\10 Civil-AutoCAD\2013646.013.dwg



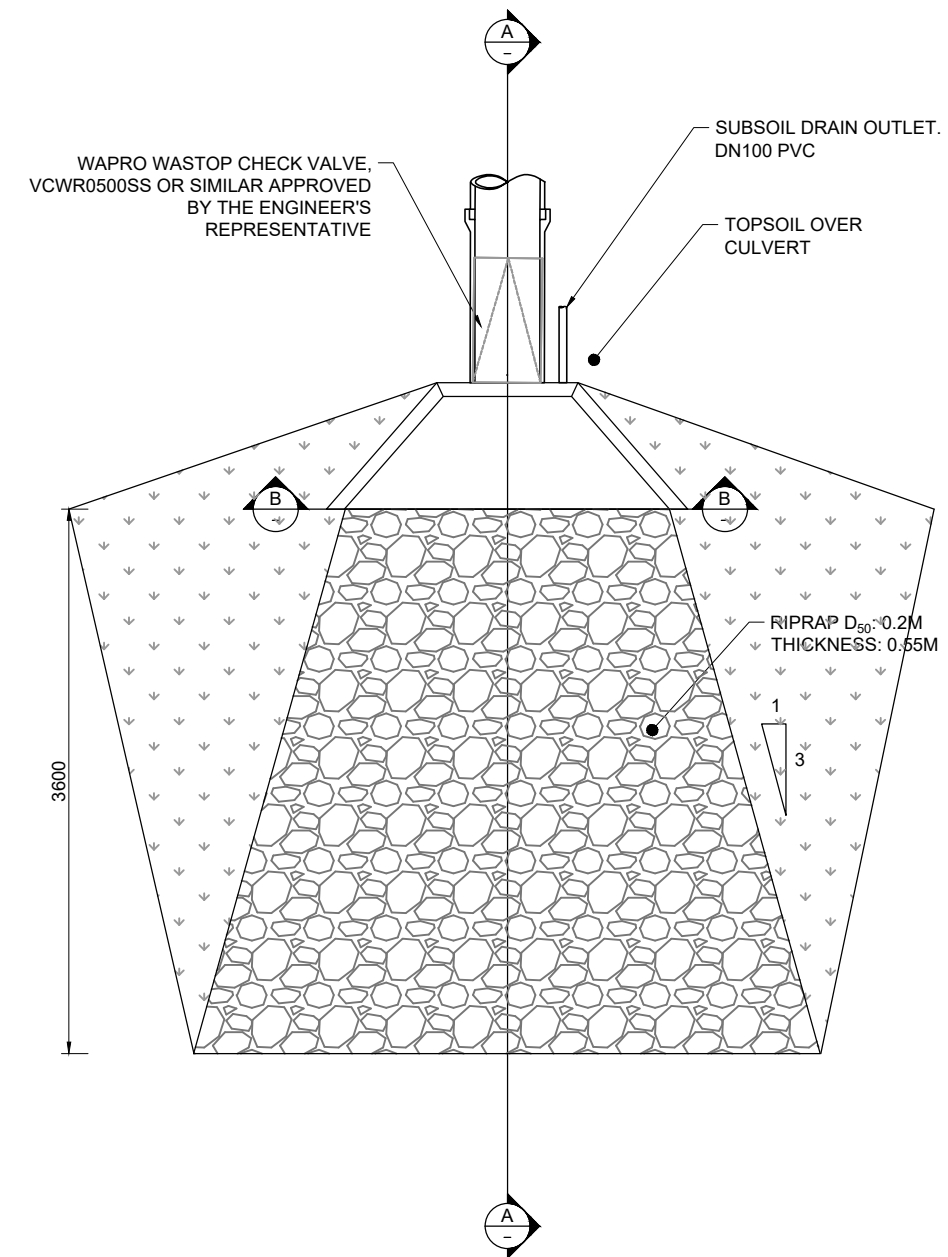
SECTION A-A - RIP-RAP APRON ENERGY DISSIPATOR
Scale: NTS



SECTION B-B - RIP-RAP APRON ENERGY DISSIPATOR
Scale: NTS

APRON NOTES:

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



PLAN - RIP-RAP APRON ENERGY DISSIPATOR
Scale: NTS

1:25 @ A1
1:50 @ A3
0 400 800 1200 1600 2000 2400 mm

DETAILED DESIGN
NOT FOR CONSTRUCTION

				DESIGNED	RG	11-21
				DES. APPROVED	MG	11-21
				DRAWN	JG	11-21
				DWG. APPROVED	RG	11-21
2	04-22	RE-ISSUED FOR DETAILED DESIGN	JG	WSL DESIGN MGMT.	RB	-
1	01-22	DETAILED DESIGN ISSUE	JG	WSL PROJ. LEAD	RB	-
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE



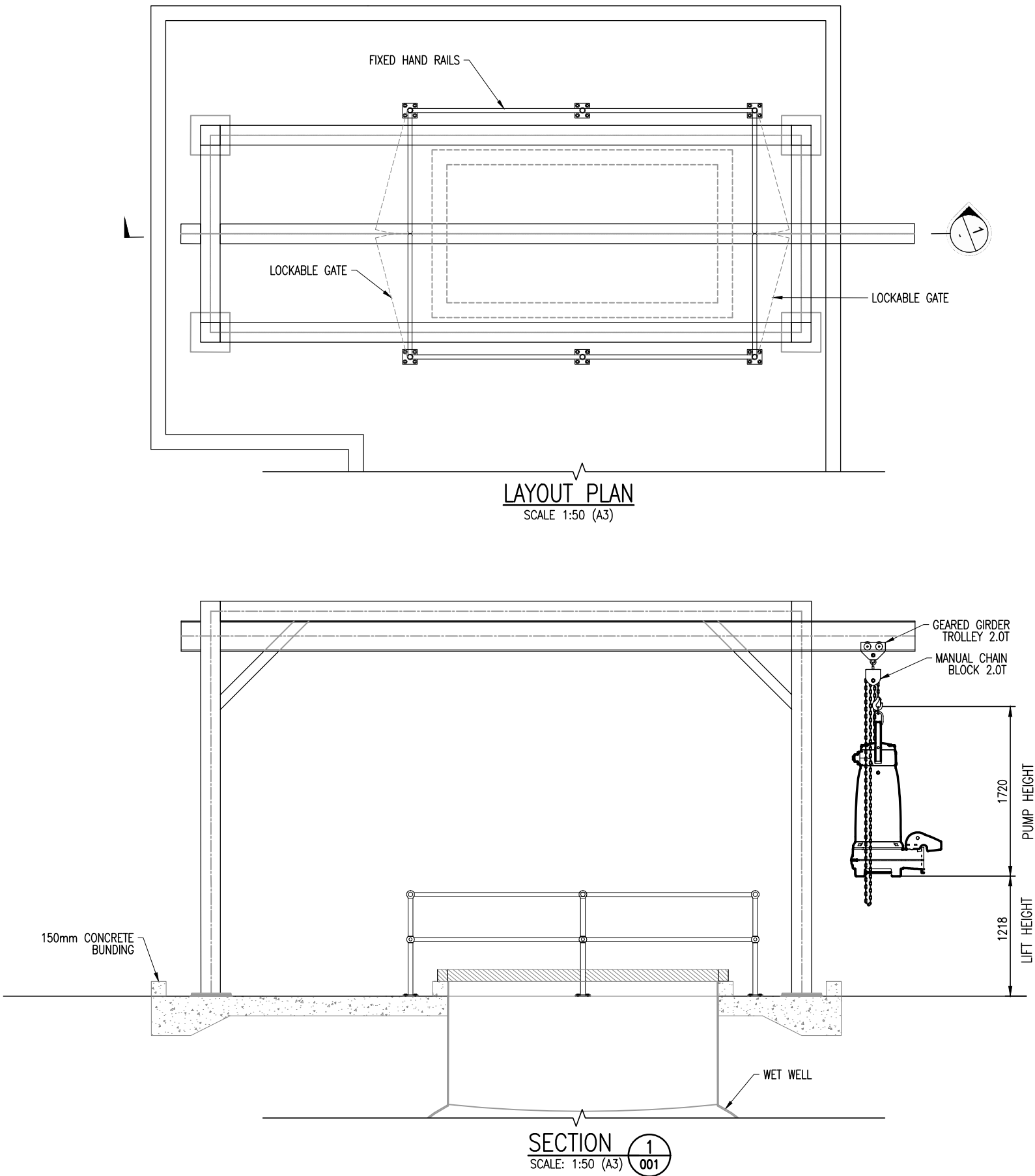
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
EMERGENCY OVERFLOW - OUTFALL AND RIPRAP DETAIL



CAD FILE	2013646.013	DATE	08-04-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	12508391	3-AWD32	
DWG No.	2013646.013	ISSUE	2

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

				DESIGNED	JG	11-21
				DES. APPROVED	MG	11-21
				DRAWN	JG	11-21
				DWG. APPROVED	MG	05-21
				WSL DESIGN MGMT.	-	-
				WSL PROJ. LEAD	-	-
1	01-22	DETAILED DESIGN ISSUE	JG	MG		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

**Watercare**

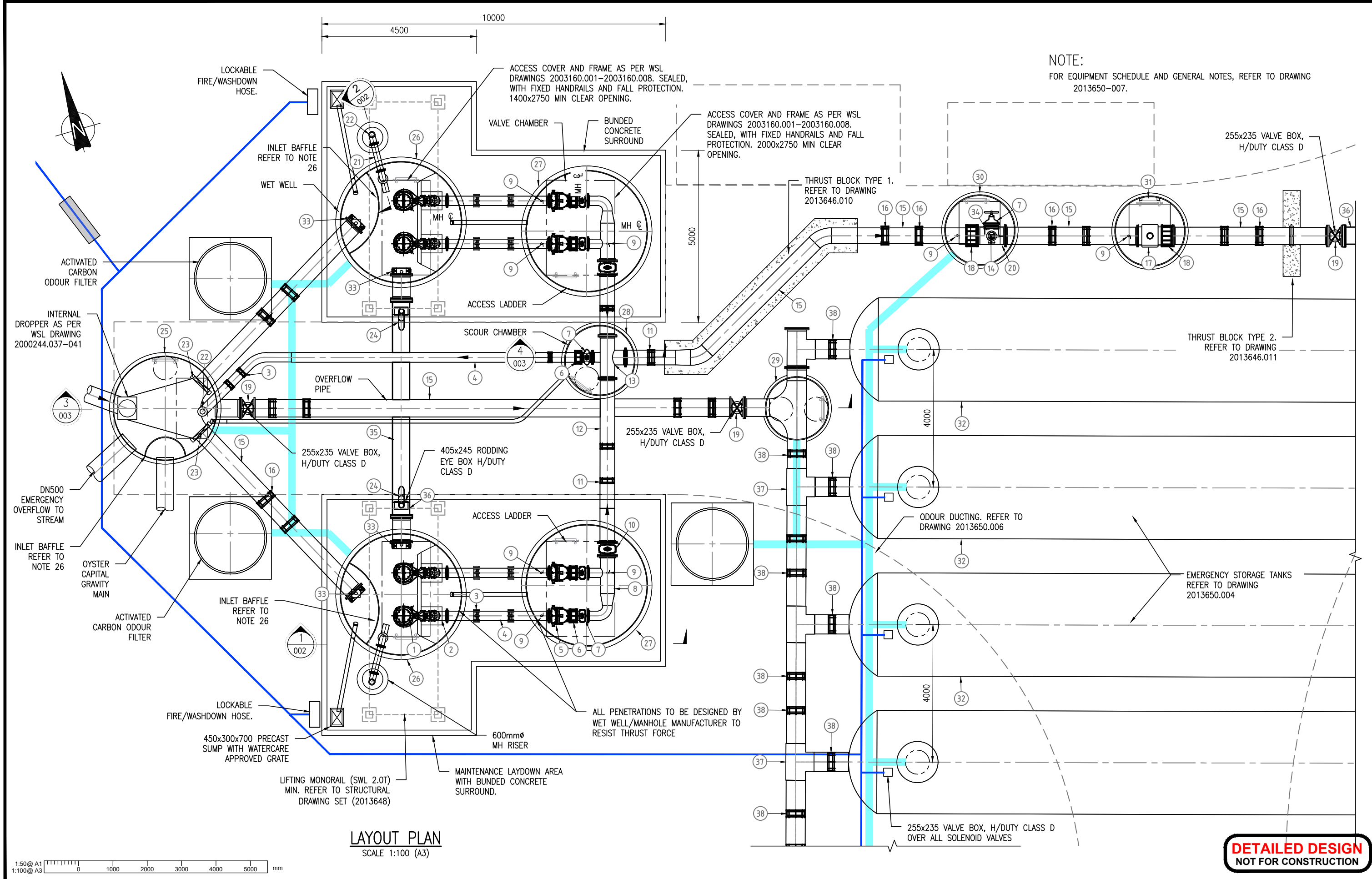
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

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



CAD FILE	201346.014	DATE	14-01-2022
ORIGINAL SCALE	A3	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	-	-	-	-	-	05-21
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	AJ	BR	-	-	-	-	-	-
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.												

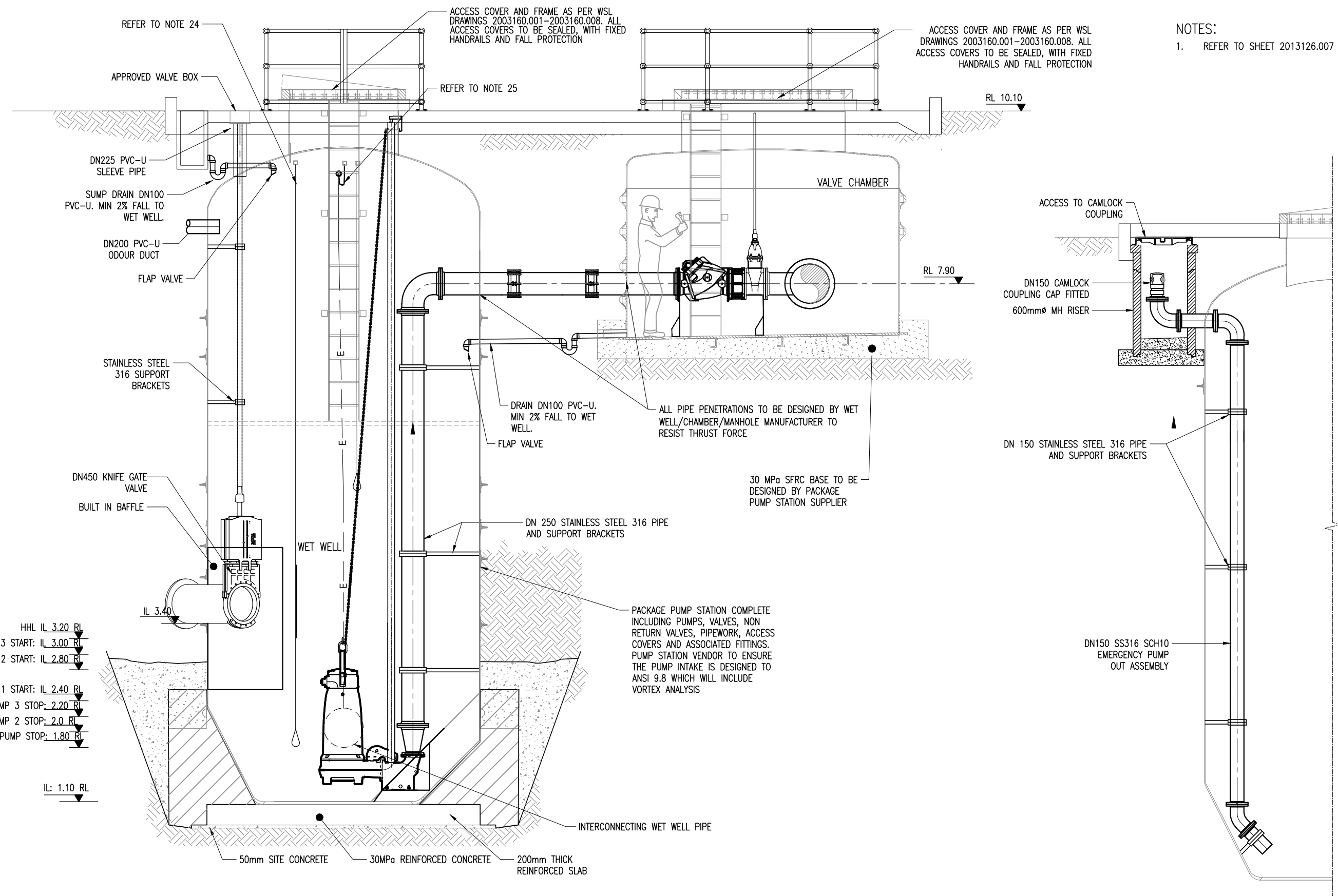


WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
PUMP STATION LAYOUT PLAN



CAD FILE	2013650.001	DATE	14-01-2022
ORIGINAL SCALE	A3	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.	BY	DATE
4	01-22	DETAILED DESIGN ISSUE	JG	MG	AJ	05-21
3	10-21	SAFETY IN DESIGN	SA	MK	BR	05-21
2	08-21	RE-ISSUED FOR PRELIMINARY DESIGN	EV	MK	EW	05-21
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	EW	05-21

Watercare

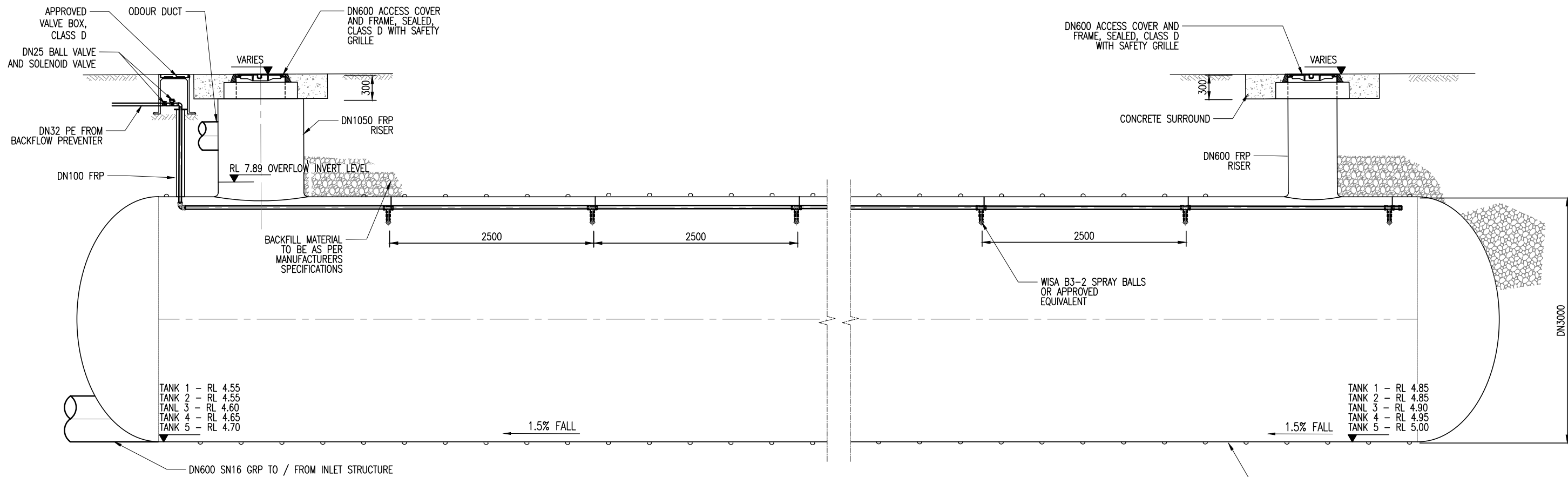
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
WET WELL, FLOW METER CH. - DETAILED SECTIONS

wsp GHD

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

U:\Project\NZ\13\13-AWD32-00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\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
0 400 800 1200 1600 2000 2400 mm

DETAILED DESIGN
NOT FOR CONSTRUCTION

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	BR	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	-	-	-	-	-	05-21
1	05-21	PRELIMINARY DESIGN ISSUE	AJ	BR	AJ	BR	-	-	-	-	-	05-21

Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

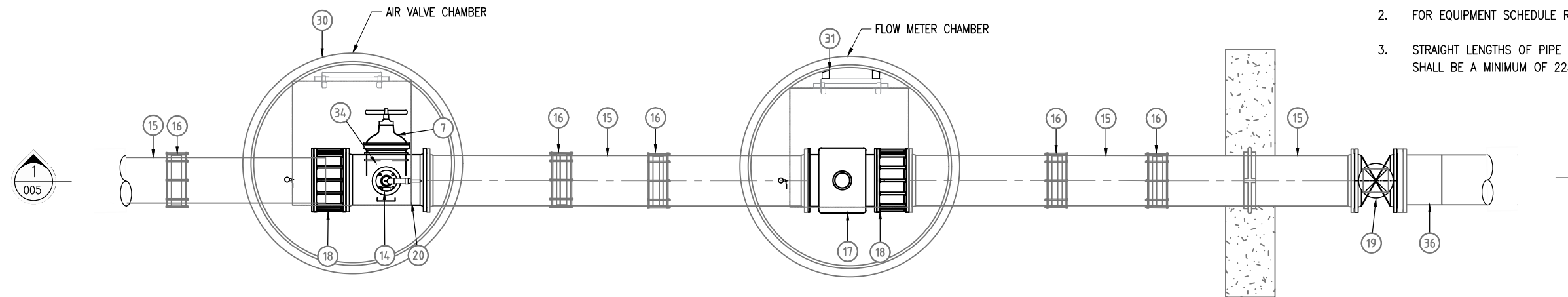
WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
22m STORAGE TANK - SECTION DETAILS



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

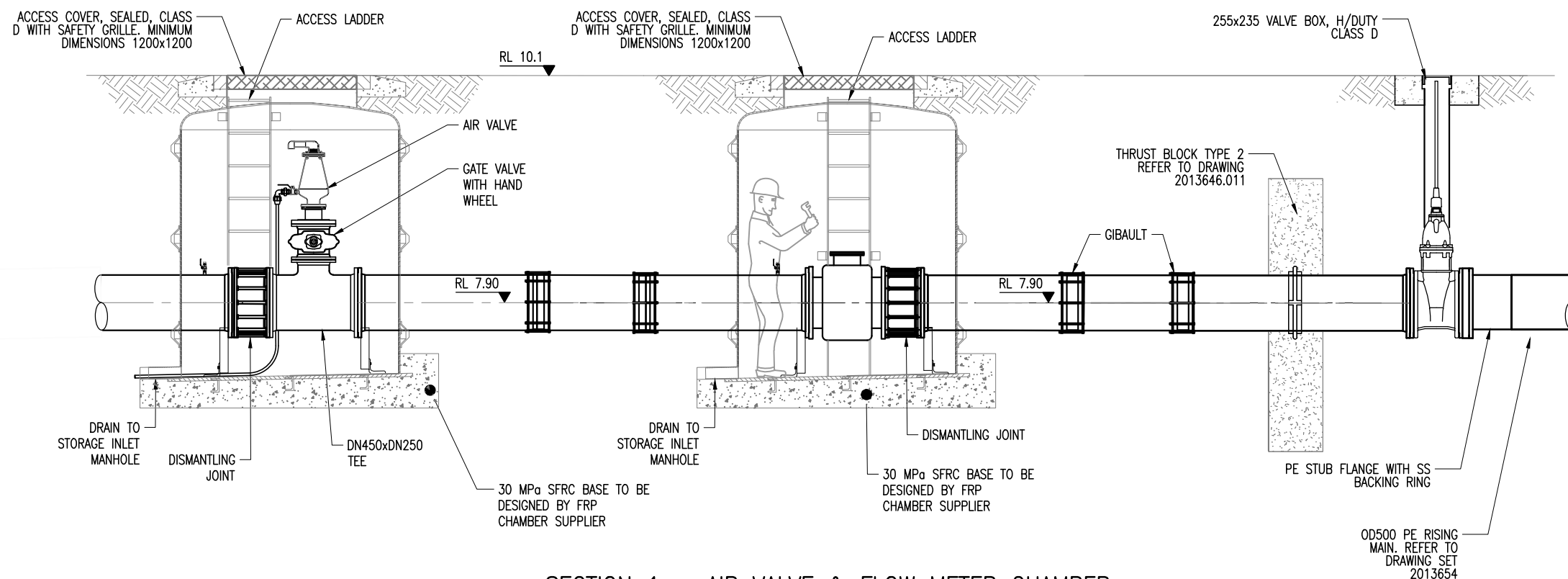
NOTES:

- 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\3A\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
				WSL DESIGN MGMT.	-	-
				WSL PROJ. LEAD	-	-
1	01-22	DETAILED DESIGN ISSUE	SA	MG		
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

Watercare

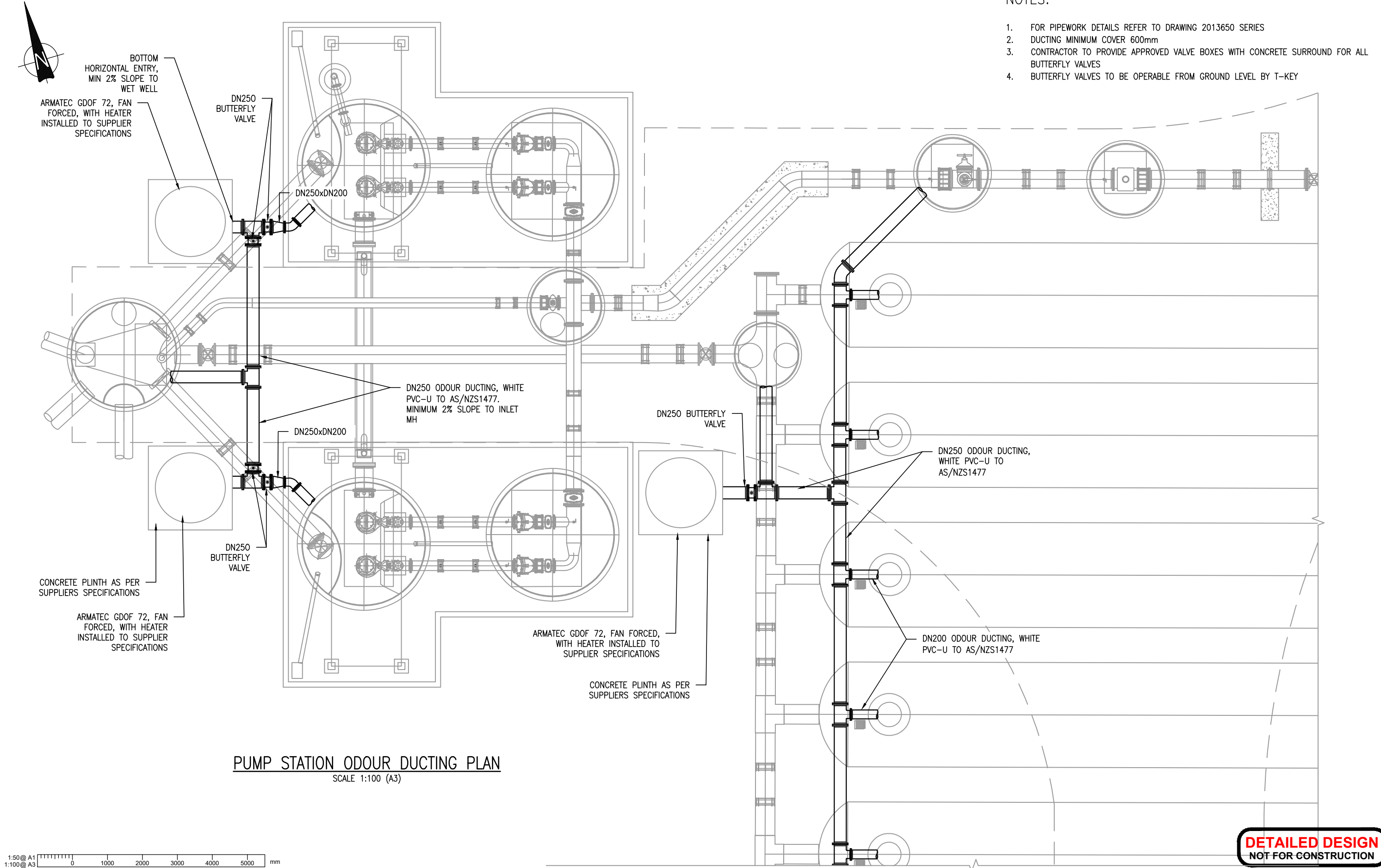
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

WHENUAPAI-REDHILLS WASTEWATER SERVICING 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

**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 PACKAGE 1
WASTEWATER PUMP STATION (DPISH)
PUMP STATION ODOUR DUCTING PLAN

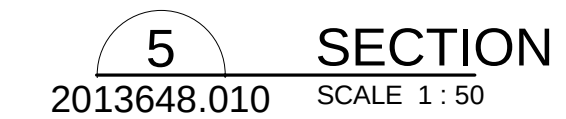
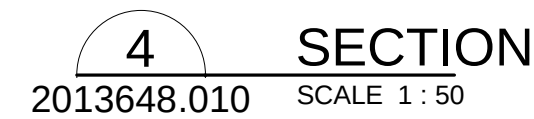
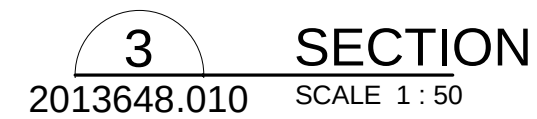


CAD FILE	2013650.006	DATE	14-01-2022
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	6484-6934
REF No.	12508391	3-AWD32	
DWG No.	2013650.006	ISSUE	1



- ## NOTES:
1. ALL DWGS TO BE READ IN CONJUNCTION WITH THE WSP STRUCTURAL SPECIFICATION.
 2. EXISTING STRUCTURE IS SHOWN INDICATIVELY ONLY. VERIFY DIMENSIONS & CONFIGURATION OF EXISTING STRUCTURE ON SITE BEFORE COMMENCING ANY WORKS & NOTIFY ENGINEER IF ANY DIFFERENCES TO WHAT IS INDICATED ON THE DWGS ARE ENCOUNTERED.
 3. EXISTING SERVICES NOT SHOWN. VERIFY LOCATION OF ALL EXISTING SERVICES ON SITE BEFORE COMMENCING ANY WORKS.
 4. REFER TO CIVILS DWGS FOR ALL SET OUT DIMENSIONS, LEVELS, FALLS, SLAB SET DOWNS, REBATES, EDGE DETAILS & EQUIPMENT.
 5. ANY SERVICES PENETRATIONS & FIXTURES SHOWN ARE SHOWN INDICATIVELY ONLY. REFER SERVICES DWGS FOR LOCATION & SIZE OF SERVICES, SERVICES PENETRATIONS & SERVICES FIXTURES U.N.O.
 6. ALL EXTERNALLY EXPOSED STEELWORK INCLUDING FIXINGS TO BE HOT DIP GALVANIZED U.N.O.

200	200 THK SLAB WITH SE82 TOP & BTM. ON DPC ON 25 NOM SAND BLINDING ON 150 MIN WELL COMPACTED GP65 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 GP65 HARDFILL ON WELL COMPACTED SUBGRADE.



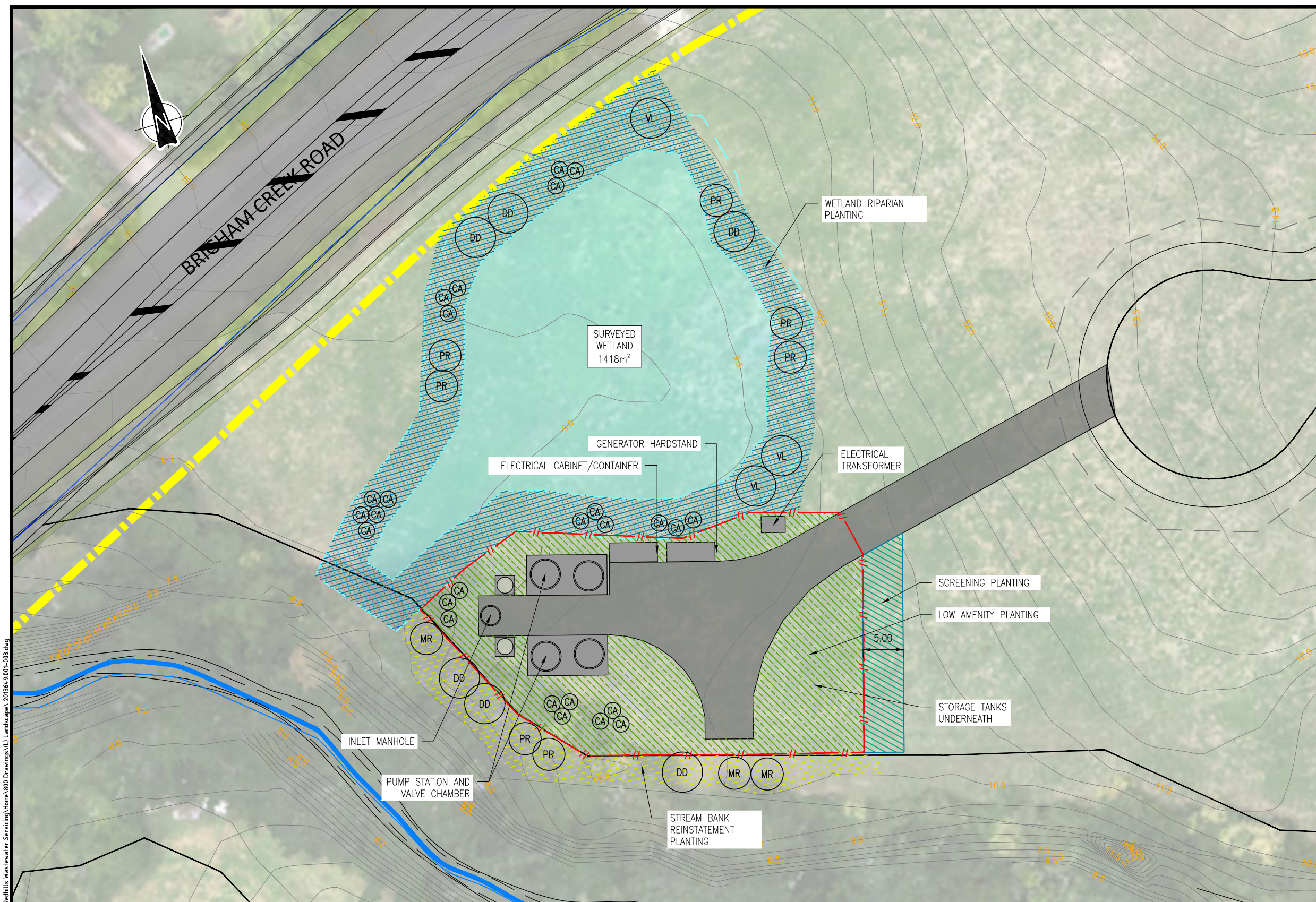
						DESIGNED	P.PATEL	21/12/21
						DES. APPROVED	A. SIMPSON	21/12/21
						DRAWN	V.CARTER	21/12/21
						DWG. APPROVED	S.JIANG	21/12/21
						WSL DESIGN MGMT.		
						WSL PROJ. LEAD		
A	01-22	DETAILED DESIGN ISSUE			SJ	AS		
ISSUE	DATE	AMENDMENT			BY	APPD.	BY	DATE



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	



PLANTING PLAN
SCALE 1:500(A3)



					DESIGNED	AL	07-21
					DES. APPROVED	CN	07-21
					DRAWN	AL	07-21
					DWG. APPROVED	CN	07-21
					WSL DESIGN MGMT.	-	-
1	01-22	DETAILED DESIGN ISSUE	AL	CN	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	DATE	14-01-2022
ORIGINAL SCALE A3 AS SHOWN	CONTRACT NO. 6484-6934		
REF No.	12508391	3-AWD32	
DWG No.	2013649.001	ISSUE 1	

U:\Projects\NZ-SA-13-AWD32.00 Whenuapai-Redhills Wastewater Servicing\Home\800 Drawings\LU Landscapes\ 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

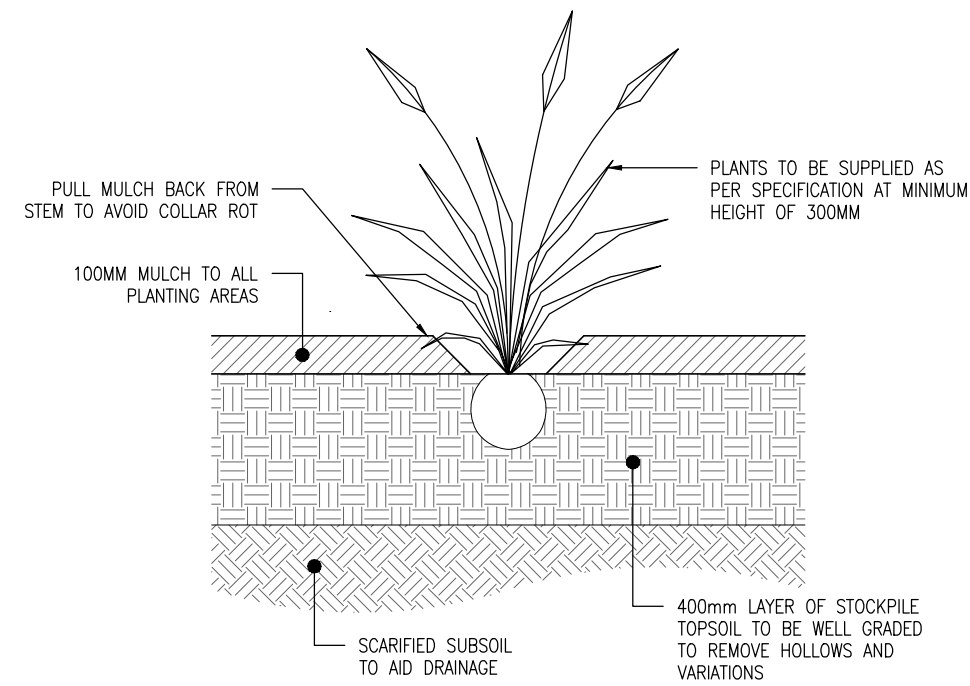
TREES WILL BE PLACED WITHIN PLANTING AREAS TO ADD AMENITY VALUE AND TO PROVIDE SCREENING EFFECTS AND BIODIVERSITY. THE TREES SELECTED ARE WET SOIL TOLERANT SPECIES INCLUDING CABBAGE TREE, KAHIKATEA, MAHOE, RIBBONWOOD AND PURIRI. THEY WILL BE POSITIONED TO AVOID OBSTRUCTING THE UNDERGROUND SERVICES.

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

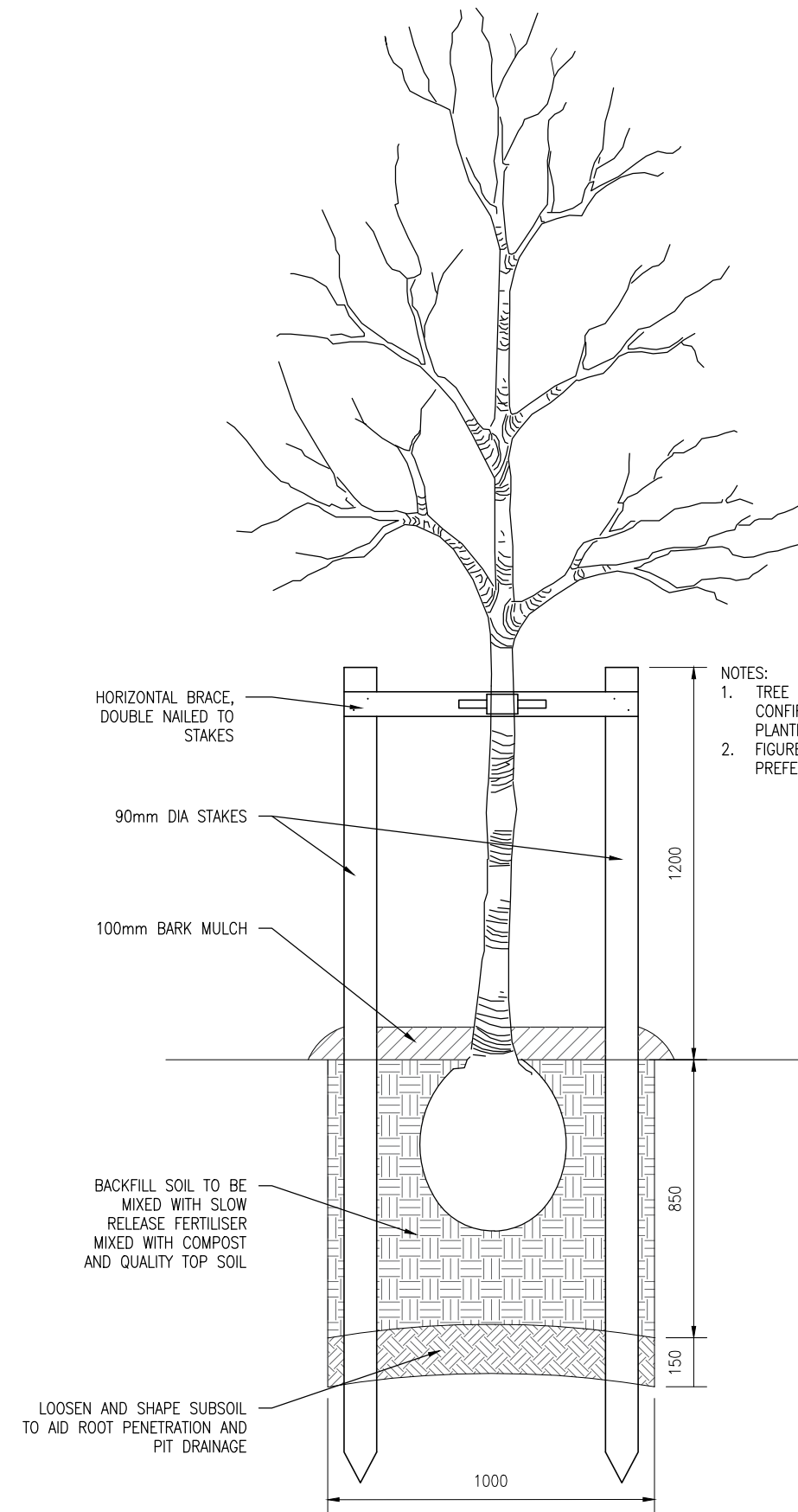
TREE SCHEDULE						
Code	Botanical Name	Common Name	Unit/ Grade	Max. Growth Size (H x W)	Plant Spacing (mm)	TOTAL
CA	Cordyline asutralis	Cabbage Tree / Ti Kouka	PB18	10.0 x 2.0m	as shown	26
DD	Dacrycarpus dacrydioides	Kahikatea / White Pine	PB18	30.0 x 10.0m	as shown	6
MR	Melicytus ramiflorus	Mahoe / 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

DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	AL	07-21	 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 PACKAGE 1 WASTEWATER PUMP STATION (DPISH) PLANT SCHEDULE	 	CAD FILE	2013649.001-003	DATE	14-01-2022
					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)

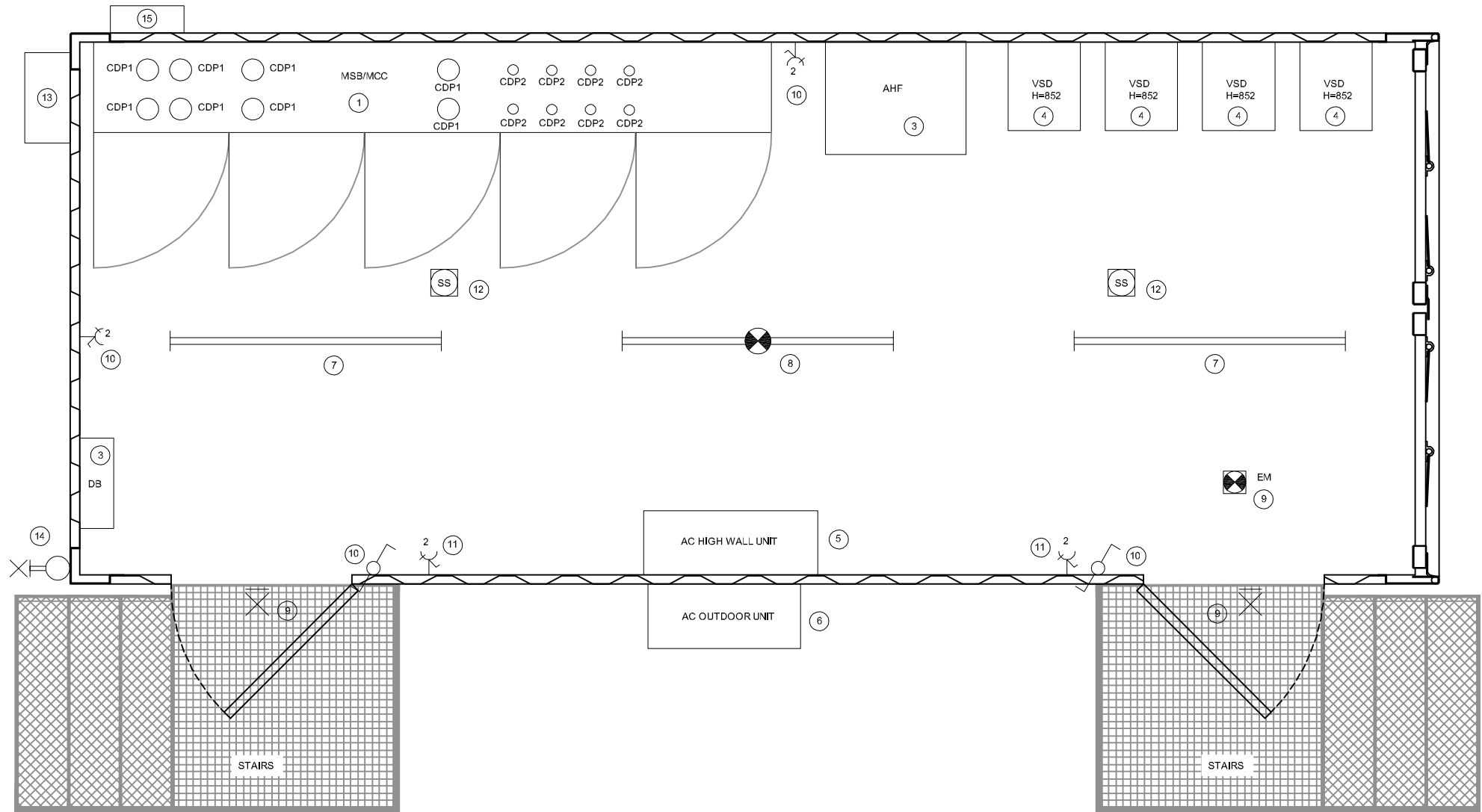
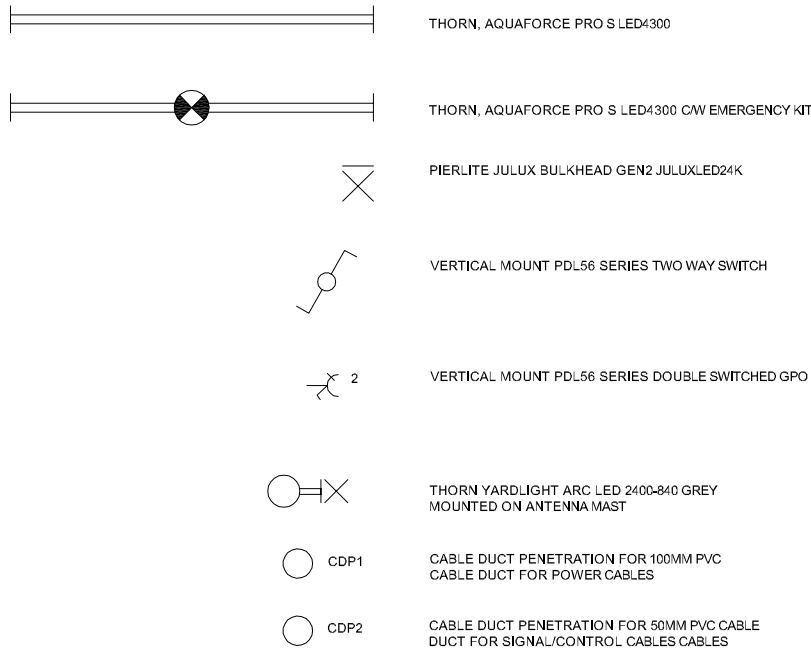
1:10 @ A1
1:20 @ A3
0 100 200 300 400 500 600 700 800 900 1000 mm

DETAILED DESIGN
NOT FOR CONSTRUCTION

					DESIGNED	AL	07-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.	WHENUAPAI-REDHILLS WASTEWATER SERVICING PACKAGE 1 WASTEWATER PUMP STATION (DPISH) PLANTING DETAILS	 	CAD FILE	2013649.001-003	DATE	14-01-22
					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						

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

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



DETAILED DESIGN
NOT FOR CONSTRUCTION

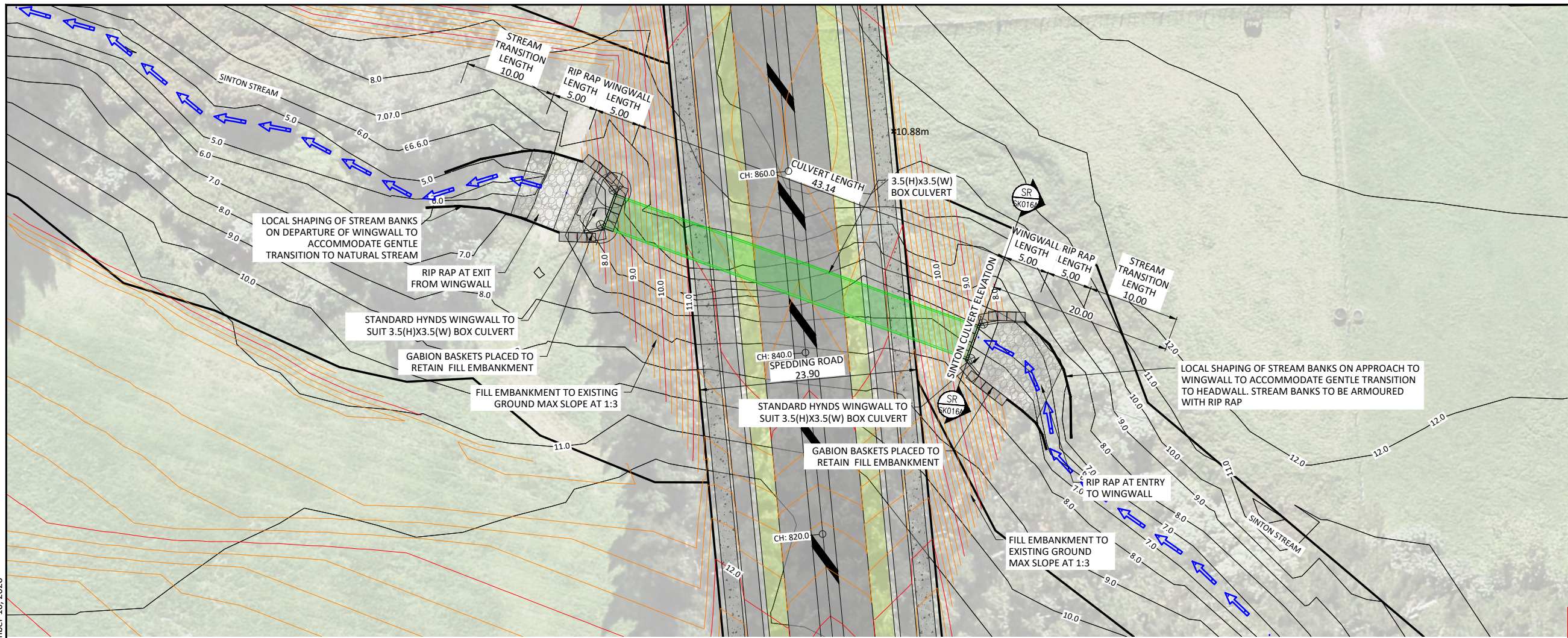
				DESIGNED	BL	11-21	 Watercare COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.
				DES. APPROVED	PW	11-21	
				DRAWN	BL	11-21	
				DWG. APPROVED	PW	11-21	
				WSL DESIGN MGMT.	-	-	
2	01-22	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

SAVED: P:\1300 - Oyster Spedding Road\5.0 Drawings\SKETCHES\SK016 Sinton Stream Bridge Detail.dwg - September 10, 2020. PRINTED: September 10, 2020



- LEGEND:**
- 15.0 PROPOSED GROUND LEVEL
 - 16.0 EXISTING GROUND LEVEL
 - EXISTING ABUTTAL BOUNDARY
 - STREAM

- NOTES:**
- DIMENSIONS AND AREAS ARE SUBJECT TO FULL AND FINAL SURVEY.
 - EXISTING CONTOURS ARE AT 1.0m INTERVALS.
 - PROPOSED CONTOURS ARE AT 0.1m INTERVALS.
 - DETAILED DESIGN TO BE CONFIRMED AT ENGINEERING APPROVAL STAGE.
 - STREAM PROFILE INFERRED FROM SURVEYED CROSS SECTIONS.

DRAFT ISSUE
NOT FOR CONSTRUCTION

4	CULVERT DIMENSION AMENDED	CG	07/09/20
3	GABION WALLS ADDED	CG	23/07/20
2	UPDATED TO BOX CULVERT	CG	25/06/20
1	CULVERT EMBEDMENT INCREASED	CG	09/04/20
REVISION	CHANGES	CHECKED	DATE

COPYRIGHT:
This document and the copyright in this document remain the property of Crang Consulting Ltd. The contents of this document may not be reproduced either in whole or in part by any means whatsoever without the prior written consent of Crang Consulting.

CRANG CIVIL
CONSULTING ENGINEERS
phone +64 09 320 3325
web www.crangcivil.co.nz
address Unit 4, 517 Mount Wellington Highway, Auckland
post PO Box 42-089, Orakei, Auckland 1745, NZ

CLIENT

OYSTER CAPITAL

PROJECT

**SPEDDING ROAD
WHENUAPAI**

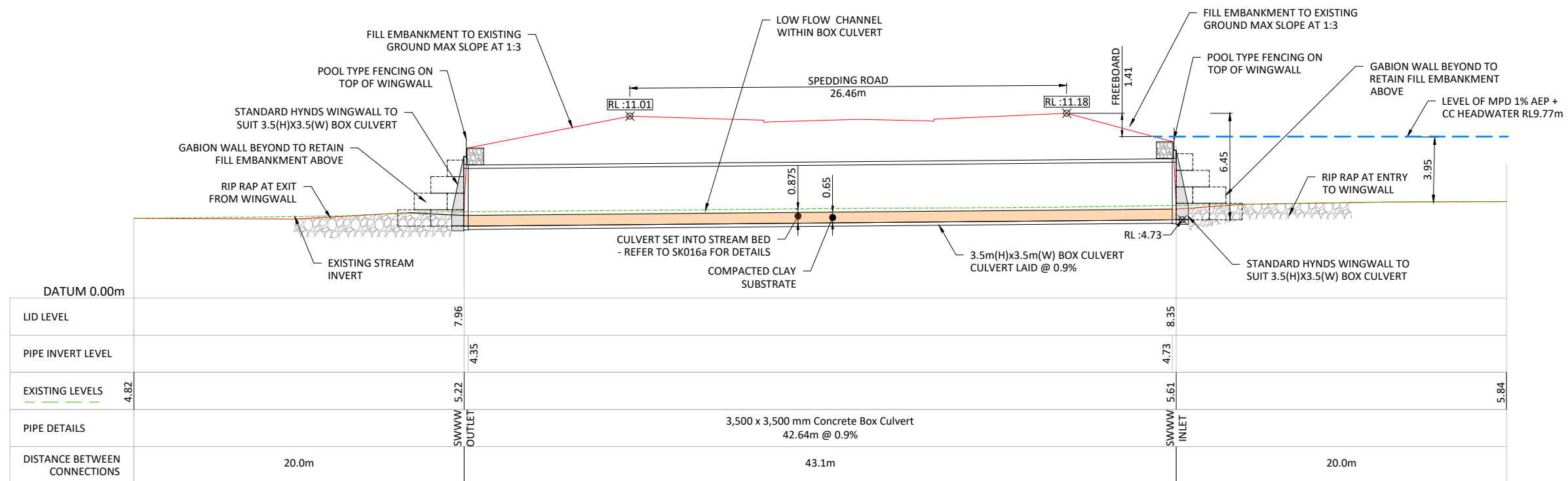
TITLE

**SINTON STREAM CULVERT
PLAN & LONGSECTION**

DATE	JUNE 2019	SCALE	A1 1:250
DRAWN	CG	A3 1:500	
DESIGNED	CG	REVISION	4
PROJECT No	1300	DRAWING No	SK016

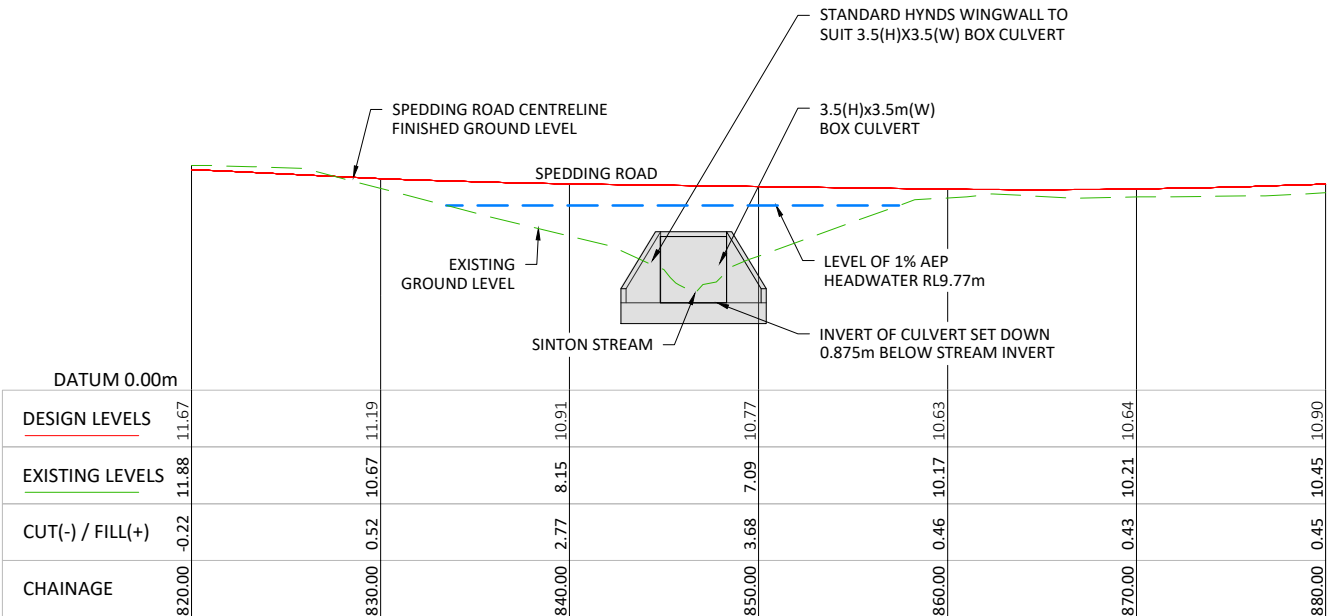
PROPOSED SINTON STREAM CULVERT

SCALE : A1 @ 1:250 & A3 @ 1:500

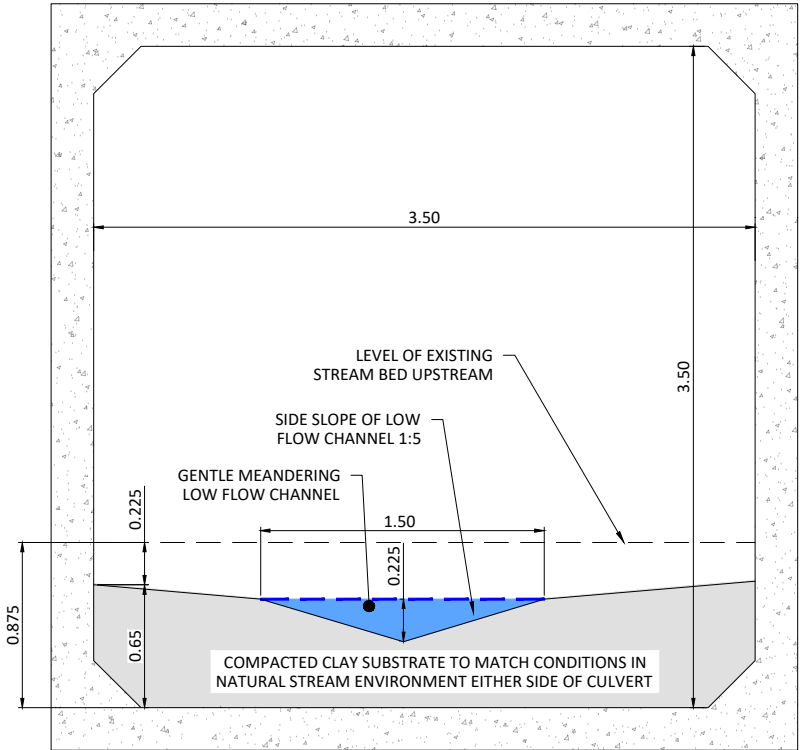


SINTON STREAM CULVERT
SCALE 1H:1V

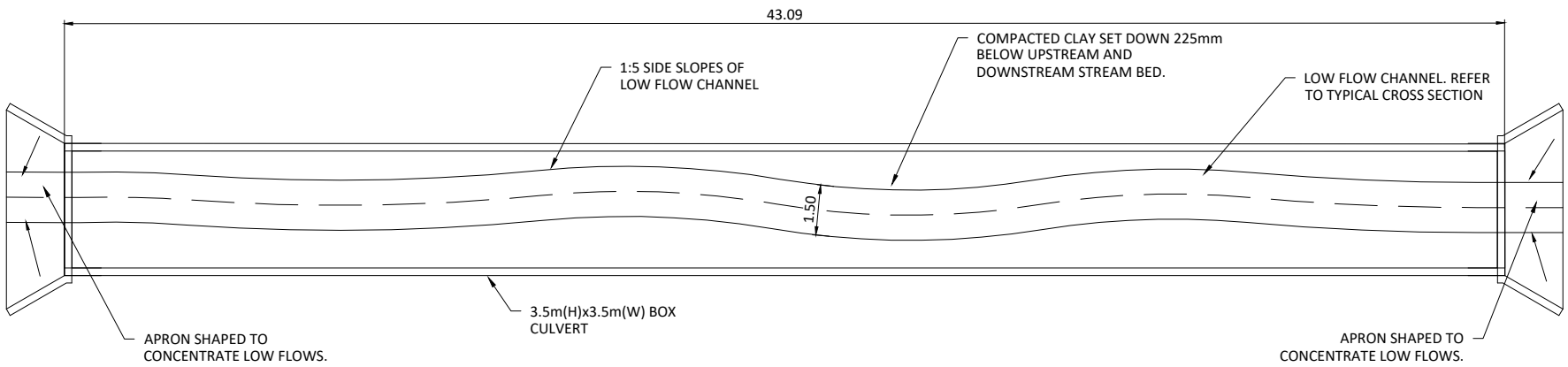
SAVED: P:\1300 - Oyster Spedding Road\5.0 Drawings\SKETCHES\SK016 Sinton Stream Bridge Detail.dwg - September 10, 2020. PRINTED: September 10, 2020



SINTON CULVERT ELEVATION
SCALE 1H:1V



BOX CULVERT LOW FLOW CHANNEL
SCALE: NTS



BOX CULVERT LOW FLOW CHANNEL ALIGNMENT
SCALE: NTS

NOTES:

- DIMENSIONS AND AREAS ARE SUBJECT TO FULL AND FINAL SURVEY.
- DETAILED DESIGN TO BE CONFIRMED AT ENGINEERING APPROVAL STAGE.
- STREAM PROFILE INFERRED FROM SURVEYED CROSS SECTIONS.

DRAFT ISSUE
NOT FOR CONSTRUCTION

5	CULVERT DIMENSION AMENDED	CG	07/09/20
4	ROCK TYPE UPDATED	CG	23/07/20
3	FISH PASSAGE ADDED	CG	14/07/20
2	UPDATE TO BOX CULVERT	CG	25/06/20
REVISION	CHANGES	CHECKED	DATE

COPYRIGHT:
This document and the copyright in this document remain the property of Crang Consulting Ltd. The contents of this document may not be reproduced either in whole or in part by any means whatsoever without the prior written consent of Crang Consulting.



phone +64 09 320 3325
web www.crangcivil.co.nz
address Unit 4, 517 Mount Wellington Highway, Auckland
post PO Box 42-089, Orakei, Auckland 1745, NZ

CLIENT			
OYSTER CAPITAL			
PROJECT			
SPEDDING ROAD WHENUAPAI			
TITLE			
SINTON STREAM CULVERT DETAILS			
DATE	APRIL 2020	SCALE	
DRAWN	CG	A1	1:200
DESIGNED	CG	A3	1:400
PROJECT No	1300	DRAWING No	SK016A
		REVISION	5

