CLIENT

ETHEKWINI MUNICIPALITY

MECHANICAL,ELECTRICAL AND CIVIL WORKS FOR THE CAPACITY INCREASE OF THE OGUNJINI WATER TREATMENT WORKS FROM 1Ml/DAY TO 3Ml/DAY

CONSULTING ENGINEERS AND
PROJECT MANAGERS

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APPENDIX TO TENDER DOCUMENT

TENDER DRAWINGS

CONTRACT NO. WS7759
PROJECT No. AA170500
VOLUME 3 OF 3

AUGUST 2023

MECHANICAL,ELECTRICAL AND CIVIL WORKS FOR THE CAPACITY INCREASE OF THE OGUNJINI WATER TREATMENT WORKS FROM 1Ml/DAY TO 3Ml/DAY

LIST OF DRAWINGS - CIVIL/MECHANICAL

DRAWING NUMBER	DESCRIPTION	ORIGINAL SIZE
57270-C-100	SITE LAYOUT	
57270-C-101	BUILDING STRUCTURAL WORKS LAYOUT	
57270-C-102	BULK EARTHWORKS PLATFORM LAY AND SETTING OUT	
57270-C-103	BULK EARTHWORKS SEC THROUGH PLATFORMS AND PAVED AREAS	
57270-C-104	BULK EARTHWORKS RET WALL LONG SECTION AND SETTING OUT	
57270-C-105	TYPICAL DETAILS FOR RETAINING WALLS AND PAVED AREAS	
57270-C-106	GEOTECHNICAL INVESTIGATION	
57270-C-200	CLEAR WATER RISING MAIN TO OGUNJINI 1 RESERVOIR 1_SHEET 1 OF 3	
57270-C-200	CLEAR WATER RISING MAIN TO OGUNJINI 1 RESERVOIR 1_SHEET 2 OF 3	
57270-C-200	CLEAR WATER RISING MAIN TO OGUNJINI 1 RESERVOIR 1_SHEET 3 OF 3	
57270-C-201	OGUNJINI 1 RM TIE-IN CHAMBER	
57270-C-202	INTERLINKING PIPELINES	
57270-C-203	RAW WATER RISING MAIN LS	
57270-C-204	CLARIFIER SLUDGE DRAINAGE LONGITUDINAL SECTION	
57270-C-300	CLEAR WATER RM TO OGUNJINI 1 RES AIR VALVE & SCOUR VALVE DETAIL	
57270-C-301	STANDARD DETAILS PIPELINES SHEET 1 OF 2	
57270-C-301	STANDARD DETAILS PIPELINES SHEET 2 OF 2	
57270-C-302	STANDARD DETAIL STREAM CROSSING	
57270-C-303	RAW WATER INLET SCREEN DETAILS	
P7957M47-001	FILTER PLANT BUILDING (SHEET 1-3)	
P7957M47-002	RAW WATER PUMP STATION BUILDING & MECHANICAL LAYOUT (SHEET 1&2)	
P7957M47-003	ABSTRACTION WORKS UPGRADE BUILDING & MECHANICAL LAYOUT (SHEET 1&2)	
P7957M47-004	CLEAR WATER PUMP STATION UPGRADE (SHEET 1&2)	

NOTE
ALL DRAWINGS REDUCED FROM ORIGINAL SIZE

MECHANICAL,ELECTRICAL AND CIVIL WORKS FOR THE CAPACITY INCREASE OF THE OGUNJINI WATER TREATMENT WORKS FROM 1MI/DAY TO 3MI/DAY

LIST OF DRAWINGS - ELECTRICAL

DRAWING NUMBER	DESCRIPTION	ORIGINAL SIZE
57270-E-800	SITE PLAN	
57270-E-806	RAW WATER FEED PUMPSTATION MCC	
57270-E-808	FILTER BUILDING MCC SCHEMATICS	
57270-E-810	MAIN PUMP STATION DB SCHEMATICS	
57270-E-811	ADMIN BUILDING DB SCHEMATICS	
57270-E-812	LAB DB	
57270-E-813	ABSTRACTION BUILDING DB SCHEMATICS	
57270-E-815	FILTER BUILDING DB SCHEMATICS	
57270-E-816	RAW WATER FEED PUMP STATION DB SCHEMATICS	
57270-E-823	MAIN LV MCC PANEL	
57270-E-828	CLEARWATER PUMP STATION MCC	
57270-E-829	GUARD HUT MCC	
57270-E-824	SLUDGE MCC	
57270-E-825	SLUDGE DB	
57270-E-826	DISINFECTION DB	

NOTE
ALL DRAWINGS REDUCED FROM ORIGINAL SIZE

MECHANICAL,ELECTRICAL AND CIVIL WORKS FOR THE CAPACITY INCREASE OF THE OGUNJINI WATER TREATMENT WORKS FROM 1Ml/DAY TO 3Ml/DAY

LIST OF DRAWINGS - STRUCTURES

DRAWING NUMBER	DESCRIPTION	ORIGINAL SIZE
57270 - 400	GENERAL NOTES	
57270 - 401	SLUDGE HOLDING TANK LAYOUT & SECTIONS	
57270 - 402	RAW WATER FEED PUMP STATION LAYOUT & SECTIONS	
57270 - 403	FILTER PLANT BUILDING LAYOUT & SECTIONS	
57270 - 404	GENERATOR SLAB LAYOUT & REINFORCEMENT DETAILS	
57270 - 405	CLEAR WATER PUMP STATION STAIRCASE LAYOUT & SECTIONS	
57270 - 406	HYPOCHLORITE BATCHING TANK SLAB LAYOUT & DETAILS	
57270 - 407	MODIFICATIONS TO EXISTING CLEAR WATER RESERVOIR	
57270 - 409	POLYELECTROLYTE BULK STORAGE TANK BUNDED AREA	
57270 - 410	SLUDGE MANHOLE MODIFICATIONS	
57270 - 411	FLOWMETER CHAMBER DETAIL NEW RAW WATER & CLEAR WATER RISING MAINS & EXISTING OLD FILTER GRAVITY MAIN	
57270 - 412	OGUNJINI 1 CLEAR WATER RESERVOIR VALVE CHAMBER & PIPE MODIFICATION DETAILS	

NOTE
ALL DRAWINGS REDUCED FROM ORIGINAL SIZE

MECHANICAL,ELECTRICAL AND CIVIL WORKS FOR THE CAPACITY INCREASE OF THE OGUNJINI WATER TREATMENT WORKS FROM 1MI/DAY TO 3MI/DAY

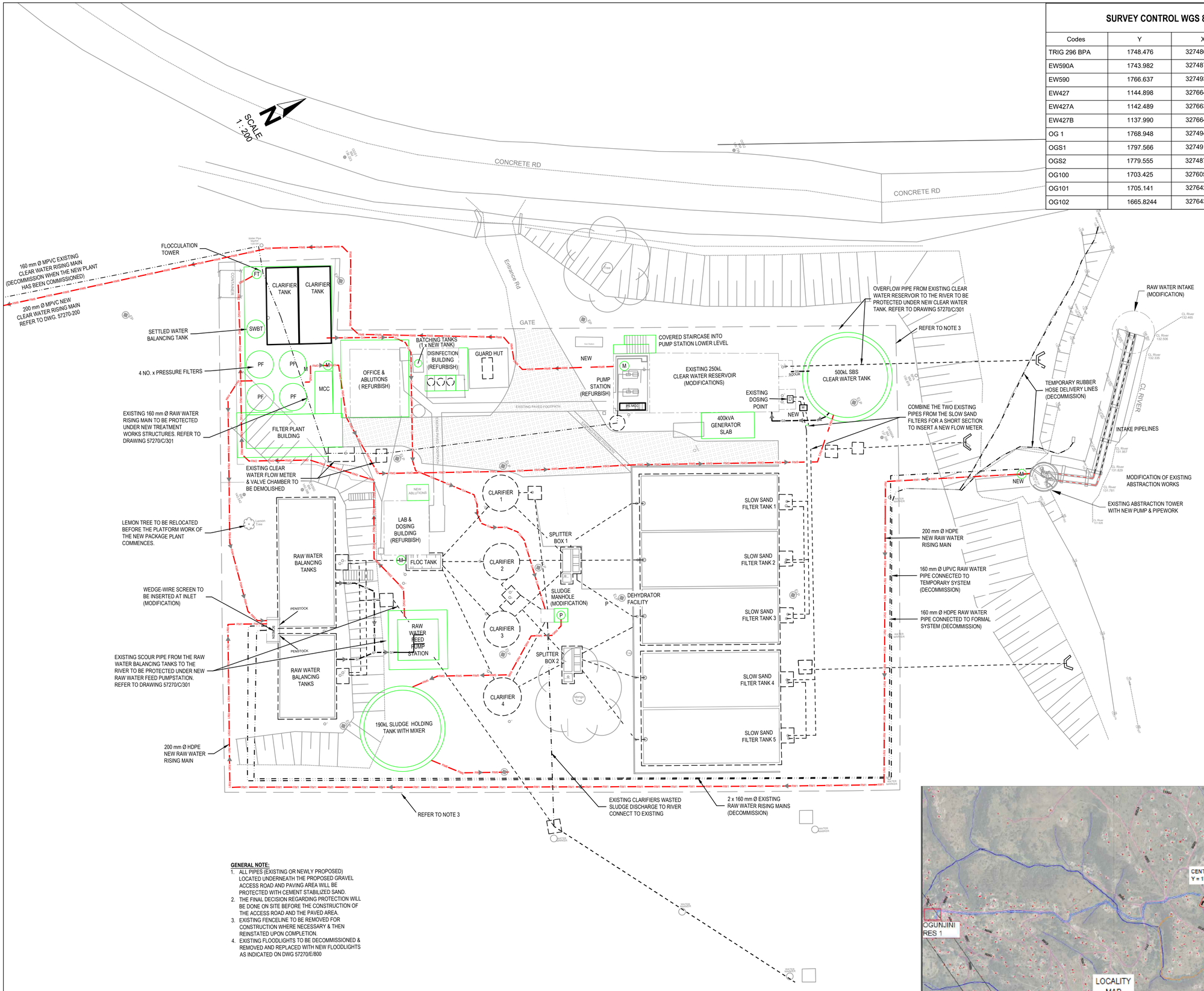
LIST OF DRAWINGS - P&ID & PFD

DRAWING NUMBER	DESCRIPTION	ORIGINAL SIZE
AA170500/001	PFD	
AA170500/002	P&ID	

NOTE
ALL DRAWINGS REDUCED FROM ORIGINAL SIZE

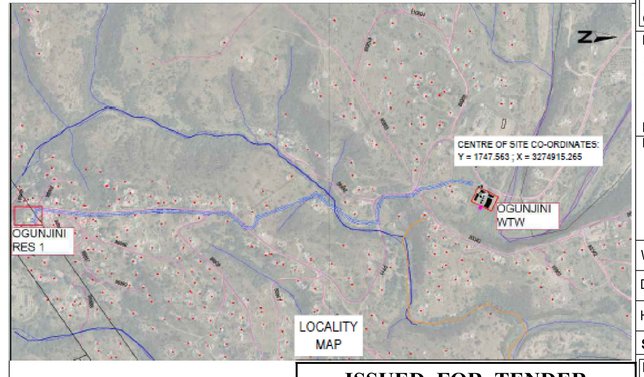
SURVEY CONTROL WGS 84 WG 31

Codes	Y	X	Z
TRIG 296 BPA	1748.476	3274868.803	136.878
EW590A	1743.982	3274875.184	137.336
EW590	1766.637	3274935.194	140.388
EW427	1144.898	3276645.229	294.970
EW427A	1142.489	3276638.225	294.976
EW427B	1137.990	3276644.144	294.961
OG 1	1768.948	3274941.197	140.542
OGS1	1797.566	3274915.016	138.273
OGS2	1779.555	3274876.071	135.786
OG100	1703.425	3276058.699	285.852
OG101	1705.141	3276429.364	277.915
OG102	1665.8244	3276434.689	278.119



GENERAL NOTE:

1. ALL PIPES (EXISTING OR NEWLY PROPOSED) LOCATED UNDERNEATH THE PROPOSED GRAVEL ACCESS ROAD AND PAVING AREA WILL BE PROTECTED WITH CEMENT STABILIZED SAND.
2. THE FINAL DECISION REGARDING PROTECTION WILL BE DONE ON SITE BEFORE THE CONSTRUCTION OF THE ACCESS ROAD AND THE PAVED AREA.
3. EXISTING FENCELINE TO BE REMOVED FOR CONSTRUCTION WHERE NECESSARY & THEN REINSTATED UPON COMPLETION.
4. EXISTING FLOODLIGHTS TO BE DECOMMISSIONED & REMOVED AND REPLACED WITH NEW FLOODLIGHTS AS INDICATED ON DWG 57270/E/800



ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

INGEROP Inventing for tomorrow

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Designed : D NARAINSAMY

Drawn : N SINGH

Checked : S SEWLAL

REVISIONS

Revision	Date	Description
B	31/08/2023	ISSUED FOR TENDER

LEGEND

- EXISTING INFRASTRUCTURE
- NEW PROPOSED INFRASTRUCTURE
- EXISTING INFRASTRUCTURE TO BE REFURBISHED OR MODIFIED
- EXISTING PIPELINES (RISING MAINS & GRAVITY)
- EXISTING PIPELINES (TO BE DECOMMISSIONED)
- M FLOW METER
- D DOSING POINT
- P PUMP STATION
- PROPOSED PAVING AREA

NEW PROPOSED RISING MAINS

- RM 1 : RAW WATER ABSTRACTION TO BALANCING TANKS
- RM 2 : RAW WATER FEED PUMP STATION TO NEW PLANT
- RM 3 : FILTERED WATER FEED TO SBS CLEAR WATER TANK
- RM 4 : BACKWASH FROM NEW PLANT
- RM 5 : WASTED SLUDGE TO SLUDGE HOLDING TANK
- RM 6 : WASTED SLUDGE TO DEHYDRATOR FACILITY
- RM 7 : BACKWASH FROM DEHYDRATOR FACILITY
- RM 8 : CLEAR WATER SUPPLY

NEW PROPOSED GRAVITY LINES

- G 1 : RAW WATER BALANCING TANK TO FEED PUMP STATION
- G 2 : FEED PUMP STATION TO EXISTING FLOCCULATION TANK
- G 3 : CLEAR WATER FEED FROM SBS TANK
- G 4 : WASTED SLUDGE FROM NEW PLANT TO SLUDGE MANHOLE
- G 5 : SBS TANK SCOUR / OVERFLOW PIPE TO EXISTING CHAMBER OF CLEAR WATER RESERVOIR
- G 6 : SLUDGE OVERFLOW FROM DEHYDRATOR FACILITY

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title
SITE LAYOUT

Works Project Manager: A. Pillay

Deputy Head: Engineering: B. Soni

Head: Water and Sanitation: E. Msweli

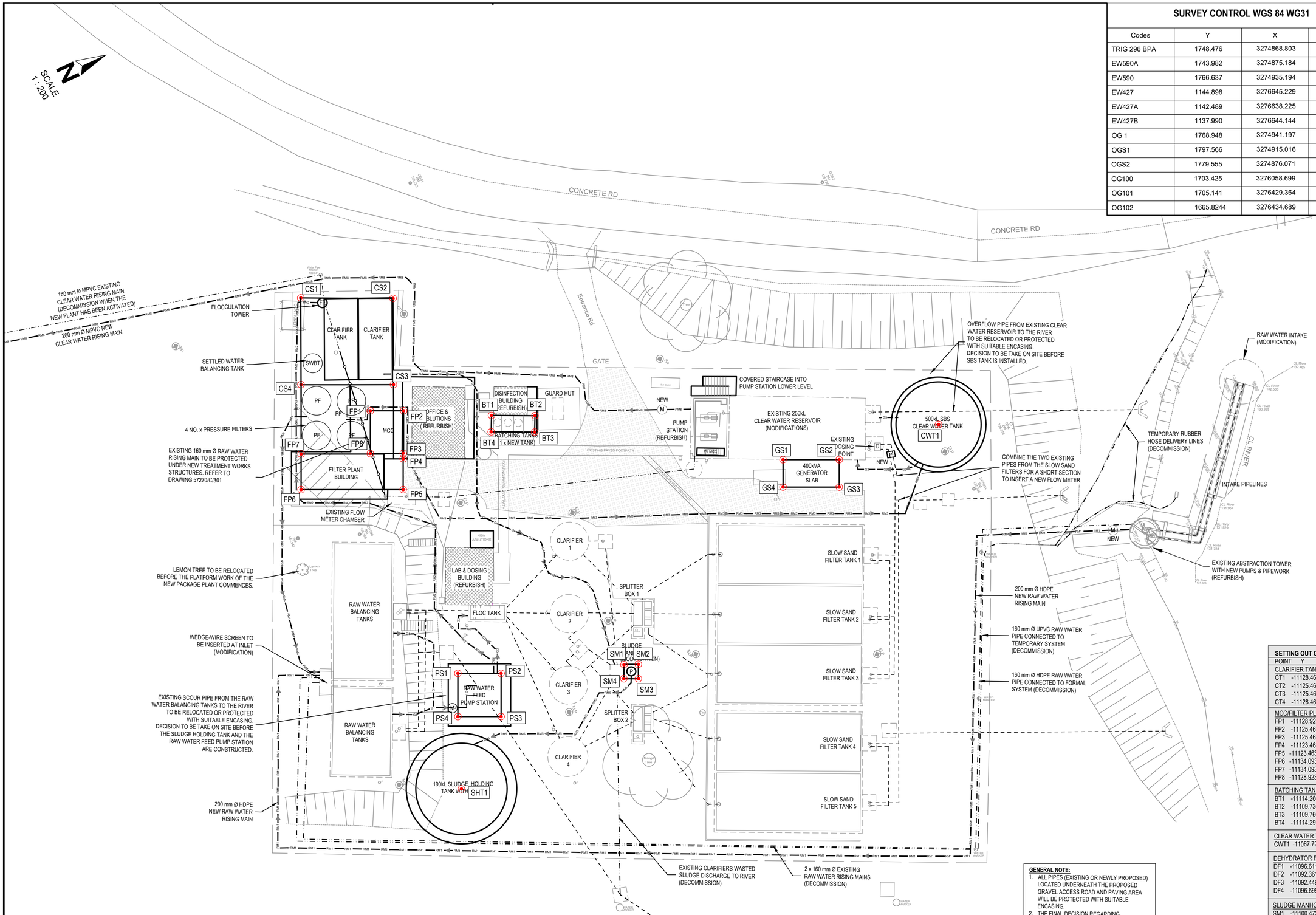
Scale : 1:200 **Date:** AUGUST 2023

Drawing No. 57270/C/100 **Sheet** 1 OF 1 **Rev.** B

SCALE 1 : 200

SURVEY CONTROL WGS 84 WG31

Codes	Y	X	Z
TRIG 296 BPA	1748.476	3274868.803	136.878
EW590A	1743.982	3274875.184	137.336
EW590	1766.637	3274935.194	140.388
EW427	1144.898	3276645.229	294.970
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EW427B	1137.990	3276644.144	294.961
OG 1	1768.948	3274941.197	140.542
OGS1	1797.566	3274915.016	138.273
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OG100	1703.425	3276058.699	285.852
OG101	1705.141	3276429.364	277.915
OG102	1665.8244	3276434.689	278.119



GENERAL NOTE:

1. ALL PIPES (EXISTING OR NEWLY PROPOSED) LOCATED UNDERNEATH THE PROPOSED GRAVEL ACCESS ROAD AND PAVING AREA WILL BE PROTECTED WITH SUITABLE ENCASING.
2. THE FINAL DECISION REGARDING PROTECTION WILL BE DONE ON SITE BEFORE THE CONSTRUCTION OF THE ACCESS ROAD AND THE PAVED AREA.

SETTING OUT COORDINATES

POINT	Y	X
CLARIFIER TANK		
CT1	-11128.463	3275032.533
CT2	-11125.463	3275032.533
CT3	-11125.463	3275039.833
CT4	-11128.463	3275039.833
MCC/FILTER PLANT BUILDING		
FP1	-11128.923	3275041.833
FP2	-11125.463	3275041.833
FP3	-11125.463	3275046.793
FP4	-11123.463	3275046.793
FP5	-11123.463	3275049.993
FP6	-11134.093	3275049.993
FP7	-11134.093	3275046.293
FP8	-11128.923	3275046.293
BATCHING TANKS		
BT1	-11114.266	3275042.270
BT2	-11109.736	3275042.298
BT3	-11109.766	3275044.008
BT4	-11114.297	3275043.979
CLEAR WATER TANKS		
CWT1	-11067.723	3275043.217
DEHYDRATOR FACILITY		
DF1	-11096.611	3275066.083
DF2	-11092.361	3275066.138
DF3	-11092.449	3275073.233
DF4	-11096.699	3275073.181
SLUDGE MANHOLE		
SM1	-11100.472	3275068.228
SM2	-11098.972	3275068.180
SM3	-11098.972	3275069.680
SM4	-11100.491	3275069.686
RAW WATER FEED PUMP STATION		
PS1	-11117.767	3275069.122
PS2	-11113.267	3275069.122
PS3	-11113.267	3275073.622
PS4	-11117.767	3275073.622
SLUDGE HOLDING TANK		
SHT1	-11117.399	3275081.148
BULK STORAGE TANK		
BT1	-11117.399	3275081.148
BT2	-11111.867	3275059.465
BT3	-11111.867	3275061.731
BT4	-11114.117	3275061.715

ISSUED FOR TENDER

CONSULTANT PROJECT NO: DD170500

INGEROP inventing for tomorrow

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Drawn :	N SINGH
Checked :	S SEWLAL
Approved :	D NARAINSAMY

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (DD170500)

Drawing Title

BUILDING AND STRUCTURAL WORKS LAYOUT

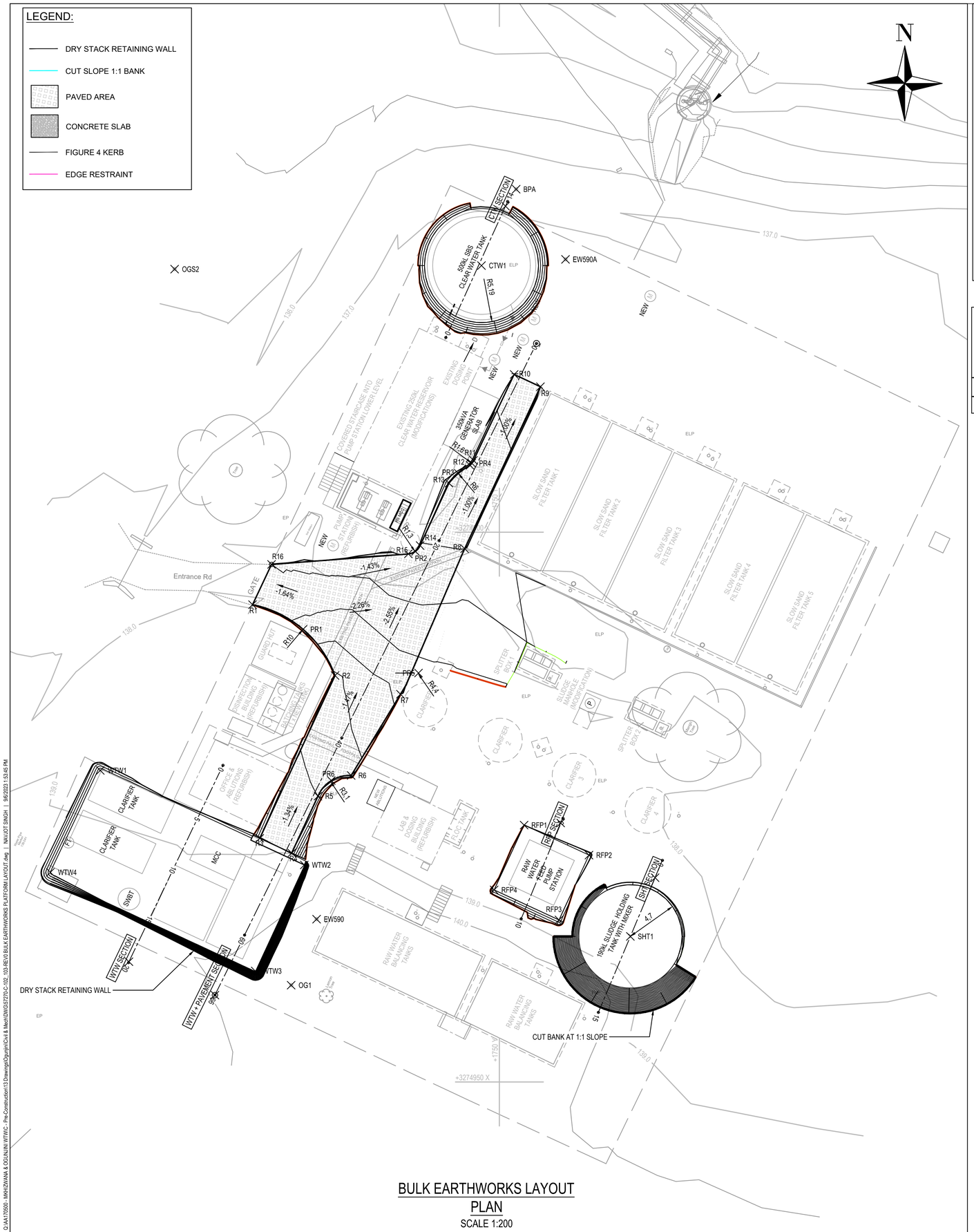
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : 1:200 **Date: AUGUST** 2023

Drawing No. 57270/C/101 **Sheet** 1 OF 1 **Rev.** B

LEGEND:

- DRY STACK RETAINING WALL
- CUT SLOPE 1:1 BANK
- PAVED AREA
- CONCRETE SLAB
- FIGURE 4 KERB
- EDGE RESTRAINT



BULK EARTHWORKS LAYOUT PLAN

SCALE 1:200

NOTES:

1. Z-COODINATES ARE BULK EARTHWORKS FINISHED LEVELS
2. EXTENT OF EXCAVATION TO REMOVE AND REPLACE UNSUITABLE FOUNDING MATERIAL TO BE DETERMINED BY THE ENGINEER ON SITE.
3. CUT AND FILL BANKS 1:2. UNLESS STATED OTHERWISE (WHERE NO LOFFELSTEIN)
4. LOFFELSTEIN FILLS TO BE 8% CEMENT STABILISED G5 MATERIAL SELECTED FROM LOCAL EXCAVATIONS AND COMPACTED TO 98% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm.
5. ALL OTHER FILL TO BE G5 MATERIAL SELECTED FROM LOCAL EXCAVATIONS AND COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm.
6. IN-SITU MATERIAL UNDER FILL TO BE BENCHED IN STEPS NOT LARGER THAN 300mm STEPS TO SUIT METHOD OF COMPACTION OF FILL.
7. DIMENSIONS OF PLATFORMS TO BE FINALISED AFTER CONTRACTORS EQUIPMENT DESIGN.
8. HIGH ELEVATION TOLERANCE ACCURACY REQUIRED FOR STORMWATER RUNOFF

CLEAR WATER TANK EARTHWORKS SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
CTW1	1 751.631	3 274 875.748	137.000

PAVING SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
R1	1 772.461	3 274 906.588	138.000
R2	1 764.955	3 274 913.036	138.316
R3	1 771.805	3 274 927.831	138.500
R4	1 768.902	3 274 929.176	138.500
R5	1 766.509	3 274 924.003	138.400
R6	1 763.488	3 274 922.124	138.333
R7	1 759.004	3 274 914.730	138.181
R8	1 753.164	3 274 901.491	0.000
R9	1 746.264	3 274 886.768	137.775
R10	1 748.655	3 274 885.648	137.775
R11	1 752.354	3 274 893.466	0.000
R12	1 752.673	3 274 893.914	0.000
R13	1 754.593	3 274 895.540	0.000
R14	1 757.217	3 274 901.207	137.775
R15	1 758.286	3 274 901.969	137.917
R16	1 770.733	3 274 902.930	138.000

SLUDGE HOLDING TANK EARTHWORKS SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z	RADIUS
SHT1	1 738.082	3 274 936.763	138.200	R = 4.7m

RAW WATER FEED P.S EARTHWORKSSETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
RFP1	1 747.748	3 274 926.634	138.300
RFP2	1 741.849	3 274 929.365	138.300
RFP3	1 744.580	3 274 935.262	138.300
RFP4	1 750.478	3 274 932.531	138.300

PAVEMENT RADIUS SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X
PR1	1 767.863	3 274 908.828
PR2	1 757.642	3 274 901.744
PR3	1 753.735	3 274 894.653
PR4	1 752.512	3 274 893.729
PR5	1 757.359	3 274 912.807
PR6	1 765.295	3 274 922.586

PACKAGE PLANT EARTHWORKS SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
WTW1	1 786.317	3 274 921.664	138.500
WTW2	1 767.751	3 274 930.260	138.500
WTW3	1 772.217	3 274 939.906	138.500
WTW4	1 790.860	3 274 930.935	-0.330

CONCRETE SLAB SETTING OUT COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X
CS11	1 643.533	3 274 830.005

BENCH MARK COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
BPA	1 748.476	3 274 868.803	136.878
EW590	1 766.637	3 274 935.194	140.388
EW590A	1 743.982	3 274 875.184	137.336
OG1	1 768.948	3 274 941.197	140.542
OGS1	1 797.566	3 274 915.016	138.273
OGS2	1 779.555	3 274 876.071	135.786

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CONSULTANT PROJECT NO: DD170500

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Drawn :	N SINGH
Checked :	S SEWLAL
Approved :	D NARAINSAMY

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

Project No. (DD170500)

Drawing Title
BULK EARTHWORKS: PLATFORM LAYOUT & SETTING OUT

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

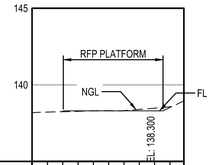
Scale : 1:500 **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/102	1 OF 1	B

Q:\AA\170500 - MKHIZWANA & OGUNJINI WTW\C - Pre-Construction\13 Drawings\Ogunjini\Civil & Mech\DWG\57270-C-102_ 03-REV B BULK EARTHWORKS PLATFORM LAYOUT.dwg | NAVJOT SINGH | 9/6/2023 1:53:45 PM

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Horizontal 1:200
Vertical 1:200

DATUM 135.000

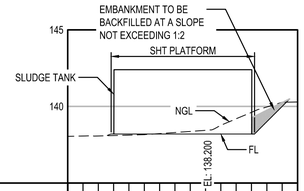


DISTANCE (m)	0	1	2	3	4	5	6	7	8	9	10
GROUND LEVEL	138.182	138.224	138.247	138.270	138.305	138.311	138.315	138.397	138.479	138.568	138.954
FINAL LEVELS			138.290	138.300	138.300	138.300	138.300	138.300	138.300	138.528	
CUT / FILL (NGL - FL)			-0.033	-0.030	0.005	0.011	0.015	0.097	0.179	0.040	

LONGSECTION RFP SECTION
FROM 0.000 TO 9.909

SCALES:
Horizontal 1:200
Vertical 1:200

DATUM 135.000

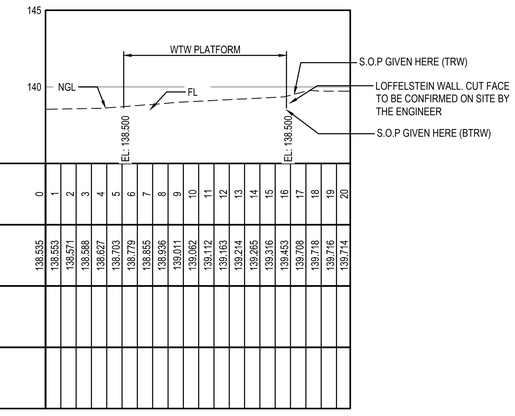


DISTANCE (m)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GROUND LEVEL	138.045	138.069	138.066	138.095	138.123	138.157	138.227	138.297	138.368	138.438	138.767	139.190	139.614	139.965	140.267	140.288
FINAL LEVELS				138.200	138.200	138.200	138.200	138.200	138.200	138.200	138.200	138.200	138.200	139.000	140.001	
CUT / FILL (NGL - FL)				-0.105	-0.077	-0.043	0.027	0.097	0.168	0.238	0.567	0.990	1.414	0.965	0.266	

LONGSECTION SHT SECTION
FROM 0.000 TO 15.009

SCALES:
Horizontal 1:200
Vertical 1:200

DATUM 135.000

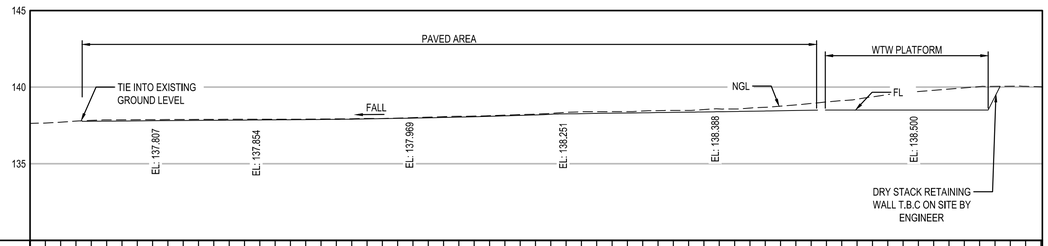


DISTANCE (m)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
GROUND LEVEL	138.535	138.553	138.571	138.588	138.627	138.703	138.779	138.855	138.936	139.011	139.062	139.112	139.163	139.214	139.265	139.316	139.453	139.708	139.718	139.716	139.714
FINAL LEVELS																					
CUT / FILL (NGL - FL)																					

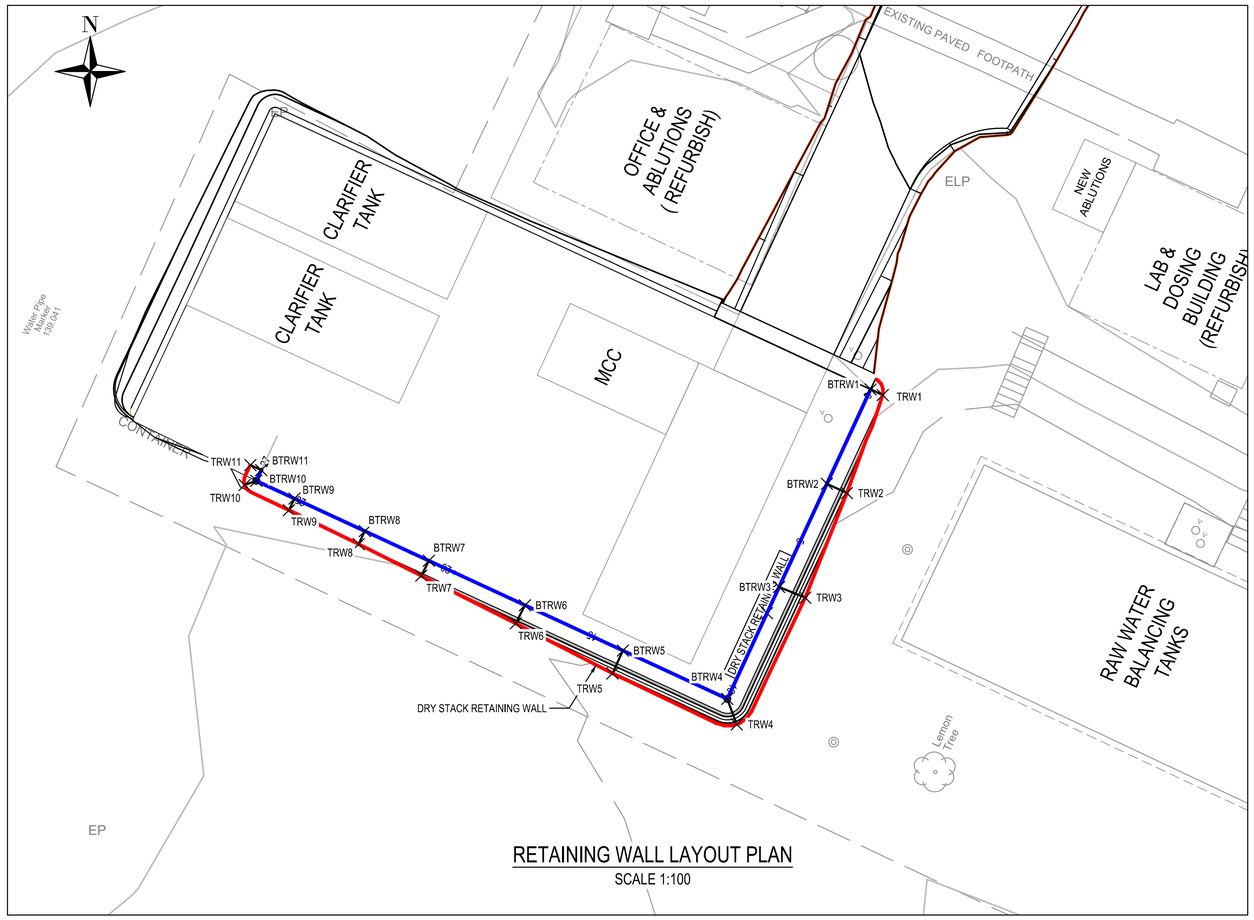
LONGSECTION WTW SECTION
FROM 0.000 TO 19.900

SCALES:
Horizontal 1:200
Vertical 1:200

DATUM 130.000



| DISTANCE (m) | 0 | 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 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---



RETAINING WALL LAYOUT PLAN
SCALE 1:100

LEGEND:

- TOP OF WALL
- BOTTOM OF WALL

NOTES:

1. Z-COODINATES ARE BULK EARTHWORKS FINISHED LEVELS
2. EXTENT OF EXCAVATION TO REMOVE AND REPLACE UNSUITABLE FOUNDING MATERIAL TO BE DETERMINED BY THE ENGINEER ON SITE.
3. CUT AND FILL BANKS 1:1. UNLESS STATED OTHERWISE (WHERE NO LOFFELSTEIN)
4. LOFFELSTEIN FILLS TO BE 8% CEMENT STABILISED G5 MATERIAL SELECTED FROM LOCAL EXCAVATIONS AND COMPACTED TO 98% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm.
5. ALL OTHER FILL TO BE G5 MATERIAL SELECTED FROM LOCAL EXCAVATIONS AND COMPACTED TO 95% MOD AASHTO IN LAYERS NOT EXCEEDING 150mm.
6. IN-SITU MATERIAL UNDER FILL TO BE BENCHED IN STEPS NOT LARGER THAN 300mm STEPS TO SUIT METHOD OF COMPACTION OF FILL.
7. DIMENSIONS OF PLATFORMS TO BE FINALISED AFTER CONTRACTORS EQUIPMENT DESIGN.
8. HIGH ELEVATION TOLERANCE ACCURACY REQUIRED FOR STORMWATER RUNOFF

BOTTOM OF RETAINING WALL SETTING COORDINATES & LEVELS WGS 84 WG 31

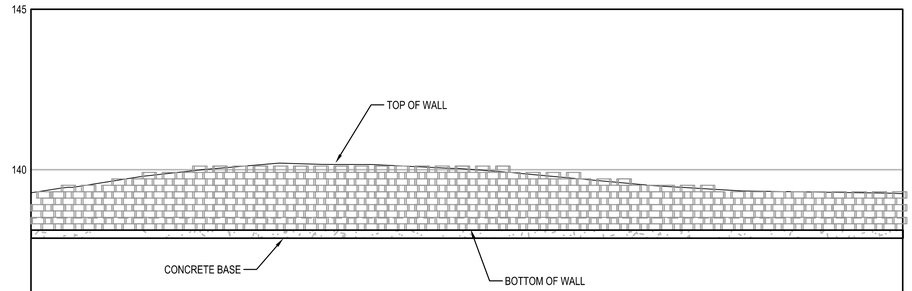
POINT	Y	X	Z
BTRW1	1 767.751	3 274 930.260	138.500
BTRW2	1 769.112	3 274 933.201	138.500
BTRW3	1 770.601	3 274 936.417	138.500
BTRW4	1 772.217	3 274 939.906	138.500
BTRW5	1 775.471	3 274 938.399	138.500
BTRW6	1 778.525	3 274 936.985	138.500
BTRW7	1 781.521	3 274 935.598	138.500
BTRW8	1 783.518	3 274 934.674	138.500
BTRW9	1 785.709	3 274 933.659	138.500
BTRW10	1 786.902	3 274 933.107	138.500
BTRW11	1 786.747	3 274 932.774	138.500

TOP OF RETAINING WALL SETTING COORDINATES & LEVELS WGS 84 WG 31

POINT	Y	X	Z
TRW1	1 767.372	3 274 930.435	139.334
TRW2	1 768.489	3 274 933.490	139.874
TRW3	1 769.786	3 274 936.750	140.258
TRW4	1 771.921	3 274 940.699	140.183
TRW5	1 775.796	3 274 939.110	140.062
TRW6	1 778.812	3 274 937.553	139.772
TRW7	1 781.757	3 274 936.066	139.547
TRW8	1 783.708	3 274 935.080	139.398
TRW9	1 785.881	3 274 934.023	139.302
TRW10	1 787.265	3 274 933.239	139.271
TRW11	1 787.084	3 274 932.616	139.245

LEGEND:

- TOP OF WALL
- BOTTOM OF WALL



SCALES:
Horizontal 1:100
Vertical 1:100

DATUM 135.000

DISTANCE (m)	0	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	27.181
TOP OF WALL	139.280	139.434	139.559	139.716	139.849	139.960	140.055	140.140	140.197	140.169	140.161	140.143	140.094	140.046	139.987	139.906	139.814	139.723	139.631	139.539	139.466	139.407	139.347	139.324	139.309	139.293	139.278	139.268	139.268
BOTTOM OF WALL	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500	138.500
WALL HEIGHT	0.780	0.934	1.059	1.216	1.349	1.460	1.555	1.640	1.697	1.669	1.661	1.643	1.594	1.546	1.487	1.406	1.314	1.223	1.131	1.039	0.966	0.907	0.847	0.824	0.809	0.793	0.778	0.768	0.768

LONGSECTION DRY STACK RETAINING WALL
FROM 0.000 TO 27.181

ISSUED FOR TENDER

CONSULTANT PROJECT NO: DD170500

INGEROP
Inventing for tomorrow
CONSULTING ENGINEERS AND PROJECT MANAGERS
2nd Floor, 53 Richefond Circle,
Ridgeside Office Park,
Umhlanga Rocks,
Tel: (031) 266 8363
Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za
P.O. Box 748
Westville
3630

Designed :	S SEWLAL
Drawn :	N SINGH
Checked :	S SEWLAL
Approved :	D NARAINSAMY

REVISIONS

Revision	Date	Description
B	03-05-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

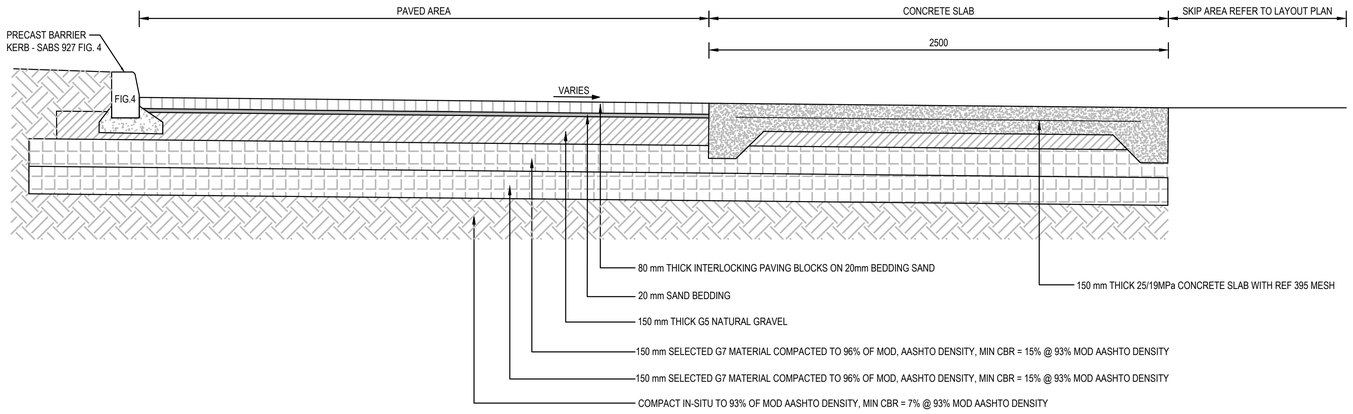
Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (DD170500)

Drawing Title
BULK EARTHWORKS: RETAINING WALL LONGITUDINAL SECTION AND SETTING OUT

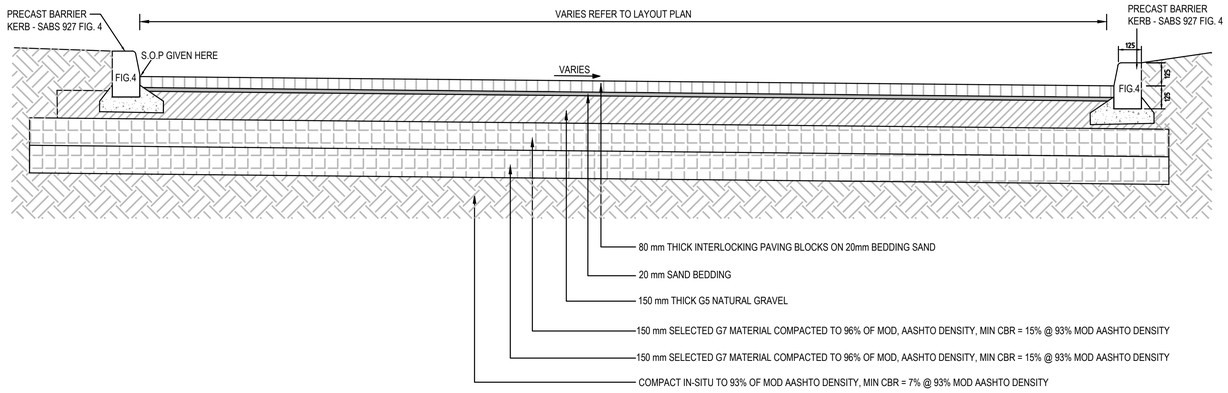
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli
Scale : 1:500	**Date:** AUGUST 2023
Drawing No. 57270/C/104	**Sheet** 1 OF 1 — **Rev.** B

Q:\AA170500 - MKHIZWANA & OGUNJINI WTWC - Pre-Construction\13 Drawings\Ogunjini\Civil & Mech\DWG\57270-C-104-REV0 BULK EARTHWORKS RET WALL LONG SECTION AND SETTING OUT.dwg | NAVJOT SINGH | 9/6/2023 1:56:38 PM



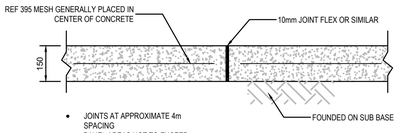
TYPICAL PAVING AREA AND CONCRETE SLAB CROSS SECTION

N.T.S.



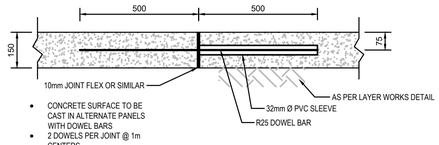
TYPICAL PAVING AREA CROSS SECTION

N.T.S.



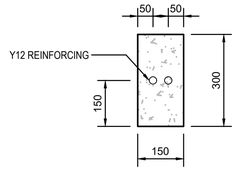
TYPICAL CONSTRUCTION JOINT DETAIL

SCALE 1:10



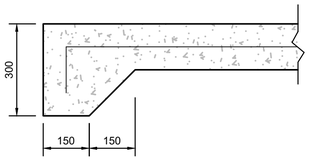
TYPICAL DOWEL JOINT DETAIL

SCALE 1:10



EDGE BEAM DETAIL

SCALE 1:10



CONCRETE SLAB EDGE ANCHOR DETAIL

SCALE 1:10

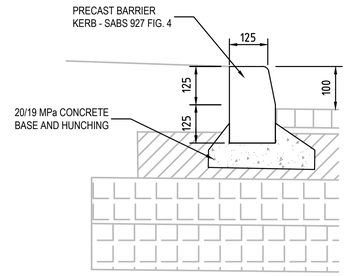
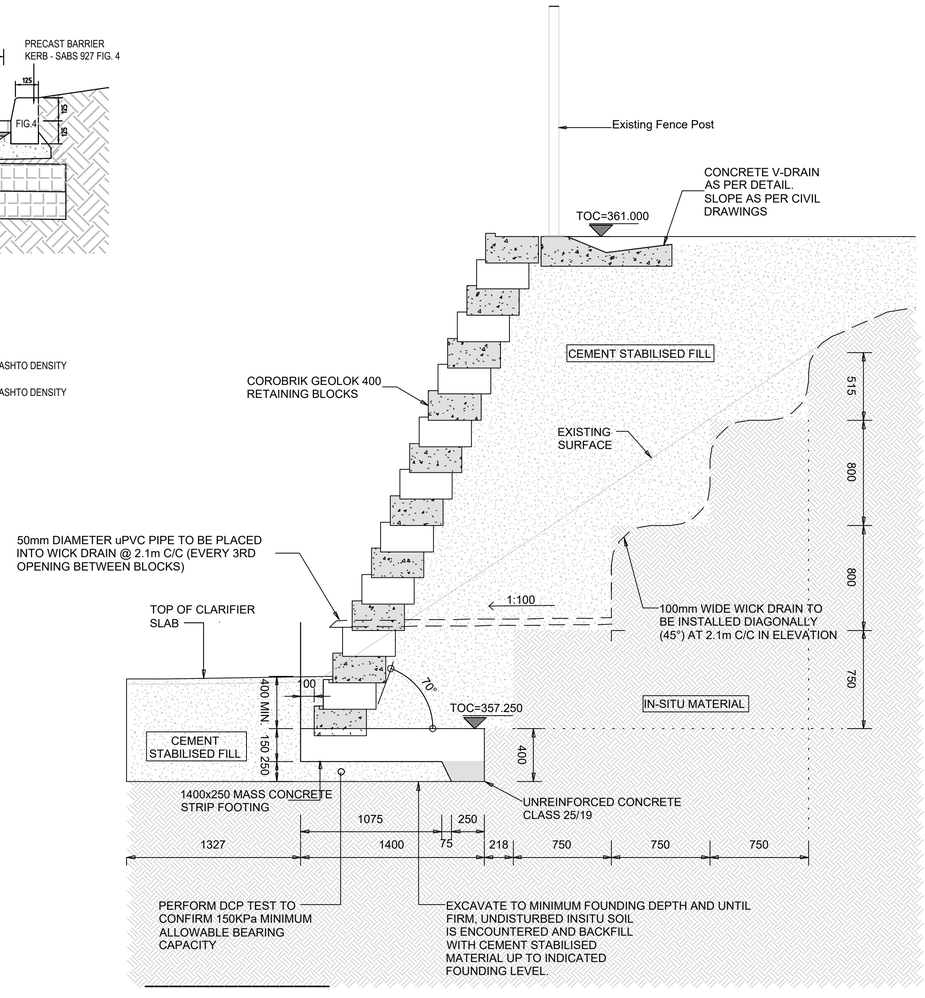


FIGURE 4 KERB DETAIL

SCALE 1:10



TYPICAL SECTION THROUGH GEOLOCK WALL U100

NTS

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE
Office: Delmat House, 2nd Floor,
27-29 Jan Hofmeyer Road,
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Tel:+27 31 2678560 Fax:+27 31 266 3310
Web:www.gibb.co.za

Designed :	S PILLAY
Drawn :	S PILLAY
Checked :	D SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

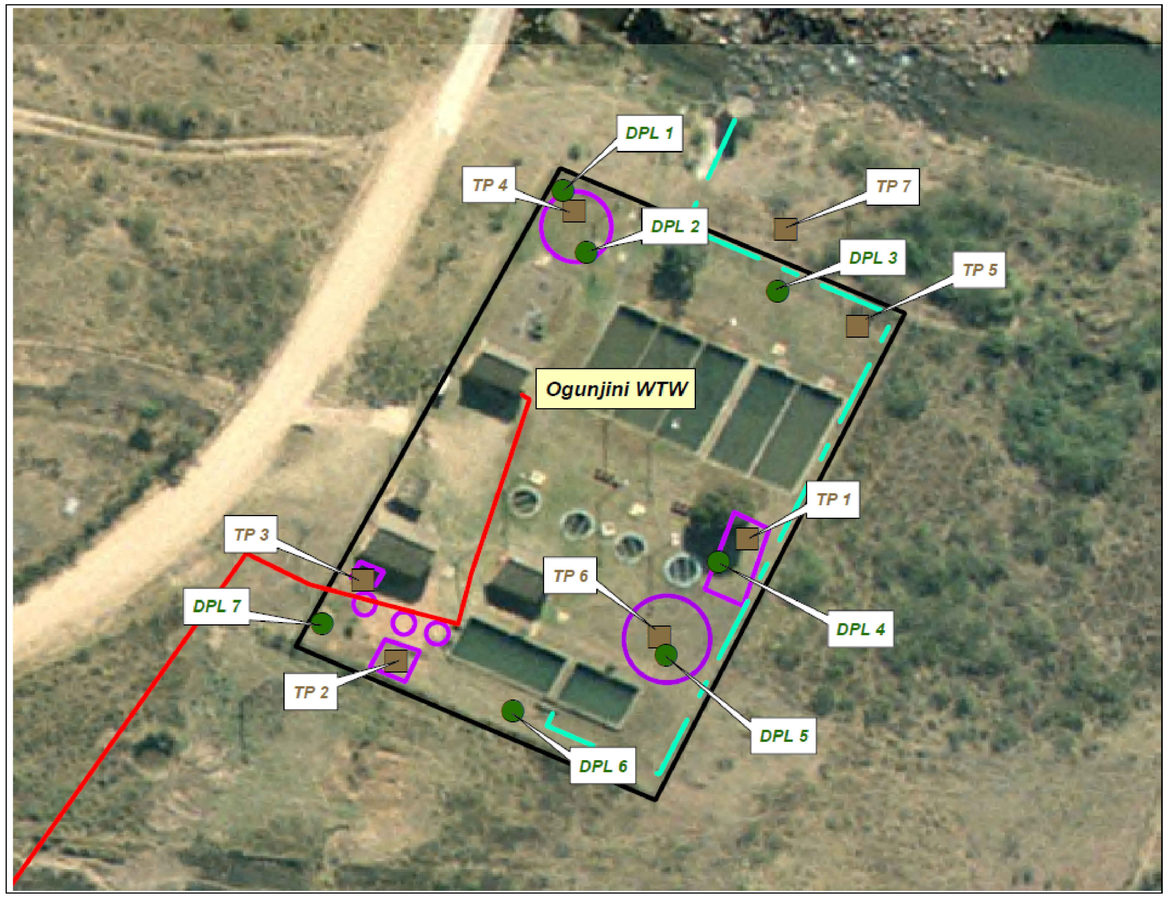
Drawing Title
TYPICAL DETAILS FOR RETAINING WALLS AND PAVED AREAS

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/105	1 OF 1	B

Q:\AA\37500. MKHIZWANA & OGUNJINI WTW\C. Pre-Construction\13 Drawings\Digs\dwt\Civil & Mech\DWG\57270-C-105 Rev3 TYPICAL DETAILS FOR RETAINING WALLS AND PAVED AREAS.dwg | TYRELL MOODLEY | 2023/09/06 11:15:15 AM



SITE PLAN OF GEOTECHNICAL INVESTIGATION
NTS

Legend:

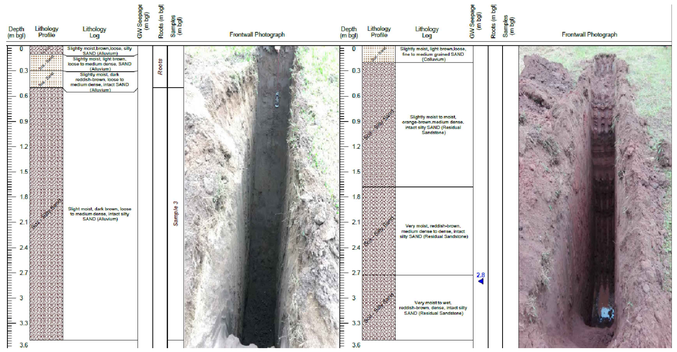
N

- DPL
- Trial Pit
- Proposed Structures
- Raw Water Rising Main Pipeline
- Clear Water Rising Main Pipeline

GEOMEASURE GROUP
Geotechnical, Environmental & Geophysical Consultants

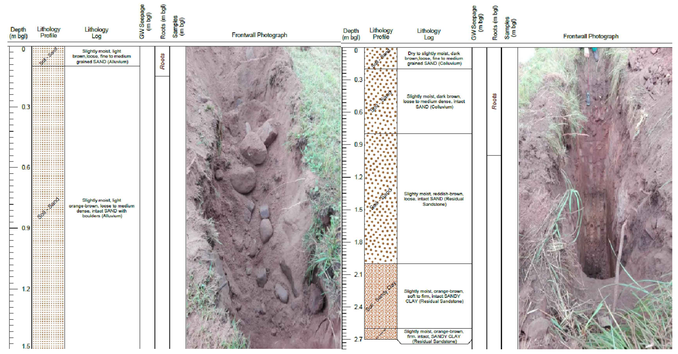
OGUNJINI WTW GEOTECHNICAL INVESTIGATION

SITE PLAN



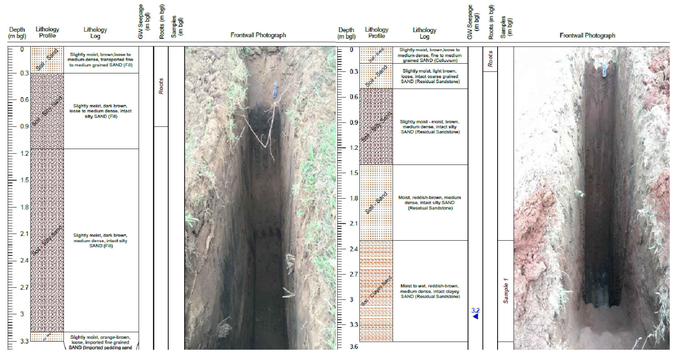
TEST PIT #5
NTS

TEST PIT #6
NTS



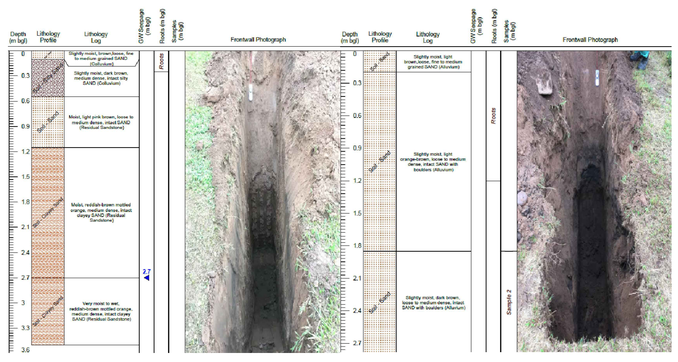
TEST PIT #7
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TEST PIT #8
NTS



TEST PIT #1
NTS

TEST PIT #2
NTS



TEST PIT #3
NTS

TEST PIT #4
NTS

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

Office: Delmat House, 2nd Floor,
27-29 Jan Hofmeyer Road,
Westville, Durban 3630
PO Box 1365, Westville, Durban 3630

Tel:+27 31 2678560 Fax:+27 31 266 3310
Web:www.gibb.co.za

Designed : D DAVIES

Drawn : D DAVIES

Checked : D SHAW

Approved : N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title
GEOTECHNICAL INVESTIGATION

Works Project Manager: A. Pillay

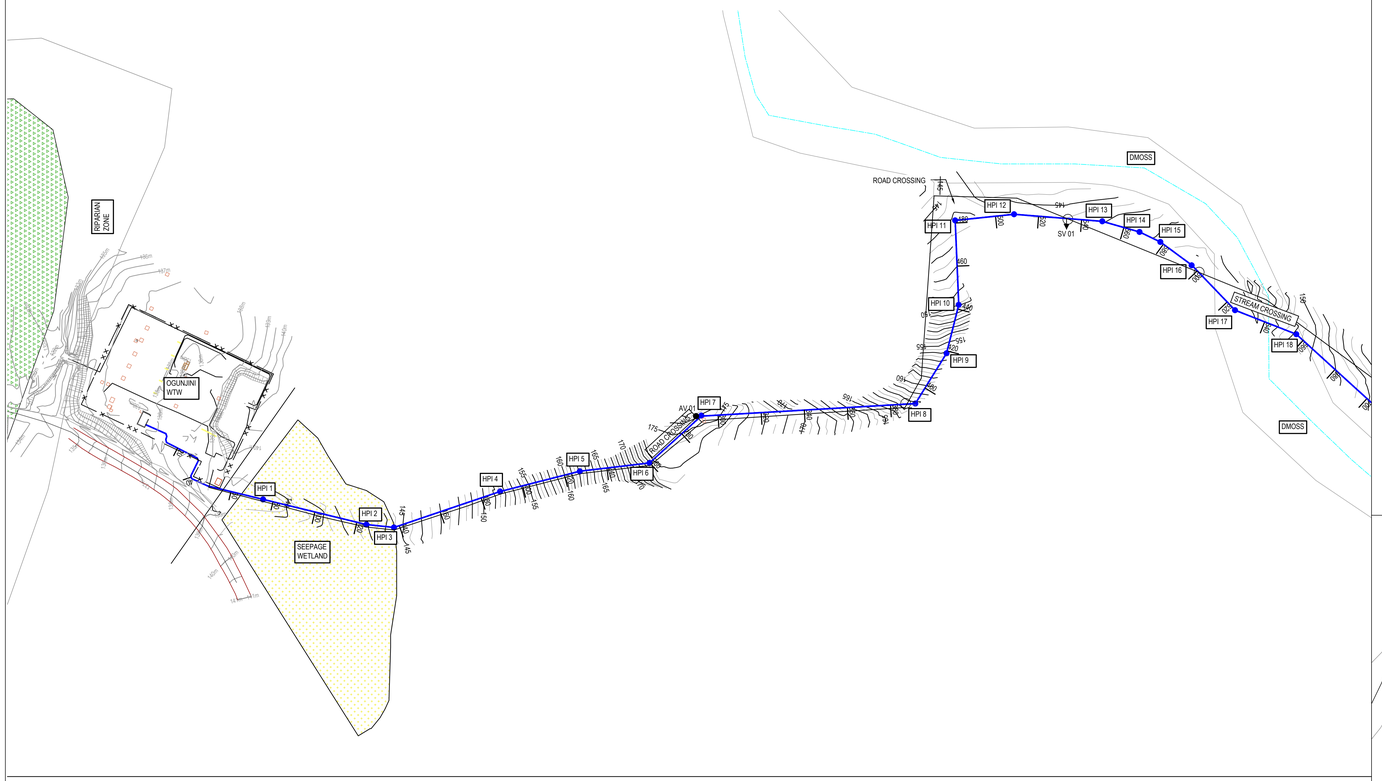
Deputy Head: Engineering: B. Soni

Head: Water and Sanitation: E. Mseweli

Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/106	1 OF 1	B

O:\AA170500 - MKHIZWANA & OGUNJINI WTW\C. Pre-Construction\13 Drawings\Ogunjini\Civil & Mech\DWG\57270-C-106-REV0 GEOTECHNICAL INVESTIGATION.dwg | TYRELL MOODLEY | 2023/09/06 11:19:29 AM

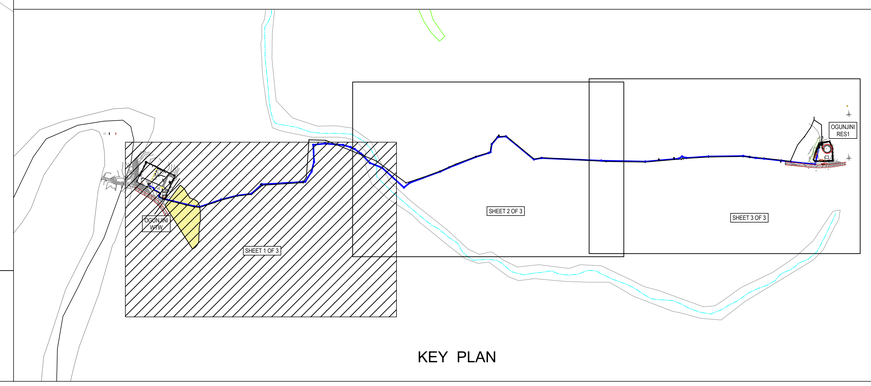


RISING MAIN LAYOUT PLAN
SCALE 1:1000

RISING MAIN SETTING OUT COORDINATES
WGS 84 WG 31

NAME	Y-COORD	X-COORD
HPI 01	1798.364	3274952.630
HPI 02	1810.018	3275000.519
HPI 03	1811.364	3275013.250
HPI 04	1794.715	3275062.392
HPI 05	1785.376	3275099.325
HPI 06	1781.483	3275131.589
HPI 07	1759.883	3275155.416
HPI 08	1753.977	3275254.688
HPI 09	1730.695	3275269.143
HPI 10	1708.256	3275274.786
HPI 11	1669.140	3275273.134
HPI 12	1666.386	3275300.363
HPI 13	1669.590	3275341.280
HPI 14	1674.500	3275358.495
HPI 15	1679.220	3275368.155
HPI 16	1689.958	3275382.663
HPI 17	1710.741	3275402.765
HPI 18	1721.867	3275431.146
HPI 19	1767.127	3275480.795
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HPI 21	1730.263	3275564.182

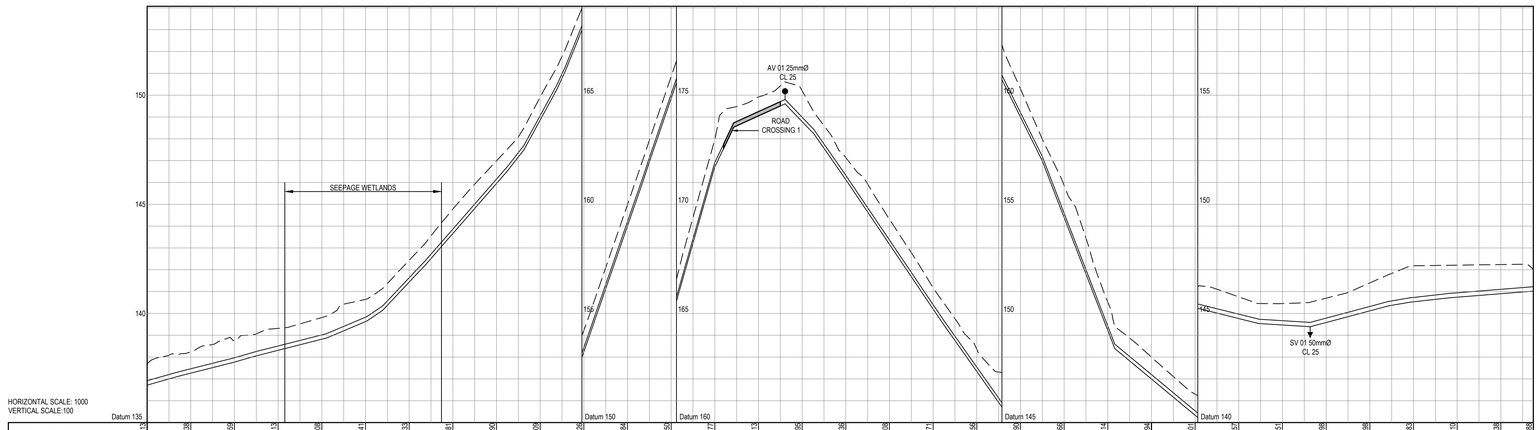
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HPI 25	1685.988	3275678.994
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HPI 27	1651.592	3275695.555
HPI 28	1650.115	3275714.473
HPI 29	1702.689	3275778.428
HPI 30	1699.575	3275796.083
HPI 31	1705.547	3275932.534
HPI 32	1707.578	3276033.804
HPI 33	1701.095	3276109.605
HPI 34	1696.192	3276117.659
HPI 35	1699.308	3276126.917
HPI 36	1695.979	3276178.128
HPI 37	1694.919	3276257.614
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HPI 39	1700.932	3276305.436
HPI 40	1705.380	3276345.191
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KEY PLAN

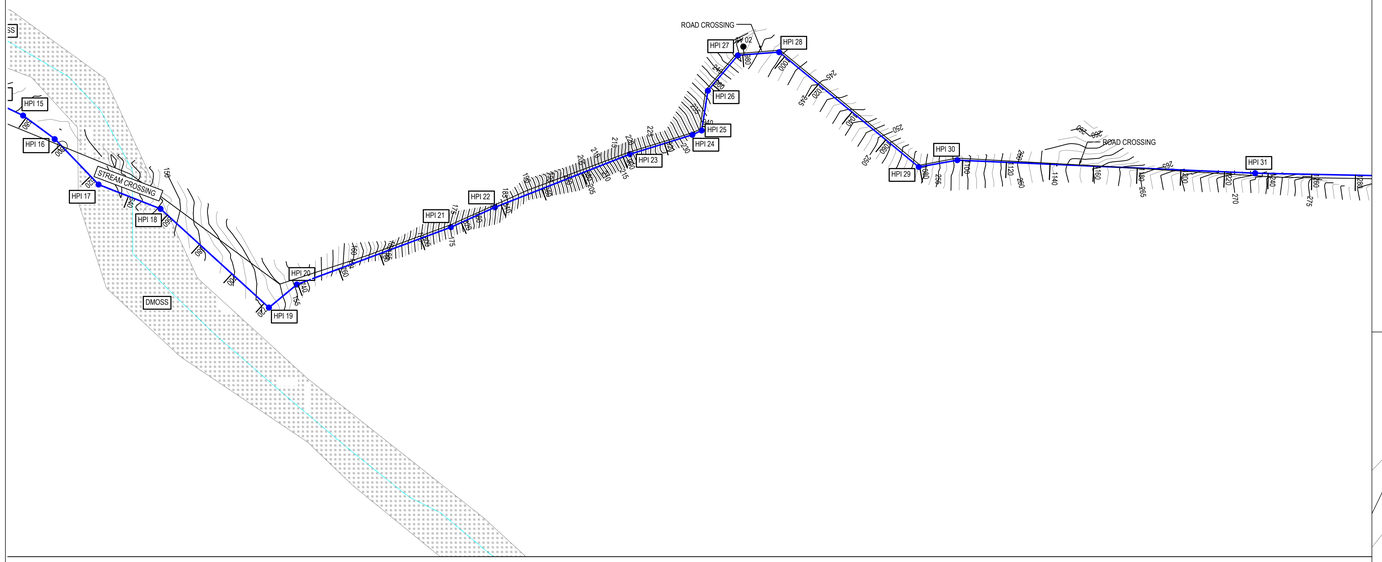
LEGEND:
- PROPOSED RISING MAIN
- EXISTING MAIN
- RIPARIAN ZONE
- SEEPAGE WETLAND
- WATERCOURSE B-SECTION
- DMOSS
- AIR VALVE
- SCOUR VALVE

NOTE:
1.SEE STANDARD DETAIL DRAWING FOR AIR VALVES AND SCOUR VALVES (DRAWING 210).



HORIZONTAL SCALE: 1000
VERTICAL SCALE:100

| | | |



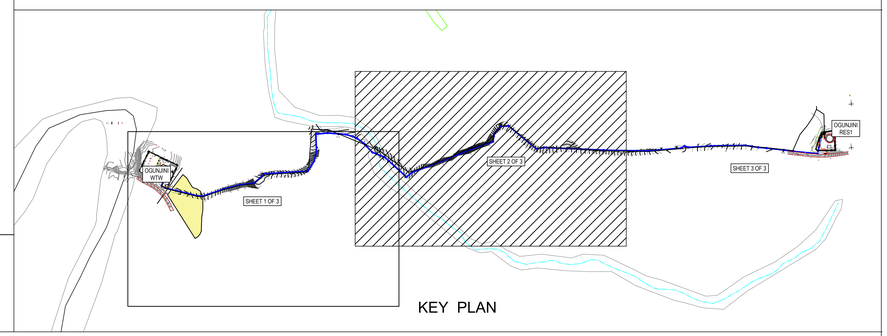
RISING MAIN LAYOUT PLAN

SCALE 1:1000

RISING MAIN SETTING OUT COORDINATES
WGS 84 WG 31

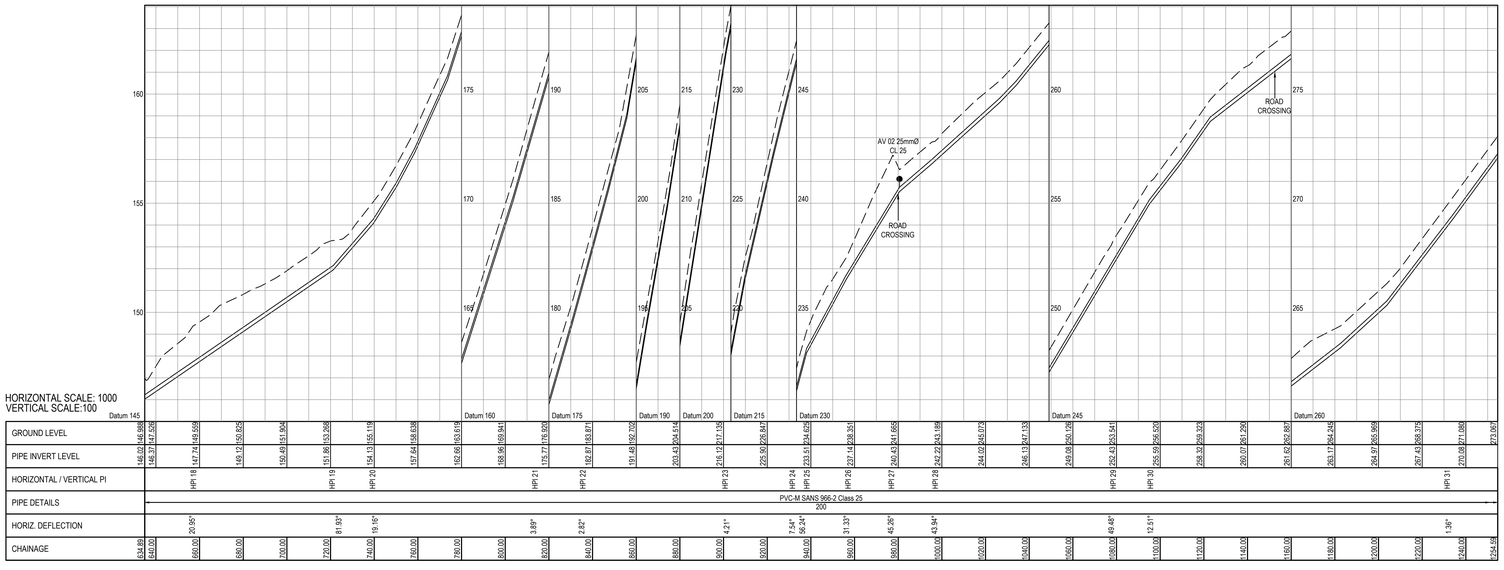
NAME	Y-COORD	X-COORD
HPI 01	1798.364	3274952.630
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HPI 03	1811.364	3275013.250
HPI 04	1794.715	3275062.392
HPI 05	1785.376	3275099.325
HPI 06	1781.483	3275131.589
HPI 07	1759.883	3275155.416
HPI 08	1753.977	3275254.688
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HPI 12	1666.386	3275300.363
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HPI 20	1756.530	3275493.615
HPI 21	1730.263	3275564.182

NAME	Y-COORD	X-COORD
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HPI 23	1696.847	3275646.110
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HPI 25	1685.988	3275678.994
HPI 26	1667.704	3275681.873
HPI 27	1651.592	3275695.555
HPI 28	1650.115	3275714.473
HPI 29	1702.689	3275778.428
HPI 30	1699.575	3275796.083
HPI 31	1705.547	3275932.534
HPI 32	1707.578	3276033.804
HPI 33	1701.095	3276109.605
HPI 34	1696.192	3276117.659
HPI 35	1699.308	3276126.917
HPI 36	1695.979	3276178.128
HPI 37	1694.919	3276257.614
HPI 38	1699.337	3276286.524
HPI 39	1700.932	3276305.436
HPI 40	1705.380	3276345.191
HPI 41	1708.417	3276367.129
HPI 42	1713.758	3276422.419
HPI 43	1676.035	3276431.174



KEY PLAN

NOTE:
1.SEE STANDARD DETAIL DRAWING FOR AIR VALVES AND SCOUR VALVES (DRAWING 210).



RISING MAIN LONGITUDINAL SECTION
FOR CH 634.89 to CH 1254.59

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

Office: Delmat House, 2nd Floor,
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Designed :	Q CLOETE
Drawn :	J BHIKA
Checked :	D SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

REFERENCES

DRAWING NO.	TITLE
57270/C/300	AIR VALVE AND SCOUR VALVE DETAILS
57270/C/301	PIPELINE TYPICAL DETAILS
57270/C/302	WATERCOURSE CROSSING DETAILS

LEGEND:
- PROPOSED RISING MAIN
- EXISTING MAIN
- RIPARIAN ZONE
- SEEPAGE WETLAND
- WATERCOURSE B-SECTION
- DMOSS
- AIR VALVE
- SCOUR VALVE

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

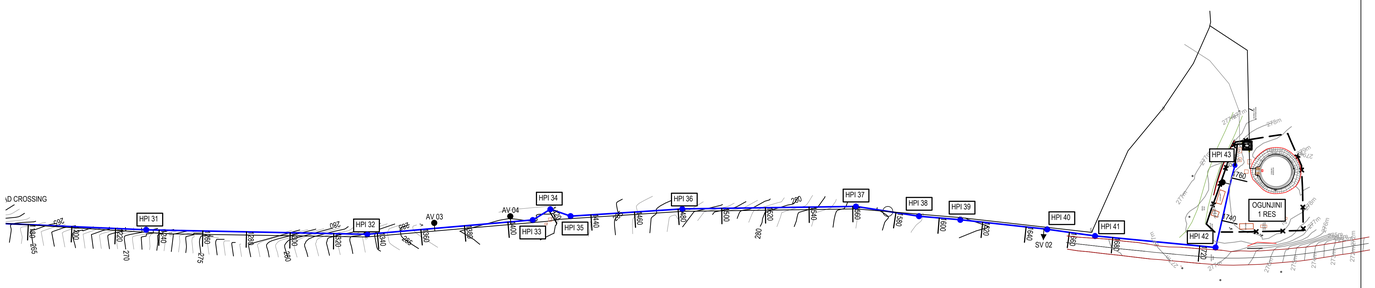
Drawing Title
CLEAR WATER RISING MAIN TO OGUNJINI 1 RESERVOIR

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli
Scale : 1 : 1	**Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/200	2 OF 3	B

ISSUED FOR TENDER

O:\JAX\7000- MKHOMAS OGUNJINI WTWC - Pre-Construction\3 Drawings\Dgn\HCs\4 Mains\57270\C270-200 - Rsm_Clear Water Rising Main to Ogunjini 1 Reservoir REV.dwg | TYRELL MOODLEY | 2023/09/08 1:28:00 AM



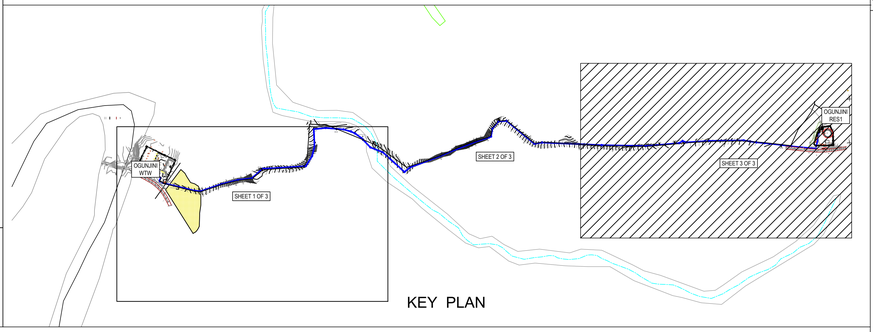
RISING MAIN LAYOUT PLAN

SCALE 1:1000

RISING MAIN SETTING OUT COORDINATES
WGS 84 WG 31

NAME	Y-COORD	X-COORD
HPI 01	1798.364	3274962.630
HPI 02	1810.018	3275000.519
HPI 03	1811.364	3275013.250
HPI 04	1794.715	3275062.392
HPI 05	1785.376	3275099.325
HPI 06	1781.483	3275131.589
HPI 07	1759.883	3275155.416
HPI 08	1753.977	3275254.688
HPI 09	1730.695	3275269.143
HPI 10	1708.256	3275274.786
HPI 11	1669.140	3275273.134
HPI 12	1666.386	3275300.363
HPI 13	1669.590	3275341.280
HPI 14	1674.500	3275358.495
HPI 15	1679.220	3275368.155
HPI 16	1689.958	3275382.663
HPI 17	1710.741	3275402.765
HPI 18	1721.867	3275431.146
HPI 19	1767.127	3275480.795
HPI 20	1756.530	3275493.615
HPI 21	1730.263	3275564.182

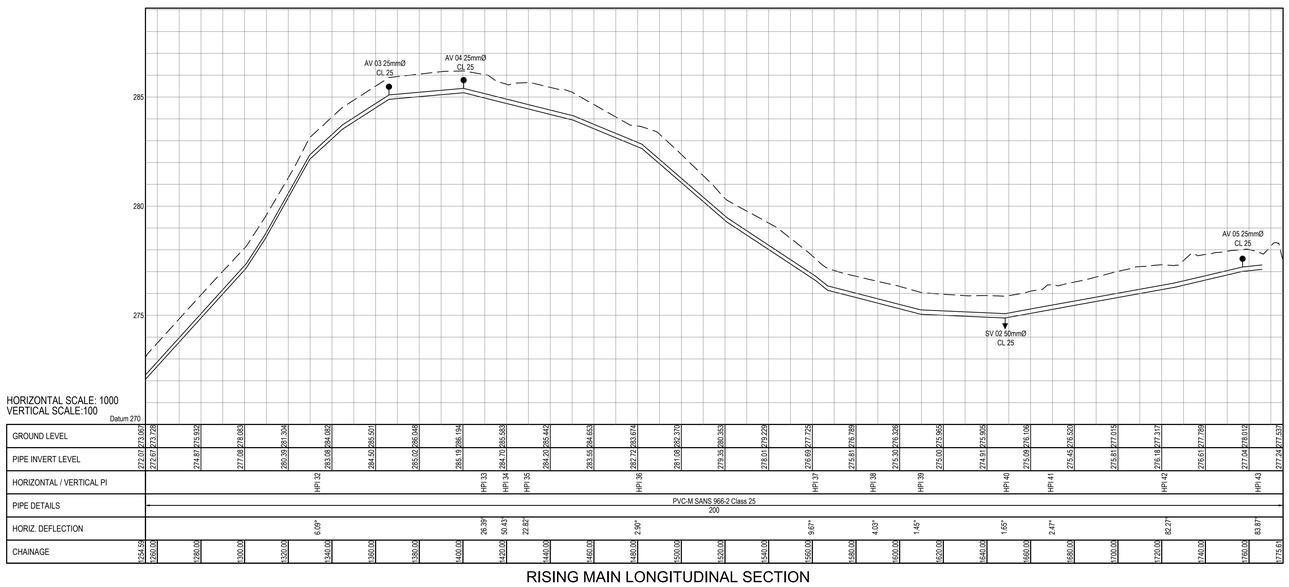
NAME	Y-COORD	X-COORD
HPI 22	1721.198	3275584.252
HPI 23	1696.847	3275646.110
HPI 24	1687.922	3275674.811
HPI 25	1685.988	3275678.994
HPI 26	1667.704	3275681.873
HPI 27	1651.592	3275695.555
HPI 28	1650.115	3275714.473
HPI 29	1702.689	3275778.428
HPI 30	1699.575	3275796.083
HPI 31	1705.547	3275932.534
HPI 32	1707.578	3276033.804
HPI 33	1701.095	3276109.605
HPI 34	1696.192	3276117.659
HPI 35	1699.308	3276126.917
HPI 36	1695.979	3276178.128
HPI 37	1694.919	3276257.614
HPI 38	1699.337	3276286.524
HPI 39	1700.932	3276305.436
HPI 40	1705.380	3276345.191
HPI 41	1708.417	3276367.129
HPI 42	1713.758	3276422.419
HPI 43	1676.035	3276431.174



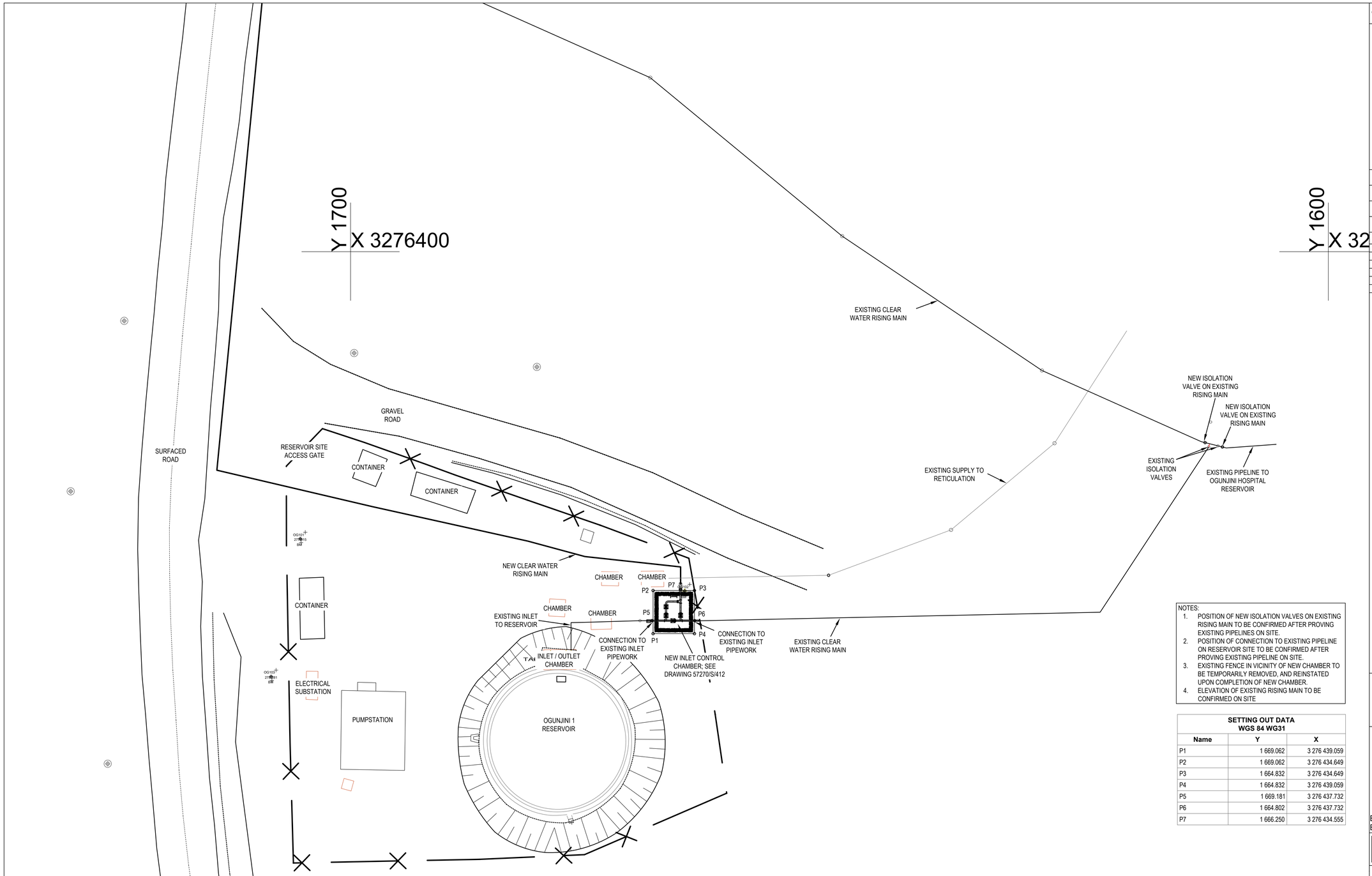
KEY PLAN

LEGEND:
- PROPOSED RISING MAIN
- EXISTING MAIN
- RIPARIAN ZONE
- SEEPAGE WETLAND
- WATERCOURSE B-SECTION
- DMOSS
- AIR VALVE
- SCOUR VALVE

NOTE:
1.SEE STANDARD DETAIL DRAWING FOR AIR VALVES AND SCOUR VALVES (DRAWING 210).



| | | |



NOTES:
1. POSITION OF NEW ISOLATION VALVES ON EXISTING RISING MAIN TO BE CONFIRMED AFTER PROVING EXISTING PIPELINES ON SITE.
2. POSITION OF CONNECTION TO EXISTING PIPELINE ON RESERVOIR SITE TO BE CONFIRMED AFTER PROVING EXISTING PIPELINE ON SITE.
3. EXISTING FENCE IN VICINITY OF NEW CHAMBER TO BE TEMPORARILY REMOVED, AND REINSTATED UPON COMPLETION OF NEW CHAMBER.
4. ELEVATION OF EXISTING RISING MAIN TO BE CONFIRMED ON SITE

SETTING OUT DATA
WGS 84 WG31

Name	Y	X
P1	1 669.062	3 276 439.059
P2	1 669.062	3 276 434.649
P3	1 664.832	3 276 434.649
P4	1 664.832	3 276 439.059
P5	1 669.181	3 276 437.732
P6	1 664.802	3 276 437.732
P7	1 666.250	3 276 434.555

CONSULTANT PROJECT NO: J36094

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ENGINEERING & ARCHITECTURE
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Designed : D DAVIES
Drawn : D DAVIES
Checked : D SHAW
Approved : N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION
ETHEKWINI MUNICIPALITY
ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

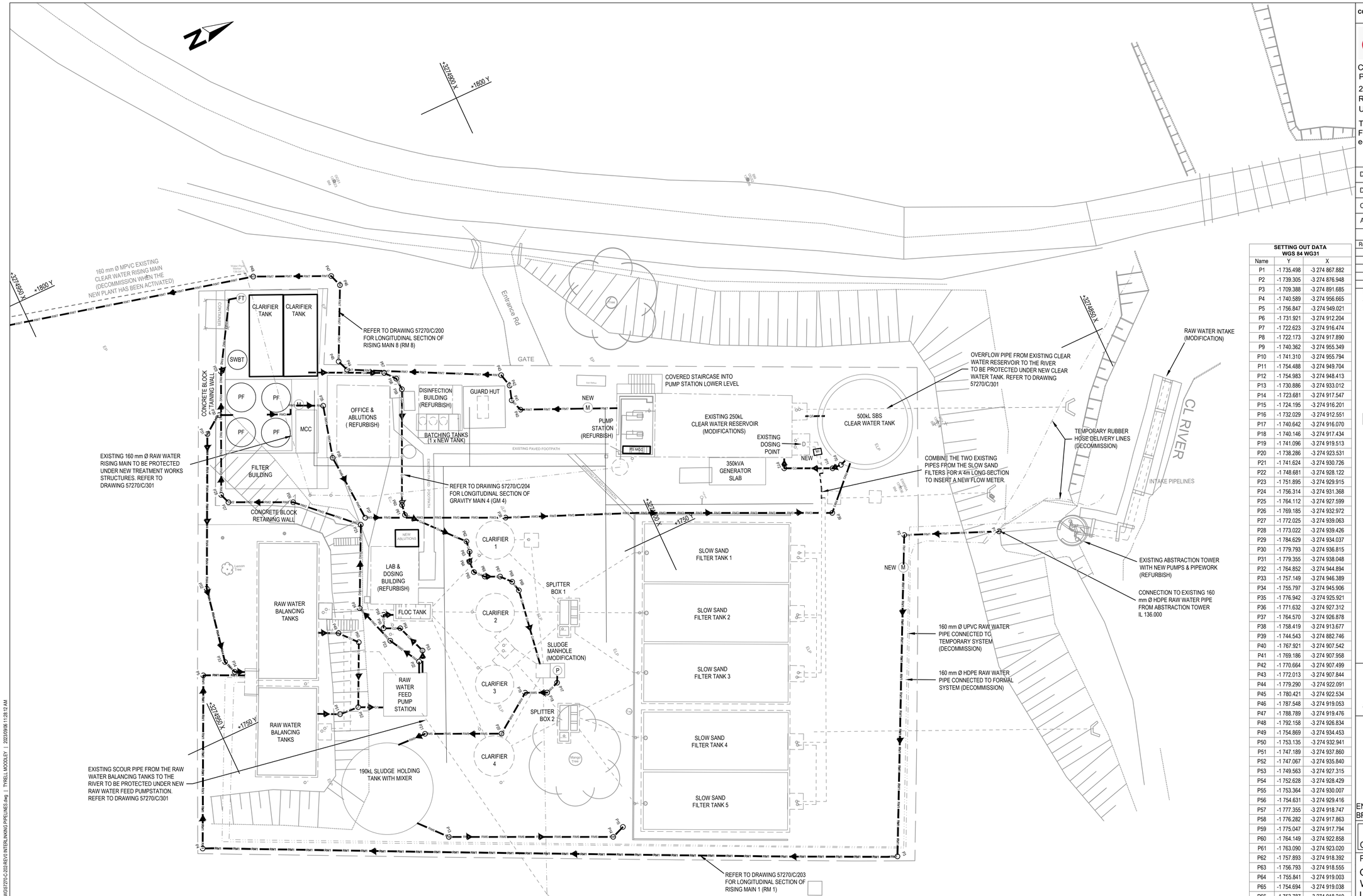
Project No. (X6307)

Drawing Title
OGUNJINI 1 CLEAR WATER RESERVOIR SITE: RISING MAIN TI-IN CHAMBER &PIPE MODIFICATIONS

Works Project Manager: A. Pillay
Deputy Head: Engineering: B. Soni
Head: Water and Sanitation: E. Msweli

Scale : 1:200 **Date:** AUGUST 2023

Drawing No. 57270/C/201 **Sheet** 1 OF 1 **Rev.** B



PIPELINE	DESCRIPTION	PIPE NOMINAL DIAMETER	PIPE MATERIAL	TOTAL LENGTH
G1 G1	G 1 : RAW WATER BALANCING TANK TO FEED PUMP STATION	200mm	HDPE PN10 (SDR17)	14m + 4m
G2 G2	G 2 : FEED PUMP STATION TO EXISTING FLOCCULATION TANK	140mm	uPVC CLASS 12	10m
G3 G3	G 3 : CLEAR WATER FEED FROM SBS TANK	125mm	GMS LINED WITH FBE	7m
G4 G4	G 4 : WASTED SLUDGE FROM NEW PLANT TO SLUDGE MANHOLE	160mm	uPVC CLASS 12	48m
G5 G5	G 5 : SBS TANK SCOUR / OVERFLOW PIPE TO EXISTING CHAMBER OF CLEAR WATER RESERVOIR	150mm	GMS LINED WITH FBE	2m

PIPELINE	DESCRIPTION	PIPE NOMINAL DIAMETER	PIPE MATERIAL	TOTAL LENGTH
RM1 RM1	RM 1 : SEE DRAWING 57270 201 RAW WATER RISING MAIN	200mm	HDPE PN10 (SDR17)	137m
RM2 RM2	RM 2 : RAW WATER FEED PUMP STATION TO NEW PLANT	140mm	HDPE PN10 (SDR17)	50m
RM3 RM3	RM 3 : FILTERED WATER FEED TO SBS CLEAR WATER TANK	160mm	HDPE PN10 (SDR17)	72m
RM4 RM4	RM 4 : SPENT BACKWASH WATER FROM NEW PLANT	160mm	uPVC CLASS 12	29m
RM5 RM5	RM 5 : WASTED SLUDGE TO SLUDGE HOLDING TANK	160mm	HDPE PN10 (SDR17)	20m
RM6 RM6	RM 6 :SUPERNATANT FLOW TO EXISTING MANHOLE	75mm	HDPE PN10 (SDR17)	36m
RM7 RM7	RM 7 : SEE DRAWING 57270 200 CLEAR WATER RISING MAIN	200mm	uPVC CLASS 25	1700m

SETTING OUT DATA
WGS 84 WG31

Name	Y	X
P1	-1 735.498	-3 274 867.882
P2	-1 739.305	-3 274 876.948
P3	-1 709.388	-3 274 891.685
P4	-1 740.589	-3 274 956.665
P5	-1 756.847	-3 274 949.021
P6	-1 731.921	-3 274 912.204
P7	-1 722.623	-3 274 916.474
P8	-1 722.173	-3 274 917.890
P9	-1 740.362	-3 274 955.349
P10	-1 741.310	-3 274 955.794
P11	-1 754.488	-3 274 949.704
P12	-1 754.983	-3 274 948.413
P13	-1 730.886	-3 274 933.012
P14	-1 723.681	-3 274 917.547
P15	-1 724.195	-3 274 916.201
P16	-1 732.029	-3 274 912.551
P17	-1 740.642	-3 274 916.070
P18	-1 740.146	-3 274 917.434
P19	-1 741.096	-3 274 919.513
P20	-1 738.286	-3 274 923.531
P21	-1 741.624	-3 274 930.726
P22	-1 748.681	-3 274 928.122
P23	-1 751.895	-3 274 929.915
P24	-1 756.314	-3 274 931.368
P25	-1 764.112	-3 274 927.599
P26	-1 769.185	-3 274 932.972
P27	-1 772.025	-3 274 939.063
P28	-1 773.022	-3 274 939.426
P29	-1 784.629	-3 274 934.037
P30	-1 779.793	-3 274 936.815
P31	-1 779.355	-3 274 938.048
P32	-1 764.852	-3 274 944.894
P33	-1 757.149	-3 274 946.389
P34	-1 755.797	-3 274 945.906
P35	-1 776.942	-3 274 925.921
P36	-1 771.632	-3 274 927.312
P37	-1 764.570	-3 274 926.878
P38	-1 758.419	-3 274 913.677
P39	-1 744.543	-3 274 882.746
P40	-1 767.921	-3 274 907.542
P41	-1 769.186	-3 274 907.958
P42	-1 770.664	-3 274 907.499
P43	-1 772.013	-3 274 907.844
P44	-1 779.290	-3 274 922.091
P45	-1 780.421	-3 274 922.534
P46	-1 787.548	-3 274 919.053
P47	-1 788.789	-3 274 919.476
P48	-1 792.158	-3 274 926.834
P49	-1 754.869	-3 274 934.453
P50	-1 753.135	-3 274 932.941
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P52	-1 747.067	-3 274 935.840
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P54	-1 752.628	-3 274 928.429
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P56	-1 754.631	-3 274 929.416
P57	-1 777.355	-3 274 918.747
P58	-1 776.282	-3 274 917.863
P59	-1 775.047	-3 274 917.794
P60	-1 764.149	-3 274 922.858
P61	-1 763.090	-3 274 923.020
P62	-1 757.893	-3 274 918.392
P63	-1 756.793	-3 274 918.555
P64	-1 755.841	-3 274 919.003
P65	-1 754.694	-3 274 919.038
P66	-1 753.787	-3 274 918.210
P67	-1 753.119	-3 274 916.777
P68	-1 752.102	-3 274 915.863
P69	-1 751.002	-3 274 915.609
P70	-1 748.682	-3 274 879.825
P71	-1 748.722	-3 274 880.755
P72	-1 750.846	-3 274 885.310

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

INGEROP Inventing for tomorrow
CONSULTING ENGINEERS AND PROJECT MANAGERS
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Umhlanga Rocks,
Tel: (031) 266 8363
Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za
P.O. Box 748
Westville
3630

Designed :	S SEWLAL
Drawn :	N SINGH
Checked :	S SEWLAL
Approved :	D NARAINSAMY

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

LEGEND
- EXISTING INFRASTRUCTURE
- NEW PROPOSED INFRASTRUCTURE
- SERVICE WATER RETICULATION
- EXISTING PIPELINES (RISING MAINS & GRAVITY)
- EXISTING PIPELINES TO BE DECOMMISSIONED
- (M) FLOW METER
- (D) DOSING POINT
- (P) PUMP STATION
- PROPOSED PAVING AREA

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION
ETHEKWINI MUNICIPALITY
ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title
INTERCONNECTING PIPELINES

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

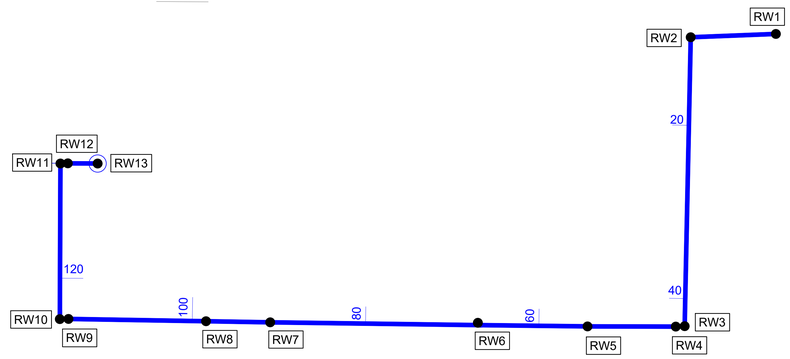
Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/202	1 OF 1	B

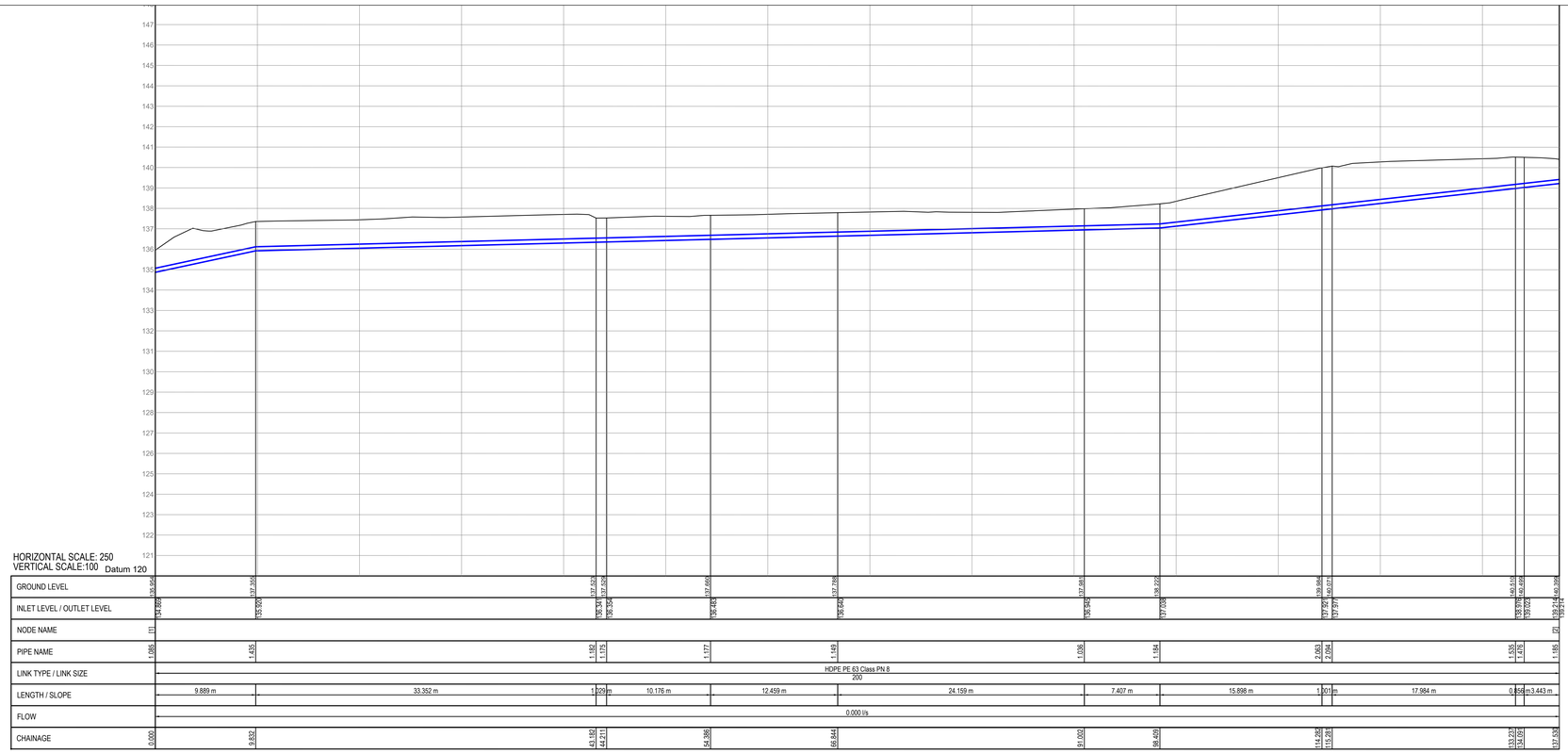
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RAW WATER RISING MAIN SETTING OUT COORDINATES

NAME	Y-COORD	X-COORD	ELEV
RW1	-1735.51	3274867.89	134.87
RW2	-1739.32	3274876.96	135.92
RW3	-1709.40	3274891.68	136.34
RW4	-1709.79	3274892.63	136.35
RW5	-1714.11	3274901.85	136.48
RW6	-1719.51	3274913.07	136.64
RW7	-1730.01	3274934.83	136.94
RW8	-1733.25	3274941.49	137.04
RW9	-1740.20	3274955.76	137.92
RW10	-1740.60	3274956.67	137.98
RW11	-1756.85	3274949.02	138.98
RW12	-1756.51	3274948.24	139.02
RW13	-1755.03	3274945.13	139.21



RAW WATER RISING MAIN LAYOUT



RAW WATER RISING MAIN LONGITUDINAL SECTION

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

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ENGINEERING & ARCHITECTURE

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Drawn :	J BHIKA
Checked :	D SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

REFERENCES

DRAWING NO.	TITLE
57270/C/201	NEW INLET CHAMBER AND TIE-IN TO RESERVOIR SITE SITE LAYOUT
57270/S/412	NEW INLET CONTROL CHAMBER DETAILS
57270/C/300	AIR VALVE AND SCOUR VALVE DETAILS
57270/C/301	PIPELINE TYPICAL DETAILS
57270/C/302	WATERCOURSE CROSSING DETAILS

LEGEND:
- PROPOSED RISING MAIN
- EXISTING MAIN
- RIPARIAN ZONE
- SEEPAGE WETLAND
- WATERCOURSE B-SECTION
- DMOSS
- AIR VALVE
- SCOUR VALVE

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title

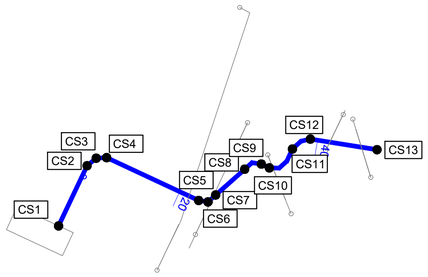
RAW WATER RISING MAIN LONGITUDINAL SECTION

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

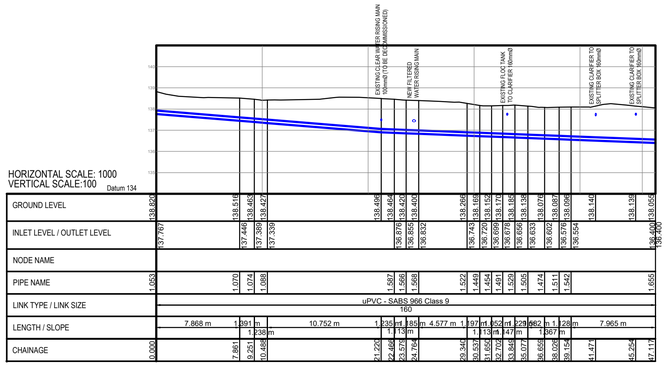
Scale : 1 : 1 **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/203	1 OF 1	B

D:\MUTYBOO...MKHONWANA & COKLAN WTW2C - Pre-Construction\13 Drawings\Drg\ArcGIS & Mxd\WORKSPOTS\C-203- Mxd-RAW WATER RISING MAIN LS.Mxd | TYRELL.MOODLEY | 2023/08/08 11:39:01 AM



CLARIFIER SLUDGE DRAINAGE LAYOUT



CLARIFIER SLUDGE DRAINAGE LONGITUDINAL SECTION

RAW WATER RISING MAIN SETTING OUT COORDINATES

NAME	Y-COORD	X-COORD	ELEV
RW1	-1735.51	3274867.89	134.87
RW2	-1739.32	3274876.96	135.92
RW3	-1709.40	3274891.68	136.34
RW4	-1709.79	3274892.63	136.35
RW5	-1714.11	3274901.85	136.48
RW6	-1719.51	3274913.07	136.64
RW7	-1730.01	3274934.83	136.94
RW8	-1733.25	3274941.49	137.04
RW9	-1740.20	3274955.76	137.92
RW10	-1740.60	3274956.67	137.98
RW11	-1756.85	3274949.02	138.98
RW12	-1756.51	3274948.24	139.02
RW13	-1755.03	3274945.13	139.21

LEGEND:
- PROPOSED RISING MAIN
- EXISTING MAIN
- RIPARIAN ZONE
- SEEPAGE WETLAND
- WATERCOURSE B-SECTION
- DMOSS
- AIR VALVE
- SCOUR VALVE

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB ENGINEERING & ARCHITECTURE
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Web:www.gibb.co.za

Designed : Q CLOETE
Drawn : J BHIKA
Checked : D SHAW
Approved : N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

REFERENCES

DRAWING NO.	TITLE
57270/C/201	NEW INLET CHAMBER AND TIE-IN TO RESERVOIR SITE SITE LAYOUT
57270/S/412	NEW INLET CONTROL CHAMBER DETAILS
57270/C/300	AIR VALVE AND SCOUR VALVE DETAILS
57270/C/301	PIPELINE TYPICAL DETAILS
57270/C/302	WATERCOURSE CROSSING DETAILS

AS-BUILT DRAWING:

DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

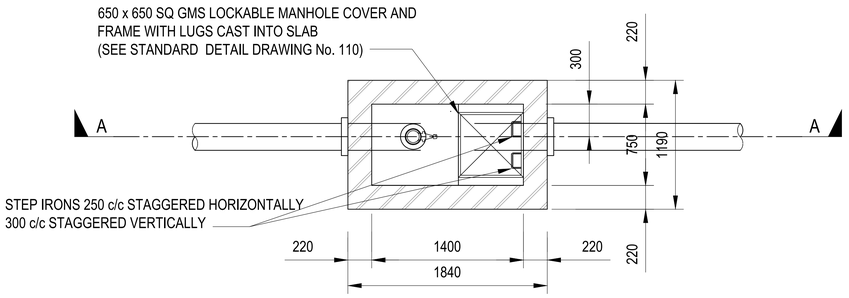
Drawing Title
CLARIFIER SLUDGE DRAINAGE LONGITUDINAL SECTION

Works Project Manager: A. Pillay
Deputy Head: Engineering: B. Soni
Head: Water and Sanitation: E. Msweli

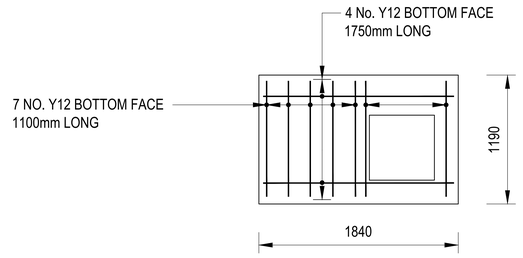
Scale : 1 : 1 **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/204	1 OF 1	B

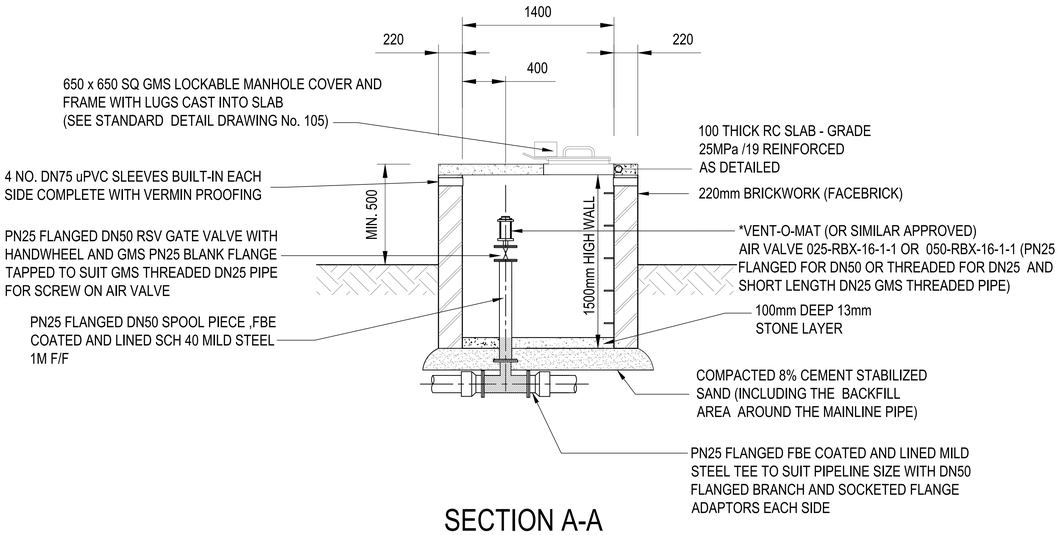
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PLAN



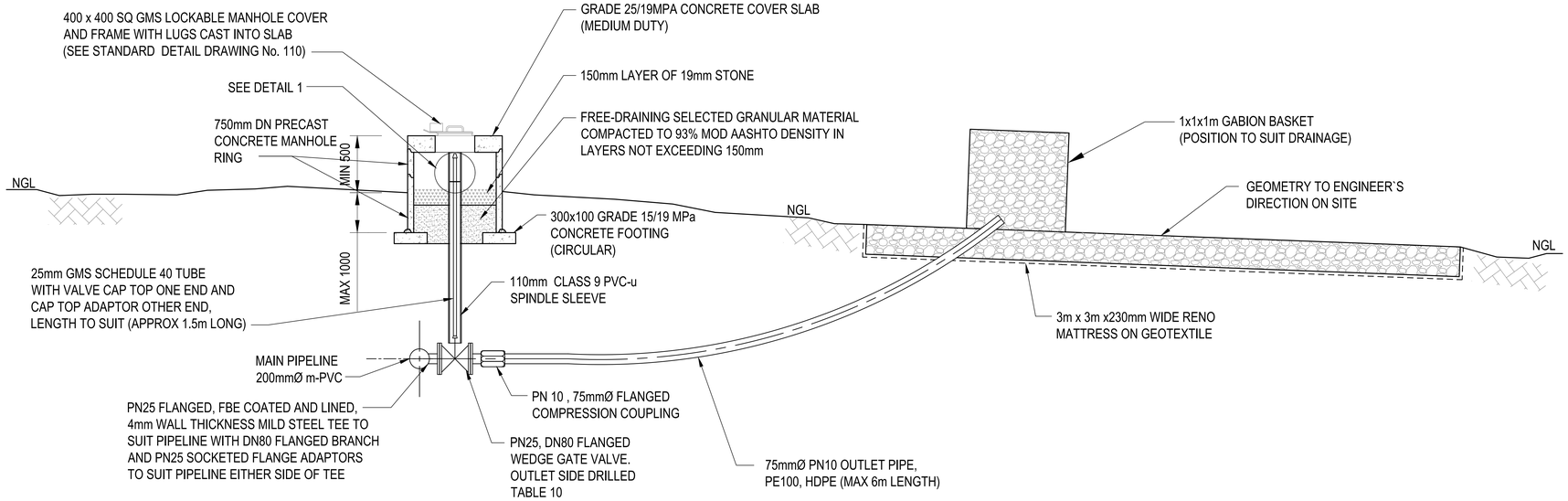
COVER SLAB REINFORCING DETAIL



SECTION A-A

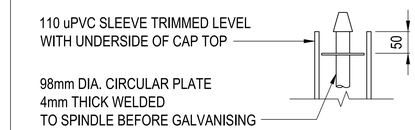
AIR VALVE DETAIL

N.T.S.



SCOUR DETAIL

N.T.S.



DETAIL 1

N.T.S

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Designed :	D.SHAW
Drawn :	B.SITHOLE
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
0	03-05-2021	ISSUED FOR CONSTRUCTION
A	31-08-2023	ISSUED FOR TENDER

EXISTING UNDERGROUND SERVICES
ARE AS SHOWN BELOW.

NEW WATER MAIN & VALVES
SEWERS AND M.H'S
STORM WATER DRAINS AND M.H'S
WATER MAINS AND VALVES
ELECTRICITY CABLES
TELKOM CABLES
OIL PIPELINES

GENERAL NOTES:

PIPEWORK:-

1. ALL MATERIAL TO BE SANS APPROVED.
2. ALL BOLTS SHALL BE HEAVY DUTY HOT-DIPPED TO ISO 1461 AND SANS 121.
3. ALL BURIED FLANGES TO BE WRAPPED WITH 'DENSO MASTIC COMPOUND OR SIMILAR APPROVED.
4. ALL PIPE FITTINGS TO BE CHECKED ON SITE, ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
5. PUDDLE FLANGES SHALL BE UNDRILLED, THE SAME DIAMETER AS OTHER FLANGES AND 10mm THICK. NO PART OF THE PUDDLE FLANGE OR PIPING TO BE CLOSER THAN 75mm FROM ANY REINFORCING.
6. SURFACE PREPARATION - GRIT BLAST TO Sa 2 IN ACCORDANCE WITH TO SIS 055900.
7. COATING AND LINING OF SPECIALS >DN250 SPECIALS WITH DIA. GREATER THAN DN250 TO BE LINED AND COATED WITH SOLVENT-FREE TWO-PACK SURFACE-TOLERANT EPOXY PAINT (DENSO ST100 OR SIMILAR APPROVED). APPLIED IN 2 LAYERS TO TO A TOTAL DFT OF AT LEAST 350 MICRON, ALL IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS FOR PREPARATION OF RECEIVING SURFACE AND APPLICATION OF THE PRODUCTS.
8. COATING AND LINING OF SPECIALS <DN250 SPECIALS WITH DIA DN250 OR LESS TO BE FACTORY-COATED AND LINED WITH HOT-FUSED RILSAN (NYLON POLYAMIDE 11) TO A DFT OF AT LEAST 350 MICRONS, ALL IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS FOR PREPARATION OF RECEIVING SURFACES AND APPLICATION OF THE PRODUCT

CIVIL WORK:-

9. ENGINEER TO INSPECT AND APPROVE FOUNDING MATERIAL BEFORE ANY CONCRETE IS CAST.
10. ALL EXPOSED EDGES TO BE CHAMFERED 20 x 20 UNLESS OTHERWISE NOTED.
10. ALL EXPOSED EDGES TO BE CHAMFERED 20 x 20 UNLESS OTHERWISE NOTED.
11. MINIMUM COVER TO ALL REINFORCING TO BE 50mm UNLESS OTHERWISE NOTED. % MOD. AASHTO IN MAX 150 LAYERS.
12. CONCRETE GRADE:-
BLINDING- 15/26 MPa
REINFORCED CONCRETE - 25/19 MPa
MASS CONCRETE - 15/19 MPa
SCREED - 1:3 (CEMENT/SAND)
13. FINISHES:-
EXTERNAL WALLS UNEXPOSED - F1 FINISH
EXTERNAL WALLS EXPOSED - F2 FINISH
INTERNAL WALLS - F2 FINISH
FLOOR - U4 FINISH

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title

CLEAR WATER RISING MAIN TO OGUNJINI 1 RESERVOIR: AIR VALVE AND SCOUR DETAIL

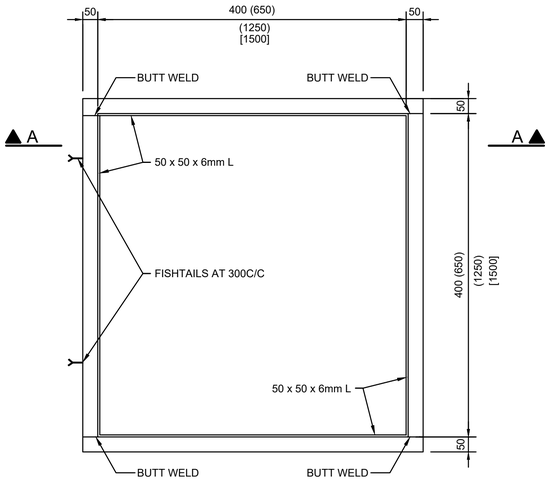
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

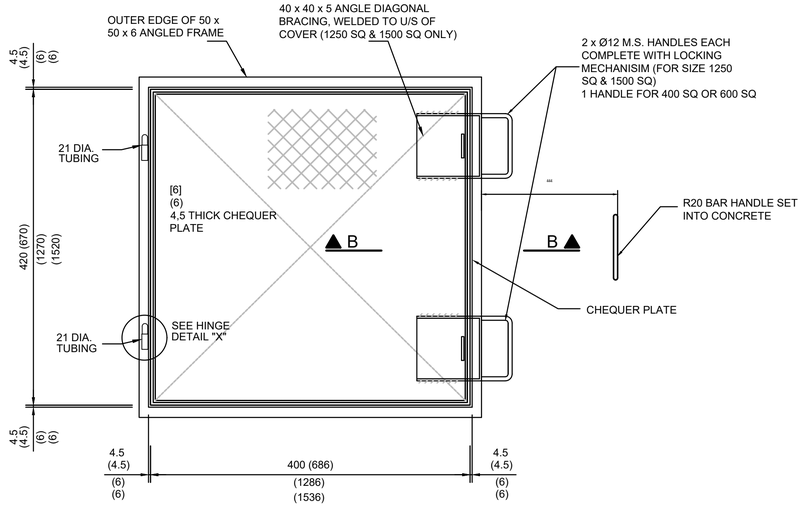
Drawing No.	Sheet	Rev.
57270/C/300	1 OF 1	A

ISSUED FOR TENDER

O:\AATP005 - MKHONYANA & OGUNJINI WTWC - Pre-Construction\13 Drawings\Design\Civil\14 Mains\DWG\57270-C-300.dwg V:\13 CAD\WATER RM TO OGUNJINI 1 RESERVOIR\AIR VALVE & SCOUR VALVE DET.dwg | THRILL MOODLEY | 2023/08/08 11:39:19 AM



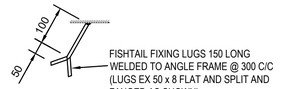
PLAN OF FRAME
SCALE 1:10



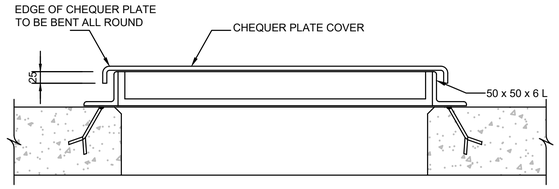
PLAN OF COVER
SCALE 1:10

NOTES:

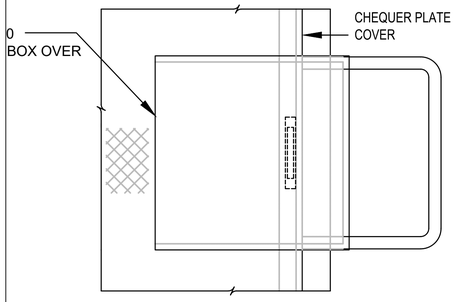
1. FRAME AND COVER TO BE HOT-DIPPED GALVANISED TO SANS 1463, AFTER FABRICATION THEN ASSEMBLED.
2. DIMENSIONS SHOWN THUS (1286) APPLY TO THE 1250 SQ TYPE MANHOLE.
3. DIMENSIONS SHOWN THUS [1536] APPLY TO THE 1500 SQ TYPE MANHOLE.
4. ALL WELDS TO BE MIN. 6mm CONTINUOUS FILLET WELDS.



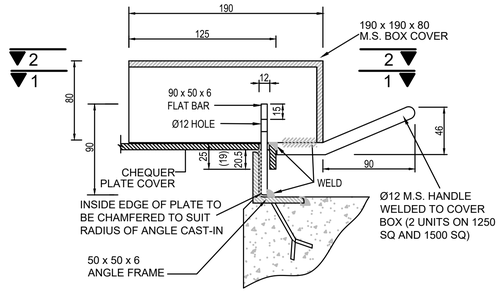
FISHTAIL DETAIL



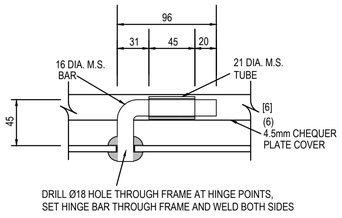
SECTION A - A



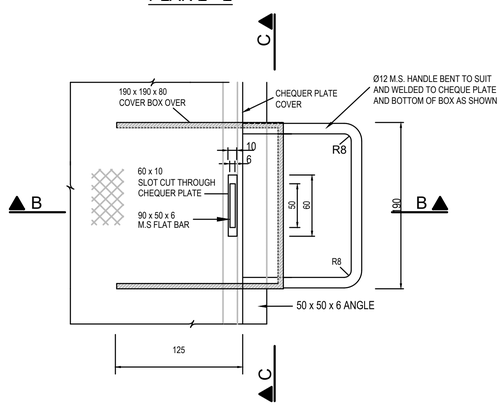
PLAN 2 - 2



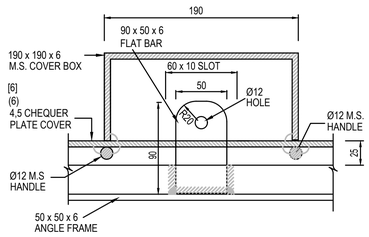
SECTION B - B



ELEV 3 - 3

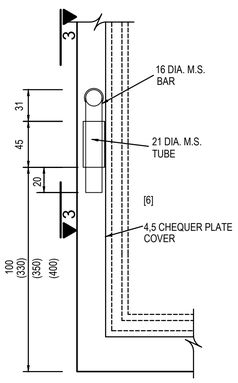


SECTIONAL PLAN 1 - 1



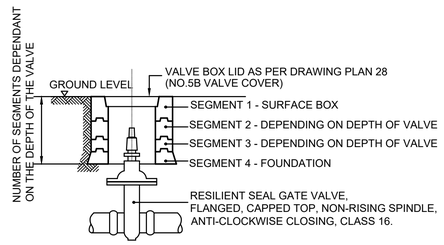
SECTION C - C

HANDLE / LOCKING
DETAIL
SCALE 1:5



HINGE DETAIL X

NOTE: ALL HINGES TO BE IN THE SAME DIRECTION
TO FACILITATE INSTALLATION AND REMOVAL OF COVER



SECTION
PRECAST VALVE CHAMBER FOR
VALVES 250mm AND SMALLER
SCALE 1:20

NOTE:
THE LONG SIDE OF THE CHAMBER IS
TO BE PARALLEL TO THE PIPE

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE
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Designed :	D.DAVIES
Drawn :	D.DAVIES
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION
ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title
STANDARD DETAILS:
PIPELINES
SHEET 1

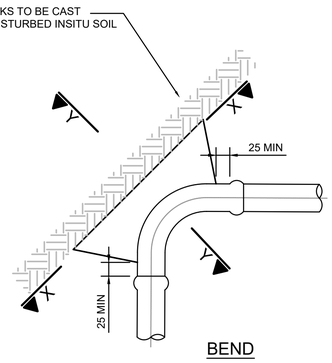
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : 1:200 **Date:** AUGUST 2023

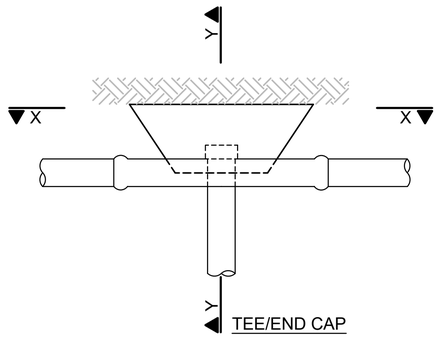
Drawing No.	Sheet	Rev.
57270/C/301	1 OF 2	B

DIMENSIONS FOR THRUST BLOCKS FOR PIPES UP TO PN25 TEST PRESSURE				
FITTING	PIPE DIA.	L	H	h
11¼° BEND	75 90 110 125 160 200 250	200 250 300 350 500 600 650	200 200 250 300 350 500 550	175 200 225 250 300 350 400
22½° BEND	75 90 110 125 160 200 250	350 400 550 600 700 1000 1100	300 350 350 400 450 550 650	175 200 225 250 300 350 400
45° BEND	75 90 110 125 160 200	550 650 800 800 1000 1300	350 400 450 550 600 800	175 200 225 250 300 400
90° BEND	75 90 110 125 160 200	700 1000 1150 1200 1600 2200	450 450 550 650 700 800	175 200 225 250 300 350
TEE/END CAP	75 90 110 125 160 200 300	700 900 1100 1200 1450 2000 2200	550 550 650 800 950 1000 1200	175 200 225 250 300 350 500
FITTING	PIPE DIA.	L2	H2	B2
REDUCERS	75 90 110 125 160 200 300	900 900 950 1000 1200 1600 1800	300 400 550 700 800 800 900	100 100 150 150 200 200 250

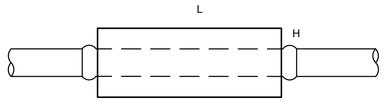
NOTE:
1. ASSUMED SAFE BEARING PRESSURE: 80kPa
2. LARGER DIAMETER PIPES THAN THOSE GIVEN IN THE TABLES TO HAVE REINFORCED CONCRETE ANCHOR BLOCKS TO ENGINEER'S DETAIL



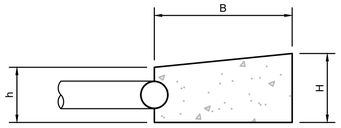
BEND



TEE/END CAP

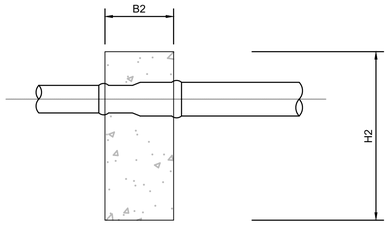


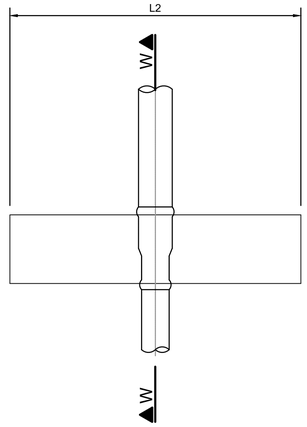
SECTION X - X



SECTION Y - Y

THRUST BLOCK DETAILS
NTS

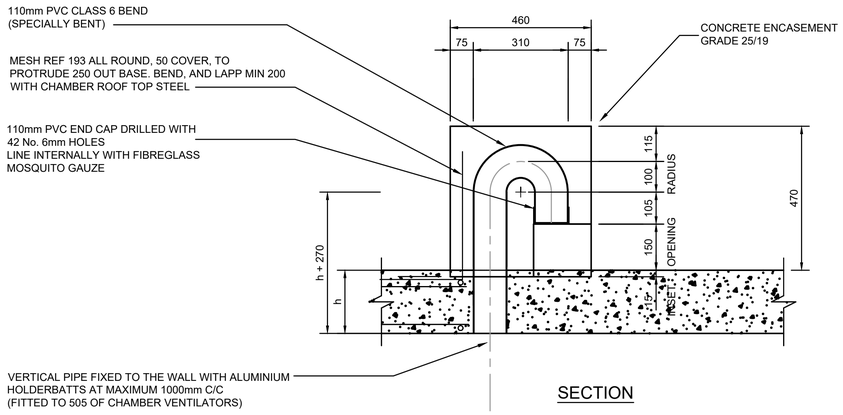




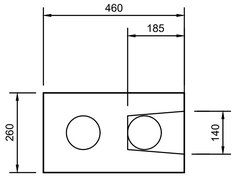
SECTION W - W

PLAN

REDUCER
NTS

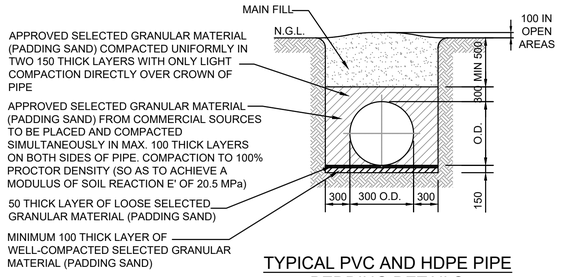


SECTION

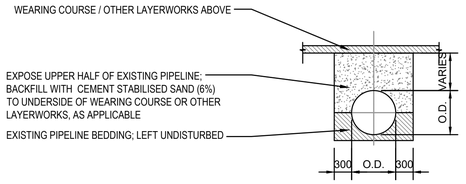


PLAN

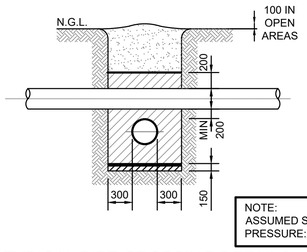
DETAIL C
TYPICAL AIR VENT PIPE DETAILS
SCALE 1:10
NOTE:
THESE PRECAST VENT BLOCKS INSET 15mm INTO CHAMBER ROOFS



TYPICAL PVC AND HDPE PIPE BEDDING DETAILS
SCALE 1:10

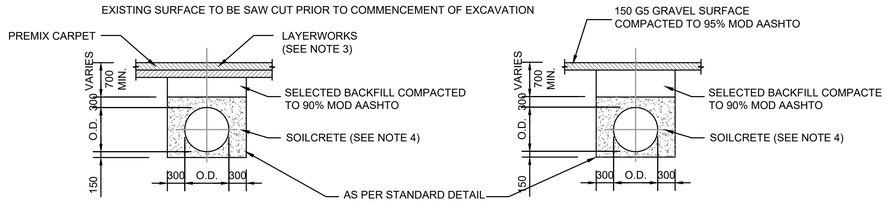


TYPICAL DETAILS FOR PROTECTION OF EXISTING PIPES
SCALE 1:10



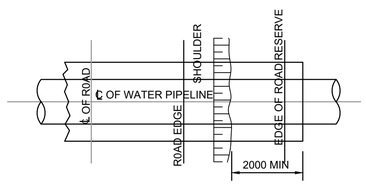
NOTE:
ASSUMED SAFE BEARING PRESSURE: 80kPa

TYPICAL PIPE CROSSING DETAILS
NTS



SECTION THROUGH SURFACE ROAD

SECTION THROUGH GRAVEL ROAD



PLAN

NOTES:
1. CROSSING TO BE APPROVED BY ROAD AUTHORITY.
2. VEHICULAR AND PEDESTRIAN THROUGH TRAFFIC SHALL BE ACCOMODATED AT ALL TIMES.
3. LAYERWORKS FOR SURFACED ROADS:

SUB GRADE - 300 SELECTED MATERIAL TO 95% MOD AASHTO.
SUB BASE - 300 APPROVED CRUSHER RUN TO 95% MOD AASHTO.
BASE - 150 APPROVED CRUSHER EXCAVATION TO 98% MOD AASHTO

4. CEMENT STABILISED SAND:

COMPACTED SELECTED BEDDING FROM COMMERCIAL SOURCES WITH 8% CEMENT CONTENT IF AND WHERE ORDERED BY THE ENGINEER.

CEMENT STABILISED ENCASEMENT TO EXTEND A MIN. OF 2000 BEYOND TOE OF EMBANKMENT OR EDGE OF DRAINAGE WORKS, WHICHEVER IS FARTHEST FROM THE ROAD CENTRE UNLESS OTHERWISE DIRECTED ON SITE.

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
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Drawn :	D.DAVIES
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

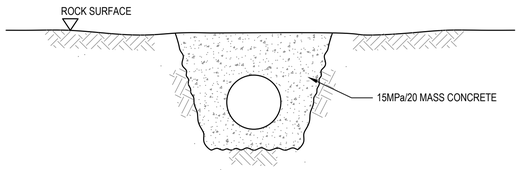
Project No. (X6307)

Drawing Title
STANDARD DETAILS: PIPELINES SHEET 2

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

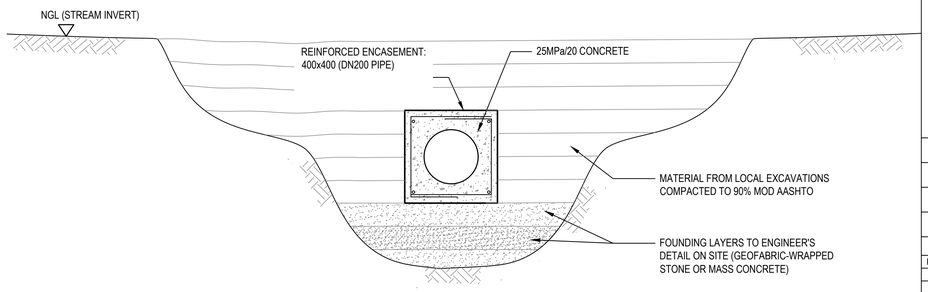
Scale : 1:200 **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/301	2 OF 2	B



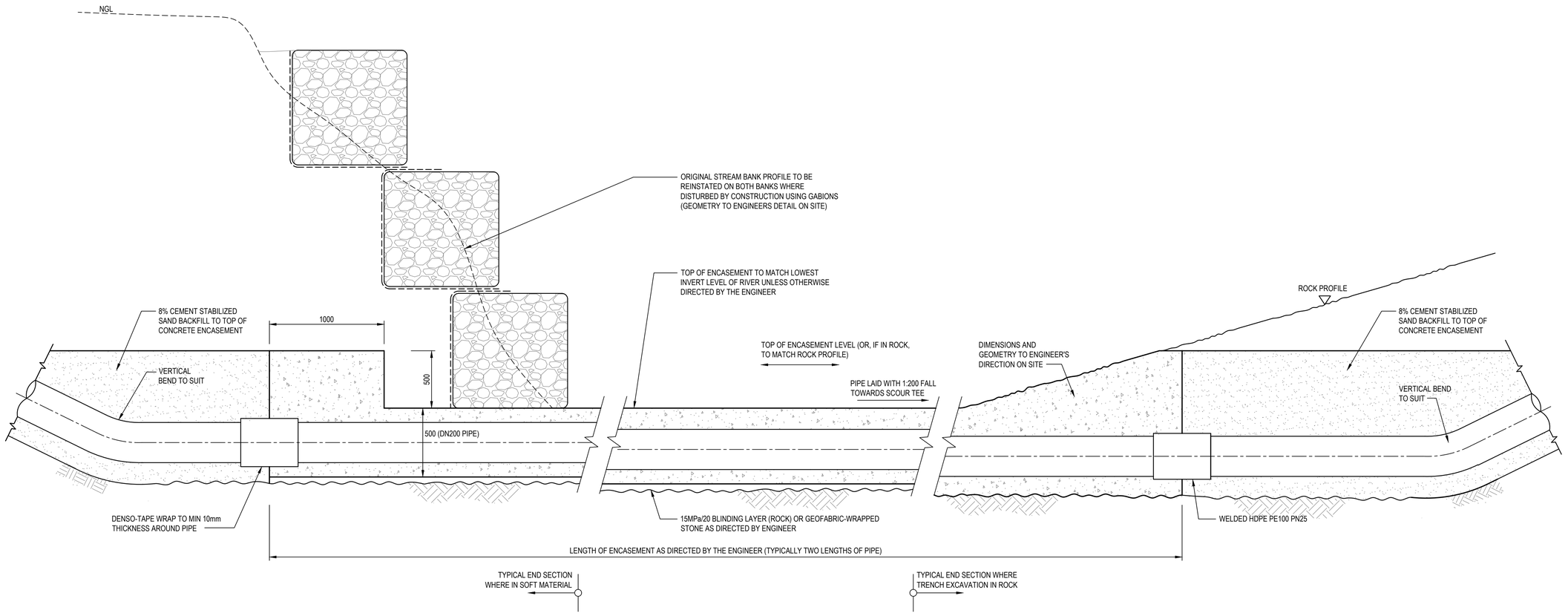
TYPICAL SECTION OF ENCASEMENT IN ROCK

NTS



TYPICAL SECTION OF ENCASEMENT IN SOFT MATERIAL

NTS



TYPICAL SECTION OF PIPE ENCASEMENT THROUGH STREAM CROSSINGS

NTS

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

Office: Delmat House, 2nd Floor,
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Westville, Durban 3630
PO Box 1365, Westville, Durban 3630

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Web:www.gibb.co.za

Designed :	Q.CLOETE
Drawn :	Q.CLOETE
Checked :	M.BESTER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31/08/2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

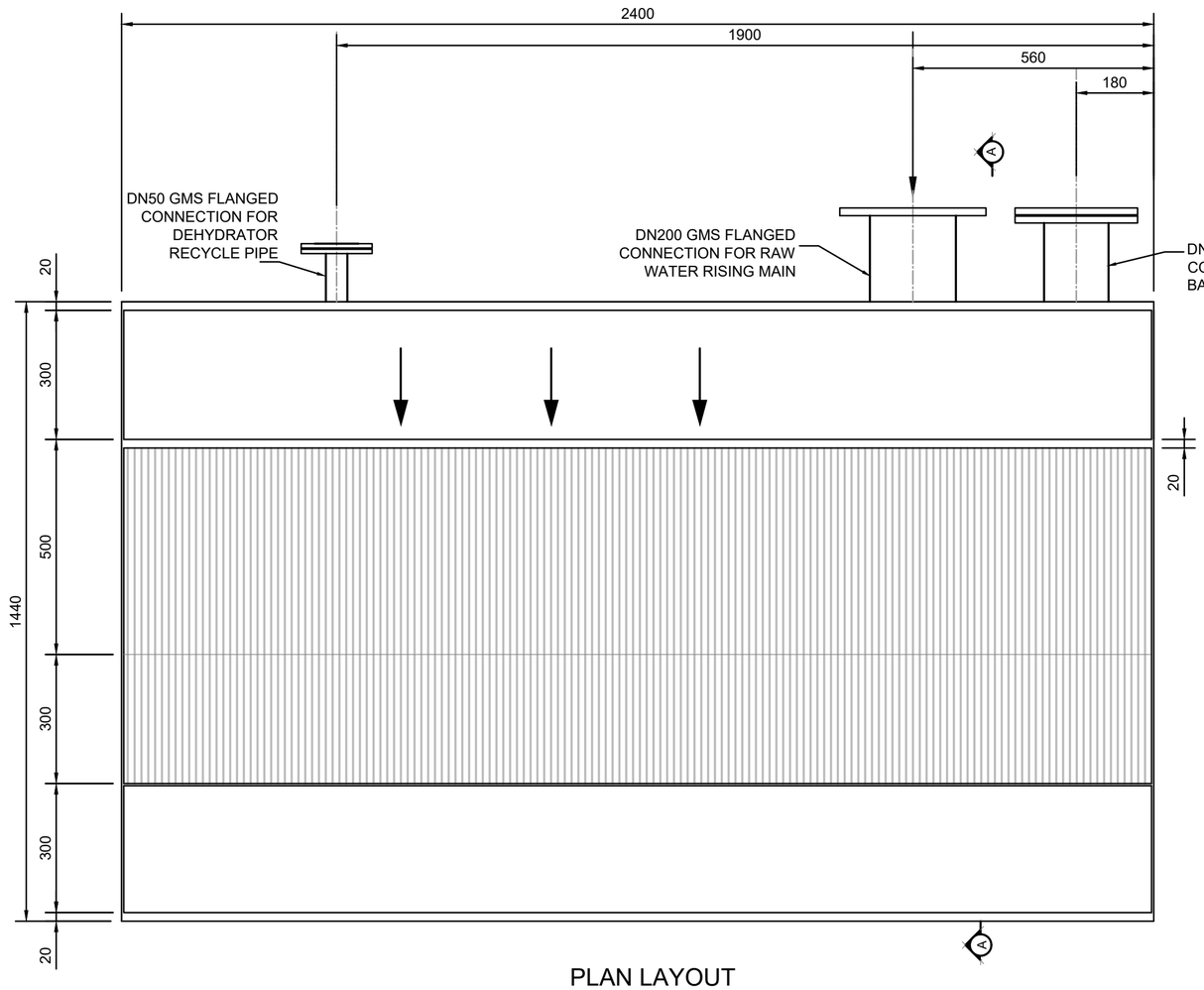
Drawing Title
STANDARD DETAIL
STREAM CROSSING
STEEL PIPES

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

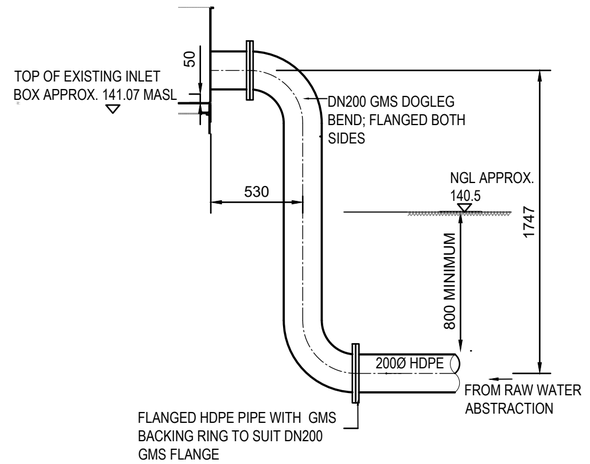
Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/C/302	1 OF 1	B

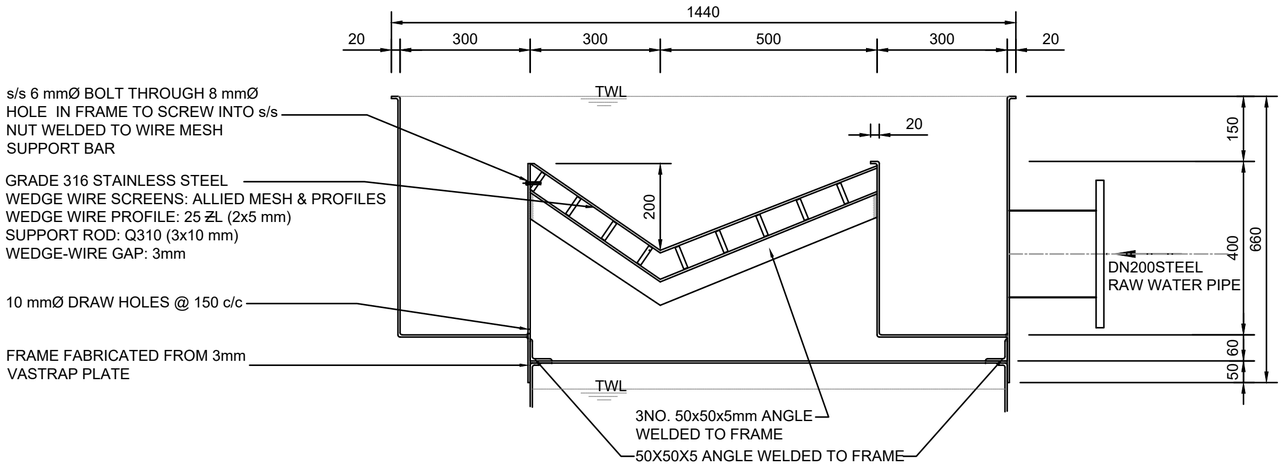
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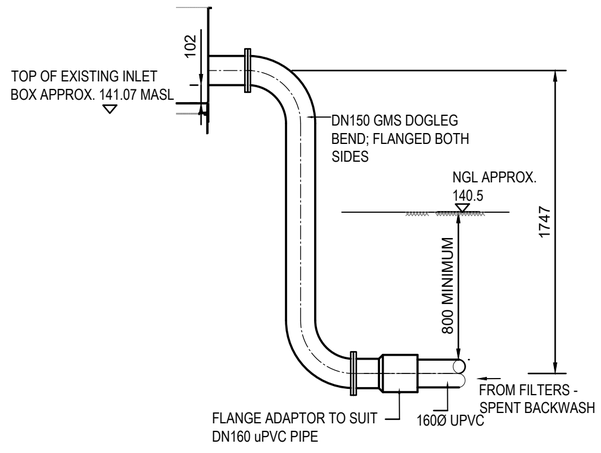
PLAN LAYOUT
SCALE 1:10



DETAIL: DN200 INLET TO RAW WATER STRAINER
SCALE 1:25



SECTION A - A
SCALE 1:10



DETAIL: DN150 INLET TO RAW WATER STRAINER
SCALE 1:25

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE
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Designed :	D.DAVIES
Drawn :	D.DAVIES
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31/08/2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION
ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

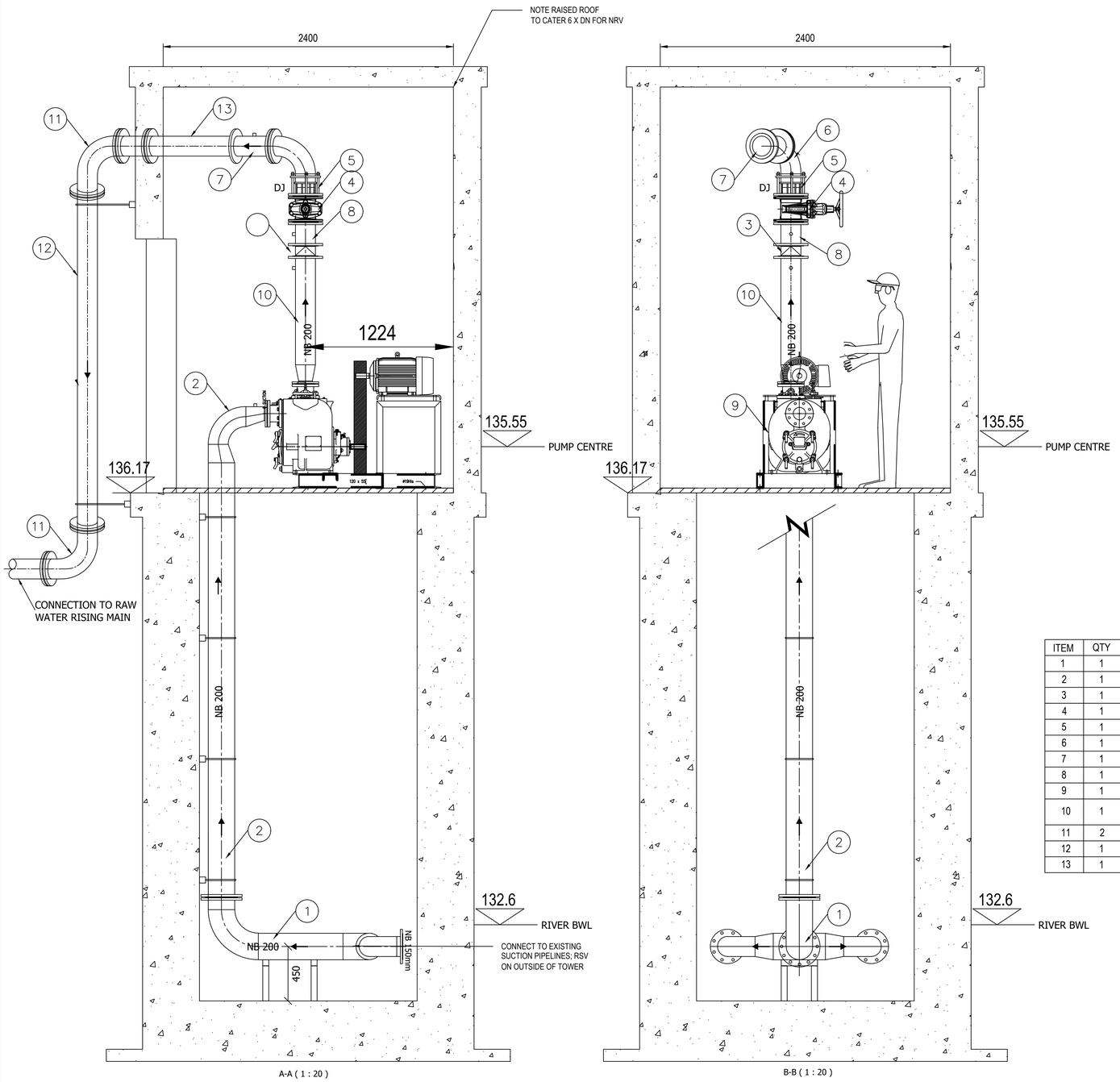
Project No. (X6307)

Drawing Title
RAW WATER INLET SCREEN DETAILS

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli
Scale : AS SHOWN	Date: AUGUST 2023

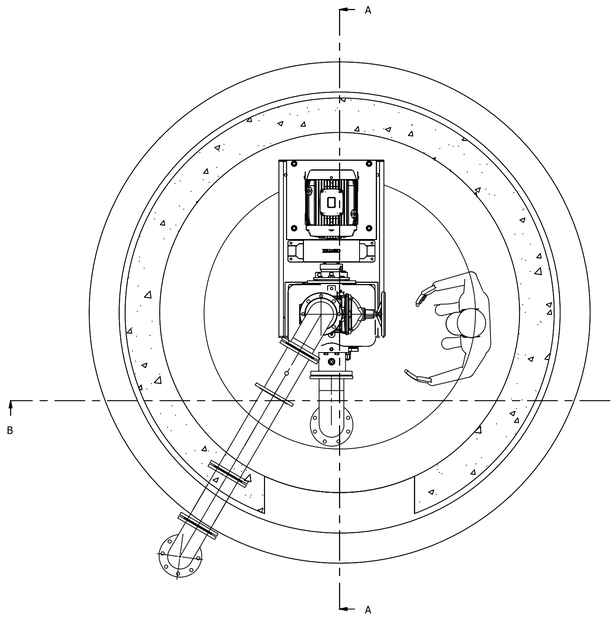
Drawing No.	Sheet	Rev.
57270/C/303	1 OF 1	B

Q:\AA170500 - MKHIZWANA & OGUNJINI WTWC - Pre-Construction\13 Drawings\Ogunjini\Civil & Mech\DWG\57270-C-303-REV0 RAW WATER INLET SCREEN DETAILS.dwg | TYRELL MOODLEY | 2023/09/06 11:41:15 AM



A-A (1 : 20)

B-B (1 : 20)



ITEM	QTY	DESCRIPTION
1	1	DN 200 x 304L SUCTION MANIFOLD
2	1	DN 200 STRAIGHT PIPE FLANGED, (TO SUIT SUCTION AND PUMP)
3	1	DN 200 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 16
4	1	DN 200 FLANGED RSV GATE VALVE,PN 10, HANDWHEEL
5	1	DN 200 DISMANTLING JOINT COUPLING, PN 10
6	1	DN 200 X 90-DEGREE BEND, FLANGED ON ONE END, C/F DIMENSION TO BE DETERMINED ON SITE
7	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, 350MM F/F, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD
8	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, 200MM F/F, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD
9	1	SELF-PRIMING CENTRIFUGAL PUMP WITH 7.5KW 6-POLE MOTOR (MEASURED ELSEWHERE)
10	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, LENGTH TO SUIT, INCORPORATING DN 150 X 100 CONCENTRIC REDUCER, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD
11	2	DN200X 90-DEGREE LONG RADIUS BEND PN16
12	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, LENGTH TO BE DETERMINED ON SITE
13	1	DN 200 SPOON PIECE, FLANGED BOTH ENDS, WITH PUDDLE FLANGE (LENGTH TO BE DETERMINED ON SITE

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES

DATE	DESCRIPTION	NAME	SIGNATURE
31 / 08 / 2023	ISSUED FOR TENDER	DN	
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T MOODLEY	31 / 08 / 2023	
DESIGNED	S. SEWLAL	31 / 08 / 2023	
CHECKED	D. NARAINSAMY	31 / 08 / 2023	
APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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Inventing for tomorrow
CONSULTING ENGINEERS AND PROJECT MANAGERS
2nd Floor, 53 Richefond Circle,
Ridgeside Office Park,
Umhlanga Rocks,
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Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za

CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

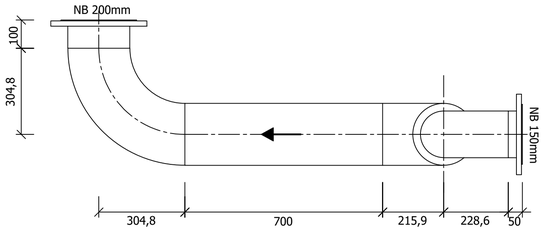
PROJECT TITLE

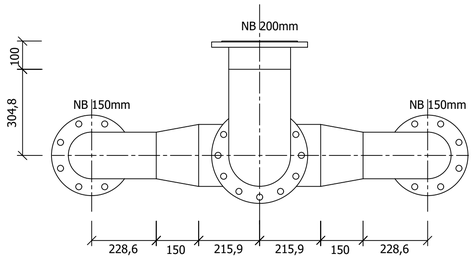
OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

TITLE

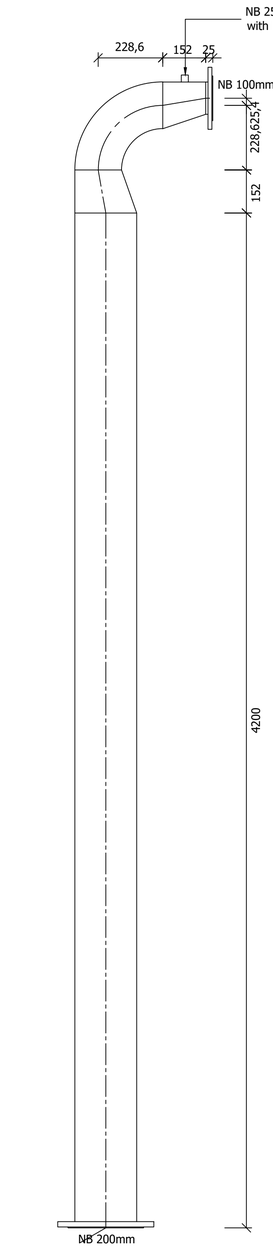
ABSTRACTION WORKS
UPGRADE MECHANICAL DETAIL

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 001		B

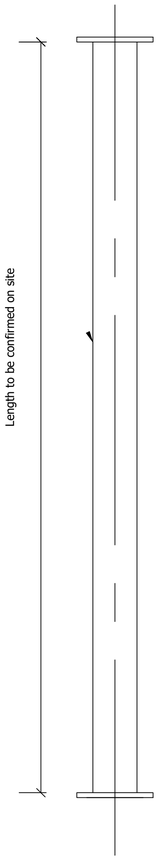




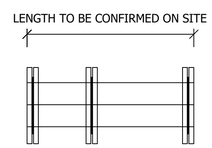
ITEM 1 - 1 off



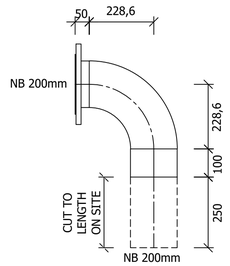
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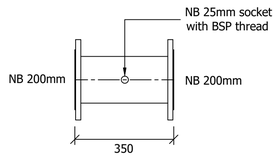
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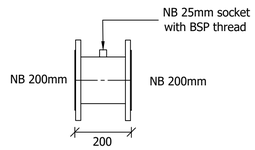
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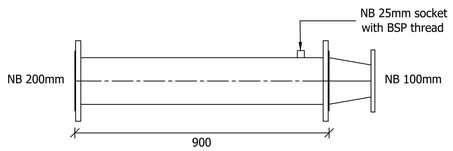
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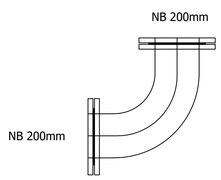
ITEM 7 - 1 off



ITEM 8 - 1 off



ITEM 10 - 1 off



ITEM 11 - 2 off

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

1. ALL PIPE WORK TO BE 304 L STAINLESS STEEL UNCOATED TO ASTM A312 SCHEDULE 10
2. ALL STAINLESS STEEL BUTT WELDED FITTINGS TO ASTM A403 WPW
3. ALL FLANGES TO BE 304 L STAINLESS STEEL UNCOATED TO SABS 1123 1600/3
4. PICKLING AND PASSIVATION TO ASTM A380
5. WELD INTEGRITY SHALL BE TESTED WITH LIQUID PENETRANT.
6. 10% OF ALL WELDS SHALL BE X-RAYED

DATE	DESCRIPTION	NAME	SIGNATURE
31 / 08 / 2023	ISSUED FOR TENDER	DN	
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T MOODLEY	31 / 08 / 2023	
DESIGNED	S. SEWLAL	31 / 08 / 2023	
CHECKED	D. NARAINSAMY	31 / 08 / 2023	
APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CONSULTING ENGINEERS AND PROJECT MANAGERS

2nd Floor, 53 Richefond Circle,
Ridgeside Office Park,
Umhlanga Rocks,

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Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za

CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

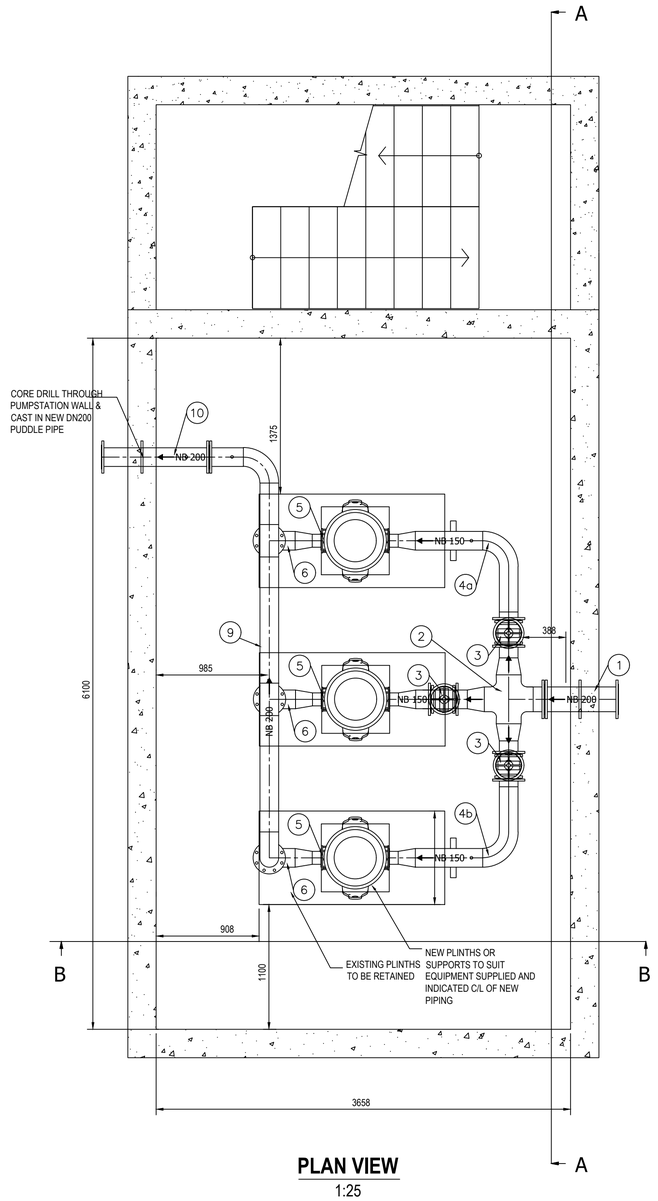
OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

TITLE

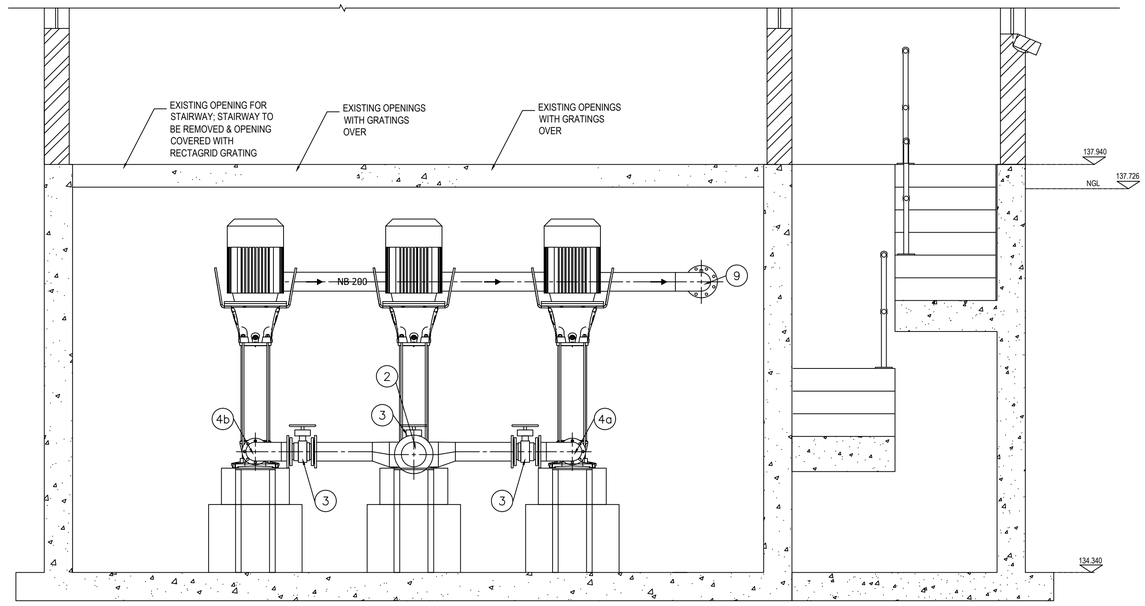
ABSTRACTION WORKS
UPGRADE MECHANICAL DETAIL

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	2 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 001		B

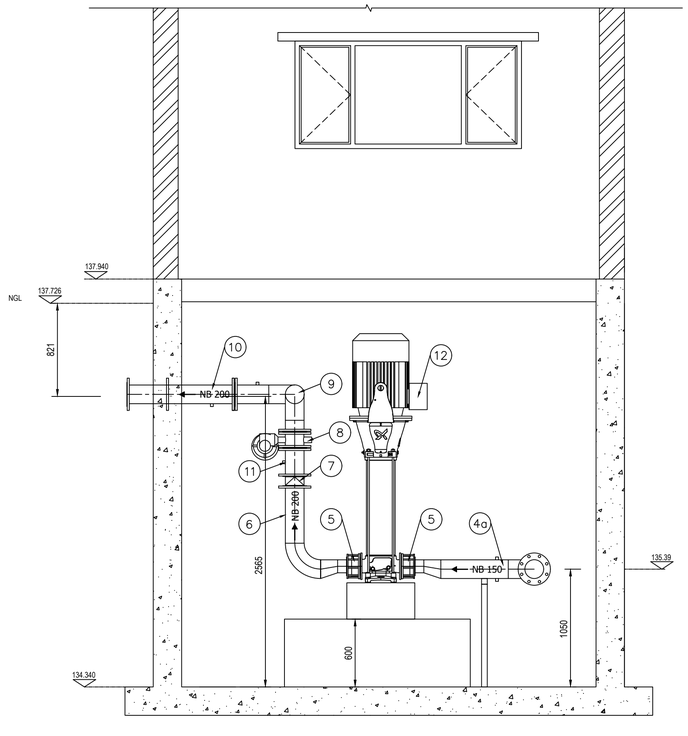
ITEM	QTY	DESCRIPTION
1	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, WITH CONCENTRIC PUDDLE FLANGE, PN 16
2	1	DN 200 TO DN150 PIPE SPECIAL, PN 16
3	3	DN 150 FLANGED RSV GATE VALVE, PN 16, HANDWHEEL
4a	1	DN 150 TO DN100 PIPE SPECIAL, COMPLETE WITH TWO 25MM HEAVY-DUTY SOCKETS WITH BSP THREAD, PN 16
4b	1	DN 150 TO DN100 PIPE SPECIAL, COMPLETE WITH TWO 25MM HEAVY-DUTY SOCKETS WITH BSP THREAD, PN 16
5	6	DN 100 NON-RESTRAINED FLANGED ADAPTOR, PN 25
6	3	DN 100 TO DN 200 PIPE SPECIAL, PN 25
7	3	DN 200 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 25
8	3	DN 200 DISMANTLING JOINT COUPLING, PN 25
9	1	DN 200 PIPE SPECIAL, PN 25
10	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, WITH PUDDLE FLANGE 350MM F/F ON ONE END, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 25
11	3	DN 200 SPOOL PIECE FLANGED BOTH ENDS, LENGTH TO SUIT, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 25
12	3	VERTICAL MULTI-STAGE PUMP WITH 55KW MOTOR



PLAN VIEW
1:25



SECTION A-A
1:25



SECTION B-B
1:25

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES

Rev.	DATE	DESCRIPTION	NAME	SIGNATURE
B	31-08-2023	ISSUED FOR TENDER (WS 7759)	DN	
A	09-05-2023	REVISED AS PER COMMENTS (WS 7202)	CB	
			APPROVED	

	BY	DATE	SIGNATURE
DRAWN	N. SINGH	31 / 08 / 2023	
DESIGNED	N. SINGH	31 / 08 / 2023	
CHECKED	S. SEWLAL	31 / 08 / 2023	
APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CONSULTING ENGINEERS AND PROJECT MANAGERS
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Ridgeside Office Park,
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Tel: (031) 266 8363
Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za

CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

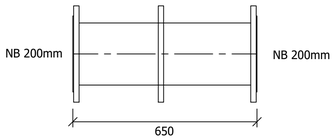
PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

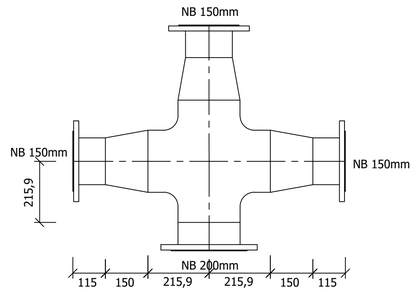
TITLE

CLEAR WATER PUMP STATION UPGRADE MECHANICAL DETAIL

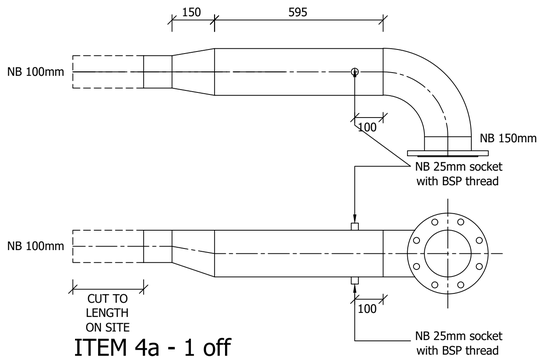
PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 004		B



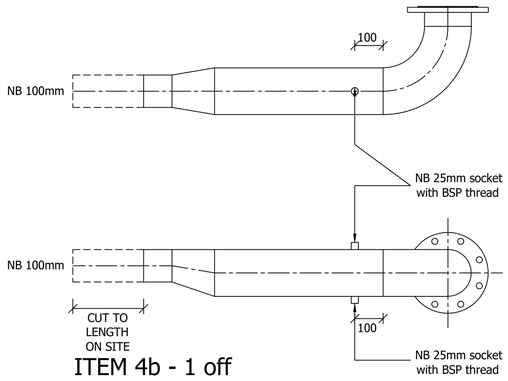
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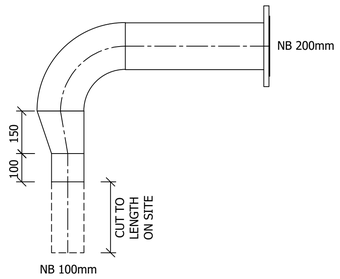
ITEM 2 - 1 off



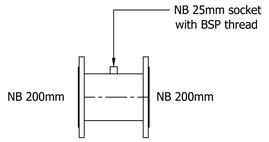
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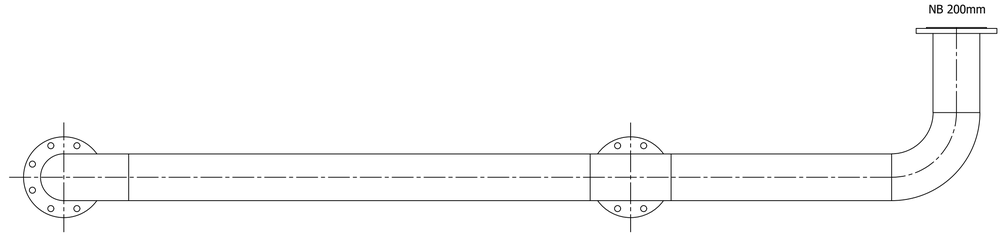
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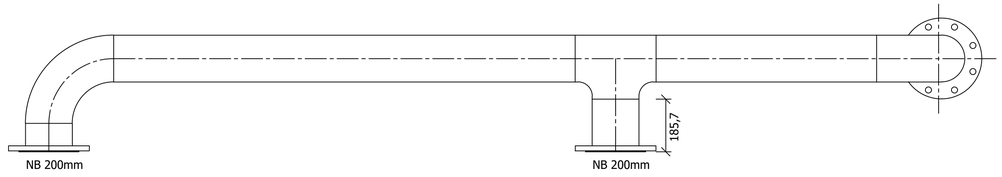
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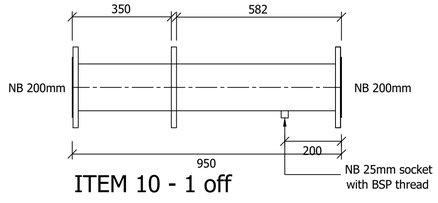


ITEM 11 - 2 off



ITEM 9 - 1 off





ITEM 10 - 1 off

ITEM	QTY	DESCRIPTION
1	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, WITH CONCENTRIC PUDDLE FLANGE, PN 16
2	1	DN 200 TO DN150 PIPE SPECIAL, PN 16
3	3	DN 150 FLANGED RSV GATE VALVE, PN 16, HANDWHEEL
4a	1	DN 150 TO DN100 PIPE SPECIAL, COMPLETE WITH TWO 25MM HEAVY-DUTY SOCKETS WITH BSP THREAD, PN 16
4b	1	DN 150 TO DN100 PIPE SPECIAL, COMPLETE WITH TWO 25MM HEAVY-DUTY SOCKETS WITH BSP THREAD, PN 16
5	6	DN 100 NON-RESTRAINED FLANGED ADAPTOR, PN 25
6	3	DN 100 TO DN 200 PIPE SPECIAL, PN 25
7	3	DN 200 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 25
8	3	DN 200 DISMANTLING JOINT COUPLING, PN 25
9	1	DN 200 PIPE SPECIAL, PN 25
10	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS, WITH PUDDLE FLANGE 350MM F/F ON ONE END, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 25
11	3	DN 200 SPOOL PIECE FLANGED BOTH ENDS, LENGTH TO SUIT, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 25
12	3	VERTICAL MULTI-STAGE PUMP WITH 55KW MOTOR

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES

1. ALL PIPE WORK TO BE 304 L STAINLESS STEEL UNCOATED TO ASTM A312 SCHEDULE 10
2. ALL STAINLESS STEEL BUTT WELDED FITTTINGS TO ASTM A403 WPW
3. ALL FLANGES TO BE 304 L STAINLESS STEEL UNCOATED TO SABS 1123 1600/3
4. PICKLING AND PASSIVATION TO ASTM A380
5. WELD INTEGRITY SHALL BE TESTED WITH LIQUID PENETRANT.
6. 10% OF ALL WELDS SHALL BE X-RAYED

Rev.	DATE	DESCRIPTION	NAME	SIGNATURE
B	23-08-2023	ISSUED FOR TENDER (WS 7759)	DN	
A	09-05-2023	REVISED AS PER COMMENTS (WS 7202)	CB	
			APPROVED	

	BY	DATE	SIGNATURE
DRAWN	N. SINGH	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

INGEROP
Inventing for tomorrow

CONSULTING ENGINEERS AND PROJECT MANAGERS

2nd Floor, 53 Richefond Circle,
Ridgeside Office Park,
Umhlanga Rocks,

Tel: (031) 266 8363
Fax: (086) 242 2799
e-mail : dbn@ingerop.co.za

CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

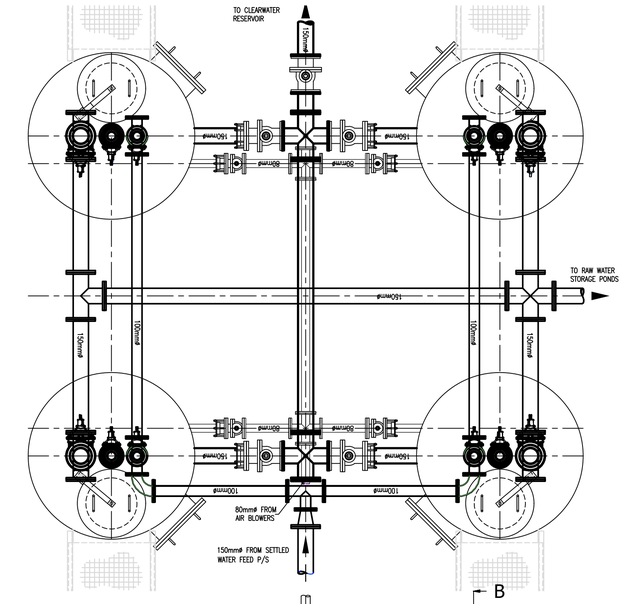
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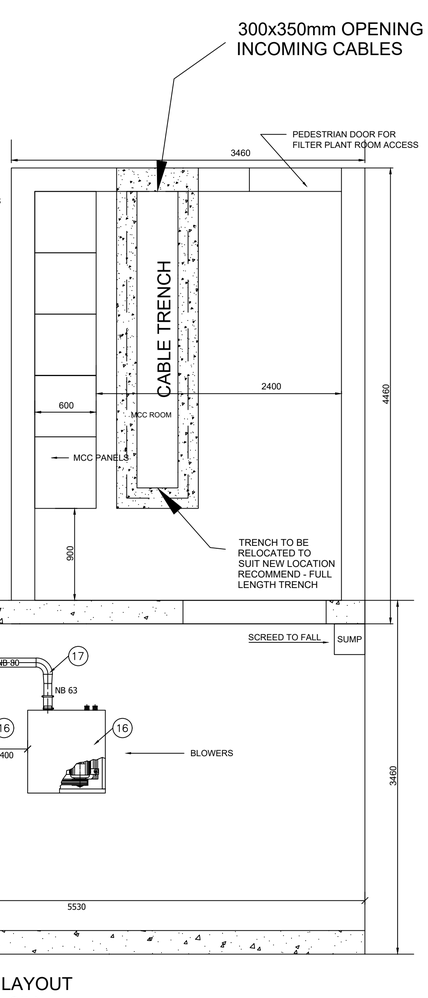
OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

TITLE

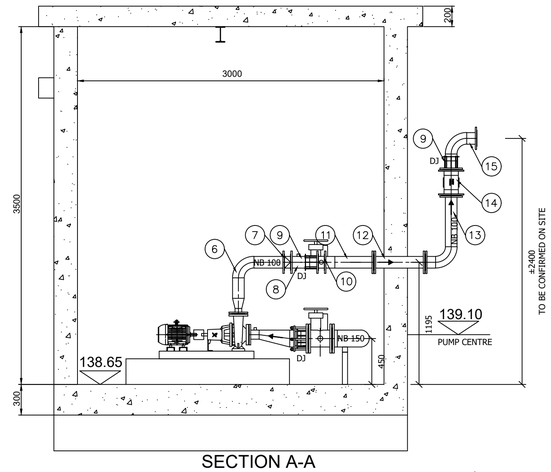
CLEAR WATER PUMP STATION
UPGRADE MECHANICAL DETAIL
(PIPE BEND DETAILS)

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	1:10	A1	2 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 004		B

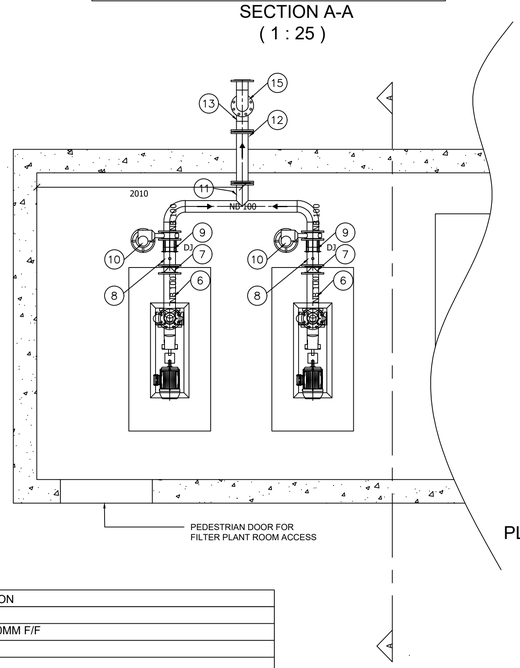




PLAN LAYOUT
(1 : 25)



SECTION A-A
(1 : 25)



PLAN LAYOUT
(1 : 25)

ITEM	QTY	DESCRIPTION
1	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS,COMPLETE WITH TWO 25MM HEAVY-DUTY SOCKETS WITH BSP THREAD, PN 10
2	1	DN 150 FLANGED LONG RADIUS BEND WITH ONE LONG LEG, WELDED TO A DN150 FLANGED TEE, BARREL 2500MM F/PE, WITH BRANCH APPROX. 278.6MM C/F, PN 10
3	2	DN 150 FLANGED BUTTERFLY VALVE, PN 10, HANDWHEEL.
4	2	DN 150 DISMANTLING JOINT [SS1] COUPLING, PN 10.
5	2	DN 150 TO DN 80 PIPE SPECIAL, PN 10.
6	2	DN 65 TO DN 100 PIPE SPECIAL, PN 10
7	2	DN 100 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 10.
8	2	DN 100 PIPE SPECIAL, COMPLETE WITH 25MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10.
9	3	DN 100 DISMANTLING JOINT [SS2] COUPLING, PN 10.
10	2	DN 100 FLANGED BUTTERFLY VALVE, PN 10.

ITEM	QTY	DESCRIPTION
11	1	DN 100 PIPE SPECIAL, FLANGED, PN 10
12	1	DN 100 SPOOL PIECE FLANGED BOTH ENDS, 500MM F/F
13	1	DN 100 PIPE SPECIAL, FLANGED, PN 10.
14	1	DN 100 ELECTROMAGNETIC FLOW METER.
15	1	DN 100 PIPE SPECIAL WITH ONE END PLAIN-ENDED AND OTHER FLANGED.
16	2	ROTARY LOBE BLOWER.
17	1	DN 63 TO DN 80 PIPE SPECIAL, PN 10.
18	1	DN 100 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 10.
19	1	DN 80 PIPE SPECIAL, FLANGED BOTH ENDS, PN 10.
20	1	DN 80 PIPE SPECIAL, FLANGED BOTH ENDS, PN 10.
21	1	DN 80 PIPE SPECIAL, FLANGED BOTH ENDS, PN 10.

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

1. ALL PIPE WORK TO BE 304 L STAINLESS STEEL UNCOATED TO ASTM A312 SCHEDULE 10
2. ALL STAINLESS STEEL BUTT WELDED FITTINGS TO ASTM A403 WPW
3. ALL FLANGES TO BE 304 L STAINLESS STEEL UNCOATED TO SABS 1123 1000/3
4. PICKLING AND PASSIVATION TO ASTM A380
5. WELD INTEGRITY SHALL BE TESTED WITH LIQUID PENETRANT.
6. 10% OF ALL WELDS SHALL BE X-RAYED

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DESIGNED	S. SEWLAL	31 / 08 / 2023	
CHECKED	D. NARAINSAMY	31 / 08 / 2023	
APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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Inventing for tomorrow

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WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

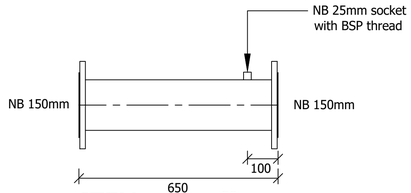
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

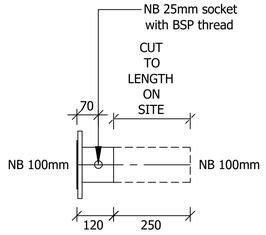
FILTER PLANT BUILDING
MECHANICAL DETAIL

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 3
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 001		B

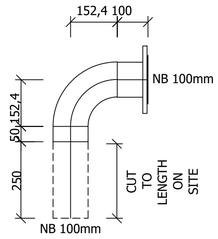
ISSUED FOR TENDER



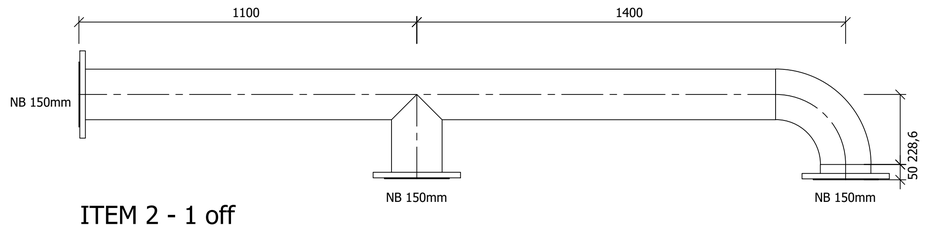
ITEM 1 - 1 off



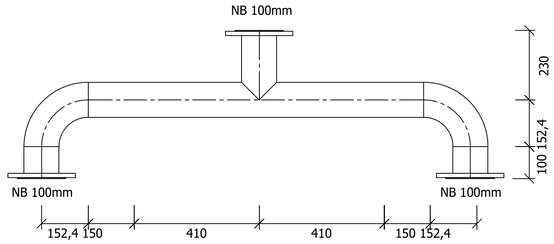
ITEM 8 - 2 off



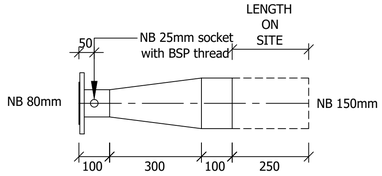
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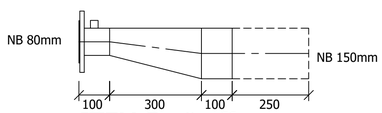


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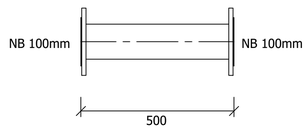


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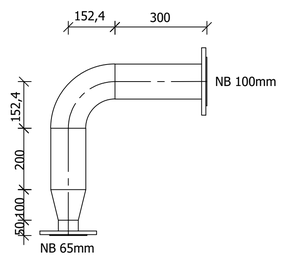




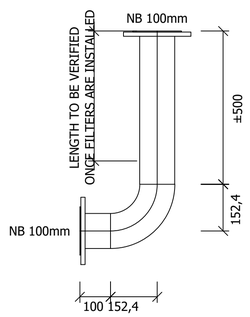
ITEM 5 - 2 off



ITEM 12 - 1 off



ITEM 6 - 2 off



ITEM 13 - 1 off

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

1. ALL PIPE WORK TO BE 304 L STAINLESS STEEL UNCOATED TO ASTM A312 SCHEDULE 10
2. ALL STAINLESS STEEL BUTT WELDED FITTINGS TO ASTM A403 WPW
3. ALL FLANGES TO BE 304 L STAINLESS STEEL UNCOATED TO SABS 1123 1000/3
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6. 10% OF ALL WELDS SHALL BE X-RAYED

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	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	31 / 08 / 2023	
DESIGNED	S. SEWLAL	31 / 08 / 2023	
CHECKED	D. NARAINSAMY	31 / 08 / 2023	
APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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Inventing for tomorrow

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WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

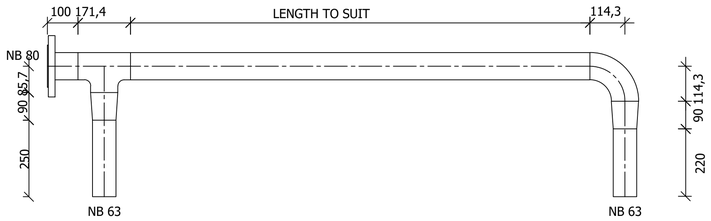
PROJECT TITLE

OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

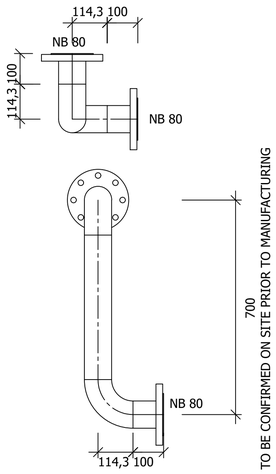
TITLE

FILTER PLANT BUILDING
MECHANICAL DETAIL

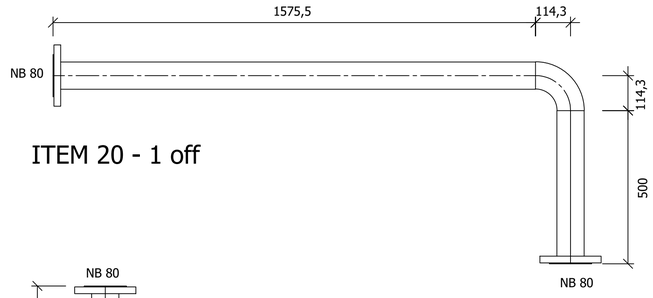
PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	2 of 3
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 001		B



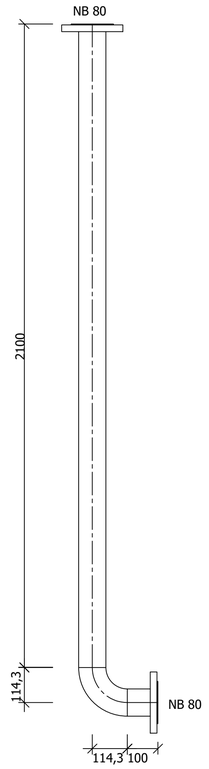
ITEM 17 - 1 off



ITEM 19 - 1 off



ITEM 20 - 1 off



ITEM 21 - 1 off

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

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APPROVED	D. NARAINSAMY	31 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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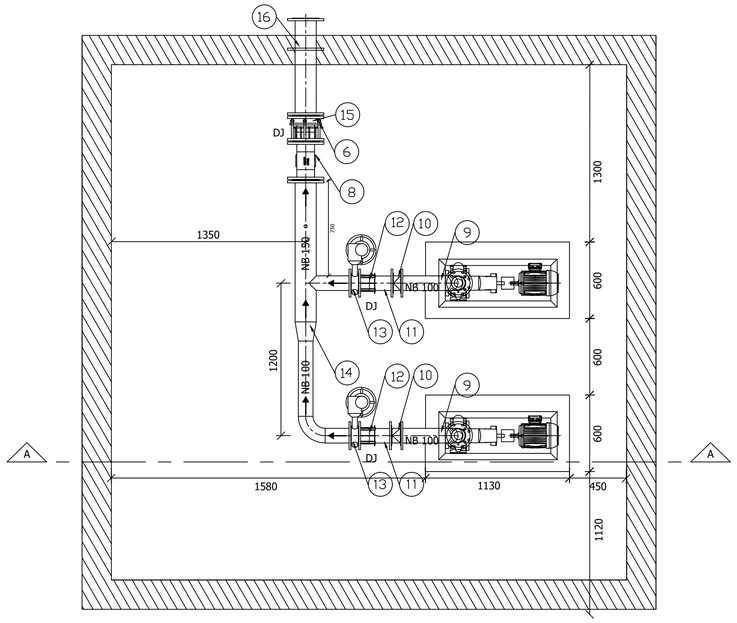
PROJECT TITLE

OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

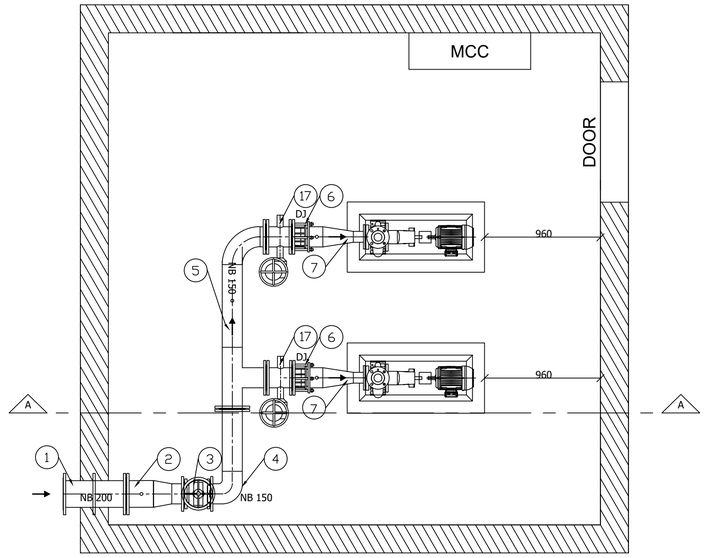
TITLE

FILTER PLANT BUILDING
MECHANICAL DETAIL

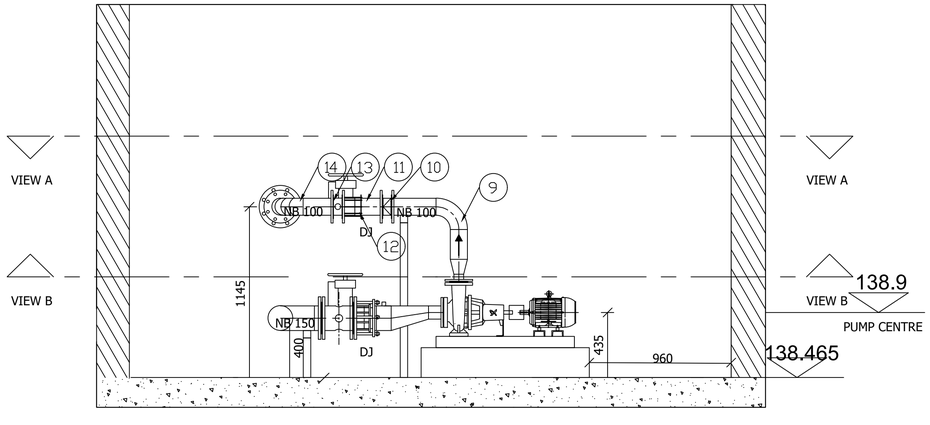
PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	3 of 3
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 001		B



PLAN - DELIVERY PIPE WORK VIEW A
1:20



PLAN - SUCTION PIPE WORK VIEW B
1:20



SECTION A A - DELIVERY PIPE WORK
1:20

ITEM	QTY	DESCRIPTION
1	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS,WITH CONCENTRIC PUDDLE FLANGE, PN 10
2	1	DN 200 to DN 150 PIPE SPECIAL, PN 10
3	1	DN 150 FLANGED RSV GATE VALVE,PN 10, HANDWHEEL
4	1	DN 150 STRAIGHT PIPE WITH SLOW BEND FLANGED, PN 10
5	1	DN 150 PIPE SPECIAL WITH SLOW BENDS FLANGED, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
6	3	DN 150 DISMANTLING JOINT COUPLING, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
7	2	DN 150 TO DN 100 PIPE SPECIAL, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
8	1	DN 150 ELECTROMAGNETIC FLOW METER, PN 16
9	2	DN 65 TO DN 100, WITH SLOW BEND PIPE FLANGED BOTH ENDS
10	2	DN 100 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 16
11	2	DN 100 STRAIGHT PIPE FLANGED ON ONE END, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 16
12	2	DN 100 DISMANTLING JOINT COUPLING, PN 16
13	1	DN 100 BUTTERFLY VALVE, PN 16
14	1	DN 100 to DN 150 PIPE SPECIAL, FLANGED BOTH ENDS
15	1	DN 150 PIPE FLANGED ONE END, PN 16
16	1	DN 150 STRAIGHT PIPE FLANGED BOTH ENDS, WITH PUDDLE FLANGE ON ONE END (LENGTH TO BE DETERMINED ON SITE)
17	2	DN 150 BUTTERFLY VALVE PN 16

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

Rev.	DATE	DESCRIPTION	NAME	SIGNATURE
B	31/08/2023	ISSUED FOR TENDER	DN	
			APPROVED	

	BY	DATE	SIGNATURE
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DESIGNED	N. SINGH	29 / 08 / 2023	
CHECKED	S. SEWLAL	29 / 08 / 2023	
APPROVED	D. NARAINSAMY	29 / 08 / 2023	

UMGENI WATER APPROVAL

ENGINEERING SERVICES	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

OPERATIONS	NAME	SIGNATURE	DATE
MAINTENANCE MANAGER			
AREA MANAGER			
ASSET MANAGER			
GENERAL MANAGER			

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P.O. Box 748
Westville
3630

CLIENT

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UNIT: ENGINEERING
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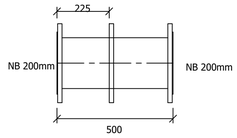
PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

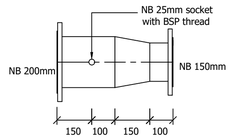
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OGUNJINI - RAW WATER FEED PUMP STATION MECHANICAL DETAIL

PROJECT No.	SCALE	SHEET SIZE	SHEET
DD170500	As Shown	A1	1 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 002		B

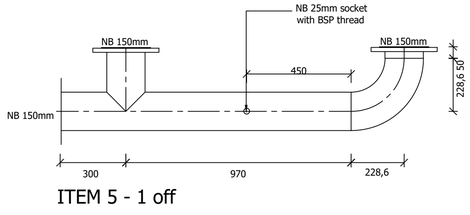


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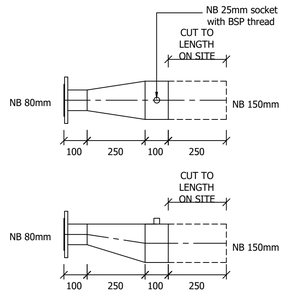


ITEM 2 - 1 off

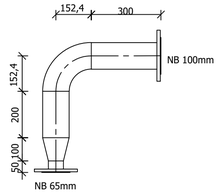
ITEM 4 - 1 off



ITEM 5 - 1 off

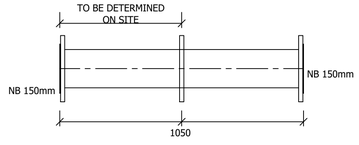


ITEM 7 - 2 off

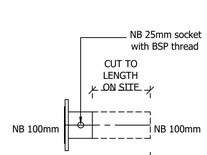


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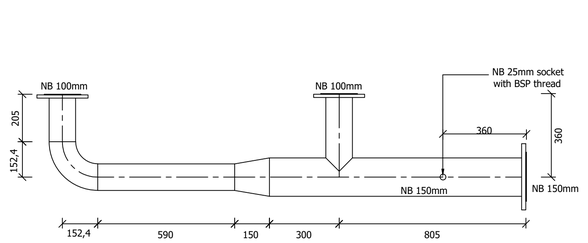
ITEM 15 - 1 off



ITEM 16 - 1 off



ITEM 11 - 2 off



ITEM 14 - 1 off

ITEM	QTY	DESCRIPTION
1	1	DN 200 SPOOL PIECE FLANGED BOTH ENDS,WITH CONCENTRIC PUDDLE FLANGE, PN 10
2	1	DN 200 to DN 150 PIPE SPECIAL, PN 10
3	1	DN 150 FLANGED RSV GATE VALVE,PN 10, HANDWHEEL
4	1	DN 150 STRAIGHT PIPE WITH SLOW BEND FLANGED, PN 10
5	1	DN 150 PIPE SPECIAL WITH SLOW BENDS FLANGED, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
6	3	DN 150 DISMANTLING JOINT COUPLING, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
7	2	DN 150 TO DN 100 PIPE SPECIAL, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 10
8	1	DN 150 ELECTROMAGNETIC FLOW METER, PN 16
9	2	DN 65 TO DN 100, WITH SLOW BEND PIPE FLANGED BOTH ENDS
10	2	DN 100 UNI-FLO DOUBLE DOOR CHECK VALVE, PN 16
11	2	DN 100 STRAIGHT PIPE FLANGED ON ONE END, COMPLETE WITH 25 MM HEAVY-DUTY SOCKET WITH BSP THREAD, PN 16
12	2	DN 100 DISMANTLING JOINT COUPLING, PN 16
13	1	DN 100 BUTTERFLY VALVE, PN 16
14	1	DN 100 to DN 150 PIPE SPECIAL, FLANGED BOTH ENDS
15	1	DN 150 PIPE FLANGED ONE END, PN 16
16	1	DN 150 STRAIGHT PIPE FLANGED BOTH ENDS, WITH PUDDLE FLANGE ON ONE END (LENGTH TO BE DETERMINED ON SITE)
17	2	DN 150 BUTTERFLY VALVE PN 16

ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

1. ALL PIPE WORK TO BE MEASURED & CHECKED ON SITE PRIOR TO INSTALLATION AND ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION

Rev.	DATE	DESCRIPTION	NAME	SIGNATURE
B	31/08/2023	ISSUED FOR TENDER	DN	APPROVED

	BY	DATE	SIGNATURE
DRAWN	N. SINGH	29 / 08 / 2023	
DESIGNED	N. SINGH	29 / 08 / 2023	
CHECKED	S. SEWLAL	29 / 08 / 2023	
APPROVED	D. NARAINSAMY	29 / 08 / 2023	

UMGENI WATER APPROVAL

ENGINEERING SERVICES	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

OPERATIONS	NAME	SIGNATURE	DATE
MAINTENANCE MANAGER			
AREA MANAGER			
ASSET MANAGER			
GENERAL MANAGER			

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CONSULTING ENGINEERS AND
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P.O. Box 748
Westville
3630

CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

OGUNJINI - RAW WATER FEED PUMP STATION MECHANICAL DETAIL - PIPE BENDS

PROJECT No.	SCALE	SHEET SIZE	SHEET
DD170500	As Shown	A1	2 of 2
CONTRACT No.	DRAWING No.		REVISION
WS 7759	P7957M47 002		B

CONCRETE RD

CONCRETE RD

Entrance Rd

GATE

FLOCCULATION TOWER

CONTAINER

CLARIFIER TANK

CLARIFIER TANK

SETTLED WATER BALANCING TANK

SWBT

4 NO. x PRESSURE FILTERS

PF

PF

PF

PF

FILTER BUILDING MCC

MCC

OFFICE & ABLUTIONS (REFURBISH)

DISINFECTION BUILDING (REFURBISH)

GUARD HUT

BATCHING TANKS (1 x NEW TANK)

1 x 150SQM, 4-CORE, Cu, SWA

10SQM, 4-CORE, Cu, SWA

10SQM, 4-CORE, Cu, SWA

NEW PUMP STATION (REFURBISH)

3 x 120SQM, 4-CORE, Cu, SWA

COVERED STAIRCASE INTO PUMP STATION LOWER LEVEL

PUMPSTATION MCC

MAIN LV PANEL

PS MCC

2 x 150SQM, 4-CORE, Cu, SWA

EXISTING 250kL CLEAR WATER RESERVOIR (MODIFICATIONS)

OVERFLOW PIPE FROM EXISTING CLEAR WATER RESERVOIR TO THE RIVER TO BE RELOCATED OR PROTECTED WITH SUITABLE ENCASING. DECISION TO BE TAKE ON SITE BEFORE SBS TANK IS INSTALLED.

500kL SBS CLEAR WATER TANK

EXISTING DOSING POINT

400kVA GENERATOR SLAB

REMOVE EXISTING POLE LIGHT

COMBINE THE TWO EXISTING FILTERS FROM THE SLOW SAND FILTERS FOR A SHORT SECTION TO INSERT A NEW FLOW METER.

TEMPORARY RUBBER HOSE DELIVERY LINES (DECOMMISSION)

160 mm Ø RAW WATER RISING
BE PROTECTED. ALLOW FOR
ON TO EXPOSE AND BACKFILL
% CEMENT STABILIZED SAND.
ION REGARDING BACKFILL TO
ON SITE AFTER THE PIPE HAS
ED. EXISTING PIPELINE MUST
MMISSIONED WHEN THE NEW
PLANT HAS been ACTIVATED.

FILTER PLANT BUILDING

EXISTING FLOW METER CHAMBER

EXISTING PAVED FOOTPATH

10SQM, 4-CORE, Cu, SWA

NEW ABLUTIONS

10SQM, 3-CORE, Cu, SWA

4SQM, 4-CORE, Cu, SWA

16SQM, 4-CORE, Cu, SWA

CLARIFIER 1

SLOW SAND FILTER TANK 1

SLOW SAND FILTER TANK 2

SLOW SAND FILTER TANK 3

SLOW SAND FILTER TANK 4

SLOW SAND FILTER TANK 5

LAB & DOSING BUILDING (REFURBISH)

BULK STORAGE TANK SLAB

FLOC TANK

CLARIFIER 2

SPLITTER BOX 1

SLUDGE MANHOLE (MODIFICATION)

CLARIFIER 3

SPLITTER BOX 2

CLARIFIER 4

RAW WATER FEED MCC

RAW WATER FEED PUMP STATION

RAW WATER BALANCING TANKS

RAW WATER BALANCING TANKS

190kL SLUDGE HOLDING TANK WITH MIXER

200 mm Ø HDPE NEW RAW WATER RISING MAIN

200 mm Ø HDPE NEW RAW WATER RISING MAIN

160 mm Ø UPVC RAW WATER PIPE CONNECTED TO TEMPORARY SYSTEM (DECOMMISSION)

160 mm Ø HDPE RAW WATER PIPE CONNECTED TO FORMAL SYSTEM (DECOMMISSION)

EXISTING CLARIFIERS WASTED SLUDGE DISCHARGE TO RIVER (DECOMMISSION)

2 x 160 mm Ø EXISTING RAW WATER RISING MAINS (DECOMMISSION)

ION TREE TO BE RELOCATED
HE PLATFORM WORK OF THE
CKAGE PLANT COMMENCES.

WEDGE-WIRE SCREEN TO BE INSERTED AT INLET (MODIFICATION)

SCOUR PIPE FROM THE RAW
NCING TANKS TO THE RIVER
RELOCATED OR PROTECTED
WITH SUITABLE ENCASING.
TO BE TAKE ON SITE BEFORE
DGE HOLDING TANK AND THE
WATER FEED PUMP STATION
ARE CONSTRUCTED.

Water Pipe Marker 139.041

Lemon Tree

Tree

Mango Tree

WATER MARKER

CONSULTANT PROJECT NO: J36094

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P.O. Box 748
Westville
3630

Designed :	S SEWLAL
Drawn :	N SINGH
Checked :	S SEWLAL
Approved :	D NARAINSAMY

REVISIONS

Revision	Date	Description
B	31/08/2023	ISSUED FOR TENDER

LEGEND :

- MAINS SUPPLY, 3 x 120mm 3-φ 4-CORE ECC SWA PVC Cu CABLES, IN TRENCHING (800mm DEEP WITH DANGER TAPE)
- MAINS SUPPLY, 10mm 1-φ 3-CORE ECC SWA PVC Cu CABLE, IN TRENCHING (600mm DEEP WITH DANGER TAPE)
- POWER SUPPLY CABLE, 4mm 3-φ 4-CORE ECC SWA PVC Cu CABLE, IN TRENCHING (600mm DEEP WITH DANGER TAPE)
- GEN AND MCC SUPPLY, 150mm 3-φ 4-CORE ECC SWA PVC Cu CABLE, IN TRENCHING (800mm DEEP WITH DANGER TAPE)
- MAINS AND MCC SUPPLY, 10mm 3-φ 4-CORE ECC SWA PVC Cu CABLE, IN TRENCHING (600mm DEEP WITH DANGER TAPE)
- MCC SUPPLY, 16mm 3-φ 4-CORE ECC SWA PVC Cu CABLE, IN TRENCHING (600mm DEEP WITH DANGER TAPE)
- SUPPLY POINT
- DISTRIBUTION BOARD
- MCC
- 4 X 100W, COOL WHITE ALUMINIUM FLOODLIGHTS ON 5 METRE GALVANIZED POLE

NOTE:
ALL CABLES TO HAVE SUFFICIENT CABLE MARKERS ON THE SURFACE.
EXISTING POLE LIGHTS TO BE REMOVED AND REPLACED.

CONTRACTOR ENGINEERING & APPROVAL

Mechanical Engineer	
Electrical Engineer	
Instrumentation Engineer	

APPROVED FOR CONSTRUCTION

NAME & SURNAME
Electrical Engineer

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title

ELECTRICAL SITE PLAN
CABLE RETICULATION LAYOUT

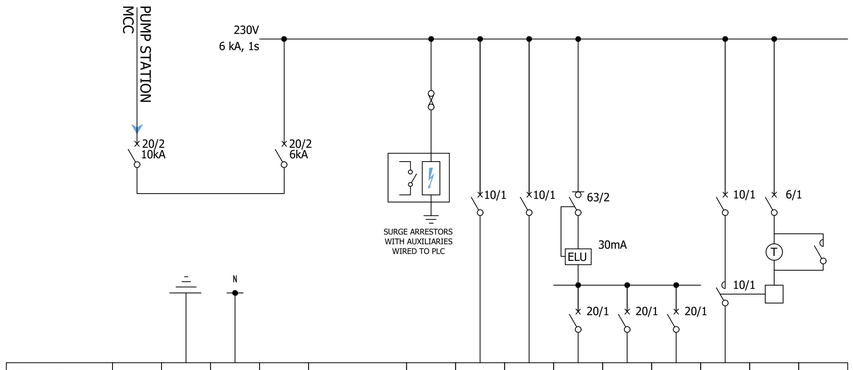
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : 1:150 **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/E/800	1 OF 1	B

1 ABSTRACTION DB
SINGLE LINE DIAGRAM

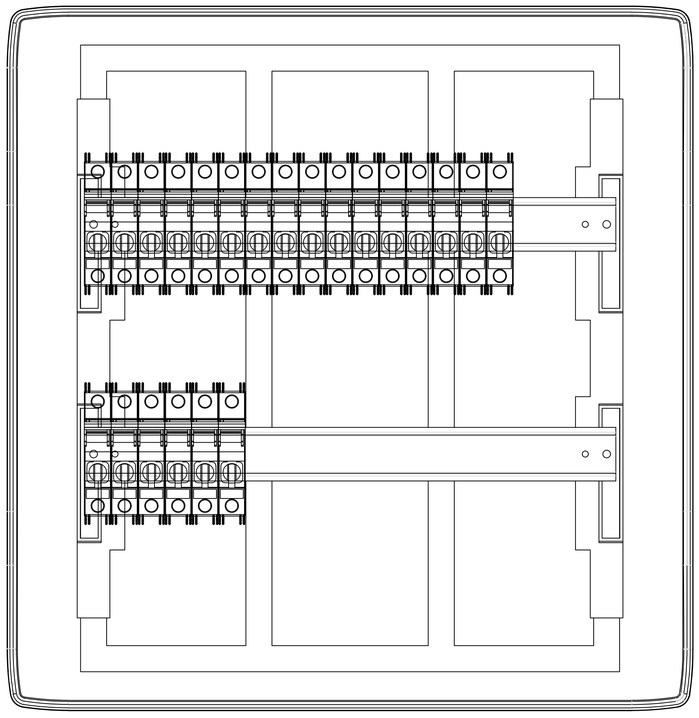
SCALE N.T.S.



CIRCUIT NO.	P10			P10		CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3		
CONDUCTOR (mm2)	10/3	FULL	FULL	10/3			1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	2.5/3		
TYPE	ECC			ECC			PVC	PVC	PVC	PVC	PVC	2.5/3	PANEL	PANEL
REMARKS	PUMP STATION MCC	EARTH	NEUTRAL	INCOMER			IL1	SPARE	SP1	SP2	SPARE	EL1	TIMER BACKUP	BYPASS
LENGTH (m)				55										
MOTOR POWER (kW)														

2 ABSTRACTION DB
GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

DATE	DESCRIPTION	NAME	SIGNATURE
31/08/2023	ISSUED FOR TENDER		
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

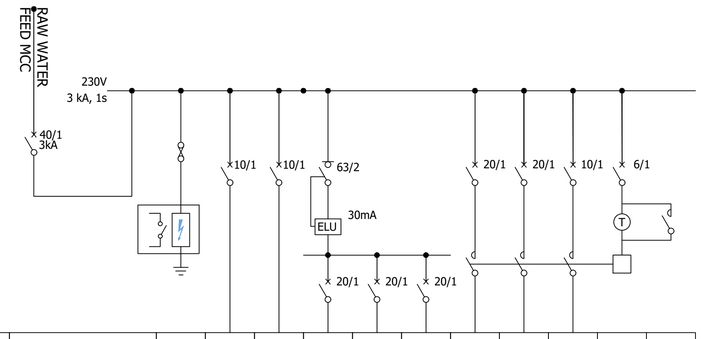
TITLE

ABSTRACTION DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-813		A

1 ADMIN DB
SINGLE LINE DIAGRAM

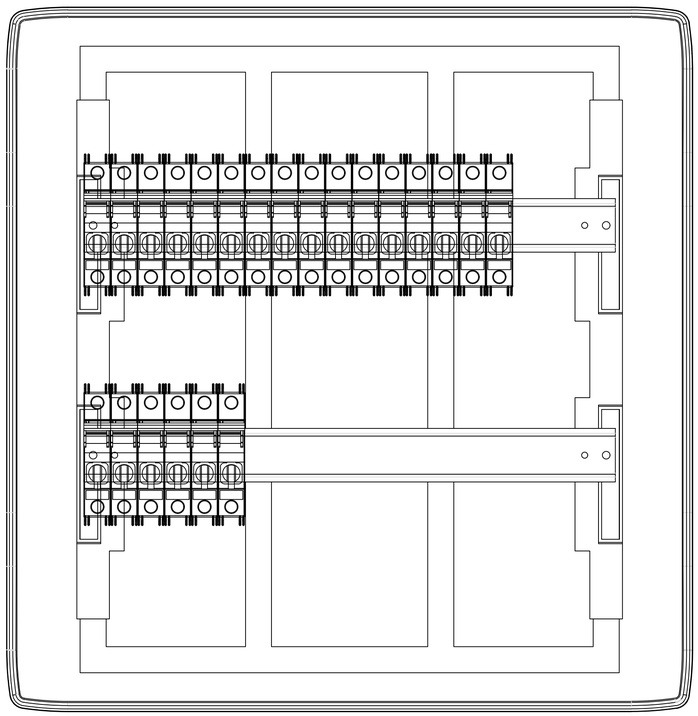
SCALE N.T.S.



CIRCUIT NO.	P12	CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3	L4	L5		
CONDUCTOR (mm²)	10/3		1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	4/3	4/3	1.5/3		
TYPE	ECC		PVC	PVC	PVC	PVC	PVC	ECC	ECC	PVC	PANEL	PANEL
REMARKS	RAW WATER FEED DB		IL1	SPARE	SP1	SP2	SPARE	FLOOD LIGHTS 1	FLOOD LIGHTS 2	EL1	TIMER BACKUP	BYPASS
LENGTH (m)	10											
MOTOR POWER (kW)												

2 ADMIN DB
GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

DATE	DESCRIPTION	NAME	SIGNATURE
31/08/2023	ISSUED FOR TENDER	APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

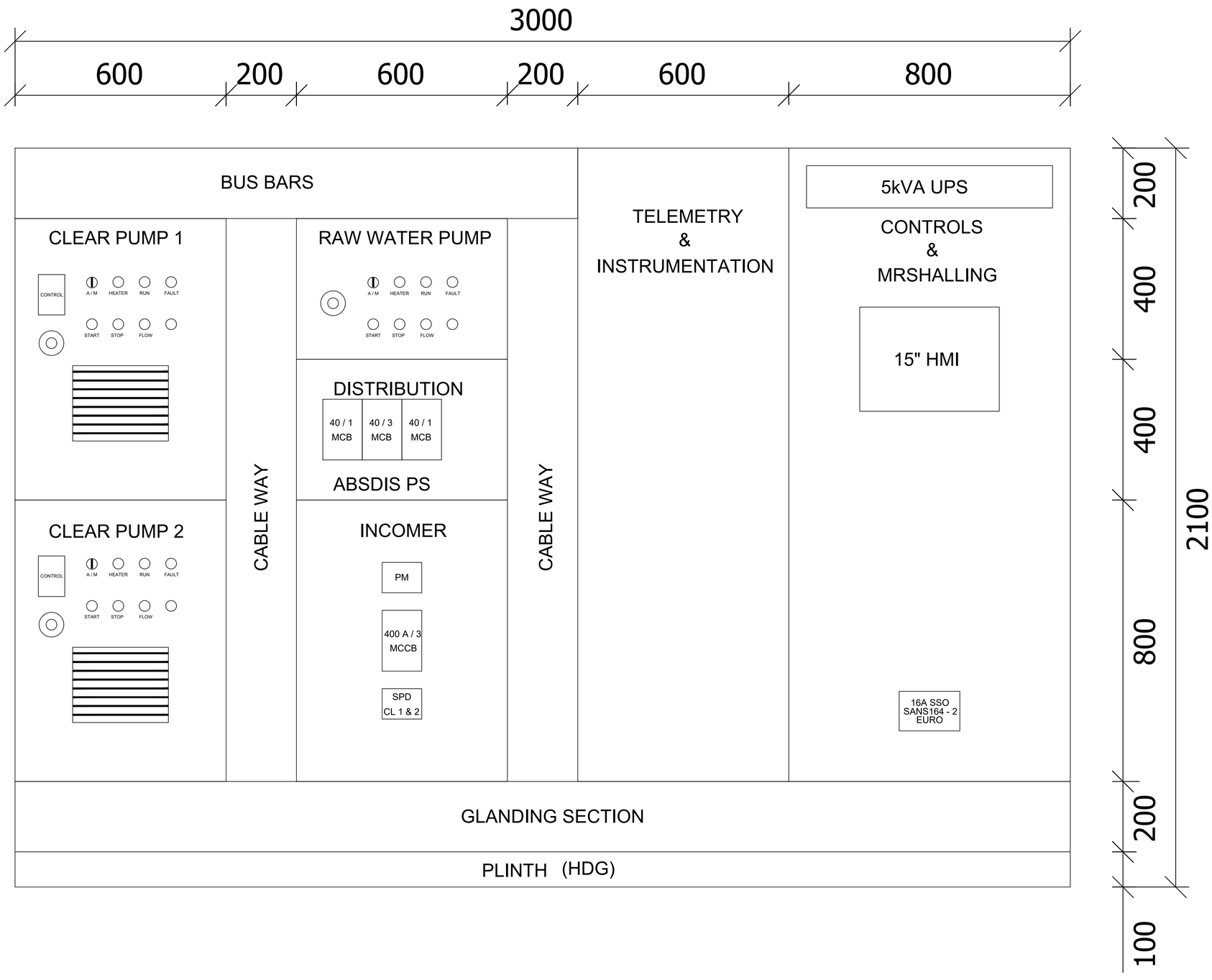
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

ADMIN BUILDING DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-811		A

1 PUMP STATION MCC - 01
GENERAL ARRANGEMENT SCALE 1:20



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

DATE	DESCRIPTION	NAME	SIGNATURE
31/08/2023	ISSUED FOR TENDER		
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

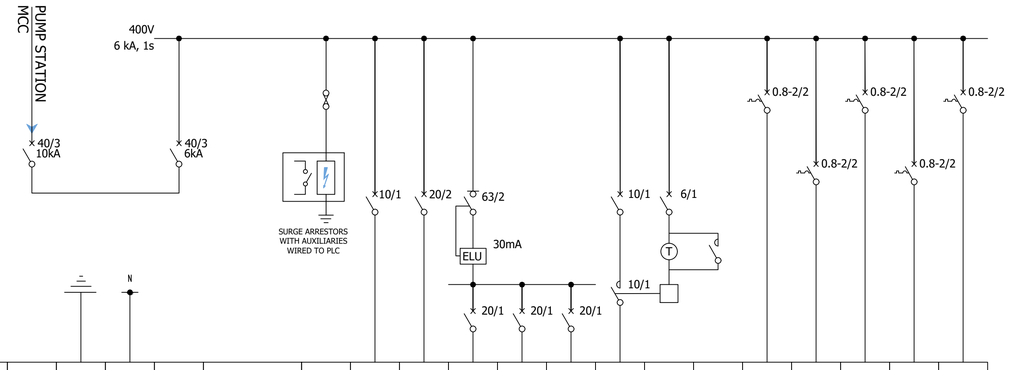
TITLE

CLEARWATER PUMP STATION MCC PANEL

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-828		A

1 DISINFECTION DB SINGLE LINE DIAGRAM

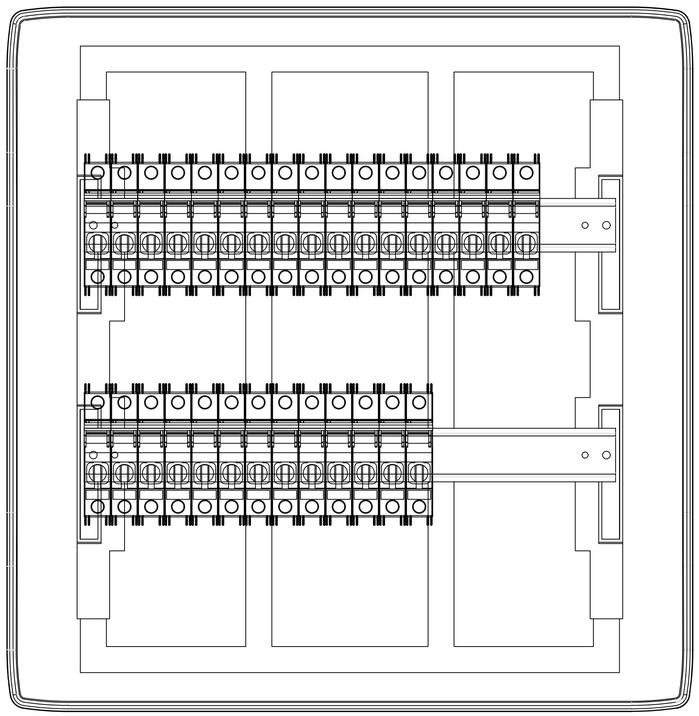
SCALE N.T.S.



CIRCUIT NO.	P11			P11		CLASS 1 SURGE ARRESTOR	L1	P40	SP1	SP2	SP3	L3			P34	P35	P36	P37	P38
CONDUCTOR (mm²)	10/4	FULL	FULL	10/4			1.5/3	6/3	2.5/3	2.5/3	2.5/3	2.5/3			1.5/3	1.5/3	1.5/3	1.5/3	1.5/3
TYPE	ECC			ECC			PVC	ECC	PVC	ECC	PVC	2.5/3	PANEL	PANEL	SWA	SWA	SWA	SWA	SWA
REMARKS	PUMP STATION MCC	EARTH	NEUTRAL	INCOMER			IL1	GUARD HUT	SP1	GUARD HUT	SPARE	EL1	TIMER BACKUP	BYPASS	DP1 ISOLATOR	DP2 ISOLATOR	DP3 ISOLATOR	DP4 ISOLATOR	DP5 ISOLATOR
LENGTH (m)				55				40							10	10	10	10	10
MOTOR POWER (kW)															0.08	0.08	0.08	0.08	0.5

2 DISINFECTION DB GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

31/08/2023	ISSUED FOR TENDER		
DATE	DESCRIPTION	NAME	SIGNATURE
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

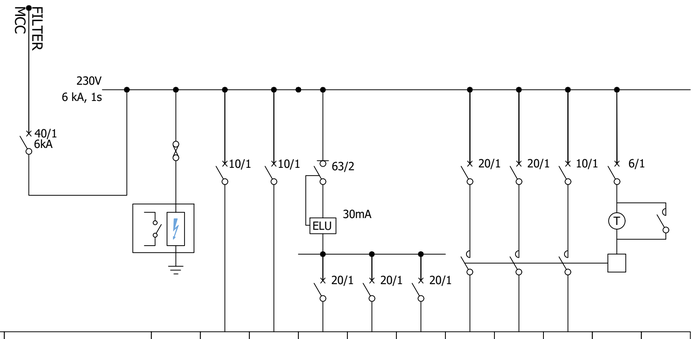
TITLE

DISINFECTION DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-826		A

1 FILTER BUILDING DB SINGLE LINE DIAGRAM

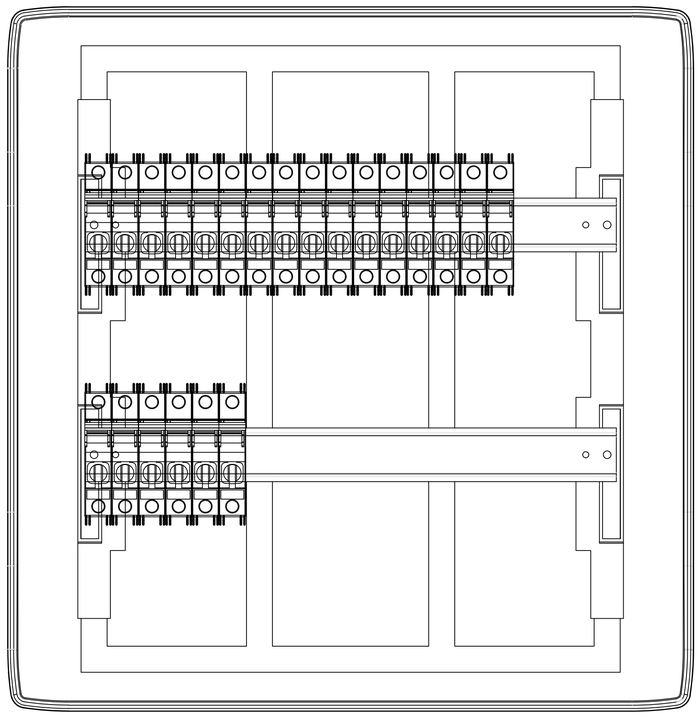
SCALE N.T.S.



CIRCUIT NO.	P12	CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3	L4	L5		
CONDUCTOR (mm²)	10/3		1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	4/3	4/3	1.5/3		
TYPE	ECC		PVC	PVC	PVC	PVC	PVC	ECC	ECC	PVC	PANEL	PANEL
REMARKS	FILTER DB		IL1	SPARE	SP1	SP2	SPARE	FLOOD LIGHTS 1	FLOOD LIGHTS 2	EL1	TIMER BACKUP	BYPASS
LENGTH (m)	17											
MOTOR POWER (kW)												

2 FILTER BUILDING DB GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

DATE	DESCRIPTION	NAME	SIGNATURE
31/08/2023	ISSUED FOR TENDER	APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

INGEROP Inventing for tomorrow

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

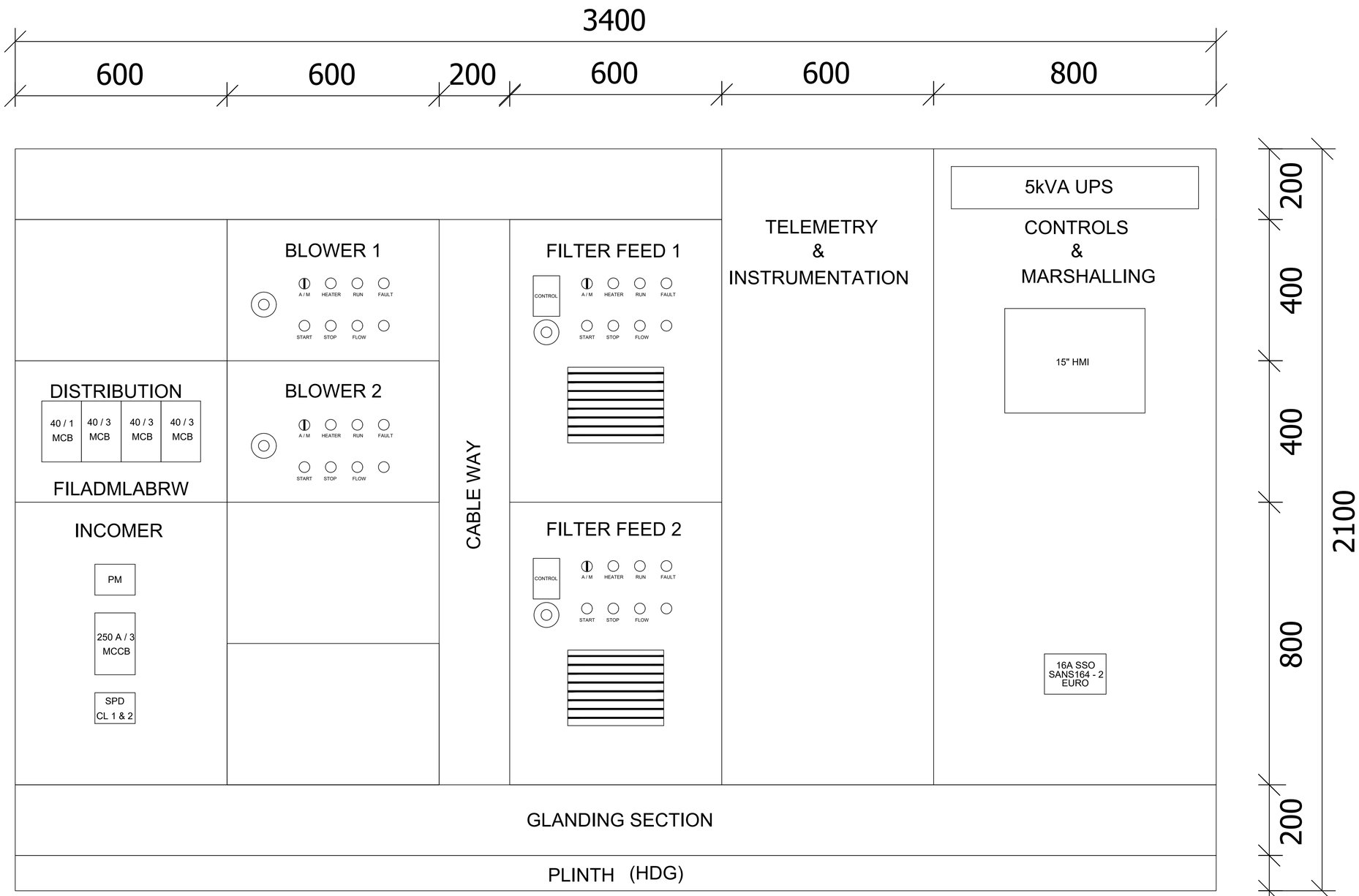
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

FILTER BUILDING DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-815		A

② FILTER MCC - 02
GENERAL ARRANGEMENT
SCALE 1:20



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES:

DATE	DESCRIPTION	NAME	SIGNATURE
31/08/2023	ISSUED FOR TENDER	APPROVED	

	BY	DATE	SIGNATURE
DRAWN	T.MOODLEY	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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Inventing for tomorrow
CONSULTING ENGINEERS AND PROJECT MANAGERS
2nd Floor, 53 Richefond Circle,
Ridgeside Office Park,
Umhlanga Rocks,
Tel: (031) 266 8363
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ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT
WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

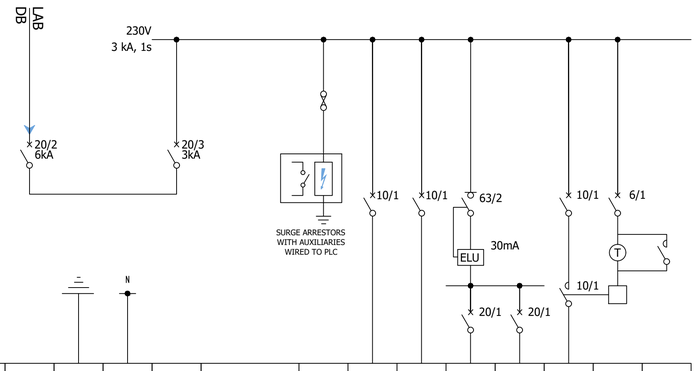
TITLE

FILTER BUILDING MCC

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-808		A

1 GUARD HUT DB SINGLE LINE DIAGRAM

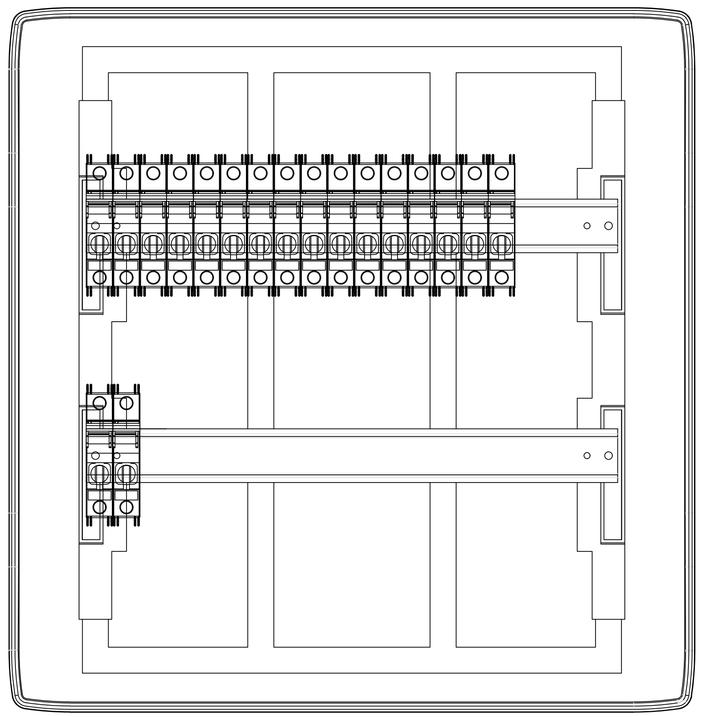
SCALE N.T.S.



CIRCUIT NO.	P40			P40		CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP3	L3		
CONDUCTOR (mm²)	4/3	FULL	FULL	6/3			1.5/3	1.5/3	2.5/3	2.5/3	2.5/3		
TYPE	ECC			ECC			PVC	PVC	PVC	PVC	2.5/3	PANEL	PANEL
REMARKS	LAB DB	EARTH	NEUTRAL	INCOMER			IL1	SPARE	SP1	SPARE	EL1	TIMER BACKUP	BYPASS
LENGTH (m)				40									
MOTOR POWER (kW)													

2 GUARD HUT DB GENERAL ARRANGEMENT

SCALE 1:2



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OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

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DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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CLIENT

ETHEKWINI MUNICIPALITY WATER AND SANITATION UNIT: ENGINEERING DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

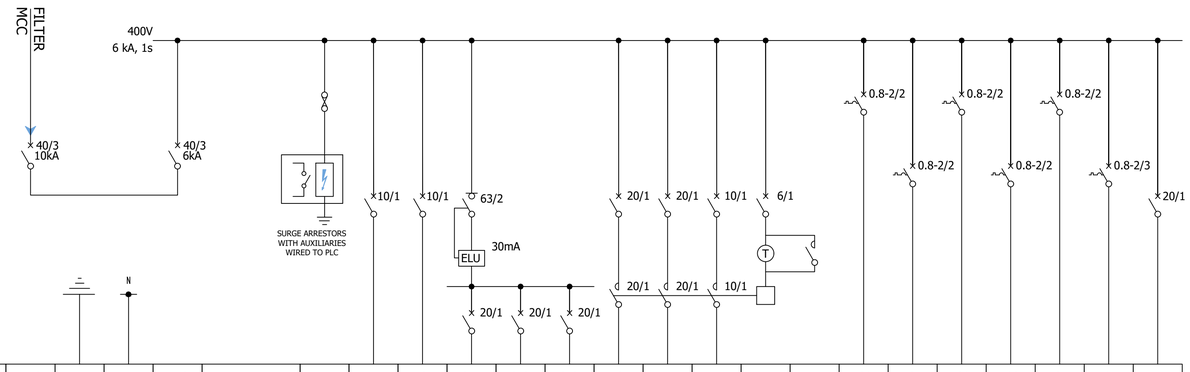
TITLE

GUARD HUT DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-829		A

1 LAB DB
SINGLE LINE DIAGRAM

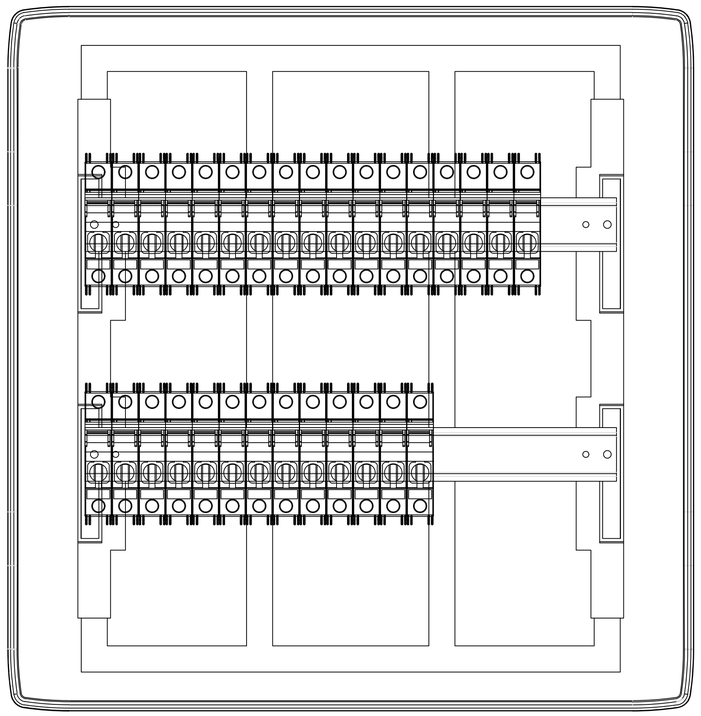
SCALE N.T.S.



CIRCUIT NO.	P13			P13		CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3	L4	L5			P30	P31	P32	P33	P34	P35	F1
CONDUCTOR (mm2)	10/4	FULL	FULL	10/4			1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	4/3	4/3	2.5/3			1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	2.5/3
TYPE	ECC			ECC			SINGLE PVC	SINGLE PVC	SINGLE PVC	SINGLE PVC	SINGLE PVC	ECC	ECC	2.5/3	PANEL	PANEL	SWA	SWA	SWA	SWA	SWA	SWA	SWA
REMARKS	FILTER MCC	EARTH	NEUTRAL	INCOMER			IL1	SPARE	SP1	SP2	SPARE	FLOOD LIGHTS 1	FLOOD LIGHTS 2	EL1	TIMER BACKUP	BYPASS	DP1 ISOLATOR	DP2 ISOLATOR	DP3 ISOLATOR	DP4 ISOLATOR	SP1 ISOLATOR	M1 ISOLATOR	FAN ISOLATOR
LENGTH (m)				35													15	15	15	15	30	25	
MOTOR POWER (kW)																	0.08	0.08	0.08	0.08	0.5	0.08	

2 LAB DB
GENERAL ARRANGEMENT

SCALE 1:2



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REFERENCE DRAWINGS

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OGUNJINI CLIENT APPROVAL

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WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

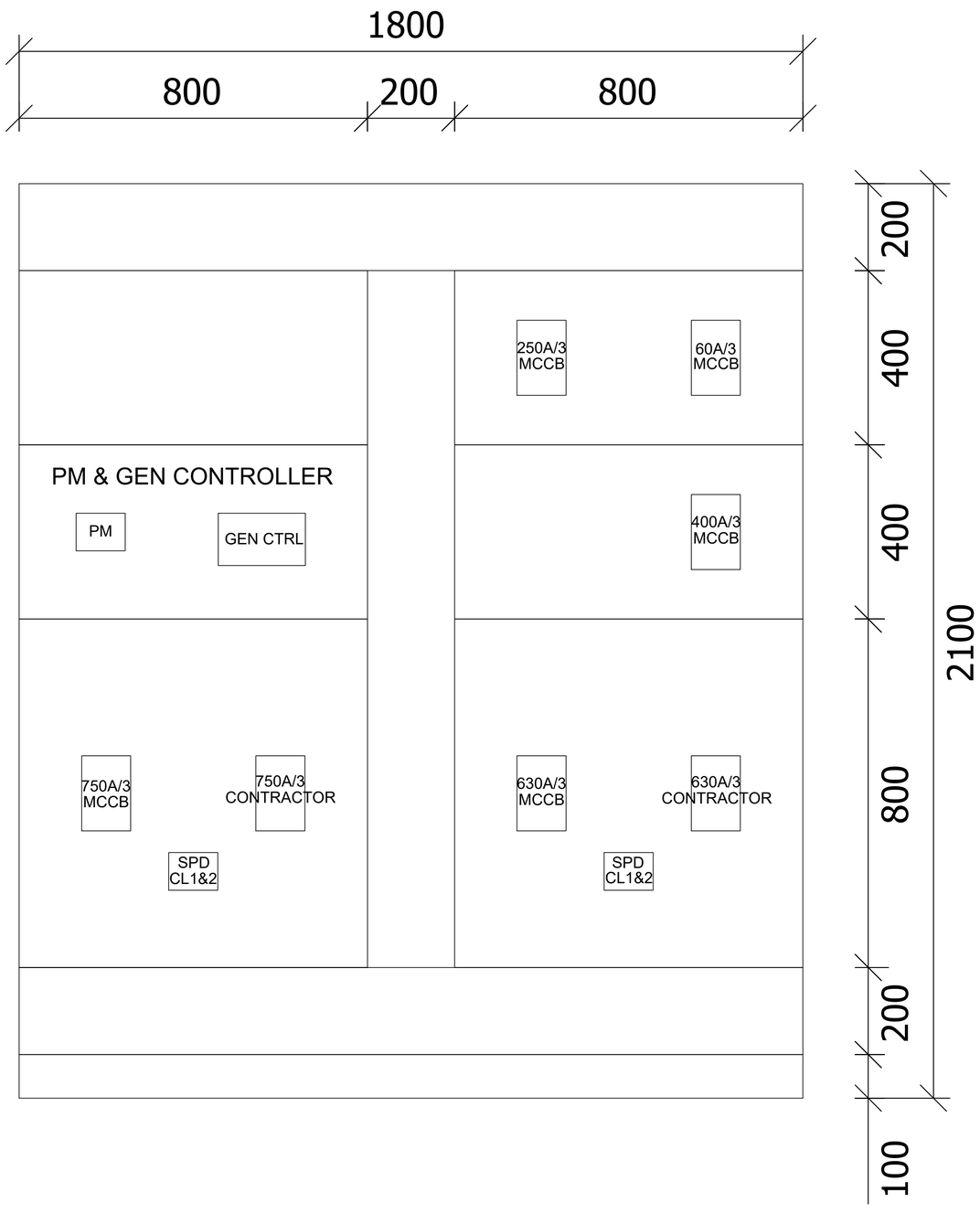
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

LAB DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-812		A

1 MAIN LV PANEL
GENERAL ARRANGEMENT



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REFERENCE DRAWINGS

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WORKS EMERGENCY CAPACITY
INCREASE FROM 1ML/D TO 3ML/D

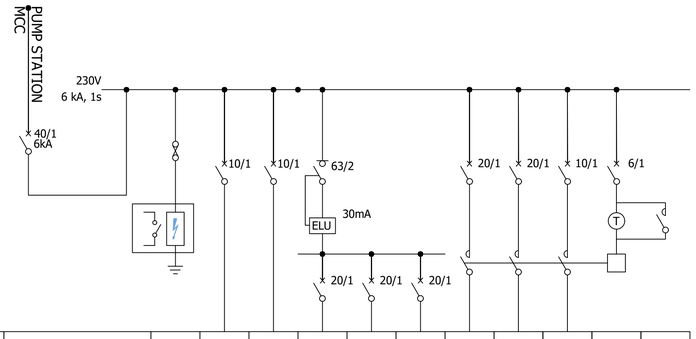
TITLE

MAIN LV PANEL

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-823		A

1 PUMP STATION DB
SINGLE LINE DIAGRAM

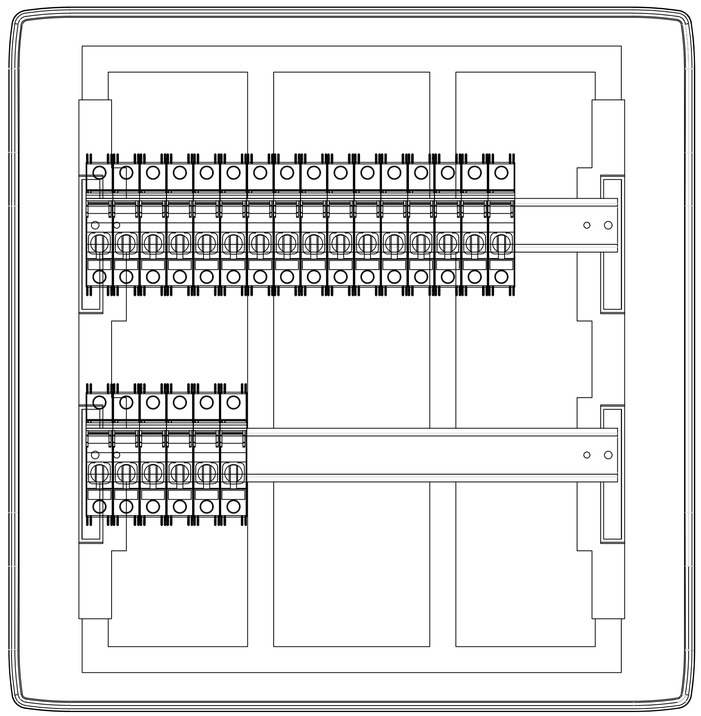
SCALE N.T.S.



CIRCUIT NO.	P19	CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3	L4	L5		
CONDUCTOR (mm²)	10/3		1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	4/3	4/3	1.5/3		
TYPE	ECC		PVC	PVC	PVC	PVC	PVC	ECC	ECC	PVC	PANEL	PANEL
REMARKS	PUMP STATION DB		IL1	SPARE	SP1	SP2	SPARE	FLOOD LIGHTS 1	FLOOD LIGHTS 2	EL1	TIMER BACKUP	BYPASS
LENGTH (m)	17											
MOTOR POWER (kW)												

2 PUMP STATION DB
GENERAL ARRANGEMENT

SCALE 1:2



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REFERENCE DRAWINGS

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OGUNJINI CLIENT APPROVAL

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WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

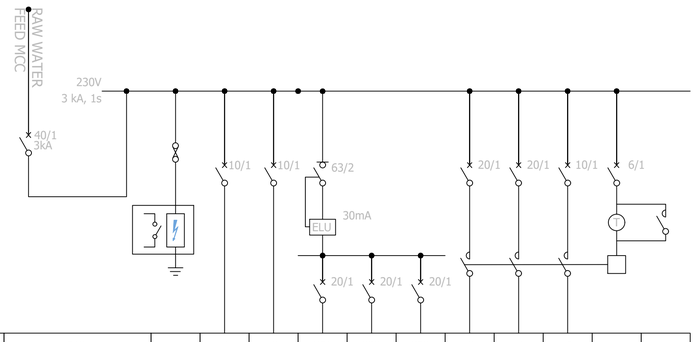
TITLE

PUMP STATION DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-810		A

1 RAW WATER FEED DB SINGLE LINE DIAGRAM

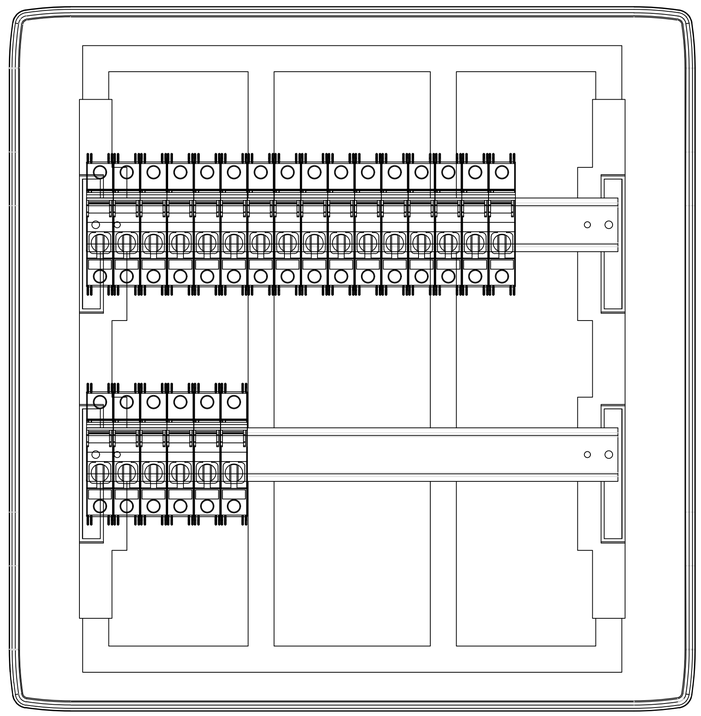
SCALE N.T.S.



CIRCUIT NO.	P12	CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L3	L4	L5		
CONDUCTOR (n^2m^2)	10/3		1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	4/3	4/3	1.5/3		
TYPE	ECC		PVC	PVC	PVC	PVC	PVC	ECC	ECC	PVC	PANEL	PANEL
REMARKS	RAW WATER FEED DB		IL1	SPARE	SP1	SP2	SPARE	FLOOD LIGHTS 1	FLOOD LIGHTS 2	EL1	TIMER BACKUP	BYPASS
LENGTH (m)	10											
MOTOR POWER (kW)												

2 RAW WATER FEED DB GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

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OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

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DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

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WATER AND SANITATION
UNIT: ENGINEERING
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PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

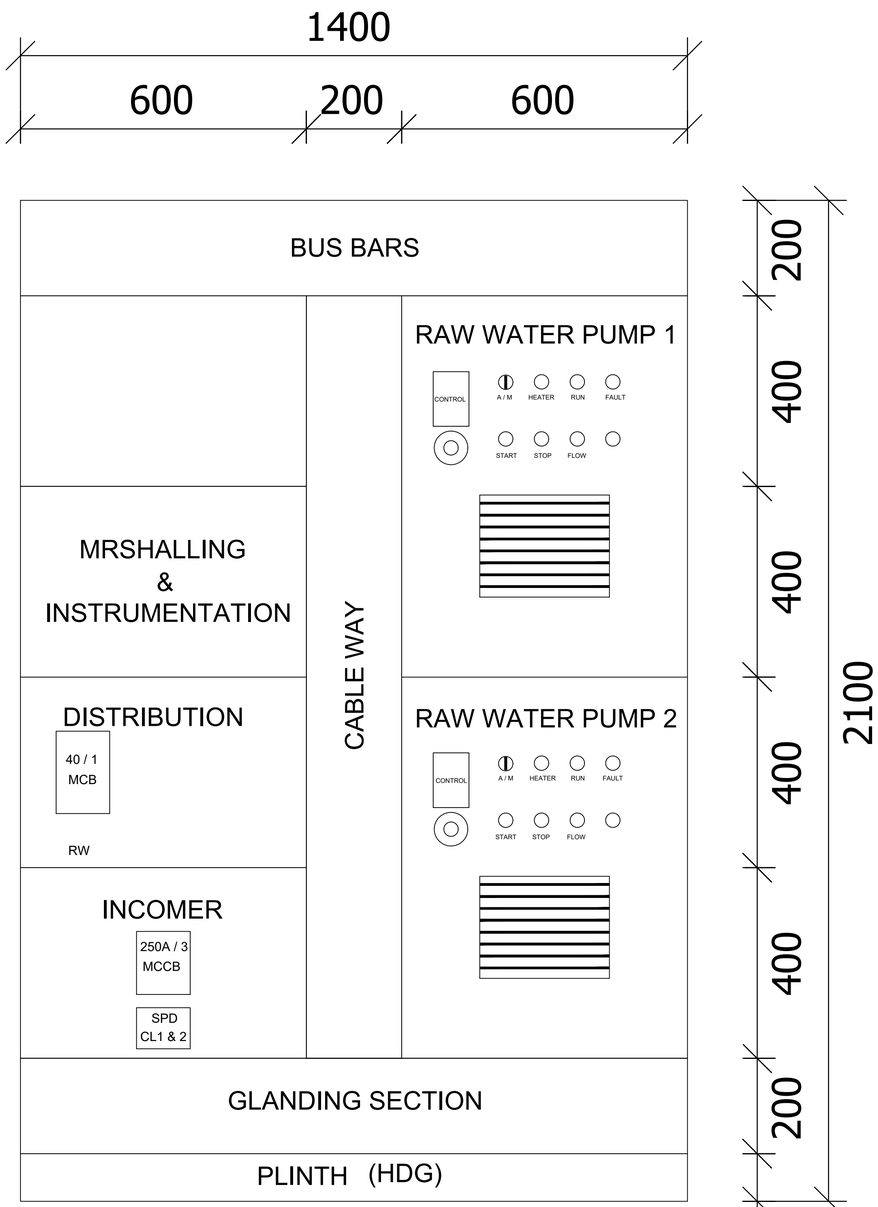
TITLE

RAW WATER FEED DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-816		A

(2) RAW WATER FEED MCC GENERAL ARRANGEMENT

SCALE 1:20



ISSUED FOR TENDER

REFERENCE DRAWINGS

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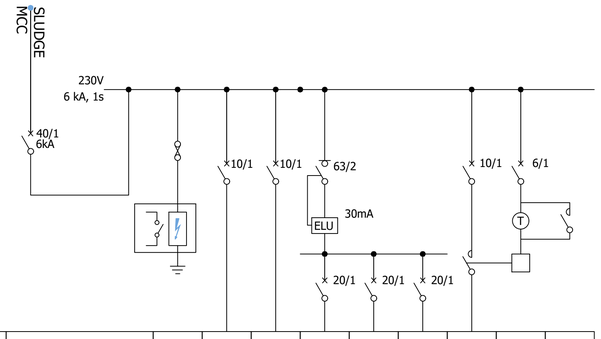
TITLE

RAW WATER FEED MCC

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-806		A

1 SLUDGE DB SINGLE LINE DIAGRAM

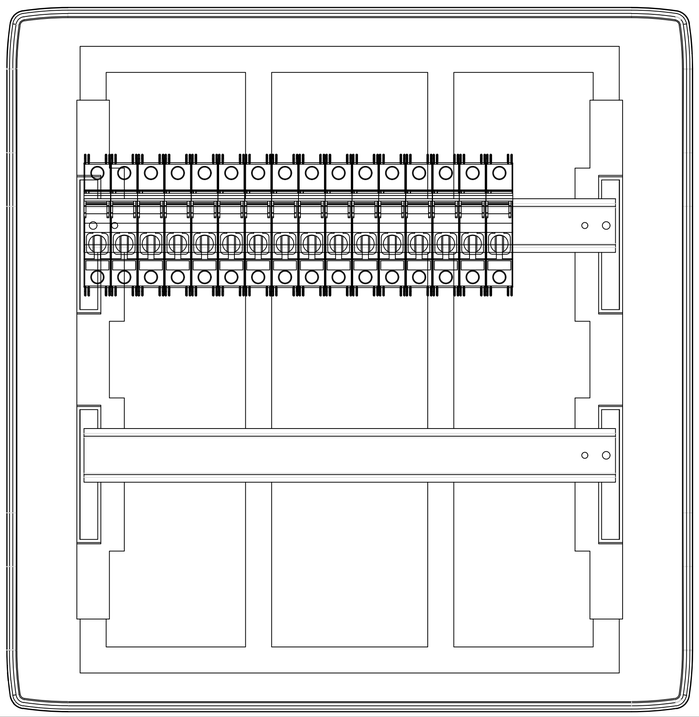
SCALE N.T.S.



CIRCUIT NO.	P13	CLASS 1 SURGE ARRESTOR	L1	L2	SP1	SP2	SP3	L5		
CONDUCTOR (mm²)	10/3		1.5/3	1.5/3	2.5/3	2.5/3	2.5/3	1.5/3		
TYPE	ECC		PVC	PVC	PVC	PVC	PVC	PVC	PANEL	PANEL
REMARKS	FILTER DB		IL1	SPARE	SP1	SP2	SPARE	EL1	TIMER BACKUP	BYPASS
LENGTH (m)	10									
MOTOR POWER (kW)										

2 SLUDGE DB GENERAL ARRANGEMENT

SCALE 1:2



ISSUED FOR TENDER

REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

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PROJECT TITLE

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

SLUDGE DB

PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	AS SHOWN	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	57270-E-825		A

GENERAL

1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT SECTIONS OF THE SANS 1200.
2. READ THIS DRAWING IN CONJUNCTION WITH OTHER ENGINEERING DRAWINGS AND PROJECT SPECIFICATIONS.
3. ALL CONTRACTOR'S QA DOCUMENTATION TO BE FORWARDED TO ENGINEER BEFORE COMMENCING WITH ANY STRUCTURAL WORK.
4. ALL LEVELS ARE IN METRES RELATIVE TO THE APPROPRIATE LOCAL DATUM.
5. ALL LEVELS ON DRAWINGS INDICATE TOP OF CONCRETE UNLESS INDICATED OTHERWISE.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
7. NO DIMENSIONS ON DRAWINGS ARE TO BE SCALED.
8. CONTRACTOR TO CHECK ALL DIMENSIONS AND LEVELS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER.

DESIGN CRITERIA

1. DESIGN IN ACCORDANCE WITH THE FOLLOWING CODES:
   - LOADINGS: SANS 10160
   - FOUNDATIONS: SANS 0161
   - CONCRETE: SANS 10100
   - STRUCTURAL STEEL: SANS 10162
1. DESIGN SUPERIMPOSED DEAD LOADS:

   CONCRETE SELF WEIGHT: 24,5kN/m³

SURFACE BED

1. PROVIDE 250 MICRON DPC UNDER ALL SURFACE BEDS WITH A MINIMUM LAP OF 300mm.
2. MINIMUM LAP OF MESH REINFORCEMENT IS 450mm UNLESS OTHERWISE NOTED.
3. PROVIDE A VERTICAL ISOLATION JOINT BETWEEN THE SURFACE BED AND ALL VERTICAL WALLS AND COLUMNS PROTRUDING THROUGH THE SURFACE BED.
4. CONCRETE CAST UNDER ROOF COVER: SAW CUT SURFACE BEDS WITHIN 24 HOURS OF CASTING.
5. CONCRETE CAST IN OPEN AIR. SAW CUT FLOOR SLABS WITHIN 6 HOURS OF CASTING

IN SITU CONCRETE WORK

1. ALL CONCRETE WORK TO BE CARRIED OUT IN ACCORDANCE WITH SANS 1200 G.
2. MINIMUM CONCRETE CUBE STRENGTH AT 28 DAYS AND MINIMUM COVER TO REINFORCEMENT:

ELEMENT	28 DAY STRENGTH (MPa)	EXPOSURE CONDITION	COVER (mm)
BLINDING, MASS CONCRETE, SCREED	15	MODERATE	N/A
SURFACE BEDS	30	MODERATE	50
APRON SLABS	25	SEVERE	N/A
RC FOUNDATIONS	25	SEVERE	50
RC COLUMNS	30	SEVERE	45
RC SLABS	30	SEVERE	45
RC BEAMS	30	SEVERE	45
LIQUID RETAINING STRUCTURES : • SLUDGE HOLDING TANK AND • SLUDGE MANHOLE MODIFICATION	35	SEVERE	50
BULK STORAGE TANK	30	SEVERE	50
CLEAR WATER RESERVOIR VALVE CHAMBER	25	SEVERE	50

3. MAXIMUM NOMINAL CONCRETE AGGREGATE SIZE = 19MM, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
4. NO-FINES CONCRETE SHALL CONSIST OF COURSE AGGREGATE OF A SINGLE SIZE (19mm), CEMENT AND WATER ONLY. NO FINE AGGREGATE SHALL BE ALLOWED.
5. MIX DESIGNS, TRIAL MIX CUBE TEST RESULTS AND SLUMP LIMITS TO BE SUBMITTED TO ENGINEER FOR APPROVAL AT LEAST 7 DAYS BEFORE CONCRETE IS DUE TO BE CAST.
6. A SLUMP TEST SHALL BE CARRIED OUT ON EVERY BATCH/TRUCK OF CONCRETE DELIVERED TO SITE AND ANY BATCH OR TRUCK LOAD OF CONCRETE THAT FALLS OUTSIDE THE LIMITS WILL BE REJECTED AND REMOVED FROM SITE.
7. CUBES SHALL BE TESTED 28 DAYS AFTER CASTING AND RESULTS TO BE SUBMITTED TO THE ENGINEER WITHIN 7 DAYS FROM DATE OF TEST. ADDITIONAL CUBES TO BE CAST FOR 7 DAYS STRENGTH.
8. DIMENSIONS OF BEAMS ARE INDICATED AS WIDTH x DEPTH.
9. THE CONTRACTOR MUST ENSURE THAT ALL EMBEDDED ITEMS AND PENETRATIONS FOR SERVICES HAVE BEEN PROVIDED FOR AND POSITIONED ACCORDING TO THE LATEST DRAWINGS OF ALL DISCIPLINES BEFORE CASTING CONCRETE.
10. ACRONYMS ARE DEFINED AS FOLLOWS:
    SC: SAW CUT JOINT
    CJ: CONSTRUCTION JOINT
11. CONSTRUCTION JOINT POSITIONS ARE INDICATIVE ONLY AND SHALL BE AGREED WITH THE ENGINEER. MOVEMENT JOINTS ARE TO BE INSTALLED AS INDICATED ON THE DRAWINGS.
12. CONSTRUCTION JOINTS: NO HORIZONTAL JOINTS WILL BE ALLOWED IN BASES, BEAMS AND SLABS. NO VERTICAL JOINTS IN COLUMNS AND SHEAR WALLS.
13. WHERE IT IS NECESSARY TO UTILIZE CONSTRUCTION JOINTS, SUCH JOINTS SHALL BE INSPECTED BY THE ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
14. THE PROPOSED CASTING SEQUENCE OF ALL CONCRETE TO BE APPROVED BY THE ENGINEERS REPRESENTATIVE 14 DAYS BEFORE CASTING.
15. IF FOR ANY REASON A COLD JOINT SHOULD FORM DURING CASTING, THE PLANE OF THE JOINT SHOULD BE AT 45 DEGREES TO THE SOFFIT OF THE MEMBER AND THE ENGINEER SHOULD BE NOTIFIED IMMEDIATELY.
16. ALL EXPOSED CONCRETE CORNERS WITH AN ANGLE OF 90° OR LESS SHALL HAVE A 20mm x 20mm CHAMFER UNLESS OTHERWISE NOTED ON THE DRAWINGS.
17. NO CONCRETE SHALL BE CAST IN LIFTS IN EXCESS OF 3m UNLESS MEASURES ARE TAKEN TO ENSURE SEGREGATION DOES NOT OCCUR, AS APPROVED BY ENGINEER.
18. ALL CONCRETE TO BE COMPACTED USING A MECHANICAL VIBRATOR OF A SUITABLE SIZE. POURS DEEPER THAN 300mm TO BE DOUBLE VIBRATED, THE SECOND VIBRATING BEING DONE JUST BEFORE INITIAL SET.
19. THE TOP OF CONCRETE ELEMENTS AND THE SURFACE OF ALL CONSTRUCTION JOINTS SHALL BE SCABBLE OR WATER JETTED TO REMOVE LAITENCE AND LOOSE MATERIAL AND TO ROUGHEN EDGES PRIOR TO CASTING THE NEXT LIFT OF CONCRETE. A WET TO DRY EPOXY TO BE PROVIDED TO THE ENGINEER'S APPROVAL ON TOP OF SLABS WHERE UPSTAND BEAMS ARE CAST.
20. ALL CONCRETE TO BE CONTINUOUSLY CURED USING AN APPROVED METHOD FOR A MINIMUM OF 7 DAYS.
21. SHOULD NO ALTERNATIVE CURING METHOD BE APPROVED BY THE ENGINEER IN WRITING, THE FOLLOWING SHOULD BE DONE:
    - FOR CONCRETE CAST UNDER ROOF COVER: CURE BY WETTING SIX TIMES PER DAY FOR A MINIMUM OF 7 DAYS.
    - CONCRETE CAST IN OPEN AIR: CURE BY COVERING WITH PLASTIC SHEETING IMMEDIATELY AFTER STRIKING OFF FORMWORK.
    - FOR POWER FLOATED SLABS, COVER SLAB WITH WHITE PLASTIC SHEETING IMMEDIATELY AFTER STRIKING OFF FORMWORK AND REPLACE PLASTIC SHEETING AFTER POWER FLOATING.
    - COLUMNS TO BE WRAPPED IN PLASTIC.
    - CURING COMPOUND TO BE APPROVED BY THE ENGINEER PRIOR TO COMMENCING WORKS.
22. CONCRETE DEFECTS MAY ONLY BE REPAIRED AFTER THE ENGINEER HAS APPROVED A METHOD STATEMENT FOR THE REPAIR.

FORMWORK

1. STAGING AND FORMWORK SHALL BE DESIGNED AND CERTIFIED BY SUITABLY EXPERIENCED PROFESSIONALLY REGISTERED ENGINEER. WHERE APPROPRIATE THE CONTRACTOR SHALL SUBMIT FORMWORK AND TEMPORARY WORKS DESIGN AND DETAILS TO THE ENGINEER FOR REVIEW.
2. CLASS OF FORMWORK AS FOLLOWS:

FORMED VERTICAL CONCRETE SURFACE AS DEFINED IN TABLE 1 OF SANS 2001 CC1:

SURFACE	FINISH
UNEXPOSED SURFACE MORE THAN 300mm BELOW GROUND LEVEL	ROUGH
UNEXPOSED SURFACE 0-300mm BELOW GROUND LEVEL	SMOOTH
EXPOSED WALLS, BEAMS AND SLABS IN MANHOLES, SLUDGE HOLDING TANK AND GENERATOR SLAB	SMOOTH
EXPOSED WALLS, COLUMNS, BEAMS AND SLABS IN PUMP STATION, FILTER PLANT BUILDING, CLEAR WATER PUMP STATION STAIRCASE AND OTHER HABITABLE AREAS	SMOOTH

HORIZONTAL UNFORMED SURFACES:

SURFACE	FINISH
SURFACE BED	POWER FLOATED
SUSPENDED SLAB	WOOD FLOATED
WALL TOPS	STEEL FLOATED
TOP OF EXPOSED FOUNDATIONS	STEEL FLOATED
TOP OF COVERED FOUNDATIONS	WOOD FLOATED

3. DEGREE OF ACCURACY FOR FORMED CONCRETE SURFACES AS DEFINED IN TABLE 11 OF SANS 2001 CC1:

SURFACE	DEGREE OF ACCURACY
UNEXPOSED SURFACE MORE THAN 300mm BELOW GROUND LEVEL	II
UNEXPOSED SURFACE 0-300mm BELOW GROUND LEVEL	II
EXPOSED WALLS, BEAMS AND SLABS IN MANHOLES, SLUDGE HOLDING TANK AND GENERATOR SLAB	II
EXPOSED WALLS, COLUMNS, BEAMS AND SLABS IN PUMP STATION, FILTER PLANT BUILDING, CLEAR WATER PUMP STATION STAIRCASE AND OTHER HABITABLE AREAS	I

PRE-CAST PRESTRESSED CONRETE LINTELS

1. LINTELS TO COMPLY WITH SANS 1504.
2. LINTELS MINIMUM BEARING LENGTH:

LOADING	MIN. LENGTH (mm)
MASONRY ONLY	150

3. LINTELS MAY NOT SPAN FURTHER THAN 3m UNLESS APPROVED METHOD OF CONSTRUCTION IS USED.
4. LINTELS TO HAVE AT LEAST 5 LAYERS OF BRICKWORK ABOVE IT WITH BRICKFORCE AS PER MASONRY NOTES.
5. LINTELS TO BE ADEQUATELY SUPPORTED FOR AT LEAST 7 DAYS AFTER COMPLETION.

REINFORCEMENT

1. ALL REINFORCEMENT SHALL COMPLY WITH SANS 920, TYPE C, CLASS 2 GRADE 1.
2. BAR DESIGNATION IS AS FOLLOWS :
   'R' = 250MPa YIELD STRENGTH PLAIN ROUND MILD STEEL BARS
   Y = GRADE 450MPa YIELD STRENGTH DEFORMED TYPE 2 HIGH YIELD BARS
3. WIRE MESH SHALL BE WELDED WIRE FABRIC REINFORCEMENT SMOOTH ROUND BARS MINIMUM PROOF STRESS 485MPa COMPLYING WITH THE REQUIREMENTS OF SANS 1024.
4. REINFORCING BARS ARE CALLED UP ON DRAWINGS IN THE FOLLOWING MANNER : NO. OFF : BAR TYPE : BAR DIAMETER - BAR MARK - PITCH : POSITION AND/OR COMMENTS E.G. 7 Y20 03 - 200 B1
5. POSITION/COMMENT IS DESIGNATED AS FOLLOWS :
   T = TOP FACE B = BOTTOM FACE
   NF = NEAR FACE FF = FAR FACE
   EW = EACH WAY EF = EACH FACE
   AB = ALTERNATE BARS ABR = ALTERNATE BARS REVERSED
   AP = ALTERNATIVELY PLACED
   AS = ALTERNATIVELY STAGGERED
   STG = BARS STAGGERED BY AMOUNT SHOWN
   ALT = ALTERNATING
   SUFFIX 1,2 INDICATES THE LAYER WITH 1 BEING CLOSEST TO THE CONCRETE SURFACE WHERE TWO BAR MARKS ARE CALLED UP TOGETHER AND IDENTIFIED AS 'ALT' THE SPACING STATED IS THE SPACING OF ALL BARS, NOT OF EACH BAR MARK
   E.G. 5 Y25 03 - 125T ALT 6 Y20 02 INDICATES 11 BARS AT 125 CENTRES IN THE TOP FACE.
6. SYMBOLS DENOTING LAYERS OF REINFORCEMENT IN SLABS AND BASES ARE SHOWN IN FIGURE 1 BELOW:

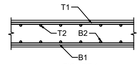


FIGURE 1

7. MINIMUM LAP LENGTH TO REINFORCING TO BE 50 X SMALLER DIAMETER BAR, AND MINIMUM ANCHORAGE LENGTH TO BE 40 X THE BAR DIAMETER UNLESS NOTED OTHERWISE.
8. COUPLERS MAY BE PROPOSED WHERE SITE CONSTRAINTS PREVENT THE ACHIEVEMENT OF FULL LAP LENGTHS. WHERE COUPLERS ARE USED THEY ARE TO BE POSITIONED SO AS TO ACHIEVE THE SAME NOMINAL COVER AS THAT SPECIFIED FOR THE REINFORCING BARS WHICH THEY JOIN. THE USE OF COUPLERS IS SUBJECT TO THE APPROVAL OF THE ENGINEER.
9. WELDING OF REINFORCEMENT IS NOT ALLOWED UNLESS APPROVED BY ENGINEER IN WRITING.
10. FABRIC REINFORCEMENT IS CALLED UP ON THE DRAWINGS BY REFERENCE TO ITS SANS REFERENCE, AND BY INDICATION OF THE AREA TO BE REINFORCED.
11. FOR FABRIC REINFORCEMENT OTHER THAN SQUARE MESH FABRIC, THE DIRECTION OF THE MAIN LONGITUDINAL BARS SHALL BE AS SHOWN ON THE DRAWINGS.
12. ALL LAPS TO FABRIC REINFORCEMENT SHOULD BE A MINIMUM OF 450MM.
13. SPACERS, TIES AND STOOLS SHALL BE SUPPLIED AND FIXED BY THE CONTRACTOR AS NECESSARY TO SECURE THE REINFORCEMENT AGAINST DISPLACEMENT. CONCRETE COVER BLOCKS MUST BE MANUFACTURED FROM CONCRETE WITH THE SAME STRENGTHS AS THE UNITS IN WHICH IT IS INCORPORATED.
14. CARE SHOULD BE TAKEN TO ENSURE THAT THE MINIMUM CONCRETE COVER OVER REINFORCEMENT IS ACHIEVED THROUGHOUT.
15. PULL OUT BAR REINFORCEMENT MAY NOT BE USED UNLESS WRITTEN CONFORMATION IS GIVEN BY THE ENGINEER.
16. ALL REINFORCEMENT IS TO BE APPROVED BY THE ENGINEER BEFORE CONCRETE IS CAST.
17. SPLICES SHALL BE AVOIDED AT POINTS OF MAXIMUM STRESS AND ALL SPLICES SHALL BE STAGGERED.

FOUNDATIONS

1. EXCAVATIONS, FOUNDING CONDITIONS AND LEVELS TO BE APPROVED BY ENGINEER PRIOR TO CASTING BLINDING.
2. THE MINIMUM DEPTH TO TOP OF FOUNDATION SHALL NOT BE LESS THAN 250mm DEEP BELOW UNFINISHED GROUND LEVEL.
3. PROVIDE 50mm BLINDING UNDER ALL COLUMN AND WALL BASES.
4. DESIGN ALLOWABLE BEARING CAPACITIES:-
   PAD FOOTINGS: 150 kPa
   STRIP FOOTINGS: 150 kPa
5. BACKFILL AROUND COLUMNS AND WALLS TO COMMENCE EVENLY.
6. COMPACTION TEST RESULTS OF IN SITU MATERIAL UNDER STRUCTURES TO CONFIRM ALLOWABLE BEARING CAPACITY, TO BE SUBMITTED AND APPROVED BY THE ENGINEER BEFORE CONCRETE WORKS COMMENCES.

PROPRIETARY EXPANSION JOINTS AND ANCHORS

1. ALL EXPANSION JOINTS AND CHEMICAL TYPE ANCHORS FOR FIXING INTO CONCRETE AND MASONRY TO BE INSTALLED STRICTLY TO MANUFACTURERS SPECIFICATION.
2. ALL EXPANSION AND CHEMICAL ANCHORS TO BE HOT DIP GALVANISED.

LIQUID RETAINING STRUCTURES

1. ALL CONCRETE SHALL BE MADE WITH ORDINARY PORTLAND CEMENT WITH 30% FLY ASH OR SIMILAR APPROVED CEMENT EXTENDER .
2. WATER:CEMENT RATIO NOT EXCEED 0.50
3. CEMENT CONTENT 325 kg/m³ - 450 kg/m³
4. NO OPEN FERRELS ARE PERMITTED. ALL SHUTTERS TO BE SUPPORTED USING AN APPROVED EMBEDDED BOLT SYSTEM.

WATERPROOFING

1. ALL WATERPROOFING AND TANKING TO BE CARRIED OUT TO MANUFACTURER'S SPECIFICATIONS AND ENGINEER'S DETAILS.

MASONRY

1. ALL MASONRY WORK SHALL BE IN ACCORDANCE WITH SANS 10164, SANS 10400K AND SANS 2001-CM1.
2. REFER TO ARCHITECT'S DRAWINGS FOR MASONRY WALL LAYOUTS.
3. THE FOLLOWING BRICK AND MORTAR STRENGTHS SHALL APPLY: BRICKWORK BELOW GROUND LEVEL NFX 14MPa AVERAGE.

	MASONRY COMPRESSIVE STRENGTH (MPa)	MORTAR CLASS (SANS 0164)
RETAINING WALLS & MASONRY BELOW GL	14	CLASS I
LOAD BEARING WALLS	14	CLASS I
PANEL WALLS IN RC FRAME	7	CLASS II

4. GALVANISED BRICKFORCE IS TO BE PROVIDED AS FOLLOWS: ALL BRICKFORCE TO BE SABS APPROVED.

WALL TYPE	BRICKFORCE QUANTITY
MASONRY FOUNDATION WALLS	EVERY COURSE
MASONRY WALLS IN GENERAL	EVERY 4th COURSE
WALLS WITH OPENINGS	FIRST 5 COURSES ABOVE AND WHERE APPLICABLE BELOW OPENINGS, CONTINUING 600mm PAST OPENINGS
CONTROL JOINTS	CONTINUOUS THROUGH CONTOL JOINT

MINIMUM DIAMETER OF BRICKFORCE: 3.55mm
YIELD STRENGTH: 485MPa
LAP LENGTH: 400mm

5. PROVIDE DPC LAYER AS BOND BREAKER BETWEEN TOP OF CONCRETE AND FIRST COURSE OF BRICKWORK.
6. BRICK PANEL WALLS TO BE ANCHORED TO RC COLUMNS WITH GALVANISED HOOP IRON ANCHORS (1.2x30mm CROSS SECTION), FIXED TWICE TO THE COLUMN EVERY 4TH COURSE AND BUILT 700 mm INTO BRICKWORK. PROVIDE 10 mm JOINTEX BETWEEN BRICKWORK AND COLUMN.
7. PROVIDE A 10 mm SOFT JOINT (JOINTEX) BETWEEN THE TOP OF ALL NON LOADBEARING BRICK PANEL WALLS AND THE SOFFIT OF CONCRETE STRUCTURE ABOVE.
8. HEIGHT OF BRICKWORK ERECTED IN 24 HOURS NOT TO EXCEED 10 BRICK COURSES.
9. NO HORIZONTAL CHASING OF SERVICES IN WALLS WILL BE PERMITTED.

STEELWORK

1. ALL STRUCTURAL STEELWORK SHALL BE IN ACCORDANCE WITH SANS 1200H.
2. WORKSHOP DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
3. MATERIALS SPECIFIED ON SHOP DRAWINGS MUST CORRESPOND WITH MATERIALS STATED ON ENGINEER'S DRAWINGS AND APPLICABLE SPECIFICATIONS.
4. STEEL GRADES:

PRODUCTION METHOD	STEEL GRADE
HOT FORMED HOLLOW SECTIONS	S355JR
HOT ROLLED SECTIONS (SANS 1431)	S355JR
COLD FORMED STEEL SECTIONS	MIN. 200 MPa YIELD STRENGTH
HOLLOW SECTIONS	S355MH
PLATES AND FLATS	S355JR

5. ALL WELDING SHALL BE IN ACCORDANCE WITH SANS 10044.
6. ALL WELDS ARE TO BE DESIGNED TO GIVE FULL MEMBER STRENGTH AND TO BE MINIMUM 6mm WELD, UNLESS SPECIFIED OTHERWISE.
7. NO SITE WELDING IS PERMITTED.
8. ALL WELDING TO BE CARRIED OUT UNDER SUPERVISION OF A CODED WELDER AND BY A SUITABLY EXPERIENCED AND TRAINED WELDER. ALL WELDS TO BE CERTIFIED BY THE CODED WELDER .
9. DETAILS OF WELDING CONSUMABLES AND CERTIFICATES TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
10. ALL WELDS MUST BE VISUALLY INSPECTED AND 10% OF ALL WELDS MUST BE CRACK TESTED USING DYE INDICATORS OR ANY OTHER TEST APPROVED BY THE ENGINEER.
11. ALL BOLTED CONNECTIONS ARE TO BE DESIGNED TO SANS 10162.
12. ALL BOLTS TO BE GRADE 8.8 UNLESS NOTED OTHERWISE. ALL BOLTS TO BE HOT DIP GALVANISED.
13. ALL BOLTS TO RECEIVE WASHERS WITH MATERIAL OF WASHER TO MATCH MATERIAL OF BOLTS. EG. HOT DIP GALVANISED BOLT TO HAVE HOT DIP GALVANISED WASHER.
14. ALL HOLDING DOWN BOLTS TO BE MINIMUM M16 AND HOT DIP GALVANISED.
15. PROVIDE 60MPa NON-SHRINK STRUCTURAL GROUT BELOW ALL BASE PLATES.
16. ALL CORROSION PROTECTION SHALL BE BE DONE IN ACCORDANCE WITH SANS 1200 HC.
17. SURFACE PREPARATION OF STRUCTURAL STEELWORK:
    - SANDBLAST ALL NEW STEELWORK TO A MINIMUM SA 2.5 IN ACCORDANCE WITH SWEDISH SIS 055900-1967.
18. ALL STEELWORK THAT IS SPECIFIED TO BE HOT DIPPED GALVANISED SHALL BE HOT DIPPED GALVANISED FOR EXPOSURE CLASS C3 IN ACCORDANCE TO SANS 121.
19. WHERE PAINTED FINISH IS SPECIFIED ON GALVANISED STEEL, DEGREASE WITH GALVANISED IRON CLEANER AND 3M SCOTCH BRITE PADS AND RINSE WITH FRESH WATER PRIOR TO APPLICATION OF PRIMER COAT.
20. NO ALKYD PRIMERS ON GALVANIZING.

    ALL STEELWORK SPECIFIED TO BE PAINTED SHALL BE PAINTED AS FOLLOWS:
    - PRIMER: STEELWORK TO BE PAINTED ONE COAT OF EPOXY ZINC PHOSPHATE PRIMER, (85 microns DTF).
    - INTERMEDIATE COAT: STEELWORK TO BE PAINTED WITH ONE COAT OF POLYAMIDE EPOXY M10, (125 microns DTF).
    - TOP COAT: STEELWORK TO BE SPRAY PAINTED WITH ONE ONE COAT ACRYLIC POLYURETHANE (60 microns DTF).
21. FINAL COLOUR TO ARCHITECTURAL SPEC.
22. PAINT DFT TO BE TESTED USING A PAINT THICKNESS GAUGE.
23. NO CUTTING, DRILLING OR WELDING OF CORROSION PROTECTED MEMBERS SHALL BE ALLOWED.
24. ALL PAINTWORK DAMAGED DURING ERECTION AND TRANSPORTATION TO BE TOUCHED UP TO ABOVE SPEC.
25. ALL STRUCTURAL STEEL BELOW GROUND LEVEL SHALL BE PAINTED WITH TWO COATS OF BITUMEN.

TIMBER STRUCTURES

1. ALL STRUCTURAL TIMBERWORK TO BE DONE IN ACCORDANCE WITH SANS 1200H. SANS 2001-CT1 AND SANS 2001-CT2
2. TIMBER STRUCTURES TO BE MANUFACTURED STRICTLY IN ACCORDANCE WITH ENGINEER'S DRAWINGS.
3. WORKSHOP DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
4. TIMBER GRADE AND SIZING AVAILABILITY SHALL BE CHECKED BEFORE COMMENCEMENT OF FABRICATION OF TIMBER STRUCTURES. ANY POSSIBLE PROCUREMENT ISSUES SHALL BE REPORTED TO THE ENGINEER BEFORE ORDERING.
5. TIMBER GRADES:

ELEMENT	TIMBER GRADE
PINE RAFTERS	5
PINE BATTENS/PURLINS	5

6. EXTERNAL TIMBER MEMBERS SHALL BE PLANED ALL ROUND (PAR).
7. ALL BOLT HOLES TO BE DRILLED A MAXIMUM OF 1mm LARGER THAN THE BOLT DIAMETER.
8. BOLTS AND COACH SCREWS CONNECTING DIRECTLY TO TIMBER WITHOUT STEEL BRACKETS TO BE FITTED WITH HOT DIPPED GALVANISED STEEL WASHERS AS FOLLOWS:

COACH SCREW/BOLT SIZE	WASHER SIZE (ØxTHICKNESS)
M6	Ø20x2mm
M8	Ø35x4mm
M10	Ø35x4mm
M12	Ø35x4mm
M16	Ø60x6mm
M20	Ø60x6mm

9. ALL COACH SCREWS SHALL BE INSERTED INTO PRE DRILLED HOLES TO AVOID SPLITTING. THE HOLE DIAMETERS ARE AS FOLLOWS AND SHALL BE DRILLED TO MATCH THE DEPTH OF THE SHANK AND THREADED PARTS RESPECTIVELY:

COACH SCREW SIZE	SCREW SHANK DIAMETER (mm)	THREADED DIAMETER (mm)
M6	6	5
M8	8	6
M10	10	8
M12	12	9

10. COACH SCREWS SHALL BE SCREWED IN AND UNDER NO CIRCUMSTANCES SHALL COACH SCREWS BE DRIVEN IN WITH A HAMMER.
11. ALL BOLTS, COACH SCREWS AND NAILS SHALL BE HOT DIP GALVANISED.
12. ALL CONNECTING BRACKETS AND PLATES TO BE HOT DIPPED GALVANISED AFTER FABRICATION.
13. SURFACE PREPARATION:
    - ENSURE THAT ALL SURFACES ARE CLEAN, DRY AND FREE OF ANY OIL, GREASE OR OTHER CONTAMINANTS.
    - SAND WITH 150 GRIT SANDING PAPER IN DIRECTION OF GRAIN.
    - REMOVE DUST WITH A DAMP CLOTH.
    - APPLY KNOT SEAL TO ALL KNOTS.
14. PROTECTIVE COATING SHALL BE AN APPROVED PENETRATING OIL BASED COATING FOR WATERPROOFING AND PROTECTION OF THE TIMBER APPLIED AS FOLLOWS:
    a. APPLY TWO COATS WITH A BRUSH BEFORE INSTALLATION OF TIMBER MEMBERS.
    b. APPLY TWO COATS AFTER INSTALLATION OF TIMBER MEMBERS WITH A ONE DAY INTERVAL BETWEEN APPLICATIONS.
15. TIMBER MEMBERS BUILT INTO BRICKWORK TO BE GIVEN TWO COATS OF DURAM 195 OR SIMILAR AND WRAPPED IN DPC.
16. TIMBER STRUCTURES TO BE SIGNED OFF BEFORE ROOF COVERING OR DECKING MAY BE INSTALLED.

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

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REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

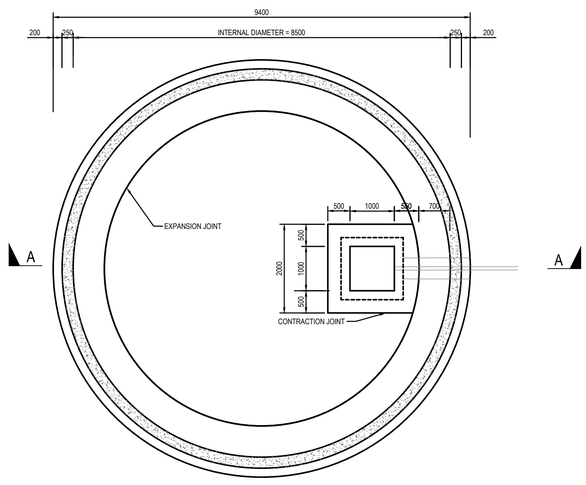
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GENERAL NOTES

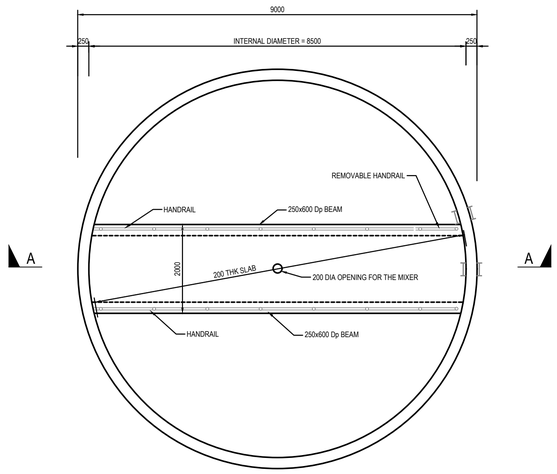
Works Project Manager: A. Pillay
Deputy Head: Engineering: B. Soni
Head: Water and Sanitation: E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

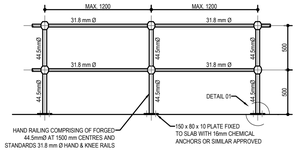
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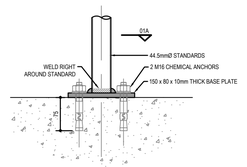
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PLATFORM LAYOUT
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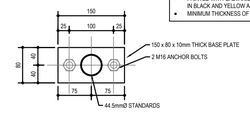


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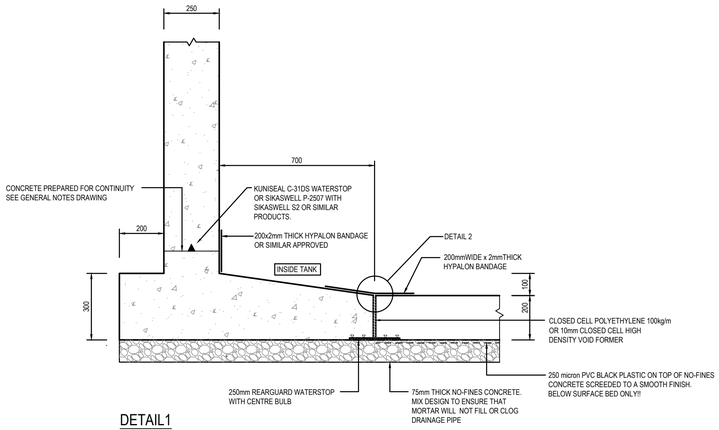


DETAIL 01
BALUSTRADE FIXING
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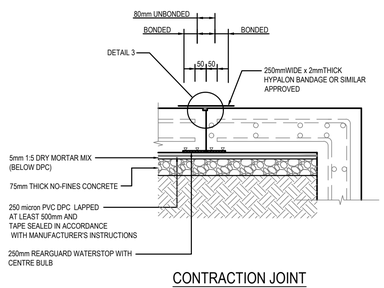
NOTE:
- ALL HAND RAIL COMPONENTS TO BE HOT DIP GALVANISED AFTER MANUFACTURE
- PAINTED WITH GALVANISED PRIMER AND FINISHED IN BLACK AND YELLOW AS PER GENERAL NOTES.
- MINIMUM THICKNESS OF TUBE WALLS TO BE 2.5mm



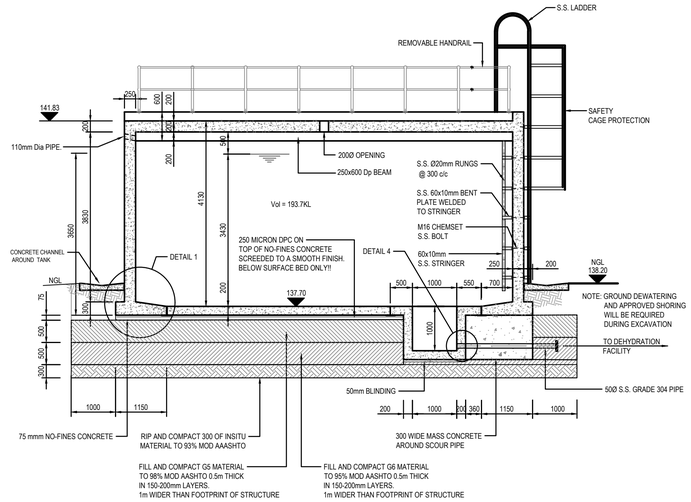
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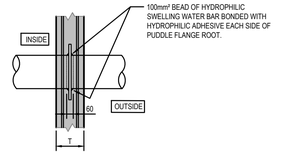
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SCALE 1:10



CONTRACTION JOINT
SCALE 1:10



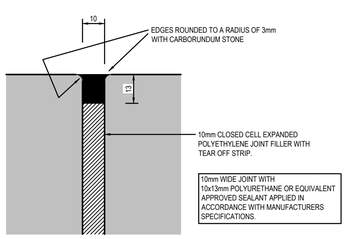
SECTION A-A
SCALE 1:50



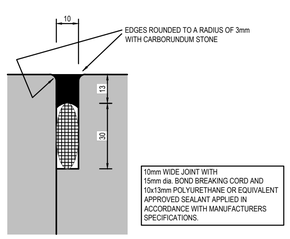
DETAIL 4
PIPE PENETRATION (SECTION)
SCALE 1:20

PLEASE NOTE!

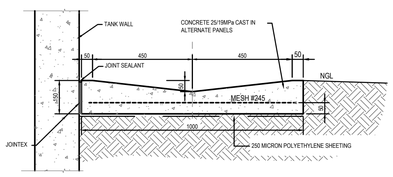
- DPC BELOW SURFACE BED ONLY. NO DPC TO BE PLACED UNDER WALL FOUNDATION.
- SLUDGE HOLDING TANK TO BE FILLED TO 50% CAPACITY WITH WATER BEFORE BACKFILLING AROUND TANK COMMENCES.



DETAIL 2
SCALE 1:1

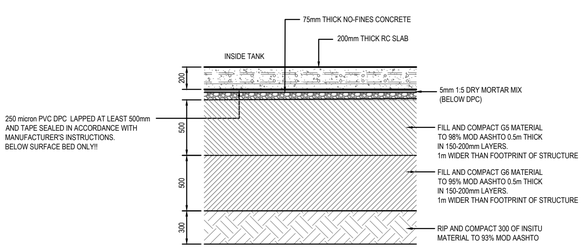


DETAIL 3
SCALE 1:1

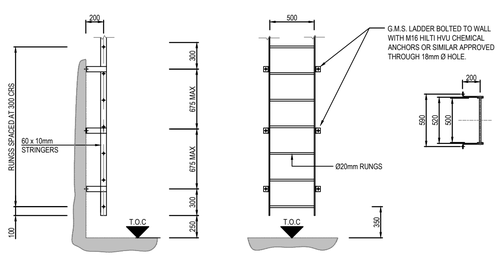


TYPICAL SECTION THROUGH CONCRETE CHANNEL AROUND TANK
SCALE 1:10

CHANNEL NOTES:
1. CONCRETE CHANNEL TO FALL MINIMUM 1 IN 100.
2. CONCRETE CHANNEL TO BE CLASS 25/19, CAST IN ALTERNATIVE SECTIONS OF LENGTHS NOT EXCEEDING 3.00m.
3. 250 MICRON POLYETHYLENE SHEETING TO BE PLACED BEFORE CASTING CONCRETE.
4. WOOD FLOATED FINISH TO SURFACE OF CONCRETE CHANNEL.
5. ONLY WHERE ORDERED, A 150MM LAYER OF G7 SUBBASE QUALITY MATERIAL COMPACTED TO 93% OF MODIFIED AASHTO MAXIMUM DENSITY, TO BE PLACED BENEATH CONCRETE.
6. CONTRACTION JOINTS TO BE PLACED EVERY 6M.
7. JOINT SEALER SHALL BE PRE-MOULDED STRIPS OF PRE-FORMED NEOPRENE COMPRESSED SEAL, INSERTED WITH A SPECIAL TOOL AND LUBRICANT ADHESIVE INTO JOINTS OR SIMILAR APPROVED SEALANT.



TYPICAL FLOOR DETAIL
SCALE 1:20



TYPICAL ACCESS LADDER DETAILS (HOT DIPPED GALVANISED)
SCALE 1:25

GENERAL NOTES:

REFER TO DRAWING No. 57270-400
FOR GENERAL NOTES.

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Designed :	P DE KLERK
Drawn :	M SMITH
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

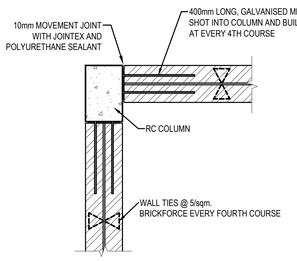
Project No. (X6307)

Drawing Title
SLUDGE HOLDING TANK LAYOUT & SECTIONS

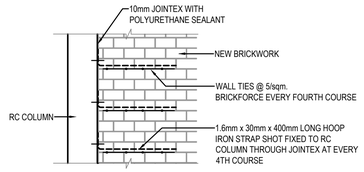
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Mseweli

Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/401	1 OF 1	B

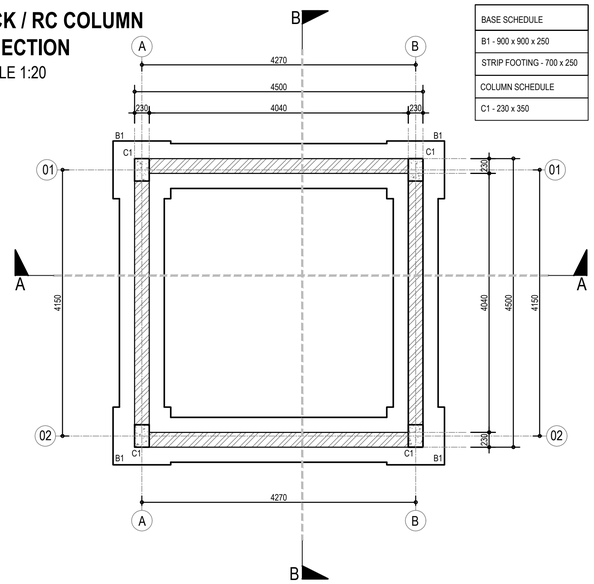


TYPICAL BRICK / RC COLUMN CONNECTION
SCALE 1:20

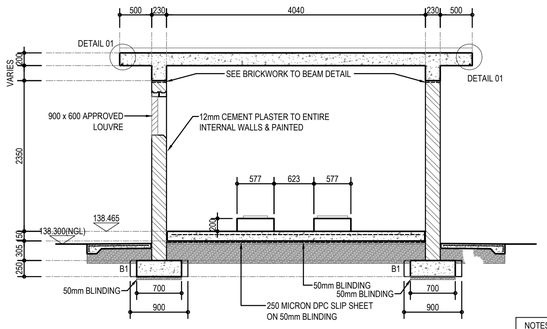


ELEVATION
TYPICAL BRICKWORK TO CONCRETE COLUMN CONNECTION
SCALE 1:25

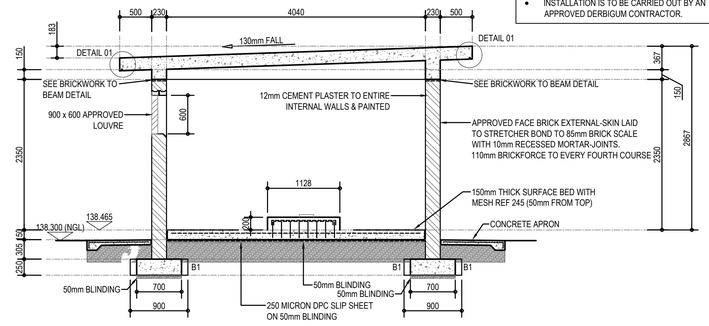
BASE SCHEDULE
B1 - 900 x 900 x 250
STRIP FOOTING - 700 x 250
COLUMN SCHEDULE
C1 - 230 x 350



FOUNDATION LAYOUT
FEED PUMP STATION
SCALE 1:50

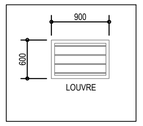


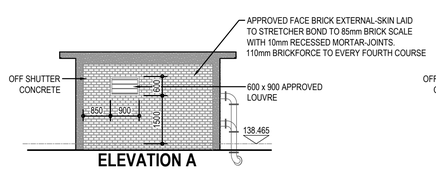
SECTION A - A
SCALE 1:50



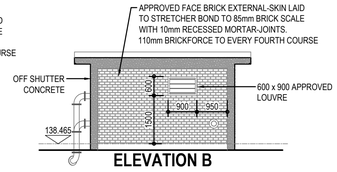
SECTION B - B
FEED PUMP STATION
SCALE 1:50

NOTES PERTAINING TO WATERPROOFING:
- ONE LAYER DERBIGUM SP4 WATERPROOFING MEMBRANE, WITH 75mm SIDE AND 100mm END LAPS, SEALED TO BITUMEN PRIMED SURFACE TO FALLS AND CROSSFALLS BY MEANS OF TORCHFUSION.
- FINISH WITH REFLECTIVE ALUMINIUM-BITUMEN PAINT.
- WATERPROOFING TO BE INSTALLED UNDER A TEN YEAR GUARANTEE.
- INSTALLATION IS TO BE CARRIED OUT BY AN APPROVED DERBIGUM CONTRACTOR.

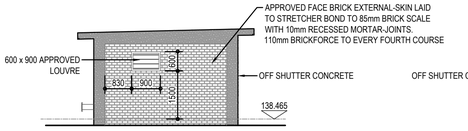




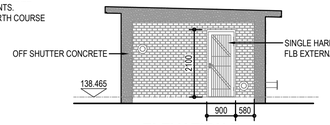
ELEVATION A
SCALE 1:100



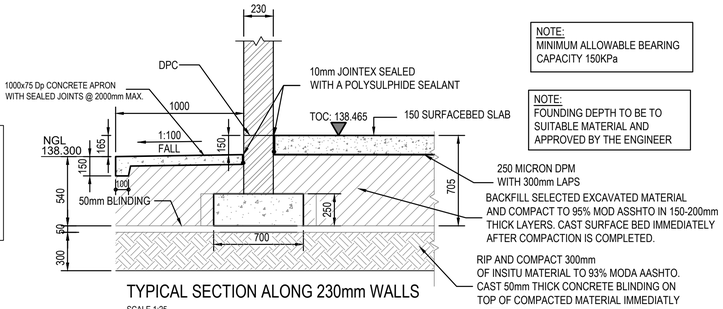
ELEVATION B
SCALE 1:100



ELEVATION C
SCALE 1:100



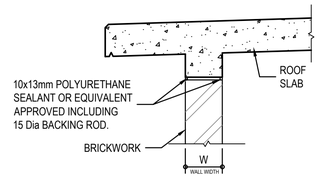
ELEVATION D
SCALE 1:100



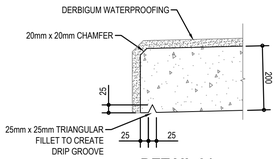
TYPICAL SECTION ALONG 230mm WALLS
SCALE 1:25

NOTE:
MINIMUM ALLOWABLE BEARING CAPACITY 150KPa

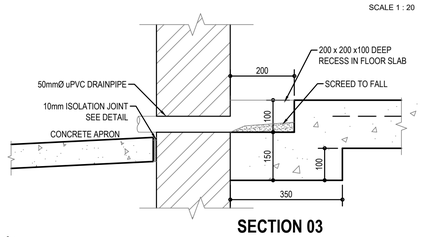
NOTE:
FOUNDING DEPTH TO BE TO SUITABLE MATERIAL AND APPROVED BY THE ENGINEER



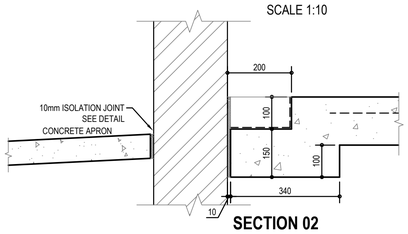
TYPICAL BRICKWORK TO BEAM DETAIL
SCALE 1 : 20



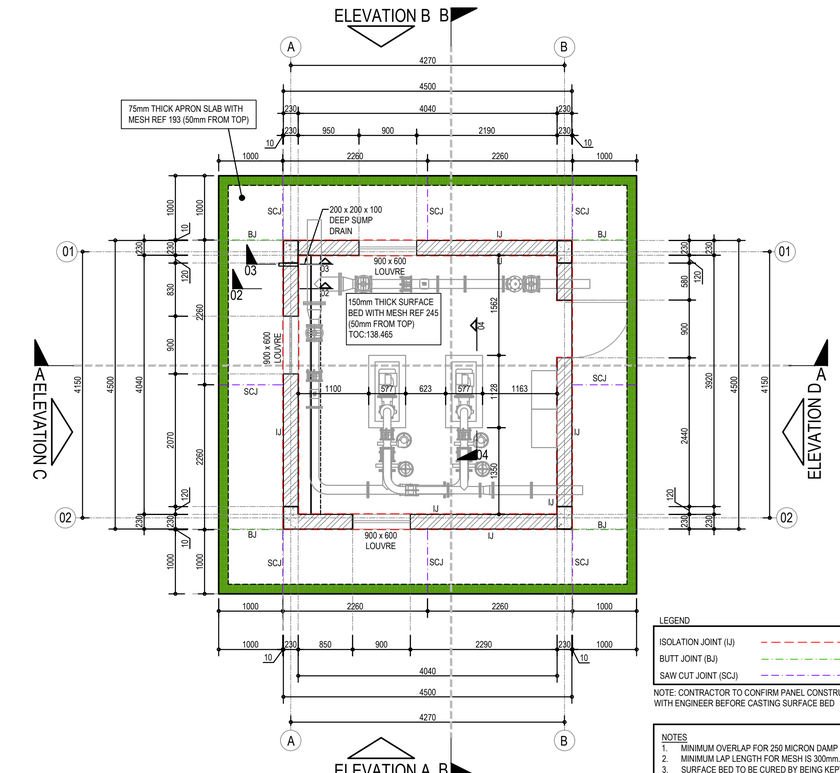
DETAIL 01
DRIP THROAT
SCALE 1:10



SECTION 03
SCALE 1:10



SECTION 02
SCALE 1:10

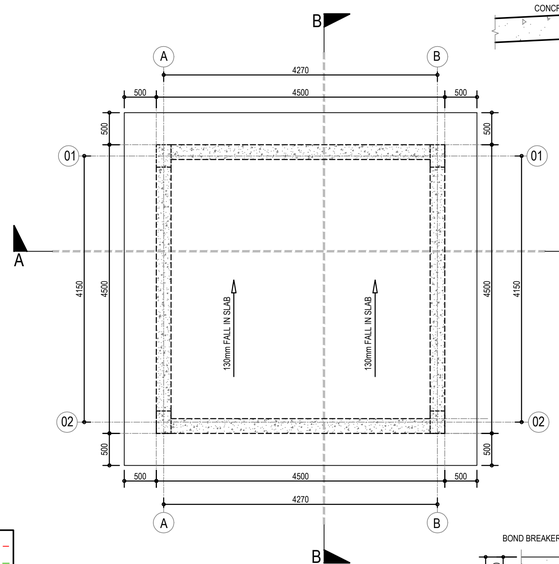


SURFACE BED LAYOUT
SCALE 1:50

LEGEND
- ISOLATION JOINT (IJ)
- BUTT JOINT (BJ)
- SAW CUT JOINT (SCJ)

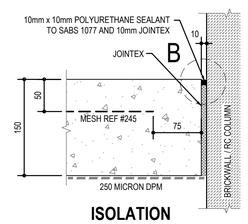
NOTE: CONTRACTOR TO CONFIRM PANEL CONSTRUCTION WITH ENGINEER BEFORE CASTING SURFACE BED

NOTES
1. MINIMUM OVERLAP FOR 250 MICRON DAMP PROOF MEMBRANE IS 300mm.
2. MINIMUM LAP LENGTH FOR MESH IS 300mm.
3. SURFACE BED TO BE CURED BY BEING KEPT WET CONTINUOUSLY FOR AT LEAST 5 CONSECUTIVE DAYS OR BY APPLYING A CURING COMPOUND WHICH MUST FIRST BE APPROVED BY THE ENGINEER.
4. COMPACTION DENSITY TESTS RESULTS FOR LAYERWORKS BENEATH SURFACE BED TO BE SUBMITTED TO ENGINEER FOR APPROVAL BEFORE LAYING DPC.
5. NO BACKFILL MATERIAL TO BE BROUGHT ONTO SITE WITHOUT APPROVAL FROM THE ENGINEER.

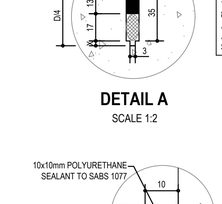


ROOF SLAB LAYOUT
SCALE 1:50

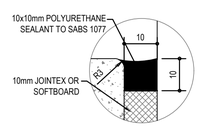
NOTES PERTAINING TO WATERPROOFING:
- ONE LAYER DERBIGUM SP4 WATERPROOFING MEMBRANE, WITH 75mm SIDE AND 100mm END LAPS, SEALED TO BITUMEN PRIMED SURFACE TO FALLS AND CROSSFALLS BY MEANS OF 'TORCHFUSION'.
- FINISH WITH REFLECTIVE ALUMINIUM-BITUMEN PAINT.
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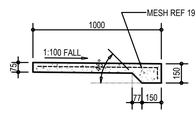
ISOLATION JOINT DETAIL (IJ)
SCALE 1:5



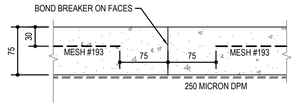
DETAIL A
SCALE 1:2



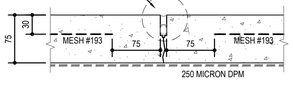
DETAIL B
SCALE 1:1



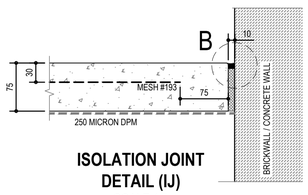
SECTION THROUGH APRON EDGE THICKENING (TYPICAL)
SCALE1:25



BUTT JOINT DETAIL (BJ)
SCALE 1:5



SAW CUT JOINT DETAIL (SCJ)
SCALE 1:5



ISOLATION JOINT DETAIL (IJ)
SCALE 1:5

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

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ENGINEERING & ARCHITECTURE
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Designed :	P DE KLERK
Drawn :	M SMITH
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

GENERAL NOTES:

REFER TO DRAWING No. 57270-400 FOR GENERAL NOTES.

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

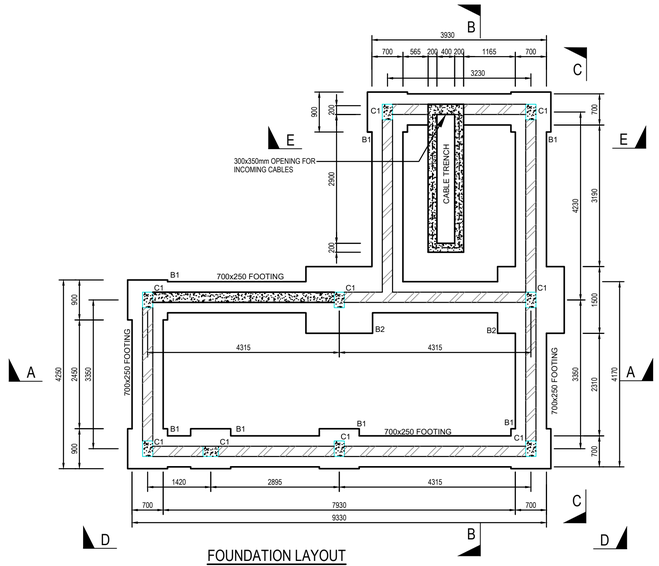
Project No. (X6307)

Drawing Title
RAW WATER FEED PUMP STATION LAYOUT & SECTIONS

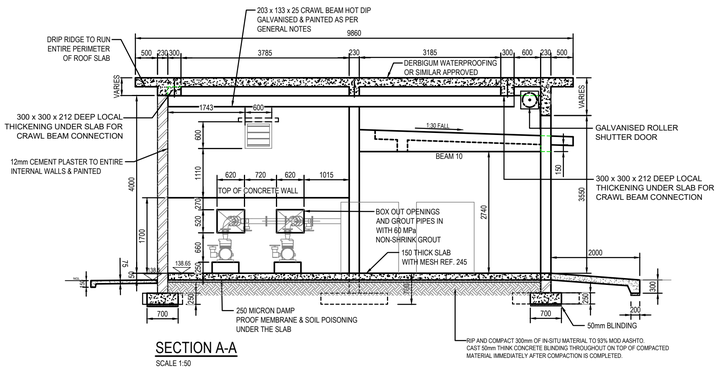
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

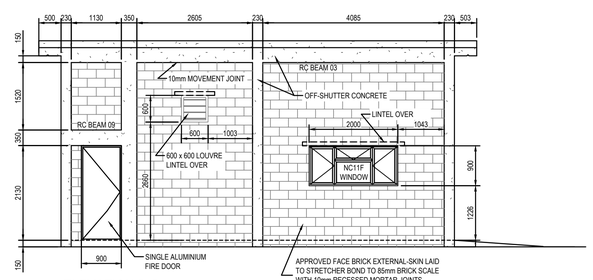
Drawing No.	Sheet	Rev.
57270/S/402	1 OF 1	B



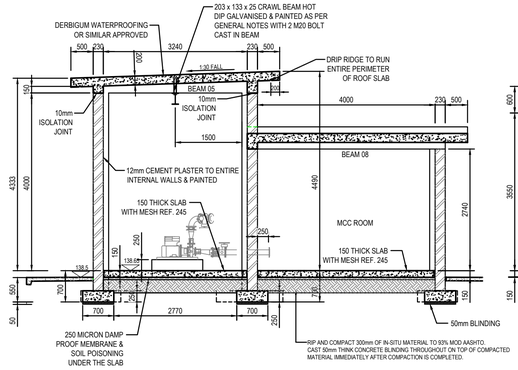
FOUNDATION LAYOUT
SCALE 1:50



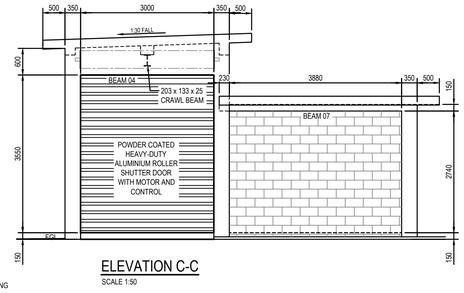
SECTION A-A
SCALE 1:50



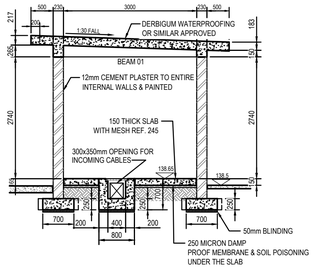
ELEVATION D-D
SCALE 1:50



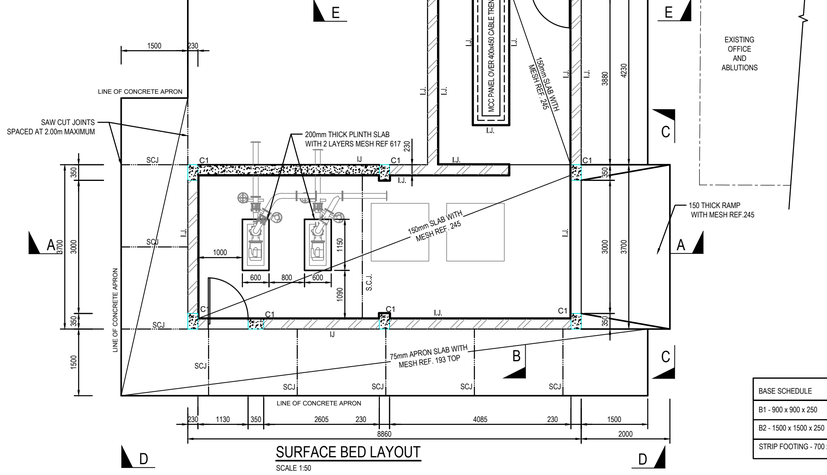
SECTION B-B
SCALE 1:50



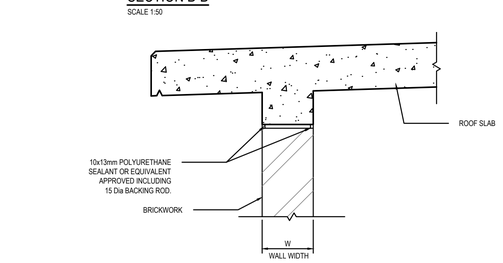
ELEVATION C-C
SCALE 1:50



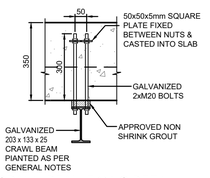
SECTION E-E
SCALE 1:50



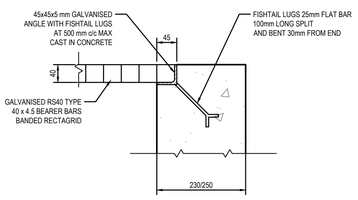
SURFACE BED LAYOUT
SCALE 1:50



TYPICAL BRICKWORK TO BEAM DETAIL
SCALE 1 : 10



CRAWL BEAM FIXING DETAIL: SECTION
SCALE 1:10

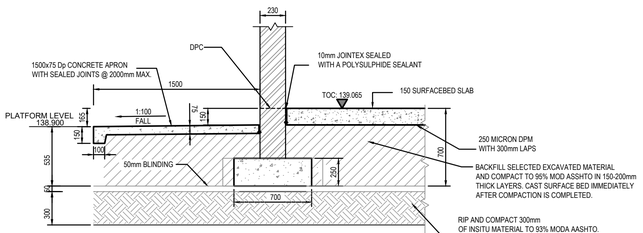


TYPICAL GRATING FIXING DETAIL
SCALE 1:5

BASE SCHEDULE
B1 - 900 x 900 x 250
B2 - 1500 x 1500 x 250
STRIP FOOTING - 700 x 250

COLUMN SCHEDULE
C1 - 230 x 350

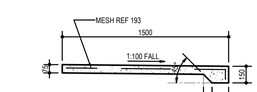
BEAM SCHEDULE
BEAM 01 - 230 x 350-465 DP
BEAM 02 - 230 x 475 DP
BEAM 03, 07, 09 - 230 x 350 DP
BEAM 04 - 230 x 800-915 DP
BEAM 05, 06 - 230 x 350-475 DP
BEAM 08 - 230 x 465 DP
BEAM 10 - 230 x 350-495 DP



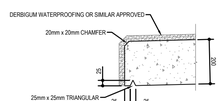
TYPICAL SECTION ALONG 230mm WALLS
SCALE 1:20

NOTE:
FOUNDING DEPTH TO BE TO SUITABLE MATERIAL AND APPROVED BY THE ENGINEER

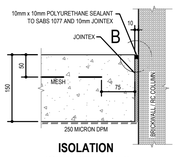
NOTE:
MINIMUM ALLOWABLE BEARING CAPACITY 150KPa



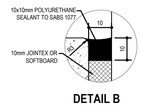
SECTION THROUGH APRON EDGE THICKENING (TYPICAL)
SCALE1:20



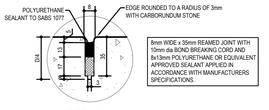
DETAIL 01
DRIP THROAT
SCALE 1:10



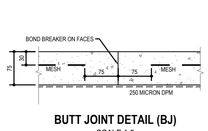
ISOLATION JOINT DETAIL (IJ)
SCALE 1:5



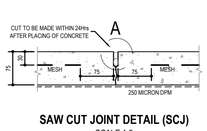
DETAIL B
SCALE 1:1



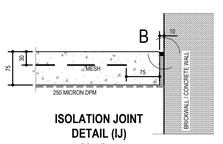
DETAIL A
SCALE 1:2



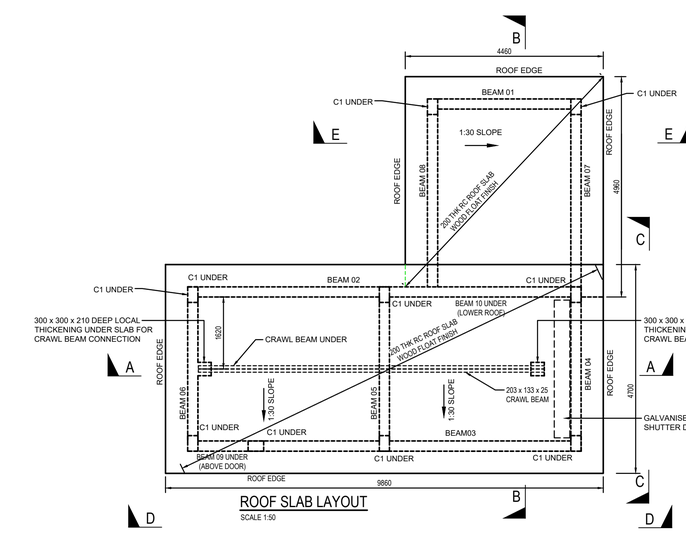
BUTT JOINT DETAIL (BJ)
SCALE 1:5



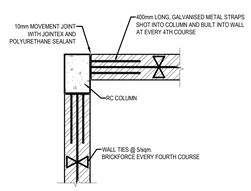
SAW CUT JOINT DETAIL (SCJ)
SCALE 1:5



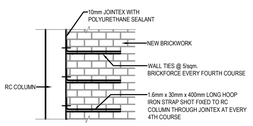
ISOLATION JOINT DETAIL (IJ)
SCALE 1:5



ROOF SLAB LAYOUT
SCALE 1:50



TYPICAL BRICK / RC COLUMN CONNECTION
SCALE 1:20



ELEVATION
TYPICAL BRICKWORK TO COLUMN CONNECTION
SCALE 1:25

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE
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Designed :	P DE KLERK
Drawn :	M SMITH
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

GENERAL NOTES:

REFER TO DRAWING No. 57270-400 FOR GENERAL NOTES.

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No, (X6307)

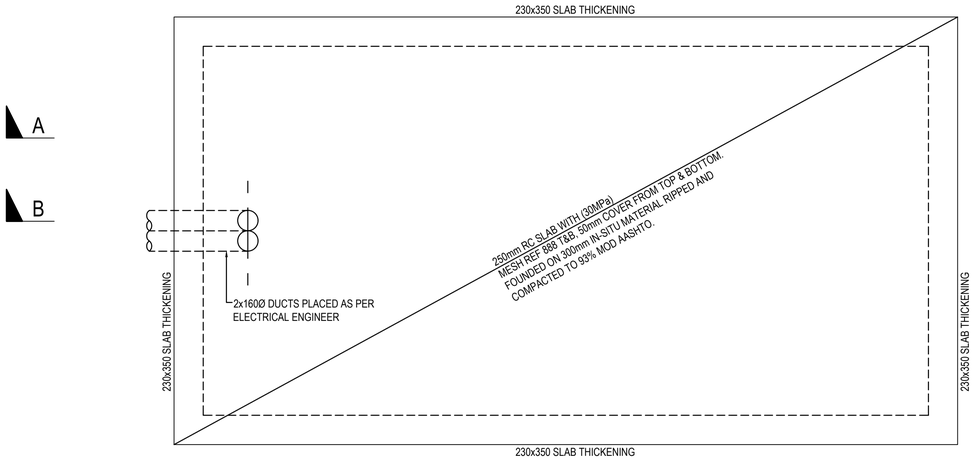
Drawing Title

FILTER PLANT BUILDING LAYOUT & SECTIONS

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli
Scale : AS SHOWN	**Date:** AUGUST 2023

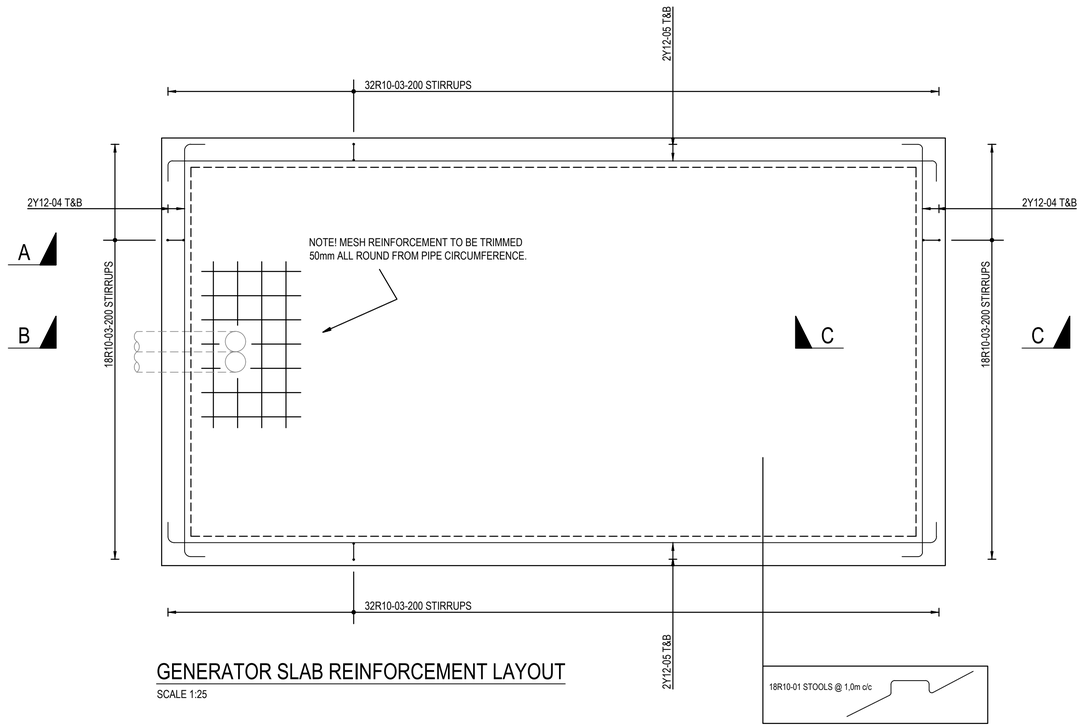
Drawing No.	Sheet	Rev.
57270/S/403	1 OF 1	B

ISSUED FOR TENDER



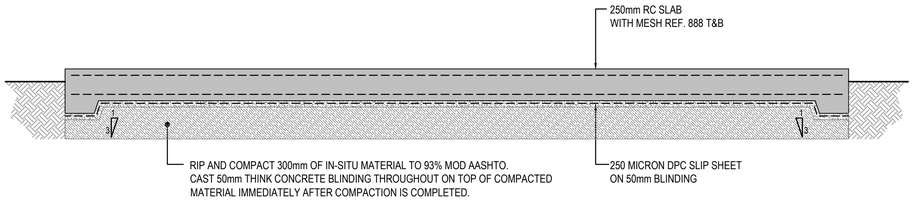
GENERATOR SLAB LAYOUT

SCALE 1:25



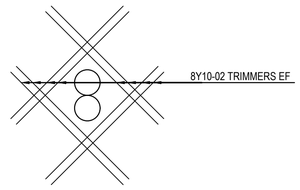
GENERATOR SLAB REINFORCEMENT LAYOUT

SCALE 1:25



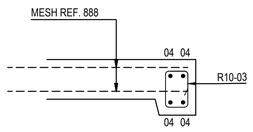
SECTION A-A

SCALE 1:25



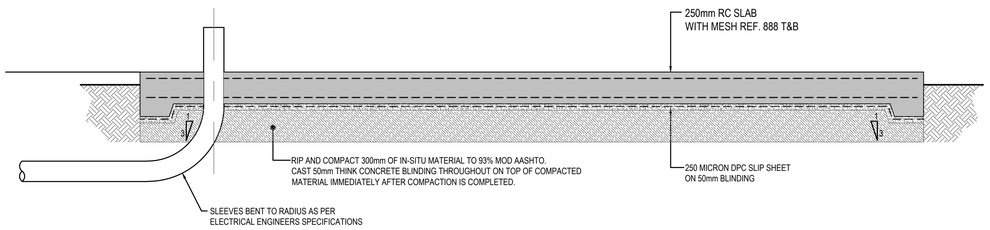
ADDITIONAL REBAR AT OPENINGS

SCALE 1:20



SECTION C-C

SCALE 1:20



SECTION B-B

SCALE 1:25

TO BE READ IN-CONJUNCTION WITH BENDING SCHEDULE No: 57270/S/BS20

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

GENERAL NOTES:

REFER TO DRAWING No. 57270-400 FOR GENERAL NOTES.

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

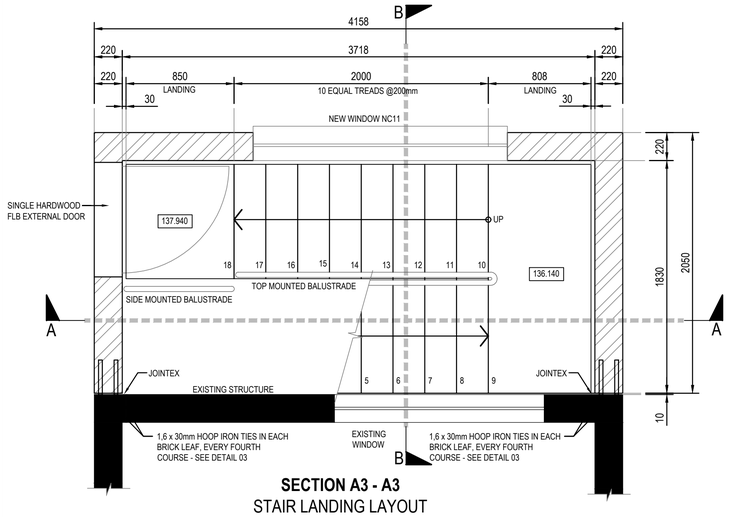
Drawing Title

GENERATOR SLAB LAYOUT & REINFORCEMENT DETAILS

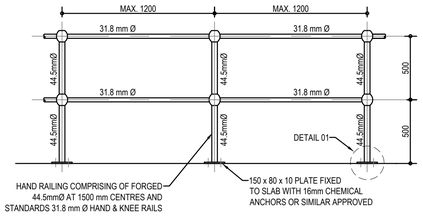
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

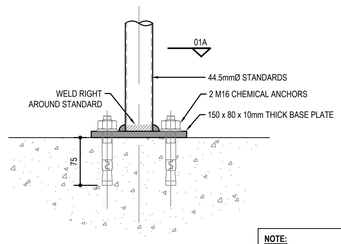
Drawing No.	Sheet	Rev.
57270/S/404	1 OF 1	B



SECTION A3 - A3
STAIR LANDING LAYOUT
SCALE :25

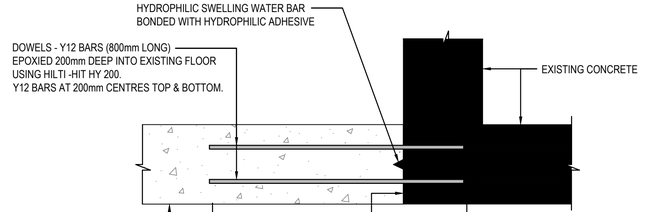


TYPICAL TOP MOUNTED HANDRAIL ELEVATION
SCALE1:25



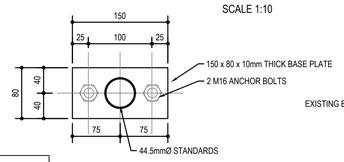
DETAIL 01
BALUSTRADE FIXING
SCALE 1:5

NOTE:
- ALL HAND RAIL COMPONENTS TO BE HOT DIP GALVANISED AFTER MANUFACTURE.
- PAINTED WITH GALVANISED PRIMER AND FINISHED IN BLACK AND YELLOW AS PER GENERAL NOTES.
- MINIMUM THICKNESS OF TUBE WALLS TO BE 2.5mm

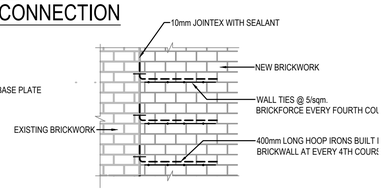


NOTE: CONTRACTOR TO CONFIRM LOCATION OF EXISTING REINFORCEMENT BEFORE DRILLING

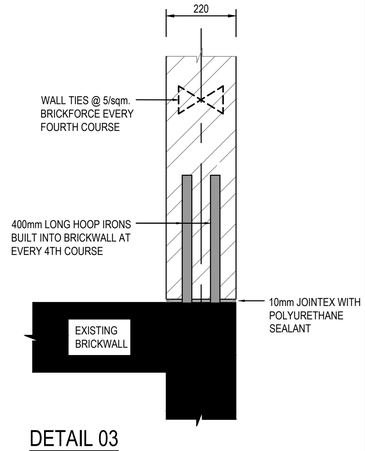
DETAIL 02
FLOOR CONNECTION
SCALE 1:10



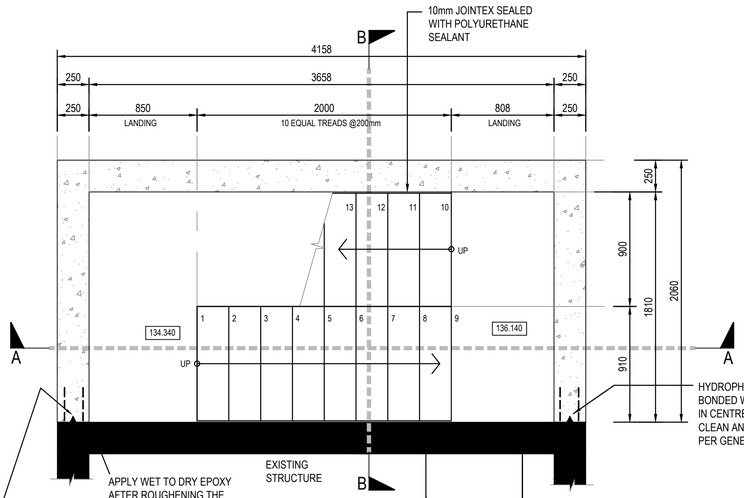
SECTION 01A
SCALE 1:5



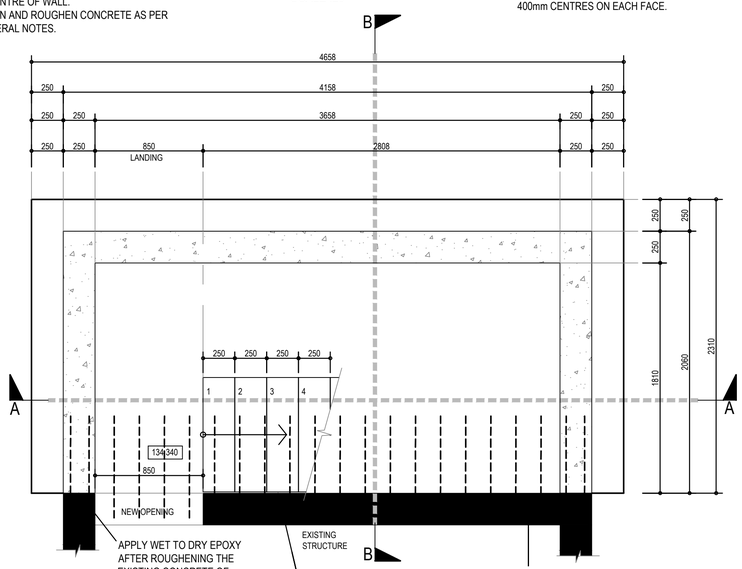
ELEVATION
TYPICAL BRICKWORK TO EXISTING WALL CONNECTION
SCALE 1:25



DETAIL 03
WALL CONNECTION
SCALE 1:10



SECTION A2 - A2
BASE SLAB LAYOUT
SCALE :25



NOTE FOR NEW OPENING:
BREAK THROUGH THE EXISTING CONCRETE WALL TO PROVIDE AN OPENING OF 850mm WIDE X 2100mm HIGH. THE REINFORCING IS TO BE CUT BACK TO PROVIDE MINIMUM 30mm COVER WHEN THE OPENING IS PLASTERED.

SECTION A1 - A1
BASE SLAB LAYOUT
SCALE :25

NOTE:
GROUND DEWATERING AND APPROVED SHORING WILL BE REQUIRED DURING EXCAVATION

DEPENDING ON IN-SITU MATERIAL, RIP AND COMPACT 300mm OF IN-SITU MATERIAL TO 93% MOD AASHTO **OR** PROVIDE 2 x 150mm LAYERS OF G5 OR G6 MATERIAL COMPACTED TO 95% MOD AASHTO DENSITY. ENGINEER TO APPROVE. CAST 50mm THINK CONCRETE BLINDING THROUGHOUT ON TOP OF COMPACTED MATERIAL IMMEDIATELY AFTER COMPACTION IS COMPLETED .

250 MICRON DPC SLIP SHEET ON 50mm BLINDING

SECTION A - A
SCALE :25

SECTION B - B
SCALE :25

NOTE:
GROUND DEWATERING AND APPROVED SHORING WILL BE REQUIRED DURING EXCAVATION

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE
Office: Delmat House, 2nd Floor, 27-29 Jan Hofmeyer Road, Westville, Durban 3630
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Drawn :	M SMITH
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

GENERAL NOTES:

REFER TO DRAWING No. 57270-400 FOR GENERAL NOTES.

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION
ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

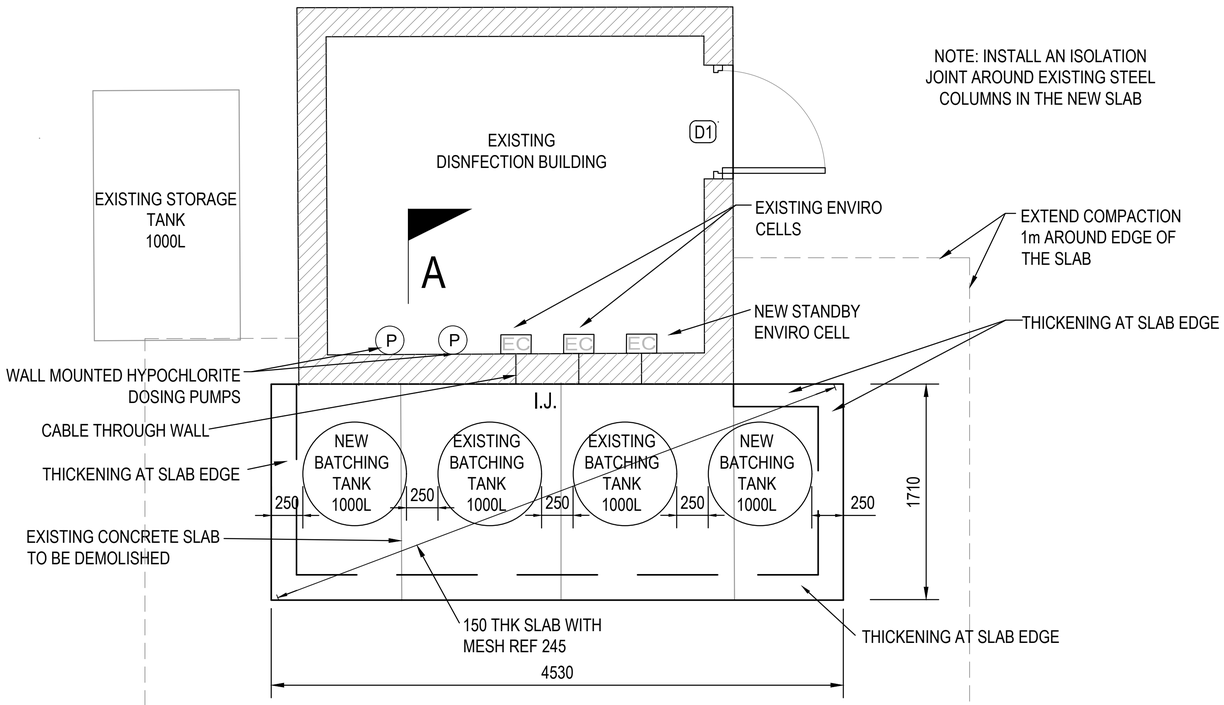
Project No. (X6307)

Drawing Title
CLEAR WATER PUMP STATION STAIRCASE LAYOUT & SECTIONS

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

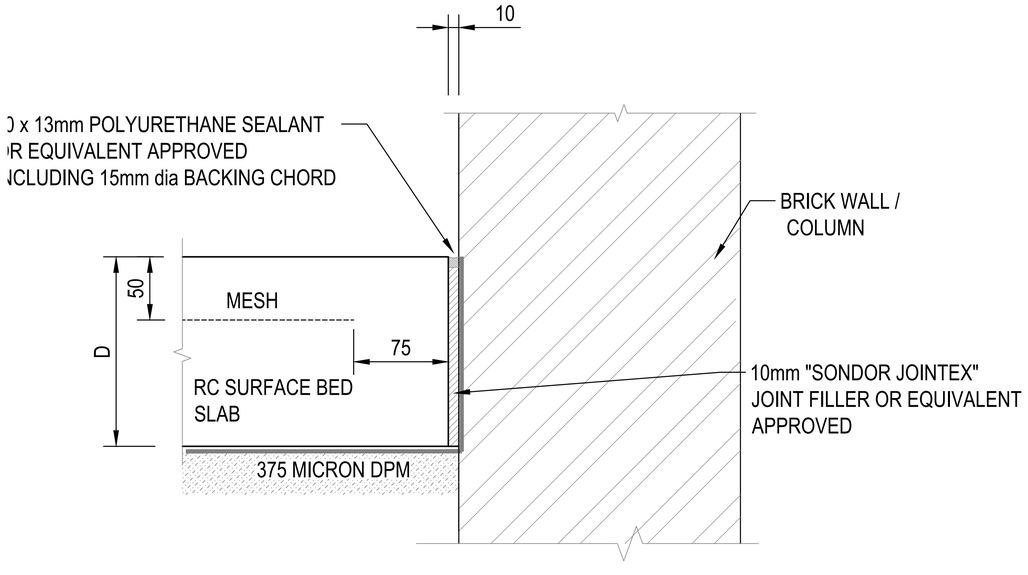
Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/405	1 OF 1	B



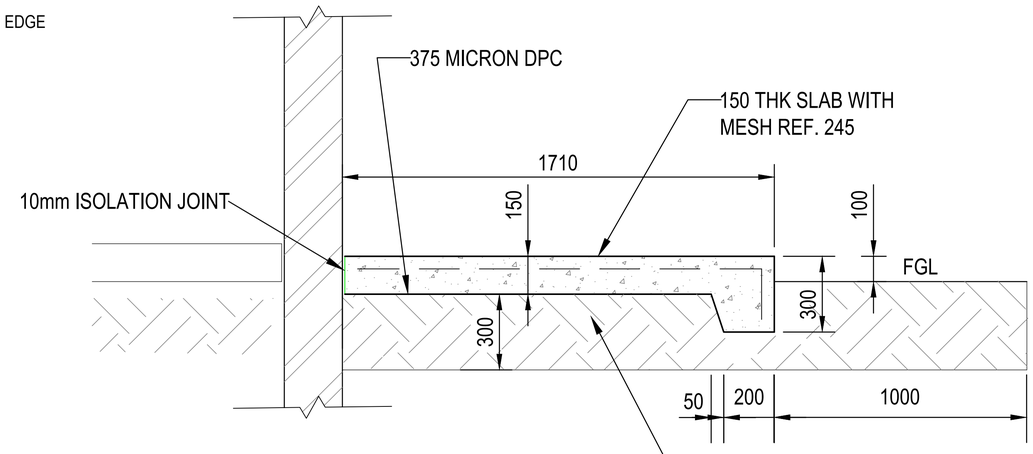
BATCHING TANK SLAB LAYOUT

SCALE 1:50



TYPICAL ISOLATION JOINT DETAIL (IJ)

SCALE 1:5



SECTION A-A

SCALE 1:25

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Designed :	P DE KLERK
Drawn :	D MUHAYIMANA
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

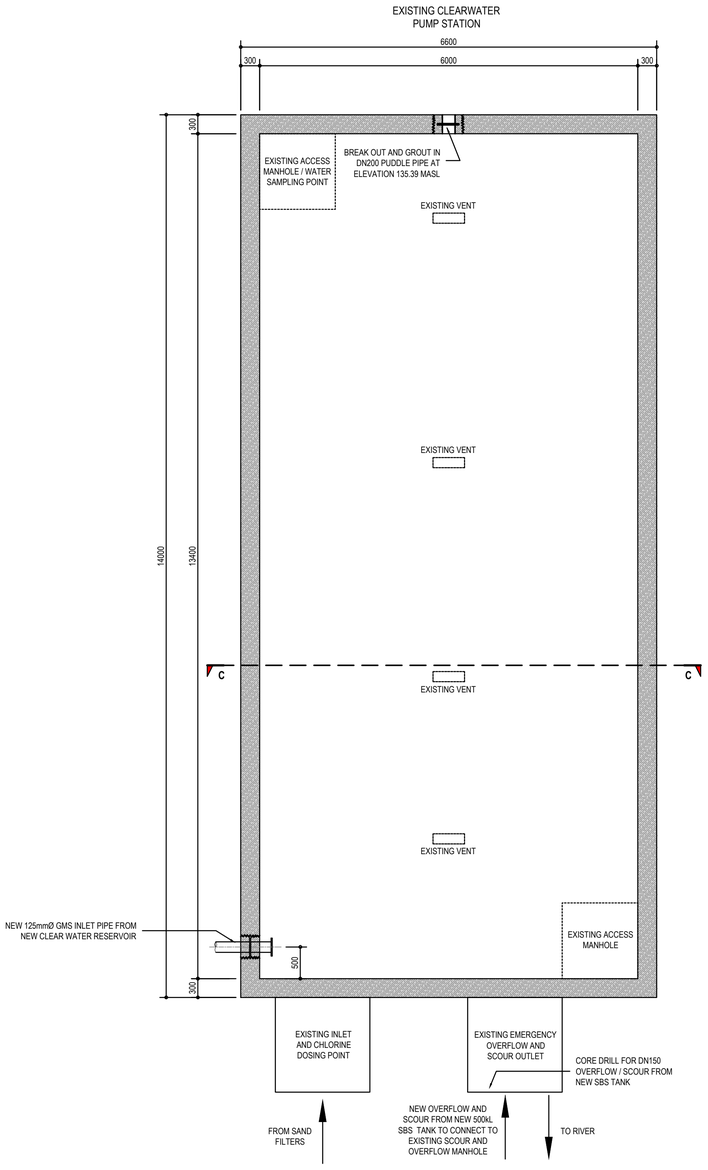
Drawing Title

HYPOCHLORITE BATCHING TANK SLAB LAYOUT AND DETAILS

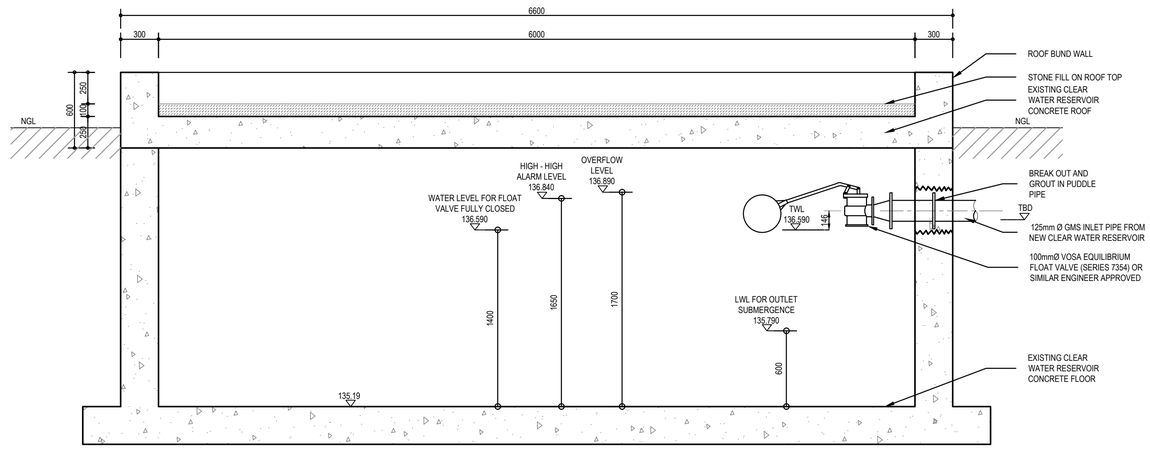
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/406	1 OF 1	B



EXISTING CLEARWATER RESERVOIR
SCALE 1:50



SECTION C - C
SCALE 1:25

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Designed :	V. DE WET
Drawn :	S. POOK
Checked :	D. SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

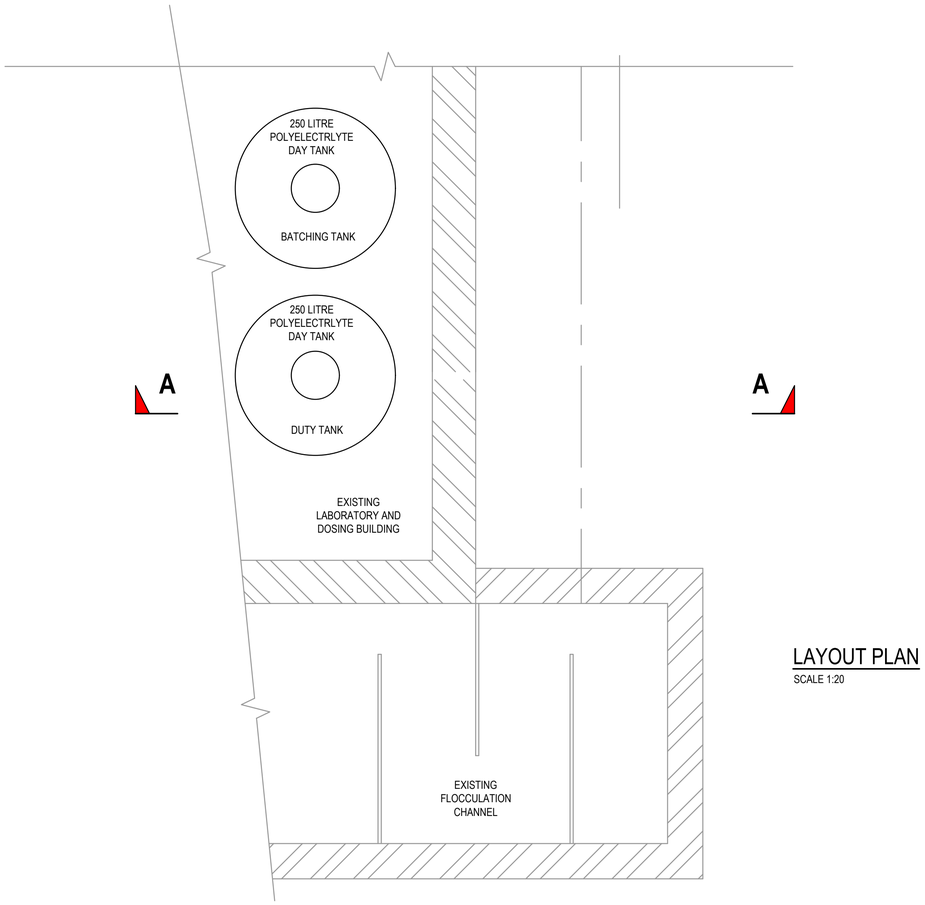
Drawing Title
MODIFICATIONS TO EXISTING CLEAR WATER RESERVOIR

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

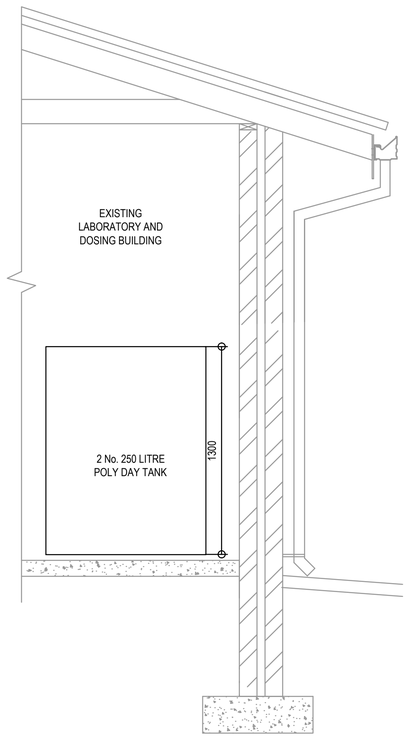
Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/407	1 OF 1	B

Q:\AA\17500 - MKHIZWANA & OGUNJINI WTW\C - Pre-Construction\13 Drawings\Ogunjini\Structural\DWS\57270 - 407- Modifications to Existing Clear Water reservoir - Rev 0.dwg | NAVJOT SINGH | 9/6/2023 12:09:46 PM



LAYOUT PLAN
SCALE 1:20



SECTION A-A
SCALE 1:20

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

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Designed :	P DE KLERK
Drawn :	M SMITH
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

GENERAL NOTES:

REFER TO DRAWING No. 57270-400
FOR GENERAL NOTES.

AS-BUILT DRAWING:

SIGN : DATE :

WATER
AND
SANITATION

ETHEKWINI
MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

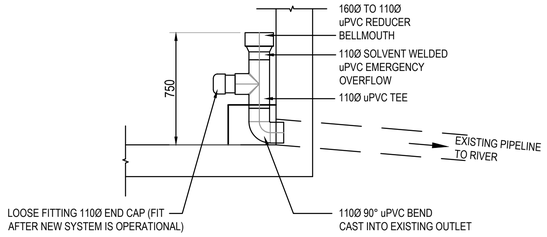
Project No. (X6307)

Drawing Title
POLYELECTROLYTE BULK STORAGE TANK BUNDED AREA

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

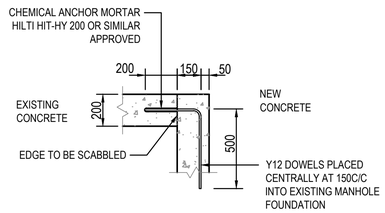
Scale : AS SHOWN | **Date: AUGUST 2023**

Drawing No.	Sheet	Rev.
57270/S/409	1 OF 1	B



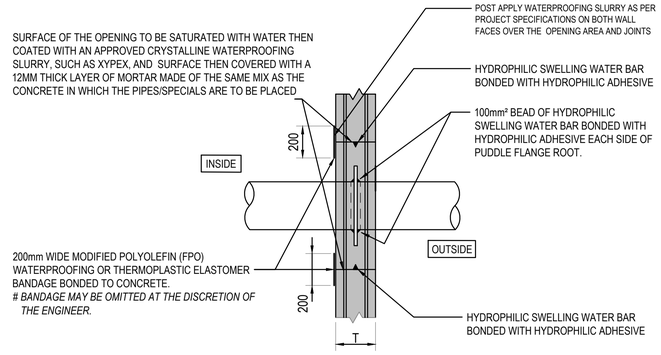
DETAIL 1:
EMERGENCY OVERFLOW

SCALE 1 : 20



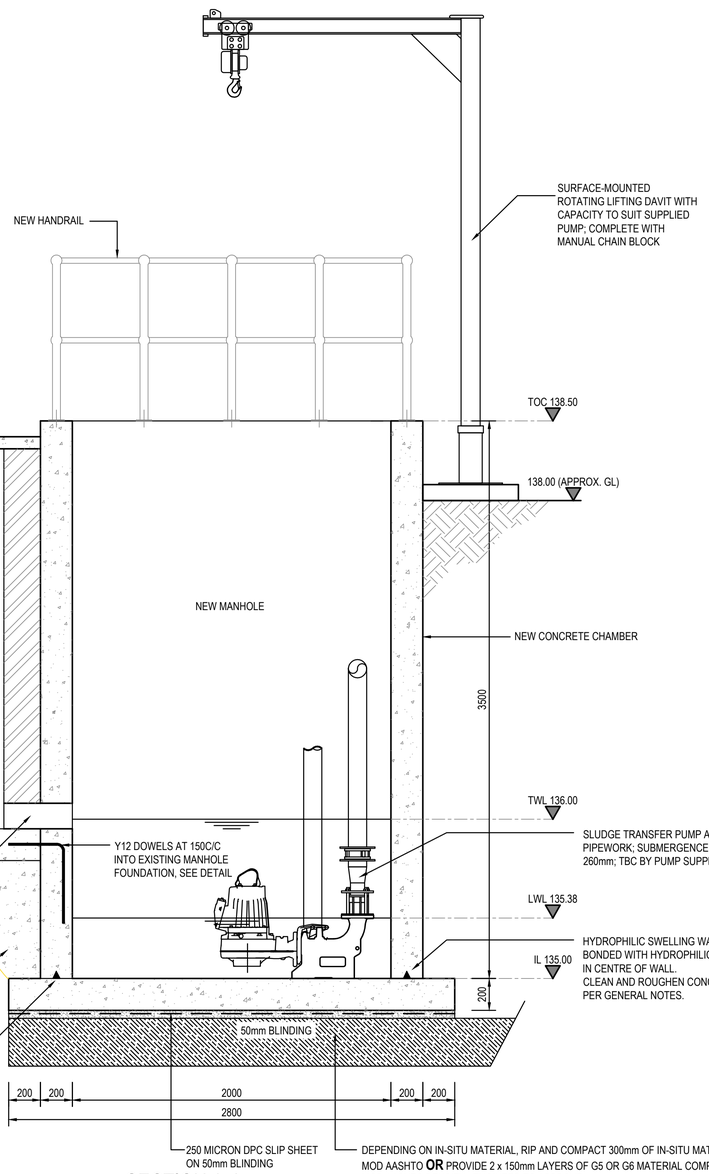
TYPICAL DOWEL DETAIL

SCALE 1 : 20



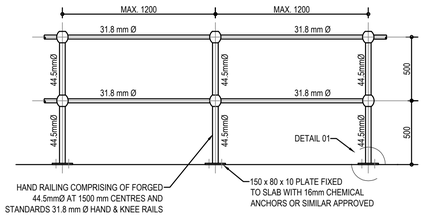
PIPE PENETRATION IN BOX-OUT (SECTION)

SCALE 1:20



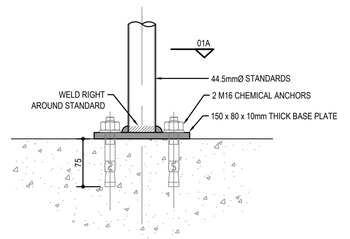
SECTION A-A

SCALE 1 : 20



TOP MOUNTED HANDRAIL ELEVATION

SCALE 1 : 25



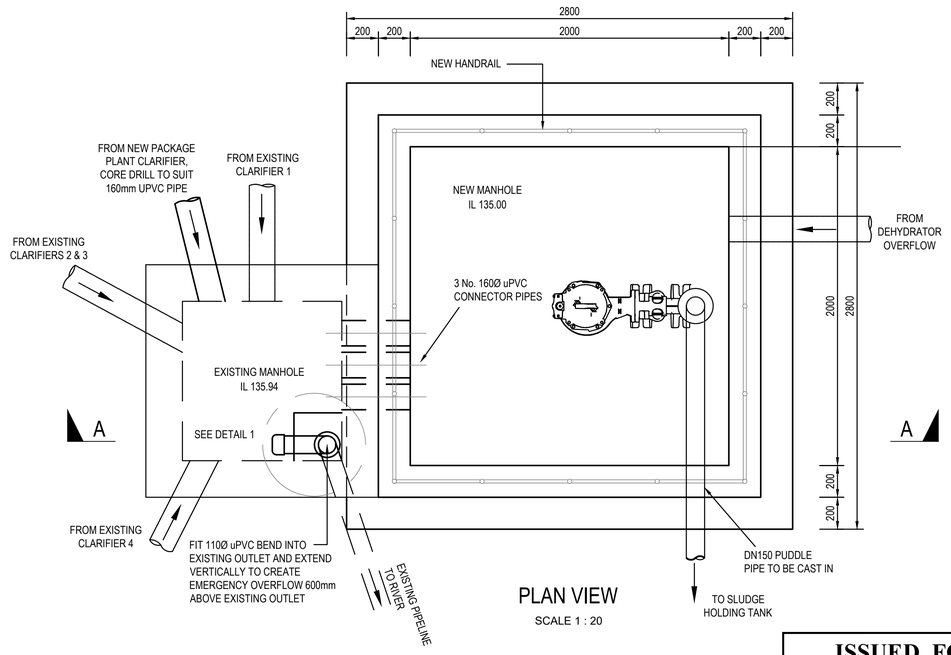
DETAIL 01
BALUSTRADE FIXING

SCALE 1 : 5

NOTE:
- ALL HAND RAIL COMPONENTS TO BE HOT DIP GALVANISED AFTER MANUFACTURE.
- PAINTED WITH GALVANISED PRIMER AND FINISHED IN BLACK AND YELLOW AS PER GENERAL NOTES.
- MINIMUM THICKNESS OF TUBE WALLS TO BE 2.5mm

SECTION 01A

SCALE 1 : 5



PLAN VIEW

SCALE 1 : 20

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
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Drawn :	B.BRUTON
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

LEGEND

- FLOW METER
- PROPOSED FLOW CONTROL VALVE
- PUMP
- RAW WATER
- SLUDGE PIPELINE
- RECYCLE TO RAW WATER TANK
- FILTERED WATER
- SCOUR OVER FLOW
- EXISTING INFRASTRUCTURE
- DOSING POINT

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

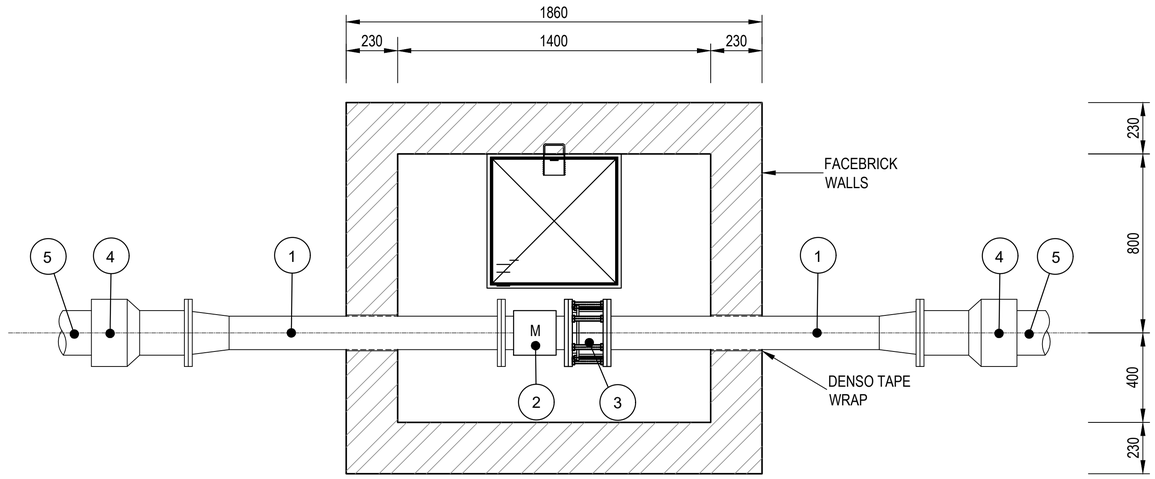
Drawing Title
SLUDGE MANHOLE MODIFICATIONS

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

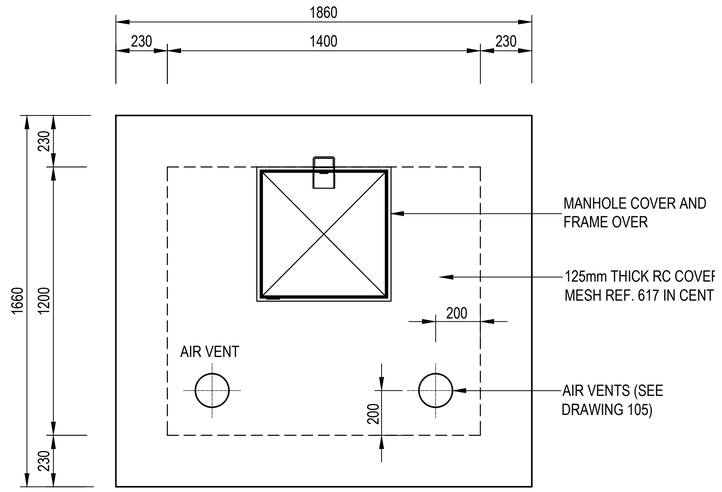
Drawing No.	Sheet	Rev.
57270/S/410	1 OF 1	B

Q:\AA17500 - MKHIZWANA & OGUNJINI WTWs\C - Pre-Construction\13 Drawings\Ogunjini\Structural\DWG\57270 - 410 - Sludge Manhole Modifications - Rev 0.dwg | NAVJOT SINGH | 9/6/2023 12:11:28 PM



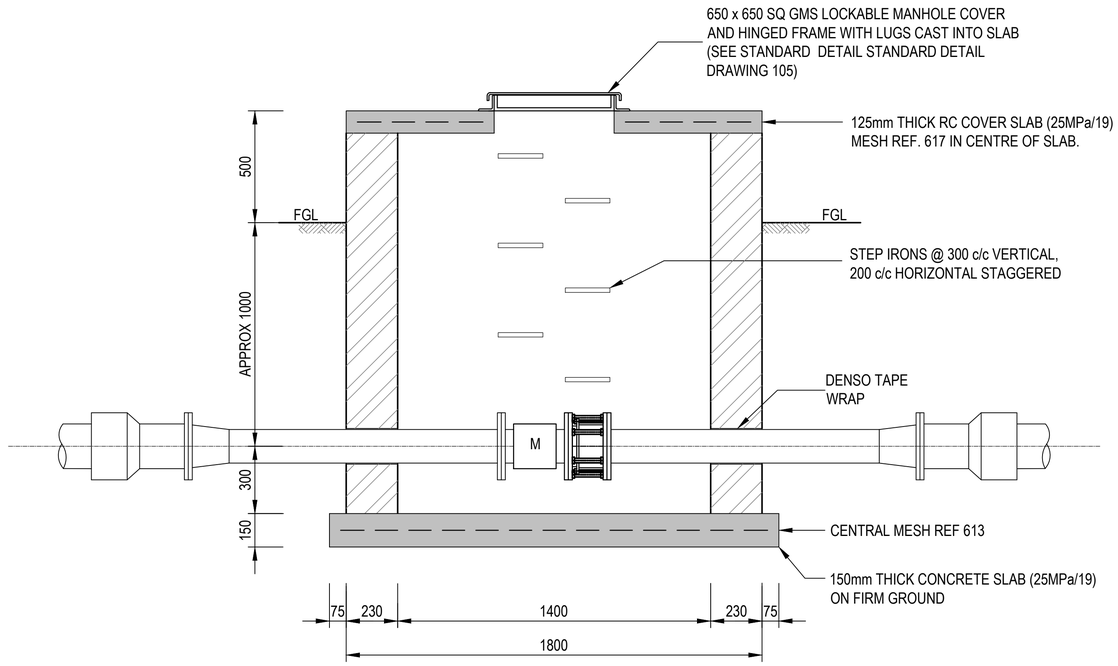
PLAN

SCALE 1 : 20



ROOF PLAN

SCALE 1 : 20



SECTION

SCALE 1 : 20

ITEM No	NEW RAW WATER RISING MAIN	OLD SAND FILTERS TO CHLORINE CONTACT TANK	NEW CLEAR WATER RISING MAIN
1	PN10 DN150 FLANGED STRAIGHT PIPE WITH DN150 X DN200 FLANGED CONCENTRIC REDUCER ONE END, 1400mm OVERALL LENGTH	PN10 DN100 FLANGED STRAIGHT PIPE WITH DN100 X DN150 FLANGED CONCENTRIC REDUCER ONE END, 1400mm OVERALL LENGTH	PN10 DN150 FLANGED STRAIGHT PIPE WITH DN150 X DN200 FLANGED CONCENTRIC REDUCER ONE END, 1400mm OVERALL LENGTH
2	DN150 PN10 MAG-FLOW METER	DN100 PN10 MAG-FLOW METER	DN150 PN10 MAG-FLOW METER
3	DN150 PN10 DISMANTLING JOINT	DN100 PN10 DISMANTLING JOINT	DN150 PN10 DISMANTLING JOINT
4	N/A	DN150 PN10 SOCKETED FLANGE ADAPTOR TO SUIT MPVC PIPE	DN200 PN10 SOCKETED FLANGE ADAPTOR TO SUIT MPVC PIPE
5	DN200 HDPE RISING MAIN (WITH GMS BACKING RING PN10 STUB FLANGE WELDED ON)	160mm UPVC PN12 (CUT INTO EXISTING EXISTING)	200mm MPVC PN25 RISING MAIN

TO BE READ IN-CONJUNCTION WITH BENDING SCHEDULE No: 57270/S/BS13

ISSUED FOR TENDER

CONSULTANT PROJECT NO: J36094

GIBB
ENGINEERING & ARCHITECTURE

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Drawn :	N AMOD
Checked :	P LOUBSER
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

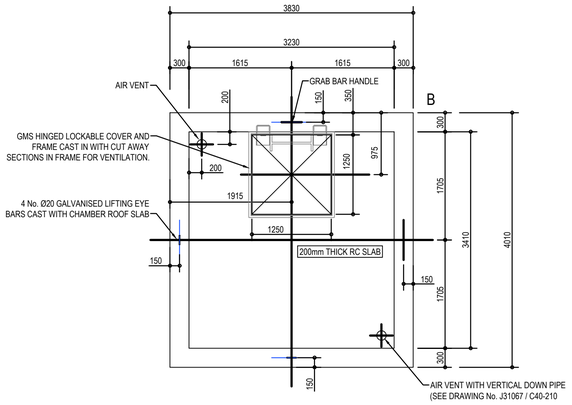
Drawing Title

FLOWMETER CHAMBER DETAIL: NEW RAW WATER & CLEAR WATER RISING MAINS & EXISTING OLD FILTER GRAVITY MAIN

Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

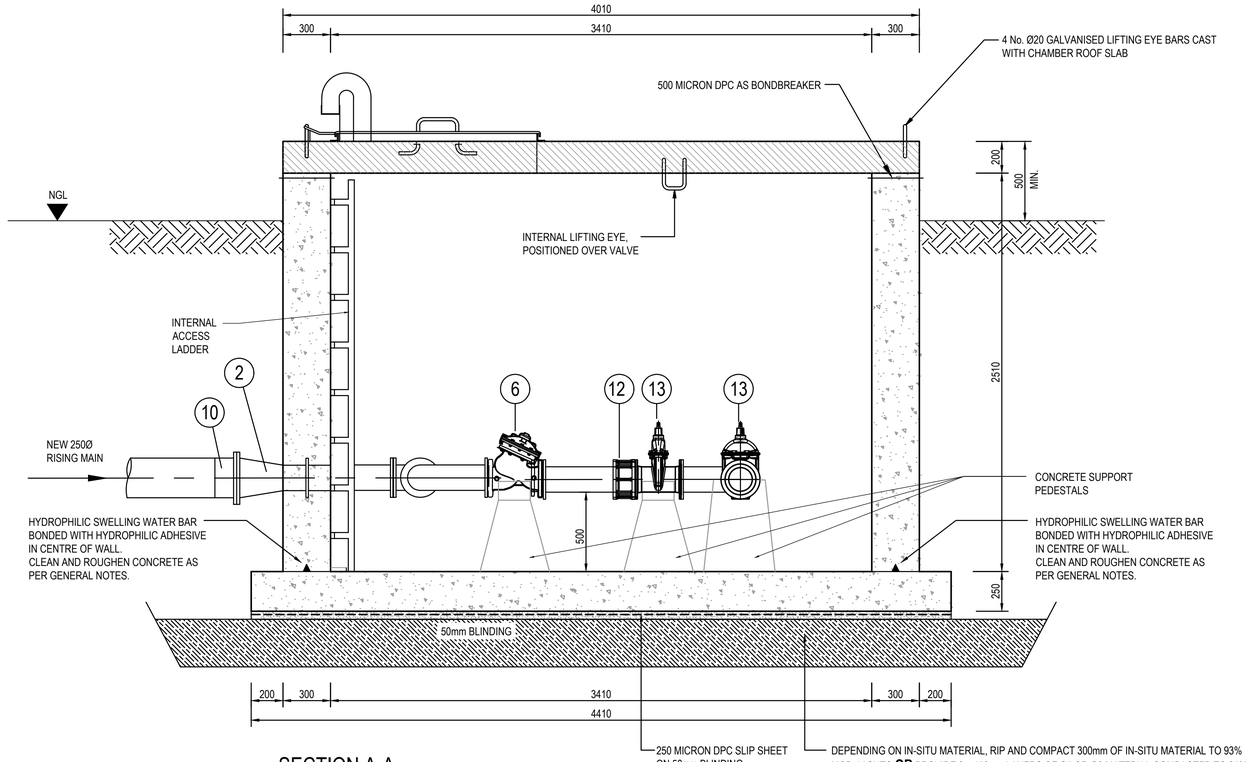
Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/411	1 OF 1	B



ROOF PLAN

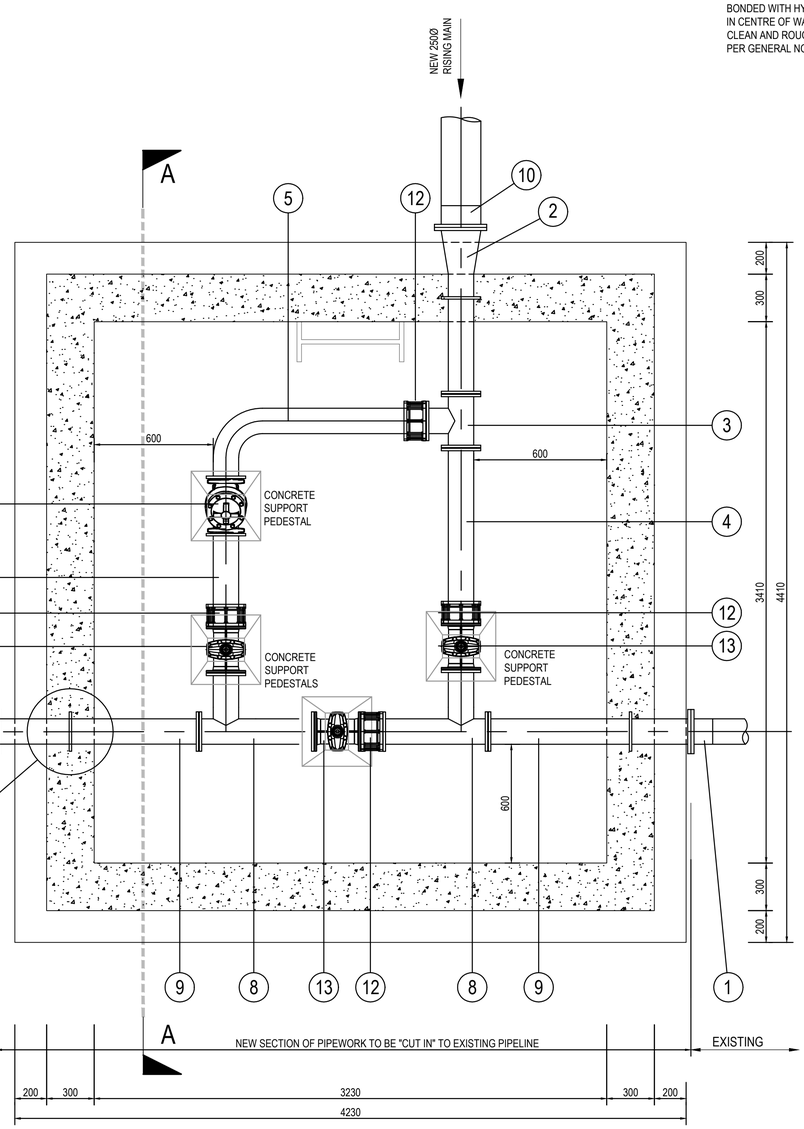
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SECTION A-A

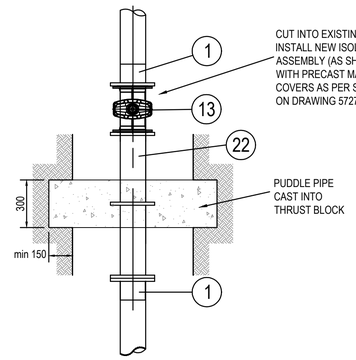
SCALE 1 : 20

NOTE: ONLY NEARSIDE FITTINGS SHOWN FOR CLARITY



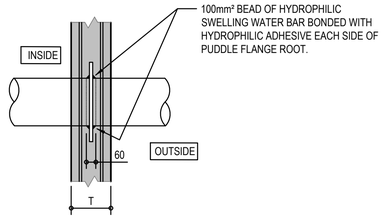
LAYOUT PLAN

SCALE 1:20



DETAIL: INSTALLATION OF NEW VALVES ON EXISTING RISING MAIN

SCALE 1:20



DETAIL 1 PIPE PENETRATION (SECTION)

SCALE 1:20

ITEM	DESCRIPTION	QTY
1	160mm PN10 socketed flange adaptor to suit 160 diam uPVC	6
2	DN250 to DN150 PN10 flanged reducing puddle pipe special 1000mm long	1
3	DN150 PN10 flanged equal tee	1
4	DN150 PN10 flanged spool piece 1100mm long	1
5	DN150 PN10 flanged L-shaped spool piece C/F 1250mm and 350mm	1
6	DN150 PN10 pressure sustaining valve c/w electric solenoid actuated pilot control for two different pressure settings (external electrical connections measured elsewhere)	1
7	DN150 PN10 flanged spool piece 720mm long	1
8	DN150 PN10 flanged equal tee with extensions as shown, barrel C/F 200mm and 350mm	2
9	DN150 PN10 flanged puddle pipe 1280mm long	2
10	250mm PN10 socketed flange adaptor to suit 260 diam uPVC pipe	1
12	DN150 PN10 dismantling joint	3
13	DN150 PN10 flanged resilient seal gate valve with hand wheel	5
22	DN150 flanged spool piece 920mm long, with puddle flange	1

NOTES:

1. ALL UNFORMED SURFACES SHALL BE AS FOLLOWS:-
   FLOOR INVERTS: STEEL TROWELLED
   WALL TOPS: WOOD FLOATED
2. ALL PIPEWORK AND FITTINGS THROUGH CONCRETE TO BE MANUFACTURED FROM uPVC WITH A MINIMUM OF 350mm LENGTH BETWEEN WALL AND SOCKET, UNLESS OTHERWISE INDICATED.
3. ALL CONCRETE SHALL BE MADE WITH ORDINARY PORTLAND CEMENT WITH 30% FLY ASH CEMENT OR SIMILAR APPROVED CEMENT EXTENDER.
4. WATER:CEMENT RATIO NOT TO EXCEED 0.50

CONSULTANT PROJECT NO: J36094

GIBB ENGINEERING & ARCHITECTURE

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Designed :	D.SHAW
Drawn :	B.BRUTON
Checked :	D.SHAW
Approved :	N MKHWANAZI

REVISIONS

Revision	Date	Description
B	31-08-2023	ISSUED FOR TENDER

REFERENCE

Drawing No	Title
57270/C/201	Ogunjini 1 Clear Water Reservoir Site: Rising Main Tie-in Chamber & Pipe Modification Details

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY UPGRADE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title
OGUNJINI 1 CLEAR WATER RESERVOIR:
VALVE CHAMBER & PIPE MODIFICATION DETAILS

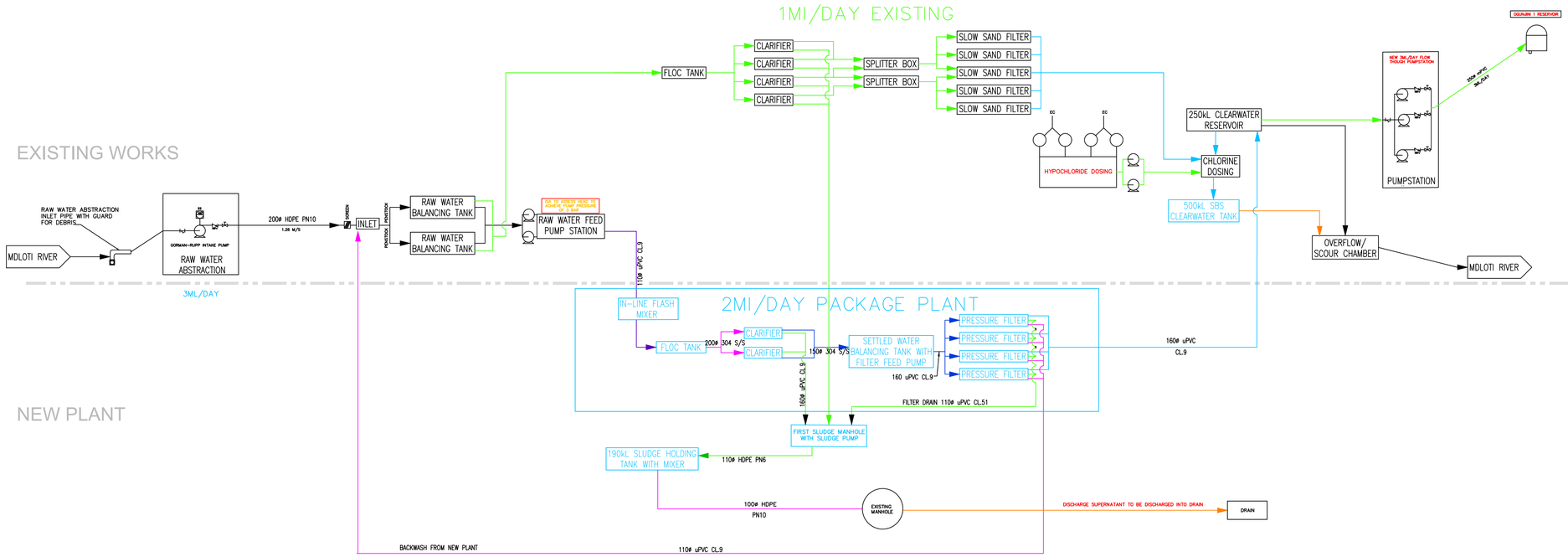
Works Project Manager:	A. Pillay
Deputy Head: Engineering:	B. Soni
Head: Water and Sanitation:	E. Msweli

Scale : AS SHOWN **Date:** AUGUST 2023

Drawing No.	Sheet	Rev.
57270/S/412	1 OF 1	B

ISSUED FOR TENDER

O:\AA17000 - MKHIZWANA & OGUNJINI WTWC - Pre-Construction\13 Drawings\Ogunjini\Structural\DWG\57270 - 412 - Ogunjini 1 Clear Water Reservoir Valve Chamber & pipe Modification Details - Rev B.dwg | MW.JOT.SINGH | 9/6/2023 12:13:10 PM



REFERENCE DRAWINGS

DRAWING No	TITLE DESCRIPTION	SOURCE

NOTES

23 / 08 / 2023	ISSUED FOR TENDER	DN	
DATE	DESCRIPTION	NAME	SIGNATURE
		APPROVED	

	BY	DATE	SIGNATURE
DRAWN	N. SINGH	23 / 08 / 2023	
DESIGNED	S. SEWLAL	23 / 08 / 2023	
CHECKED	D. NARAINSAMY	23 / 08 / 2023	
APPROVED	D. NARAINSAMY	23 / 08 / 2023	

OGUNJINI CLIENT APPROVAL

ENGINEERING SERVICES

	NAME	SIGNATURE	DATE
DESIGN ENGINEER	.		
ENGINEERING MANAGER	.		

INGEROP
Inventing for tomorrow

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CLIENT

ETHEKWINI MUNICIPALITY
WATER AND SANITATION
UNIT: ENGINEERING
DEPARTMENT

PROJECT TITLE

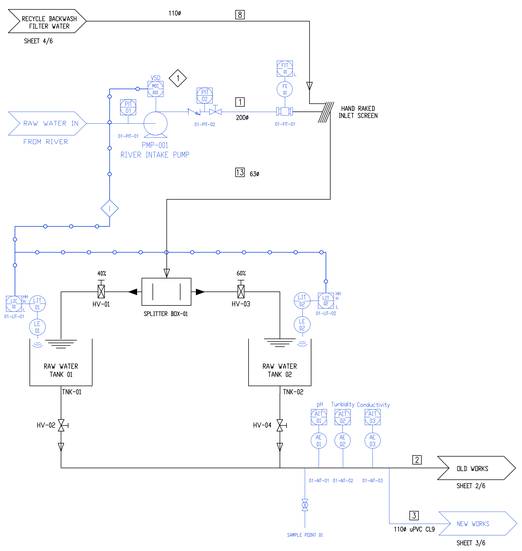
OGUNJINI WATER TREATMENT WORKS EMERGENCY CAPACITY INCREASE FROM 1ML/D TO 3ML/D

TITLE

WATER TREATMENT WORKS PROCESS FLOW DIAGRAM

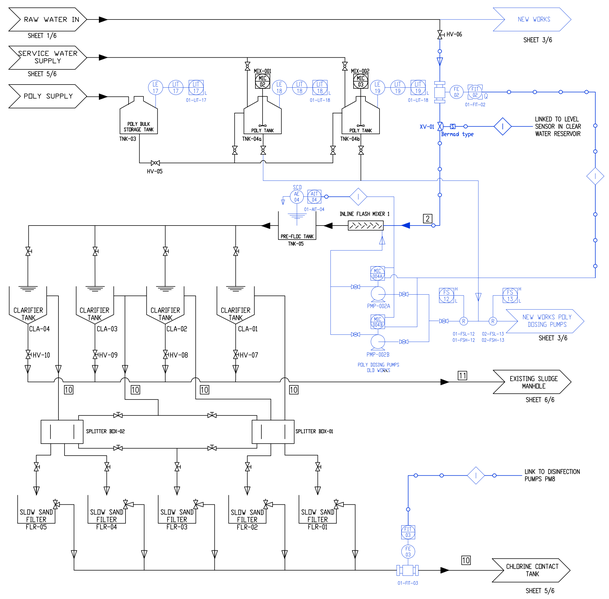
PROJECT No.	SCALE	SHEET SIZE	SHEET
AA170500	1:1000	A1	1 of 1
CONTRACT No.	DRAWING No.		REVISION
WS 7759	AA170500/001		B

STREAM No.	1	2	3	4	5	6	7	8	9	10	11	12	12A	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRODUCT																														
AVG. FLOW										EXISTING WORKS	EXISTING WORKS				EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS	EXISTING WORKS
MAX. FLOW		14																												
DESIGN FLOW	30.9	11.7	13.9	13.9	13.9	23.15	13.9	13.9	10			17	0.56	2																
FLOW UNITS	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s			l/s	l/s	l/s																
PRESSURE																														
TEMP. °C																														
PIPE MATERIAL	HDPE		uPVC	uPVC/MS	uPVC	MS	MS	uPVC	uPVC			HDPE	HDPE	HDPE																
PIPE CLASS	PN10		CL9	CL9	CL9			CL9	CL9			PN6	PN10	PN6																
PIPE SIZE DELIVERY	ø200mm	ø150mm	ø110mm	ø160/150mm	ø160/150mm	ø150mm	ø150mm	ø110mm	ø160mm			ø110mm	ø32mm	ø63mm																



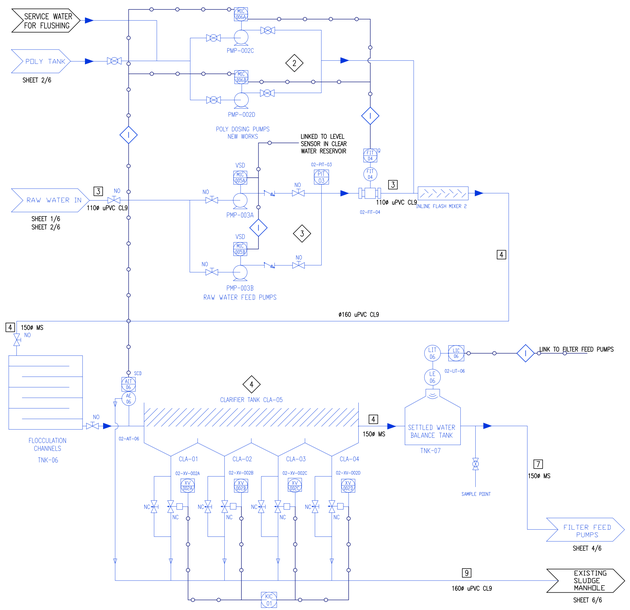
RAW WATER FROM RIVER ABSTRACTION

SHEET 1/6



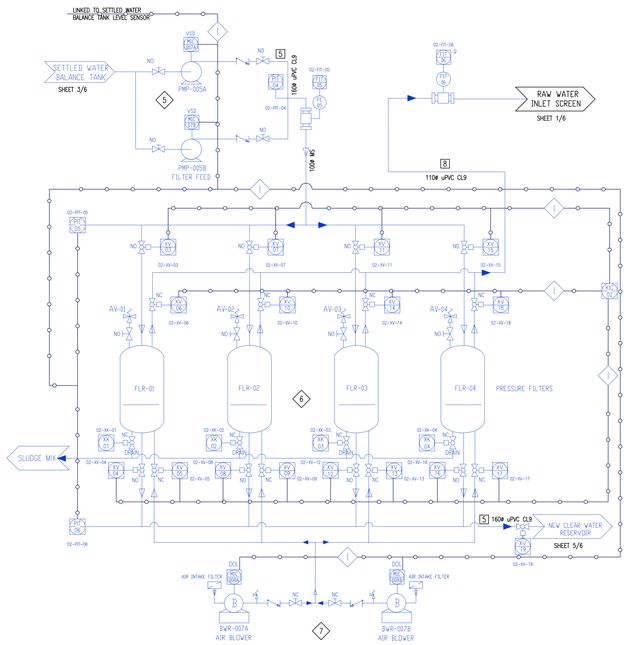
EXISTING WTW

SHEET 2/6



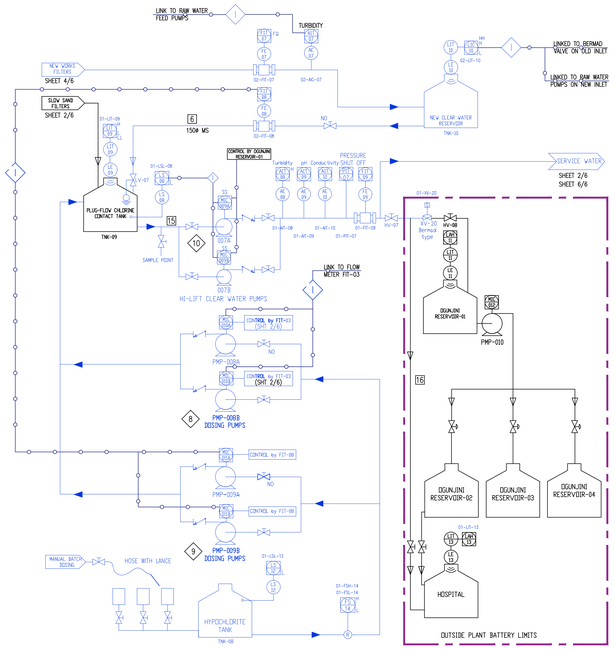
NEW WTW (1ML/d)

SHEET 3/6



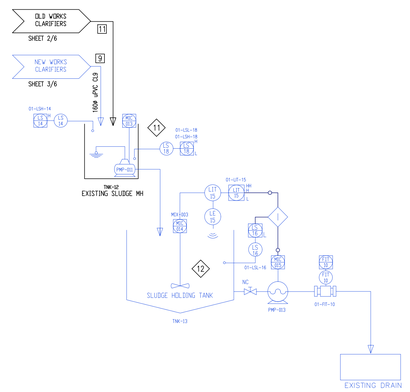
NEW WTW FILTERS

SHEET 4/6



CLEARWATER AND CHLORINATION SYSTEM

SHEET 5/6



SLUDGE HANDLING SYSTEM

SHEET 6/6

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ISSUED FOR TENDER

PLANT/ITEM No.	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
DESCRIPTION	RIVER ABSTRACTION PUMPS	POLY DOSING PUMPS	RAW WATER PUMPS	CLARIFIER	FILTER FEED PUMPS	PRESSURE SAND FILTERS	AIR BLOWERS	HYPOCHLORITE DOSING PUMPS	HYPOCHLORITE DOSING PUMPS	CLEAR WATER PUMPS	SLUDGE TRANSFER PUMPS	SLUDGE MIXER	DEHYDRATOR	FILTRATE PUMPS																
EQUIPMENT DETAILS	30.9 l/s	0.1–4.2 l/hr	13.9 l/s	13.9 l/s	13.9 l/s	13.9 l/s	62.4 m^3/hr	1.5–15 l/hr	1.5–15 l/hr	30.9 l/s	17 l/s	1.5 mø	0.56 l/s	2 l/s																
	6.8–11.2m		±8m HEAD	2.5m UPFLOW	±10m HEAD	6m/hr FILTRATION RATE	0.033 BAR			163m HEAD	7m HEAD	54rpm	160kg DS/Bhr	6m HEAD																
					20–42m^3/hr BACKWASH						3kW	7.5kW	75–90% DS REMOVAL	0.5kW																
	QTY 2	QTY 2	QTY 2	QTY 1	QTY 2	QTY 4	QTY 2	QTY 2	QTY 2	QTY 2	QTY 2	QTY 1	QTY 1	QTY 2																
	SELF PRIMING	RECIPROCATING DIAPHRAGM	END SUCTION	LAMELLA SETTLER	END SUCTION	PRESSURE TYPE	ROOTS LOBE TYPE	RECIPROCATING DIAPHRAGM	RECIPROCATING DIAPHRAGM	MULTI-STAGE	SUBMERSIBLE	LOW SPEED, LOW SHEAR TYPE	MECHANICAL VOLUTE TYPE	SUBMERSIBLE																

CONSULTANT PROJECT NO: P7486

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Designed : K. McRAE
Drawn : J. MüLLER
Checked : JP. BLIGNAULT
Approved : K. McRAE

REVISIONS

Revision	Date	Description
B	31/08/2023	ISSUED FOR TENDER

INSTRUMENT ABBREVIATIONS

LETTER	MEASURED VARIABLE	TRANSMITTERS BLIND	TRANSMITTERS INDICATING	READOUT INDICATING
A	ANALYSIS	AT	AIT	AI
B	BURNER			
C	CONDUCTIVITY	CT	CIT	CI
D	DENSITY	DT	DIT	DI
E	VOLTAGE	ET	EIT	EI
F	FLOW	FT	FIT	FI
H	HAND			
I	CURRENT	IT	IIT	II
J	POWER	JT	JIT	JI
K	TIME	KT	KIT	KI
L	LEVEL	LT	LIT	LI
M	MOTOR	MT	MIT	MI
P	PRESSURE	PT	PIT	PI
PD	PRESSURE DIFF.	PDT	PDIT	PDI
Q	QUANTITY	QT	QIT	QI
R	RADIATION	RT	RIT	RI
S	SPEED/FREQUENCY	ST	SIT	SI
T	TEMPERATURE	TT	TIT	TI
V	VIBRATION	VT	VIT	VI
W	WEIGHT	WT	WIT	WI
X	UNCLASSIFIED			
Y	EVENT/STATE	YT	YIT	YI
Z	POSITION	ZT	ZIT	

Output Function: C - Control, A - Alarm, S - Switch, I - Indication, E - Element

Discreet Instruments: Field Mounted; Panel Mounted; PLC Function; Hard-wired Interlock

- GATE VALVE
- CONTROL VALVE
- ACTUATED VALVE
- SWEETY VALVE
- RELIEF VALVE
- FLOAT VALVE
- BUTTERFLY VALVE
- BALL VALVE
- NON-RETURN VALVE
- SCREW DOWN NRV
- DIAPHRAGM VALVE
- 3-WAY VALVE
- KNIFE GATE VALVE
- SOLENOID VALVE
- TELESCOPIC VALVE
- SLUDGE WITH HAND & GEARBOX
- AIR BLOWER
- AIR COMPRESSOR
- SUBMERSIBLE PUMP
- CENTRIFUGAL PUMP
- PROGRESSIVE CAVITY PUMP
- INLINE FLASH MIXER
- STATIC MIXER
- MIXER
- MACERATOR
- ELECTRIC MOTOR
- CHECK VALVE
- CROSSING LINES NOT CONNECTED
- INSTRUMENT SIGNAL LEAD
- PIPE LINE (minor)
- FLOW DIRECTION
- INSTRUMENT AIR
- SOFTWARE LINK
- RUBBER JOINT
- REDUCER
- SIGHT GLASS
- DRAIN
- DAMPER
- VARIABLE AREA FLOW METER
- ULTRASONIC/RADAR TRANSDUCER
- STRAINER
- SURFACE AERATOR
- VACUUM INJECTOR
- MAGFLOW METER
- VENTURI FLUME
- WEIR
- ADJUSTABLE WEIR
- MECHANICAL SCREEN
- HAND RAKED SCREEN
- FILTER
- PRESSURE REGULATOR

"NO" DENOTES VALVE NORMALLY OPEN
"NC" DENOTES VALVE NORMALLY CLOSED

AS-BUILT DRAWING:

SIGN : DATE :

WATER AND SANITATION

ETHEKWINI MUNICIPALITY

ENGINEERING: TREATMENT WORKS DESIGN BRANCH

Contract No. WS 7759

Project Title

OGUNJINI WATER TREATMENT WORKS CAPACITY INCREASE FROM 1ML/D TO 3ML/D

Project No. (X6307)

Drawing Title

PROCESS AND INSTRUMENTATION DIAGRAM

Works Project Manager: A. Pillay

Deputy Head: Engineering: B. Soni

Head: Water and Sanitation: E. Msweli

Scale : AS SHOWN | Date: AUGUST 2023

Drawing No.	Sheet	Rev.
AA170500/002	1 OF 1	B