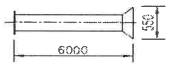
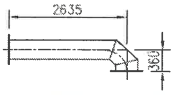
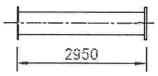
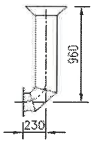
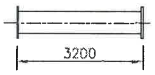
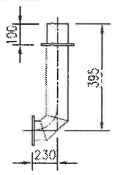
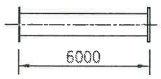
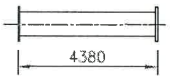
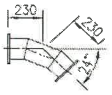
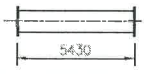
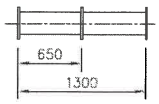
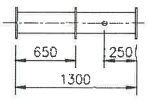
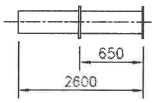
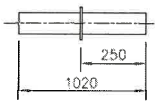
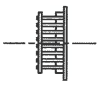
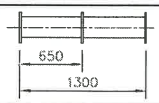
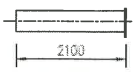
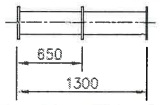
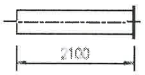
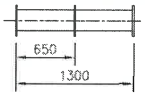
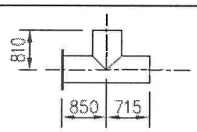
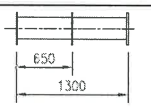
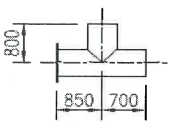
PIPE SCHEDULE

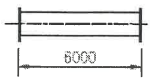
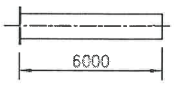
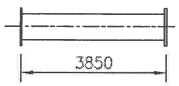
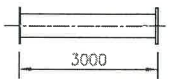
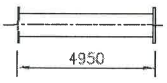
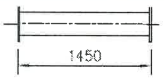
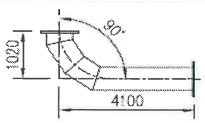
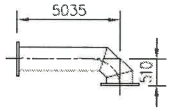
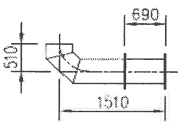
Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
SECTION 4: RESERVOIR							
OVERFLOW PIPING							
OF-001	350	SS 304 3mm w.t.	FLANGED BELLMOUTH, O.A. 6000mm, BELLMOUTH 550mm DIA.		1		R -
OF-002	350	SS 304 3mm w.t.	FLANGED 90° SHORT RADIUS BEND. ONE END 360mm C. to F. OTHER END 2635mm C. to F.		1		R -
OF-003	350	SS 304 3mm w.t.	FLANGED PIPE, O.A. 2950mm		1		R -
SCOUR PIPING							
SP-001	150	SS 304 3mm w.t.	90° SHORT RADIUS BEND ONE END 230mm C. TO F. AND FLANGED, OTHER END 960mm C. to F. WITH BELLMOUTH OD OF 245mm		1		R -
SP-002	150	SS 304 3mm w.t.	FLANGED PIPE O.A.3200mm		1		-
DRAIN PIPING							
DR-001	150	SS 304 3mm w.t.	FLANGED 90° SHORT RADIUS BEND. ONE END 230mm C. TO F. OTHER END PLAIN 395mm O.A.WITH PUDDLE FLANGE 100mm FROM PLAIN END		1		R -
DR-002	150	SS 304 3mm w.t.	FLANGED PIPE 0.A 6000mm		2		R -
DR-003	150	SS 304 3mm w.t.	FLANGED PIPE 0.A 4380mm		1		R -
DR-004	150	SS 304 3mm w.t.	FLANGED 24° MEDIUM RADIUS BEND 230mm C. to F.		1		R -
DR-005	150	SS 304 3mm w.t.	FLANGED PIPE O.A.5430mm		1		R -
TOTAL CARRIED TO ITEM 4.2.1							R -

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
SECTION 5: CHAMBERS AND BOXES							
SCOUR BOX							
SB-001	150	SS 304 3mm w.t.	PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END.		1		
SB-002	150	SS 304 3mm w.t.	PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH P.F. 650mm FROM ONE END AND 50mm BOSS 250mm FROM OTHER END		1		
SB-003	350	SS 304 3mm w.t.	PUDDLE PIPE 0.A 2600mm. ONE END FLANGED WITH PUDDLE FLANGE 650mm FROM FLAGED END.		1		
SB-004	150	SS 304 3mm w.t.	PUDDLE PIPE 0.A 1020mm. BOTH ENDS PLAIN WITH PUDDLE FLANGED 250mm FROM END.		2		
SB-005	150	Coated M.S.	FLANGED ADAPTOR		2		
V-001	150	D.I.	WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS		2		
V-002	50	SS 304	THREADED BALL VALVE		1		
TOTAL CARRIED TO ITEM 5.1.6.1							
INLET FLOW METER CHAMBER							
IFC-001	500	SS 304 4mm w.t.	PUDDLE PIPE O.A. 1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END.		2		
IFC-002	500	SS 304 3mm w.t.	FLANGED PIPE O.A. 2100mm		1		
IFC-003	500	Coated M.S.	FLANGE ADAPTOR		1		
TOTAL CARRIED TO ITEM 5.2.6.1							

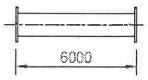
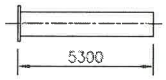
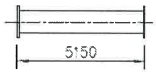
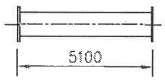
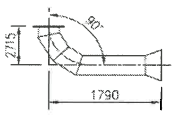
PIPE SCHEDULE

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
OUTLET FLOW METER CHAMBER							
OFC-001	500	SS 304 4mm w.t.	PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END.		2		
OFC-002	500	SS 304 4mm w.t.	PIPE O.A.2100mm, ONE END FLANGED OTHER END PLAIN		1		
OFC-003	500	Coated M.S.	FLANGE ADAPTOR		1		
TOTAL CARRIED TO ITEM 5.3.6.1							
VALVE CHAMBERS							
VC-001	500	SS 304 4mm w.t.	PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END.		3		
VC-002	500	SS 304 4mm w.t.	UN-EQUAL TEE, PLAIN ENDED BRANCH 810mm C. to F. 850mm C. to F. FROM FLANGED END, OTHER END PLAIN 715mm C. to F.		1		
VC-003	500	Coated M.S.	FLANGE ADAPTOR		2		
VC-004	500	D.I.	WAFER TYPE KNIFE GATE VALVE WITH STAINLESS STEEL BLADE AND SPINDLE, PN10, O.A. 100mm		2		
VC-005	600	SS 304 5mm w.t.	PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END.		3		
VC-006	600	SS 304 5mm w.t.	UN-EQUAL TEE, PLAIN ENDED BRANCH 800mm C. to F. 850mm C. to F. FROM FLANGED END, OTHER END PLAIN 700mm C. to F.		1		
VC-007	600	Coated M.S.	FLANGE ADAPTOR		2		
VC-008	600	D.I.	WAFER TYPE KNIFE GATE VALVE WITH STAINLESS STEEL BLADE AND SPINDLE, PN10, O.A. 110mm		2		
TOTAL CARRIED TO ITEM 5.5.6.1							

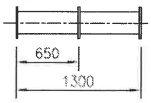
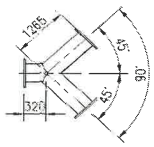
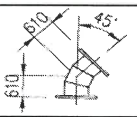
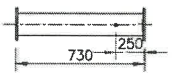
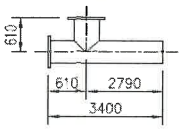
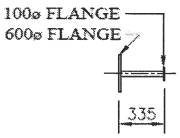
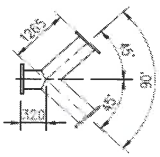
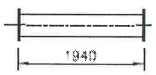
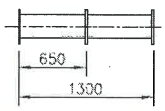
PIPE SCHEDULE

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
SECTION 6: INTERCONNECTING PIPEWORK							
INLET PIPING							
IP-001	500	Coated M.S. 5mm w.t.	FLANGED PIPE O.A.600mm		9		
IP-002	500	Coated M.S. 5mm w.t.	PIPE PME EMD FLANGED O.A.6000mm		1		
IP-003	500	Coated M.S.	FLANGE ADAPTOR		1		
IP-004	500	Coated M.S. 5mm w.t.	FLANGED PIPE O.A.3850mm		1		
IP-005	500	Coated M.S. 5mm w.t.	FLANGED PIPE O.A.3000mm		1		
IP-006	500	Coated M.S. 5mm w.t.	FLANGED PIPE O.A.4950mm		1		
IP-007	500	Coated M.S. 5mm w.t.	FLANGED PIPE O.A.1450mm		1		
IP-008	500	Coated M.S. 5mm w.t.	FLANGED 90° MEDIUM RADIUS BEND. ONE END 1020mm c. TO F. OTHER END 4100mm C. TO F.		1		
IP-009	500	Coated M.S. 5mm w.t.	FLANGED 90° SHORT RADIUS BEND. ONE END 5035mm C. TO F. OTHER END 510mm C. TO F.		1		
IP-010	500	SS 304 4mm w.t.	UNEQUAL 90° SHORT RADIUS BEND, ONE END PLAIN 510mm C. to F. OTHER END FLANGED 1510 C. to F. WITH P.F. 690mm FROM FLANGED END		1		
TOTAL CARRIED TO ITEM 6.2.5							

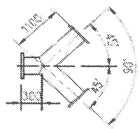
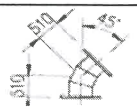
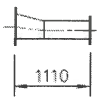
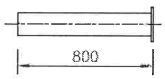
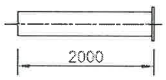
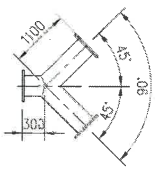
PIPE SCHEDULE

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
OUTLET PIPING							
OP-001	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A.6000mm		8		
OP-002	600	Coated M.S. 6mm w.t.	PIPE ONE END FLANGED O.A.5300mm		1		
OP-003	600	Coated M.S.	FLANGE ADAPTOR		1		
OP-004	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A.5150mm		1		
OP-005	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A.3000mm		1		
OP-006	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A.5100mm		1		
OP-007	600	SS 304 5mm w.t.	UNEQUAL 90° MEDIUM RADIUS BEND, ONE END FLANGED 2715mm C. to F. OTHER END WITH BELLMOUTH 1790mm C. to F.		1		
TOTAL CARRIED TO ITEM 6.2.6							

PIPE SCHEDULE

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
SECTION 9: VALVE BUILDING							
VALVE BUILDING							
VB-001	600	SS 304 5mm w.t.	PUDDLE PIPE O.A.900mm BOTH ENDS FLANGED WITH PUDDLE FLANGE 450mm FROM ONE END.		2		
VB-002	600	Coated M.S. 6mm w.t.	FLANGED 90° Y-PIECE, BRANCHES 1265mm C to F. MAIN PIPE 320mm C. to F. WITH 50mm BOSS 320mm FROM MAIN FLANGED END		1		
VB-003	600	Coated M.S. 6mm w.t.	STANDARD D.F 45° SHORT RADIUS BEND, 610mm C TO F.		4		
VB-004	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A.730mm WITH 25mm BOSS 250mm FROM ONE END.		2		
VB-005	600	Coated M.S.	FLANGE ADAPTOR		2		
VB-006	600	Coated M.S. 6mm w.t.	UN-EQUAL TEE, ONE END FLANGED 610mm C.to F. OTHER END PLAIN 2790mm C. to F. WITH FLANGED ENDED BRANCH 610mm C. to F.		2		
VB-007	100X 600	Coated M.S.	600ø BLANK FLANGE DRILLED FOR 100ø PIPE O.A.335mm WITH FLANGED END		2		
VB-008	600	Coated M.S. 6mm w.t.	FLANGED 90° Y-PIECE, BRANCHES 1265mm C to F. MAIN PIPE 320mm C. to F.		1		
VB-009	600	Coated M.S. 6mm w.t.	FLANGED PIPE O.A. 1940mm		1		
VB-010	500	SS 304 4mm w.t.	D.F. PUDDLE PIPE O.A.1300mm. WITH P.F. 650mm FROM ONE END.		2		
SUB-TOTAL CARRIED FORWARD							

PIPE SCHEDULE

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
brought forward							
VALVE BUILDING (CONTINUED)							
VB-011	500	Coated M.S. 5mm w.t.	FLANGED 90° Y-PIECE, BRANCHES 1100mm C. to F. MAIN PIPE 300mm C. to F. WITH 50mm BOSS 300mm FROM FLANGED END.		1		
VB-012	500	Coated M.S. 5mm w.t.	STANDARD D.F 45° SHORT RADIUS BEND 510mm C. TO F.		4		
VB-013	500X 300	Coated M.S. 4mm w.t.	FLANGED ECCENTRIC 500mm to 300mm REDUCER AND 300mm DIA. PIPE O.A.1110mm		2		
VB-014	300	Coated M.S.	FLANGE ADAPTOR		4		
VB-015	300	Coated M.S. 4mm w.t.	PIPE ONE END FLANGED O.A.800mm		2		
VB-016	300	Coated M.S. 4mm w.t.	PIPE ONE END FLANGED 0.A. 2000mm.		2		
VB-017	500	Coated M.S. 5mm w.t.	FLANGED 90° Y-PIECE, BRANCHES 1100mm C. to F. MAIN PIPE 300mm C. to F. WITH 50mm THREADED ENDED BOSS 300mm FROM FLANGED END AT THE BOTTOM AND A 100mm DIA. FLANGED ENDED BOSS AT THE TOP.		1		
V-005	600	D.I.	WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, GEARBOX OPERATED COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS, O.A. 600mm		2		
V-006	100	SS 304	FLANGED BALL VALVE		2		
V-007	100	SS 304	DOUBLE ORIFICE AIR RELEASE AND VACUUM BREAKER VALVE WITH ANTI SHOCK MECHANISM		2		
SUB-TOTAL CARRIED FORWARD							

Mark on dwg	NB (mm)	Mat	Decription	Sketch	No.	Rate	Amount
brought forward							
VALVE BUILDING (CONTINUED)							
V-008	600	D.I.	FLANGED TILITING DISC NON-RETURN VALVE		2		
V-009	300	D.I.	WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, GEARBOX OPERATED COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS, O.A. 380MM		4		
V-010	300	D.I.	HYDRAULIC CONTROL VALVE INCLUDING 20mm SS BI-LEVEL CONTROL PILOT INSIDE RESERVOIR WITH 15mm SS CONNECTION PIE		2		
V-011	300	Coated M.S. 4mm w.t.	FLANGED BASKET STRAINER, O.A. 800mm		2		
V-012	50	SS 304	THREADED BALL VALVE		2		
V-013	50	SS 304	DOUBLE ORIFICE AIR RELEASE AND VACUUM BREAKER VALVE WITH ANTI SHOCK MECHANISM		1		
V-014	600	D.I.	WAFER TYE KNIFE GATE VALVE, PN 10, STAINLESS STEEL BLADE AND SPLINDLE, O.A 110mm.		4		
V-015	300	D.I.	WAFER TYPE KNIFE GATE VALVE, PN 10, STAINLESS STEEL BLADE AND SPINDLE, O.A. 70mm		4		
V-016	25	SS 304	THREADED BALL VALVE		2		
TOTAL CARRIED TO ITEM 9.1.10							

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SANS 1200A	**SECTION 1: PRELIMINARY & GENERAL**				
1.1	8.3	**FIXED CHARGE AND VALUE RELATED ITEMS**				
	8.3.1	**Contractual Requirements**				
1.1.1		Surety or Bank Guarantee	Sum	1		
1.1.2		Insurance of Works	Sum	1		
1.1.3		Common Law Liability Insurance	Sum	1		
1.1.4		Third Party Insurance	Sum	1		
1.1.5		Insurance of Construction Plant and Equipment	Sum	1		
1.1.6	PSA 8.3.1	Initial Insurance Deductible	Sum	1		
1.1.7a		Any Other Insurances that the Tenderer deems necessary to comply with Insurance requirements (Detail .....)	Sum	1		
1.1.7b		Other (Detail .....)	Sum	1		
		Forward Cover				
1.1.8	PS 6.18	In respect of the total value of imported content of goods used in the reservoir from page RD30 Imported Content Sheet R				
1.1.9		Allow a Provisional Sum to cover variation in exchange rate prior to obtaining forward cover. Tenderer is to insert an amount = 20% of the above amount from Item 1.1.8	Prov. Sum	1		
1.1.10		Allow a Provisional Sum to cover the cost of forward cover Tenderer is to insert an amount = 10% of the above amount from item 1.1.8	Prov. Sum	1		
1.1.11		Allowance as a percentage of the PC value of items under 1.1.9 and 1.1.10 for Contractor's cost and profit. Tenderer to insert the summed amount (calculated under 1.1.9 and 1.1.10) in the "Qty" column, and state percentage in the "Rate" column.	%			
	8.3.2	**Establish Facilities on the Site**				
	8.3.2.1	**Facilities for the Employer's Agent**				
1.1.12	PS 5.6.1	(a) Offices (3 no. off)	Sum	1		
1.1.13		(c) Nameboards	Sum	2		
1.1.14	PSA 8.3.2.1	(d) Latrine facilities	Sum	1		
1.1.15	PSA 8.3.2.1	(e) Boardroom to accommodate 15 people	Sum	1		
1.1.16	PSA 8.3.2.1	(f) Carports (5 off)	Sum	1		
1.1.17	PSA 8.3.2.1	(h) Construction and setting out of survey beacons, including beacons to confirm property boundaries	No.	8		
1.1.18	PSA 8.3.2.1	(i) Furniture for offices and meeting rooms	Sum	1		
1.1.19	PSA 8.3.2.1	(j) Laptop, Data and Software	Sum	1		
	8.3.2.2	**Facilities for the Contractor**				
1.1.20		(a) Offices and Storage Sheds	Sum	1		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
1.1.21		(b) Workshops	Sum	1		
1.1.22		(c) Laboratories	Sum	1		
1.1.23		(e) Ablution and Latrine Facilities	Sum	1		
1.1.24	PSA 8.3.2.2	(f) Tools and Equipment	Sum	1		
1.1.25		(g) Water Supplies, Electric Power & Communications	Sum	1		
1.1.26		(h) Dealing with Water	Sum	1		
1.1.27		(i) Access	Sum	1		
1.1.28		(j) Plant	Sum	1		
1.1.29	PSA 8.3.2.2	(k) Security of the works	Sum	1		
1.1.30	PSA 8.3.2.2	(l) Personal protection equipment	Sum	1		
1.1.31	8.3.3	Other Fixed Charge Obligations	Sum	1		
1.1.32	8.3.4	Removal of Site Establishment	Sum	1		
1.1.33		Compliance with the Occupational Health and Safety Act and Specification (Including compliance with COVID-19 Regulations)	Sum	1		
1.1.34		Compliance with the Environmental Management Plan and Vegetation Management Plan	Sum	1		
1.1.35		Hazard Identification and Risk Assessment	Sum	1		
1.1.36		Construction Safety Officer and Other Appointments	Sum	1		
1.1.37		Work Skills Plan and Implementation Report to CETA	Sum	1		
1.1.38		Pre-Employment Medical Examinations	Sum	1		
1.2	**8.4**	**TIME RELATED ITEMS**				
	8.4.1	**Contractual Requirements**				
1.2.1		Surety or Bank Guarantee	Sum	1		
1.2.2		Insurance of Works	Sum	1		
1.2.3		Common Law Liability Insurance	Sum	1		
1.2.4		Third Party Insurance	Sum	1		
1.2.5		Insurance of construction plant and equipment	Sum	1		
1.2.6a		Any Other Insurances that the Tenderer deems necessary to comply with Insurance requirements (Detail .....)	Sum	1		
1.2.6b		Other (Detail .....)	Sum	1		
	8.4.2	**Operation and Maintenance of facilities on site, for the duration of construction, except where otherwise stated**				
	8.4.2.1	**Facilities for Employer's Agent for the Duration of Construction**				
1.2.7		(a) Furnished offices (3 no. off.)	Sum	1		
1.2.8		(c) Nameboards	Sum	1		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
1.2.9	PSA 8.4.2.1	(e) Latrine facilities for the sole use of the Employer's Agent	Sum	1		
1.2.10	PSA 8.4.2.1	(f) Boadroom to accommodate 15 personnel	Sum	1		
1.2.11	PSA 8.4.2.1	(g) Carports (5 off)	No.	5		
1.2.12	PSA 8.4.2.1	(h) Construction and setting out of survey beacons	No.	8		
1.2.13	PSA 8.4.2.1	(i) Furniture for offices and meeting rooms	Sum	1		
1.2.14		(j) Laptop, Data and Software	Sum	1		
	8.4.2.2	**Facilities for the Contractor**				
1.2.15		(a) Offices and Storage Sheds	Sum	1		
1.2.16		(b) Workshops	Sum	1		
1.2.17		(c) Laboratories	Sum	1		
1.2.18		(e) Ablution and Latrine Facilities	Sum	1		
1.2.19		(f) Tools and Equipment	Sum	1		
1.2.20		(g) Water supplies, electricpower and communications, dealing with water and access	Sum	1		
1.2.21		(h) Dealing with water	Sum	1		
1.2.22		(i) Access	Sum	1		
1.2.23		(j) Plant	Sum	1		
1.2.24	PSA 8.4.2.2	(k) Security of the works	Sum	1		
1.2.25	PSA 8.4.2.2	(l) Water tanker for dust suppression	Sum	1		
1.2.26	PSA 8.4.3	Supervision for the duration of the Contract	Sum	1		
1.2.27	8.4.4	Company and head office overhead costs for the duration of the contract	Sum	1		
1.2.28		Compliance with the Occupational Health and Safety Act and Specification (Including compliance with COVID-19 Regulations)	Sum	1		
1.2.29		Compliance with the Environmental Management Plan and Vegetation Management Plan	Sum	1		
1.2.30		Construction Safety Officer and Other Appointments	Sum	1		
1.2.31		Work Skills Plan and Implementation Report to CETA	Sum	1		
1.2.32		Compliance with contractual reporting requirements and managing of processes for local content	Sum	1		
1.2.33	8.4.5	Other time-related obligations	Sum	1		
1.3	**PSA 8.5**	**SUMS STATED PROVISIONALLY BY THE EMPLOYER'S AGENT**				
1.3.1	(b) (3)	(a) Provisional sum for control testing to be carried out as required by the Employer's Agent including testing of the structure	Prov. Sum	1	R 100 000.00	R 100 000.00
1.3.2		(b) Additional tests ordered by the Employer's Agent	Prov. Sum	1	R 50 000.00	R 50 000.00
1.3.3		(c) Community Liaison Officer (CLO)	Prov.Sum	1	R 255 000.00	R 255 000.00
1.3.4		(d) Training of targetted labour and SMME's	Prov.Sum	1	R 1 000 000.00	R 1 000 000.00
1.3.5		(e) Skills Development and Training	Prov.Sum	1	R 864 000.00	R 864 000.00
1.3.6		(f) Signage for buildings	Prov.Sum	1	R 50 000.00	R 50 000.00
1.3.7		(g) GPR survey	Prov.Sum	1	R 100 000.00	R 100 000.00
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
1.3.8		(h) Protection of existing services	Prov.Sum	1	R 150 000.00	R 150 000.00
1.3.9		(i) Application for Environmental regulation	Prov.Sum	1	R 50 000.00	R 50 000.00
1.3.10		(j) Environmental Control Officer	Prov.Sum	1	R 144 000.00	R 144 000.00
1.3.11		(k) Full time Environmental Liaison Officer	Prov.Sum	1	R 720 000.00	R 720 000.00
1.3.12		(l) Project Mentor or support services for the Contractor or for Sub-contractors, SMME's, etc.	Prov.Sum	1	R 3 660 000.00	R 3 660 000.00
1.3.13		(m) Contractor's percentage to cover cost of handling for items 1.3.1 to 1.3.12	%	R 7 143 000		
1.4	**8.7**	**DAYWORK**				
1.4.1	PSA 8.7.1	Expenditure on dayworks	Prov.Sum	1	R 200 000.00	R 200 000.00
	PSA 8.7.2	**Extra over item 1.4.1 for supervision, overheads and all other costs related to the Daywork items under item 1.4.2 to 1.4.4 for the following:**				
1.4.2		(a) Skilled labourers	%	75 000		
1.4.3		(b) Unskilled labourers	%	75 000		
1.4.4		(c) Material	%	50 000		
	PS 8.7.3	**Plant Hire Rates**				
		The appropriate types and sizes (T&S) of the plant shall be stated in the space provided:				
1.4.5		Mobile cranes (Type & Size .....)	hrs	24		
1.4.6		Front-end loader (T&S.....)	hrs	40		
1.4.7		Bulldozer (T&S.....)	hrs	40		
1.4.8		Grader	hrs	40		
1.4.9		Excavators (T&S.....)	hrs	40		
1.4.10		Tip Trucks	hrs	40		
1.4.11		TLB's	hrs	40		
1.4.12		Portable compressor and breakers etc.	hrs	40		
1.4.13		Portable pumps and hoses	hrs	40		
1.4.14		**Others give full details:**				
		.....	rate/hr			
		.....	hrs only			
1.5	**PSA 8.8**	**TEMPORARY WORKS**	Sum	1		
1.5.1	PSA 8.8.2	Dealing with traffic and maintain Roads				
	PSA 8.8.4	**Relocation of services**				
1.5.2		Excavation for exposing services in the following depth ranges below ground level:				
		(a) 0.0m up to 2.0m:				
1.5.3		(i) Soft material	m³	60		
1.5.4		(ii) Intermediate material	m³	180		
1.5.5		(iii) Hard material	m³	60		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
		(b) Exceeding 2.0m up 4.0m:				
1.5.6		(i) Soft material	m³	64		
1.5.7		(ii) Intermediate material	m³	192		
1.5.8		(iii) Hard material	m³	64		
1.6	PSA 8.9	**DELAYS**				
1.6.1		Delay due to total work stoppage (the Daily rate must equal the total of the Daily Time Related P&G Cost. Only this Daily rate will be paid in the event of ANY approved delays to the Due Completion Date of the Contract)	days	20		
1.7	PSA 8.10	**SUBCONTRACTORS (SMME's)**				
1.7.1		Fixed-Charge items for the sub-contractors Contractual Requirements				Refer to Summary Page
1.7.2	PSA 8.10.2	Overhead, charges and profit for the Main Contractor to provide for fixed-charge items for the sub-contractors Contractual Requirements				Refer to Summary Page
1.7.3		Time Related items for the sub-contractors Contractual Requirements				Refer to Summary Page
1.7.4	PSA 8.10.3	Overhead, charges and profit for the Main Contractor to provide for time related items for the sub-contractors Contractual Requirements				Refer to Summary Page
1.7.5	PSA 8.10.4	Provisional Sum to cover costs incurred by the Contractor when making payments of behalf of the sub-contractor (ref Contract Data) or to provide ad-hoc services on behalf of the sub-contractor	Prov.Sum	1	R 100 000.00	R 100 000.00
		TOTAL FOR SECTION 1 (Carried to Summary)				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 2: SITE PREPARATION & FENCING				
2.1	**SANS 1200C**	**SITE CLEARANCE**				
2.1.1	8.2.1	Clear and grub small trees and bushes	ha	2		
2.1.2	8.2.1	Clear and grub strip 2 m wide for fence	m	455		
2.2	**SANS 1200D**	**EARTHWORKS**				
	8.3.1	**Site Preparation**				
2.2.1	8.3.1.2	Remove topsoil to nominal depth of 150 mm, stockpile and maintain (only where ordered by the Engineer)	m²	12682		
	PSD 8.3.2	**Bulk Excavation**				
	8.3.2 (a)	**Excavate in all materials and use for embankment or backfill or dispose as ordered within freehaul distance**				
2.2.2		(1) Excavate to main terrace level of reservoir and ancilliary structures and dispose	m³	2560		
2.2.3		(2) Excavate to main terrace level of access road and dispose	m³	250		
2.2.4		Extra over items 2.2.2 to 2.2.3 for additional excavations required by the Engineer after excavation has been completed	m³	820		
	8.3.2(b)	**Extra over items 2.2.2 to 2.2.3 for excavations in:**				
2.2.5		(1) Intermediate material	m³	1686		
2.2.6		(2) Hard rock material	m³	843		
2.2.7	8.3.6	Overhaul	m³.km	200		
	PSBA	**Landscapping and Grassing**				
		Trimming:				
2.2.8	PSBA 8.1 (a)	Machine trimming areas to receive grass	m²	5290		
		Preparing areas for grassing (Only where no trimming was done)				
2.2.9	PSBA 8.3 (a)	Scarifying where ordered by the Engineer	m²	1058		
	PSAB 8.3 (b)	**Top soiling (100mm thick) with:**				
2.2.10		Topsoil obtained from stockpile on site	m²	529		
2.2.11		Topsoil obtained by the Contractor (from commercial sources)	m²	5290		
	PSAB 8.3 (d)	**Supplying and applying of Chemical Fertiliser @ 50g/m²**				
2.2.12		2:3:2 (22) Fertilizer	kg	264.5		
	PSVA 8.4	**Grassing**				
2.2.13	PSVA 8.4 (b)	Kikuyu sodding	m²	1587		
2.2.14	PSVA 8.4 (d)	Hydroseeding mix	m²	794		
2.2.15	PSVA 8.7	Dealing with weeds	m²	1323		
2.2.16	PSVA 8.8	Extra over for Landcapping	Prov. Sum	1	R	50 000.00
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
2.3	PSVB	**ACCESS CONTROL AND FENCING**				
		Supply and erection of new security fencing material				
2.3.1	PSVB 8.1	Supply and Install a new 2.4m Clear Galvanised Steel Mesh Fence	m	415		
2.3.2		600mm Deep by 200mm wide concrete (Class 15/20) strip below fence into ground	m^3	50		
2.3.3	PSVB 8.2	Supply and Install a 7m Motorised Galvanised Steel Mesh Sliding Gate to suit 2.4m Galvanised Steel Mesh Fence	No.	1		
		TOTAL FOR SECTION 2 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 3: ROADS AND STORMWATER				
3.1	**SANS 1200DB**	**PIPE TRENCHES**				
	PSD 8.3.2	**Excavate in all materials for trenches, backfill and compact, including disposal of surplus unsuitable material for pipes and cable ducts over 300 mm up to 600 mm diameter for depths.**				
3.1.1		(a) 0.0 m - 2.0 m	m	35		
3.1.2		(b) 2.0 m - 4.0 m	m	5		
3.1.3		Extra over items 3.1.1 to 3.1.2 for additional excavations required by the Employer's Agent after excavation has been completed	m^3	8		
	PSD 8.3.2(b)	**Extra over items 3.1.1 to 3.1.2 for**				
3.1.4		(1) Intermediate excavation	m^3	5		
3.1.5		(2) Hard rock excavation	m^3	5		
3.1.6	8.3.2 (c)	Excavate and dispose of unsuitable material from trench bottom (provisional)	m^3	40		
	8.3.3	**Excavation Ancilliaries**				
		Make up deficiency in backfill material (provisional)				
3.1.7		(c) by importation from commercial sources (G7)	m^3	860		
3.1.8	8.3.3.4	Overhaul	$m^3.km$	200		
3.1.9	8.3.4	Particular Items				
3.1.10		a) Shore trench opposite structure or service (Provisional)	m	35		
	PSDB 8.3.5	**Existing Services that Intersect or Adjoin a Pipe Trench**				
3.1.11		(a) Services that intersect with the trench	No.	10		
3.1.12		(b) Services that adjoin a trench	m	50		
	8.3.6	**Finishing**				
3.1.13	8.3.6.1	Reinstate road sidewalk complete with all courses at pipe crossings as per existing layerworks and surface treatment	m^2	50		
3.2	**SANS 1200DM**	**ACCESS ROAD**				
	8.3.3	**Treatment of road-bed**				
	8.3.3.3 (a)	**Road Bed Preparatioin and Compaction of Materal to:**				
3.2.1		Rip and recompact in-situ material to 150mm depth, moisten and compact to minimum of 93% Mod. AASHTO density.	m^3	45		
3.2.2		Tie into existing road	Sum	1		
3.3	**SANS 1200G**	**CONCRETE ROAD**				
	8.2	**Formwork**				
3.3.1	8.2.1	Rough Formwork along sides of concrete road slabs	m	90		
	8.3	**Reinforcement**				
3.3.2	8.3.1	High tensile steel bars	t	0.5		
3.3.3	8.3.1	Mild steel bars	t	0.2		
	8.3.2	**High Tensile Welded Mesh**				
3.3.4		Ref. 888 for road slabs	m^2	500		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
	8.4	**Concrete**				
3.3.5	8.4.3	**Strength Concrete of Class 20/19 utilised for:** (a) Road Surface Slab	m^3	100		
	8.4.4	**Unformed Surface Finishes**				
3.3.6		(a) Wood-Floated Finish for road slab	m^2	500		
3.4	**PSG 8.5**	**JOINTS**				
	PSG 8.5.2	**Filled Joints**				
3.4.1		**Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m3 including bullnose finish to both sides of joint and tear off strip** 20 mm wide between 200mm concrete members	m	240		
	PSG 8.5.3	**Sealed Joints**				
3.4.2	(a)	**Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker** 20 mm x 15 mm joints between concrete members	m	240		
3.4.3		Saw-cut Joints	m	240		
3.5	**SANS 1200LB**	**PIPE BEDDING**				
	8.2.2	**Supply only of Bedding by Importation**				
	8.2.2.3	**From commercial sources**				
3.5.1	(a)	Selected granular material (G7) compacted to 95% MOD AASHTO	m^3	9		
3.5.2	(b)	Selected fill blanket	m^3	14		
3.5.3	8.2.4	Encasing of 450 mm pipe in 15 MPa concrete	m^3	33		
3.6	**SANS 1200LE**	**STORMWATER DRAINAGE**				
	8.2.1	**Supply, handle, lay, bed Class B concrete pipes with interlocking joints**				
3.6.1		450 mm diameter Class 100D	m	35		
3.6.2		Ancilliary Stormwater Infrastructure	Prov. Sum	1	R	350 000.00
3.7	**SANS 1200ME**	**SUBBASE**				
	8.3.3	Construct the subbase course/ shoulder with material from commercial sources or designated borrow pits.				
3.7.1		G7 material compacted in 150mm layer to 93% of modified AASHTO maximum density.	m^3	45		
3.7.2		Construct 150mm layer of G5 base compacted to 93% of MOD AASHTO from commercial sources	m^3	45		
3.8	**SANS 1200MF**	**STABILISATION**				
3.8.1	8.3.5	Process base material by Stabilisation	m^3	45		
	8.3.8	**Stabilising Agent:**				
3.8.2	8.3.8 (b)	Portland Cement	t	9		
3.9	**SANS 1200MK**	**KERBING & CHANNELLING**				
	8.2.1	Concrete kerbing (Class 20/20 Concrete)				
3.9.1		Edge beam (150mm x 150mm)	m^3	1		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
3.9.2		300 x 150mm Barrier kerb (Straight) Fig 3	m	125		
3.9.3		Allowance for 80mm thick interlocking paving blocks	Prov. Sum	1	R 950 000.00	R 950 000.00
3.10	**SANS 1200MM**	**ANCILLIARY ROADWORKS**				
3.10.1		Allowance for signage, barriers and markings	Prov. Sum	1	R 100 000.00	R 100 000.00
3.10.2		Tie into road stormwater network	Prov. Sum	1	R 250 000.00	R 250 000.00
		PROVISION FOR PAVING				
3.11	**SANS 1200ME**	**SUBBASE**				
3.11.1		Rip and recompact in-situ material to 150mm depth, moisten and compact to minimum of 93% Mod. AASHTO density.	m^3	800		
3.11.2	8.3.3	Construct the subbase course/ shoulder with material from commercial sources or designated borrow pits.	m^3	800		
3.11.3		Construct 150mm layer of G5 base compacted to 93% of MOD AASHTO from commercial sources	m^3	800		
3.11.4		150 mm C4 compacted to 95% MOD. AASHTO.	m^3	800		
3.11.5	8.3.8 (b)	Stabilizing agent: Portland cement (3%)	t	30		
		TOTAL FOR SECTION 3 (Carried to Summary)				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 4: RESERVOIR				
4.1	**SANS 1200D**	**EARTHWORKS**				
	8.3.3	**RESTRICTED EXCAVATION**				
	PSD 8.3.3(a)	**Excavate for restricted foundations, footings and pipe trenches in all materials and use as described for items 4.1.1 to 4.1.3**				
4.1.1		0 to 2m deep	m³	900		
4.1.2		2m to 4m deep	m³	300		
	PSD 8.3.3 (b)	**Extra over items 4.1.1 to 4.1.2 for**				
4.1.3	1)	Intermediate excavation	m³	450		
4.1.4	2)	Hard rock excavation	m³	450		
4.1.5		Extra over items 4.1.1 to 4.1.4 for additional excavations required by the Engineer after excavation has been completed	m³	180		
4.1.6	8.3.6	Overhaul	m³.km	11 250		
4.2	**SANS 1200L**	**PIPEWORK**				
	PSL 8.2.5	**PIPE SPECIALS**				
4.2.1		Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule (building in of pipes measured elsewhere)	Sum	1		
4.3	**PSLD**	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes supplied and installed by the Contractor (Irrespective of type)**				
4.3.1		150 mm diameter	No.	1		
4.3.2		500 mm diameter	No.	1		
4.3.3		600 mm diameter	No.	1		
4.4	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
4.4.1		Drainage trench walls	m²	55		
4.4.2		Edges of butresses	m²	140		
		Curved Cylindrical				
4.4.3		Vertical sides of reservoir wall footing (outer radius 30175 mm)	m²	90		
4.4.4		Vertical sides of reservoir wall footing (inner radius 28125 mm)	m²	80		
4.4.5		Wall of reservoir (outer radius 29450 mm)	m²	1 575		
4.4.6		Wall of reservoir (inner radius 29000 mm)	m²	1 550		
4.4.7		Ring beam (outer radius 29800 mm)	m²	255		
4.4.8		Ring beam (inner radius 29000 mm)	m²	150		
4.4.9		Roof Vent	m²	12.5		
	8.2.5	**Narrow width (up to 300mm wide)**				
4.4.10		Sides of drainage trench floor (250mm high)	m	41		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
4.4.11		Edge of apron around reservoir	m	195		
		Curved Spherical				
4.4.12		Internal soffit of reservoir roof	m²	3 060		
	8.2.6	**Box Out Holes/Form Voids**				
4.4.13	8.2.6(d)	Rectangular openings for access hatch A (1000 x 1500 mm) as shown in drawing: 13214-73-04-001	No.	2		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
4.4.14		25 mm along ringbeam	m	370		
4.4.15		25mm roof ventilator	m	7.6		
4.4.16		60x60 Plastic fillet along prestressed reservoir wall as per drawing 13214-73-04-001	m	185		
	8.3	**Reinforcement**				
4.4.17	8.3.1	High tensile steel bars	t	249		
4.4.18	8.3.1	Mild steel bars	t	22		
	8.4	**Concrete**				
	PSG 8.4.3	**Strength of Concrete: 15/19**				
4.4.19	8.4.2	Blinding layer 75mm thick in reservoir floor and footing (horizontal)	m²	3 010		
4.4.20		Blinding layer 50mm thick underneath drainage trench as per drawing 13214-73-04-001	m²	30		
		STRENGTH CONCRETE NF 20				
4.4.21		No fines concrete layer 100mm thick (horizontal) in reservoir floor	m²	2 645		
4.4.22		300 x 300 mm No fines concrete around 110 diameter slotted PVC pipe as per drawing 13214-73-04-002	m³	40		
4.4.23		No fines concrete around 75 diameter perforated PVC pipe within the leak detection system as per drawing 13214-73-04-002	m³	30		
4.4.24		Mass concrete as ordered by the engineer	m³	100		
	PSG 8.4.3	**Strength of Concrete: 25/19**				
4.4.25		Apron Slab	m³	140		
	PSG 8.4.3	**Strength of Concrete: 35/19**				
4.4.26		Wall Footings	m³	145		
4.4.27		Floors	m³	530		
4.4.28		Walls (including 350 x 2000 Buttresses)	m³	760		
4.4.29		Ring beam	m³	255		
4.4.30		Roof (including base of ventilation structure)	m³	845		
4.4.31		Drainage trench floor	m³	15		
4.4.32		Drainage trench walls	m³	10		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
4.4.33		Drainage trench (floor and top of walls)	m²	45		
4.4.34		Domed roof	m²	3 060		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
	8.4.4 (b)	**Steel Floated Finish**				
4.4.35		Floor inside reservoir	m²	2 670		
	PSG 8.9	**Sealing of openings in top surface of NF-concrete layer with plaster**				
4.4.36		horizontal	m²	2 670		
4.5	**PSG 8.5**	**JOINTS**				
		Filled Joints (Including Formwork)				
		Joint Filler Consisting of Closed Cell Expanded Polyethylene with Density not Less than 100 kg/m³ Including Bullnose Finish to Both Sides of Joint.				
4.5.1		20 mm wide between 100 mm concrete members	m	190		
4.5.2		20 mm wide between 150 mm concrete members	m	190		
4.5.3		20 mm wide between 200 mm concrete members	m	645		
	PSG 8.5.3	**Sealed Joints**				
		Joint Sealer (20 X 15 mm) Consisting of a two Component Polyether Based Polyurethane Sealing Compound on Visible Face of Joint Including Primer and Backing Cord or Bond Breaker				
4.5.4		20 mm joints between concrete wall and floor interface as per drawings 13214-73-04-001	m	735		
4.5.5		20 mm wide sealed expansion joint along perimeter of drainage trench as per drawing 13214-73-04-001	m	55		
4.5.6		20 mm expansion joint along reservoir floor	m	450		
	PSG 8.5.4	**Waterstops**				
4.5.7	(a)	200 mm wide Rearguard with centerbulb PVC waterstop at floor joints	m	450		
4.5.8	(b)	250 mm Rearguard with centerbulb PVC waterstop at wall and floor joint (29m radius)	m	183		
4.5.9	(c)	Extra-over items (a) and (b) above for factory moulded intersection pieces	No.	30		
	PSG 8.5.5	**Bandaged Joints**				
4.5.10	(a)	200mm wide X 2mm thick epoxy-fixed bandage along floor expansion joints	m	450		
4.5.11	(b)	250mm wide x 2mm thick flexible epoxy-fixed bandage along horisontal wall construction joints	m	1 095		
4.5.12	(c)	300mm wide X 2mm thick flexible epoxy-fixed bandage along wall and floor expansion joints (90 degree angle) incl. 60x60 corner fillet	m	183		
		Sundry Items				
4.6		**PLASTIC SHEETING**				
4.6.1	PSLE 8.2.18	250 micron PVC sheeting underneath floor slab	m²	2 610		
4.6.2		200 micron PVC sheeting adjacent to scour pipe as per drawing 13214-73-04-003: Scour Pipe Detail	m²	1 872		
4.7		**BEARING STRIPS**				
4.7.1		Supply and install 200 kN/m strip bearing at reservoir footing as per drawing 13214-73-04-001: Prestressed Wall/Footing Detail	m	185		
4.7.2		Supply and install 95 kN/m strip bearing on top of reservoir wall as per drawing 13214-73-04-001: Ringbeam Detail	m	185		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
4.8	**PSG 8.13**	**WATERPROOFING**				
4.8.1		Impermeable ductile slurry coating on all internal tank wall and floor surfaces. Including the top external surface of the tank roof.	m²	11 000		
4.9	**PSG 8.10**	**TESTING STRUCTURE FOR WATERTIGHTNESS**	-			
4.9.1		Reservoir	No.	1		
4.10	**SANS 1200HA**	**STRUCTURAL STEELWORK**				
		Ladder				
4.10.1		Heavy Duty Hot Dipped Galvanised SABS 763 - as per drawing 13214-73-04-002: Typical Cat Ladder Detail	No.	2		
4.10.2		Stainless Steel Grade 304 Access ladder including cage as per drawing 13214-73-04-002: Typical Cat Ladder Detail	No.	1		
4.10.3		Stainless Steel Grade 304 grating to fit in a stainless steel frame to be placed over outlet and scour pipes as per drawing 13214-73-04-003	No.	2		
4.10.4		Stainless Steel Grade 304 energy dissipating plate 4.5mm thick bolted to Reservoir wall with a neoprene rubber inbetween installed below inlet pipe as per drawing 13214-73-04-003	No.	1		
		GRP Products				
4.10.5		GRP handrail assembly complete	m	200		
		Access Hatch				
4.10.6		Lockable access hatch (1000mm x 1500mm) as per drawing 13214-73-04-002: Plan on Access Hatch	No.	2		
4.11	**SANS 1200L**	**MEDIUM PRESSURE PIPELINES**				
	8.2.2	**Specials and Fittings**				
		Extra over for the supply & installation of fittings and specials as shown in drawing 13214-73-04-002: Typical Cross & T Connection				
4.11.1		(a) 110 diameter PVC cross	No.	10		
4.11.2		(b) 110 diameter PVC tee	No.	8		
		Mild Steel Pipes				
4.11.3		50 mm Galvanised MS outlet pipes	No.	31		
4.12	**PSG 8.11**	**RESERVOIR STERILIZATION**				
4.12.1		Sterilization of the reservoir	Sum	1		
4.13	**PSU 8.14**	**ROOF VENTILATOR**				
4.13.1		Supply and install Roof ventilator as per the detail on drawing 13214-73-04-001: Roof Ventilator Detail	Sum	1		
		TOTAL FOR SECTION 4 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 5: CHAMBERS AND BOXES				
5.1		**SCOUR CHAMBER**				
5.1.1	**SANS 1200D**	**EARTHWORKS**				
	PSD 8.3.3	**Restricted Excavation**				
	PSD 8.3.3(a)	**Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items**				
5.1.1.1		0 to 2m deep	m^3	110		
5.1.1.2		2m to 4m deep	m^3	95		
	PSD 8.3.3 (b)	**Extra over items 5.1.1 to 5.1.2 for**				
5.1.1.3	1)	Intermediate excavation	m^3	98		
5.1.1.4	2)	Hard rock material	m^3	42		
5.1.1.5		Extra over items 5.1.1.3 to 5.1.1.4 for additional excavations required by the Engineer after excavation has been completed	m^3	50		
5.1.1.6	8.3.6	Overhaul	$m^3.km$	50		
5.1.2	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
5.1.2.1		Scour chamber walls (internal and external)	m^2	160		
5.1.2.2		Scour chamber floors	m^2	25		
5.1.2.3		Sides of valve supports	m^2	1.5		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
5.1.2.4		25 x 25 mm along scourbox cover	m	15		
5.1.2.5		25 x 25 mm along walls of scourbox	m	20		
	PSG 8.3	**Reinforcement**				
5.1.2.6	8.3.1	High tensile steel bars	t	5		
5.1.2.7	8.3.1	Mild steel bars	t	2		
5.1.2.8	8.4	**Strength of Concrete: 15/19**				
5.1.2.9		Benching to floors of boxes	m^2	16		
	8.4.3	**Strength of Concrete: 15/19**				
5.1.2.10		Mass Concrete	m^3	3		
5.1.2.11	8.4.2	Blinding layer 50mm thick	m^2	25		
	8.4.3	**Strength of Concrete: 35/19**				
5.1.2.12		Floors	m^3	8		
5.1.2.13		Walls	m^3	33		
5.1.2.14		Pipe supports	m^3	1.5		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
5.1.2.15		Top surface of box walls	m^2	5		
	8.4.4 (b)	**Steel Floated Finish**				
5.1.2.16		Benching in boxes	m^2	20		
SUB-TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
		Sundry Items				
5.1.3		**PRE-CAST CONCRETE**				
5.1.3.1		Precast concrete roof slab sections (1280mm x 2000mm x 300mm) (including lockable access hatch and holding brackets) as per drawing 13214-73-04-011: Scourbox Layout	No.	1		
5.1.3.2		Precast concrete roof slab sections (1280mm x 2000mm x 300mm) as per drawing 13214-73-04-011: Scourbox Layout	No.	1		
5.1.4	SANS 1200HA	**STRUCTURAL STEELWORK**				
5.1.4.1		Galvanised steel cat ladder fixed with M16 chemical anchors	No.	1		
5.1.4.2	PSHA 5.2.13	50 mm Galvanised open floor grating	m²	10		
5.1.4.3		50x50x5L with 150x25x3 lugs as per drawing 13214-73-04-011: Galvanised Open Grid Flooring	No	2		
		Access Hatch				
5.1.4.4		Lockable access hatch (1535mm x 1535mm) as per drawing13214-73-04-002: Plan on Access Hatch	No.	2		
5.1.5	PSLD	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
5.1.5.1		110mm	No.	3		
5.1.5.2		150mm	No.	4		
5.1.5.3		350mm	No.	2		
5.1.5.4		600mm	No.	1		
5.1.6	SANS 1200L	**PIPEWORK**				
	PSL 8.2.5	**PIPE SPECIALS**				
5.1.6.1	8.2.5	Supplying, testing and installation of pipes, fittings and specials brought forward from the Scour Chamber Pipe Schedule	Sum	1		
5.2		**INLET FLOWMETER CHAMBER**				
5.2.1	SANS 1200D	**EARTHWORKS**				
	8.3.3	**Restricted Excavation**				
	8.3.3(a) (i)	**Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items**				
5.2.1.1		0 to 2m deep	m³	29		
5.2.1.2		2m to 4m deep	m³	19		
5.2.1.3		(b) Intermediate excavation	m³	51		
5.2.1.4		(c) Hard rock material	m³	21		
5.2.1.5		Extra over items 5.2.1.3 to 5.2.1.4 for additional excavations required by the Engineer after excavation has been completed	m³	35		
5.2.1.6	8.3.6	Overhaul	m³.km	50		
5.2.2	SANS 1200G	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
5.2.2.1		Internal & external sides of inlet flowmeter chamber walls	m²	86		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
5.2.2.2		Sides of valve supports	m^2	1		
		Plane Horizontal				
	PSG 8.2.6	**Box Out Holes/Form Voids**				
	PSG 8.2.6(a)	**Circular holes for pipes**				
5.2.2.3		500mm	No.	2		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
5.2.2.4		25 x 25 mm along flow meter chamber concrete cover	m	35		
	8.3	**Reinforcement**				
5.2.2.5	8.3.1	High tensile steel bars	t	2		
5.2.2.6	8.3.1	Mild steel reinforcement	t	0.7		
	8.3.2	**High Tensile Welded Mesh**				
5.2.2.7		Ref. 245 for flow meter chamber cover	m^2	5		
	8.4	**Concrete**				
	8.4.3	**Strength of Concrete: 15/19**				
5.2.2.8		Benching to floors of boxes	m^2	8		
	8.4.3	**Strength of Concrete: 15/19**				
5.2.2.9	8.4.2	Blinding layer 50mm thick	m^2	15		
	8.4.3	**Strength of Concrete: 35/19**				
5.2.2.10		Floors	m^3	5		
5.2.2.11		Walls	m^3	14		
5.2.2.12		Pipe supports	m^3	0.05		
5.2.2.13		500x500x300 deep sump	m^3	5		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
5.2.2.14		Top surface of box walls	m^2	5		
	8.4.4 (b)	**Steel Floated Finish**				
5.2.2.15		Benching in boxes	m^2	8		
		Sundry Items				
5.2.3		**PRE-CAST CONCRETE**				
5.2.3.1		Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005	No.	1		
5.2.4	**SANS 1200HA**	**STRUCTURAL STEELWORK**				
5.2.4.1		Galvanised steel ladder fixed with M16 chemical anchors	No.	1		
5.2.5	**PSLD**	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
5.2.5.1		500 mm diameter	No.	2		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
5.2.6	**SANS 1200L**	**PIPEWORK**				
	PSL 8.2.5	**PIPE SPECIALS**				
5.2.6.1		Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule	Sum	1		
5.3		**OUTLET FLOWMETER CHAMBER**				
5.3.1	**SANS 1200D**	**EARTHWORKS**				
	8.3.3	**Restricted Excavation**				
	8.3.3(a) (i)	**Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items**				
5.3.1.1		(a) Soft excavation	m^3	25		
5.3.1.2		(b) Intermediate excavation	m^3	12		
5.3.1.3		(c) Hard rock material	m^3	9		
5.3.1.4		Extra over items **5.3.1.1 to 5.3.1.3** for additional excavations required by the Engineer after excavation has been completed	m^3	35		
5.3.1.5	8.3.6	Overhaul	m^3.km	100		
5.3.2	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
5.3.2.1		Internal & external sides of inlet chamber walls	m^2	95		
5.3.2.2		Sides of valve supports	m^2	1		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
5.3.2.3		25 x 25 mm along flow meter chamber concrete cover	m	35		
	8.3	**Reinforcement**				
5.3.2.4	8.3.1	High tensile steel bars	t	2.21		
5.3.2.5	8.3.1	Mild steel bars	t	0.88		
	8.3.2	**High Tensile Welded Mesh**				
5.3.2.6		Ref. 245 for flow meter chamber cover	m^2	5		
	8.4	**Concrete**				
	8.4.3	**Strength of Concrete: 15/10**				
5.3.2.7		Benching to floors of boxes	m^2	8		
	8.4.3	**Strength of Concrete: 15/19**				
5.3.2.8	8.4.2	Blinding layer 50mm thick	m^2	15		
	8.4.3	**Strength of Concrete: 35/19**				
5.3.2.9		Floors	m^3	5		
5.3.2.10		Walls	m^3	15		
5.3.2.11		Pipe supports	m^3	0.05		
5.3.2.12		500x500x300 deep sump	m^3	5		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
5.3.2.13		Top surface of box walls	m²	5		
	8.4.4 (b)	**Steel Floated Finish**				
5.3.2.14		Benching in boxes	m²	8		
		Sundry Items				
5.3.3		**PRE-CAST CONCRETE**				
5.3.3.1		Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005	No.	1		
5.3.4	**SANS 1200HA**	**STRUCTURAL STEELWORK**				
5.3.4.1		Galvanised steel ladder fixed with M16 chemical anchors	No.	1		
5.3.5	PSLD	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
5.3.5.1		600 mm diameter	No.	2		
5.3.6	**SANS 1200L**	**PIPEWORK**				
	PSL 8.2.5	**PIPE SPECIALS**				
5.3.6.1		Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule	Sum	1		
5.4		**DRAINAGE BOXES**				
5.4.1	**SANS 1200D**	**EARTHWORKS**				
	8.3.3	**Restricted Excavation**				
	8.3.3(a) (i)	**Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items**				
5.4.1.1		(i)(a) 0 m up to 2 m	m³	86		
	8.3.2(b)	**Extra Over Items for Excavations in:**				
5.4.1.2		(a) Intermediate excavation	m³	30		
5.4.1.3		(b) Hard rock material	m³	27		
5.4.1.4		Extra over items **5.4.1.2 to 5.4.1.3** for additional excavations required by the Engineer after excavation has been completed	m³	35		
5.4.2	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
5.4.2.1		Internal & external sides of drainage chamber walls	m²	360		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
5.4.2.2		25 x 25 mm along wall edge of drainage boxes	m	135		
	8.3	**Reinforcement**				
5.4.2.3	8.3.1	High tensile steel bars	t	20		
5.4.2.4	8.3.1	Mild steel bars	t	6		
	8.4	**Concrete**				
	8.4.3	**Strength of Concrete: 15/10**				
5.4.2.5		Benching to floors of boxes	m²	24		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
	8.4.3	**Strength of Concrete: 15/19**				
5.4.2.6	8.4.2	Blinding layer 50mm thick	m²	40		
	8.4.3	**Strength of Concrete: 35/19**				
5.4.2.7		Floors	m³	8		
5.4.2.8		Walls	m³	32		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
5.4.2.9		Top surface of box walls	m²	16		
	8.4.4 (b)	**Steel Floated Finish**				
5.4.2.10		Benching in boxes	m²	24		
		Sundry Items				
5.4.3	**SANS 1200HA**	**STRUCTURAL STEELWORK**				
5.4.3.1		Grade 304 Stainless Steel 900mm x 900mm frame to be cast into concrete walls of boxes	No.	12		
5.4.4		**GRP Products**				
5.4.4.1		GRP grating to fit inside item 5.4.3.1	No.	12		
5.4.4	**PSLD**	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
5.4.4.1		50 mm diameter	No.	48		
5.4.4.2		110 mm diameter	No.	24		
5.5		**VALVE CHAMBERS**				
5.5.1	**SANS 1200D**	**EARTHWORKS**				
	8.3.3	**Restricted Excavation**				
	8.3.3(a) (i)	**Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items**				
5.5.1.1		(a) Soft excavation	m³	22		
5.5.1.2		(b) Intermediate excavation	m³	37		
5.5.1.3		(c) Hard rock material	m³	15		
5.5.1.4		Extra over items **5.3.1.1 to 5.3.1.3** for additional excavations required by the Engineer after excavation has been completed	m³	70		
5.5.1.5	8.3.6	Overhaul	m³.km	200		
5.5.2	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
5.5.2.1		Internal & external sides of inlet chamber walls	m²	190		
5.5.2.2		Sides of valve supports	m²	2		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
5.5.2.3		25 x 25 mm along valve chamber concrete cover	m	65		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
	8.3	**Reinforcement**				
5.5.2.4	8.3.1	High tensile steel bars	t	4.41		
5.5.2.5	8.3.1	Mild steel bars	t	1.76		
	8.3.2	**High Tensile Welded Mesh**				
5.5.2.6		Ref. 245 for flow meter chamber cover	m^2	10		
	8.4	**Concrete**				
	8.4.3	**Strength of Concrete: 15/10**				
5.5.2.7		Benching to floors of boxes	m^2	16		
	8.4.3	**Strength of Concrete: 15/19**				
5.5.2.8	8.4.2	Blinding layer 50mm thick	m^2	30		
	8.4.3	**Strength of Concrete: 35/19**				
5.5.2.9		Floors	m^3	10		
5.5.2.10		Walls	m^3	30		
5.5.2.11		Pipe supports	m^3	0.1		
5.5.2.12		500x500x300 deep sump	m^3	5		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
5.5.2.13		Top surface of box walls	m^2	10		
	8.4.4 (b)	**Steel Floated Finish**				
5.5.2.14		Benching in boxes	m^2	16		
		Sundry Items				
5.5.3		**PRE-CAST CONCRETE**				
5.5.3.1		Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005	No.	2		
5.5.4	**SANS 1200HA**	**STRUCTURAL STEELWORK**				
5.5.4.1		Galvanised steel ladder fixed with M16 chemical anchors	No.	2		
5.5.5	PSLD	**BUILDING PIPES INTO CONCRETE WORK**				
	8.3 (a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
5.5.5.1		500 mm diameter	No.	2		
5.5.5.2		600 mm diameter	No.	2		
5.5.6	**SANS 1200L**	**PIPEWORK**				
	PSL 8.2.5	**PIPE SPECIALS**				
5.5.6.1		Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule	Sum	1		
		TOTAL FOR SECTION 5 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 6: INTERCONNECTING PIPEWORK				
6.1	**SANS 1200DB**	**PIPE TRENCHES**				
		Excavation				
	8.3.2	**Excavate in all materials For Trenches, Backfill and Compact, including Disposal of Surplus Unsuitable Maternal for Pipes**				
		Up to 300 mm Diameter for depths				
6.1.1		0.0 m - 1.0 m	m	47.5		
6.1.2		1.0 m - 2.0 m	m	84.5		
6.1.3		2.0 m - 3.0 m	m	178		
		Over 300mm up tp 600 mm diameter for depths				
6.1.4		0.0 m - 1.0 m	m	150		
6.1.5		1.0 m - 2.0 m	m	150		
6.1.6		2.0 m - 3.0 m	m	88		
6.1.7		3.0 m - 4.0 m	m	10		
	8.3.2 (b)	**Extra Over items 6.1.1 to 6.1.7 for excavations**				
6.1.8	8.3.2 (I)	Intermediate material	m^3	366		
6.1.9	8.3.2 (ii)	Hard rock material	m^3	237.5		
	8.3.3	**Excavation Ancillaries**				
6.1.10	8.3.3.3	Compaction in road reserve (provisional)	m^3	10		
6.1.11	8.3.3.4	Overhaul	$m^3.km$	50		
	PSDB 8.3.5	**Existing Services that Intersect or Adjoin of a Pipe Trench**				
6.1.12		(a) Services that intersect with the trench	No.	10		
6.1.13		(b) Services that adjoin a trench	m	50		
	8.3.6	**Finishing**				
6.1.14	8.3.6.1	(a) Reinstate road surface complete with all courses at pipe crossings	m^2	50		
6.1.15	8.3.7	Accommodation of Traffic	Sum	1		
6.2	**SANS 1200L**	**MEDIUM PRESSURE PIPEWORK**				
	8.2.1	**Interconnecting Pipework**				
		Supply, lay, join and test pipework on granular bedding				
6.2.1		50 mm diameter PVC drainage pipe in concrete	m	75		
6.2.2		50 mm diameter PE100PN10 HDPE pipe	m	50		
6.2.3		75 mm diameter PVC perforated drainage in no fines concrete	m	310		
6.2.4	PSLE 8.	110 mm diameter PVC perforated drainage pipe in no fines concrete	m	340		
	PSL 8.2.5	**Pipe Specials**				
6.2.5		Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Inlet Pipe (building in of pipes measured elsewhere)	Sum	1		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
6.2.6		Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Oulet Pipe (building in of pipes measured elsewhere)	Sum	1		
	8.2.11	**Thrust Blocks**				
6.2.7		Concrete grade 15/20 in thrust blocks (per Employer's Agent instruction)	m^3	10		
6.2.8		Rough shuttering at thrust blocks (per Employer's Agent's instruction)	m^2	50		
6.3	**SANS 1200LB**	**BEDDING**				
	8.2.2.1	**Provision of bedding material from trench or other excavations within freehaul distance**				
6.3.1	(a)	Selected granular material	m^3	86		
6.3.2	(b)	Selected fill blanket	m^3	120		
	8.2.2.3	**Provision of bedding material by importation from commercial sources.**				
6.3.3	(a)	Selected granular material	m^3	86		
6.3.4	(b)	Selected fill blanket	m^3	120		
	8.2.4	**Concrete at Pipes**				
6.3.5		Encasing of 110mm dia underfloor drainage pipes in concrete	m^3	60		
6.3.6		Encasing of 150mm dia drainage & scour pipes in concrete	m^3	8		
6.3.7		Encasing of 350mm dia overflow pipe in concrete	m^3	4		
6.3.8		Encasing of 500mm dia inlet pipe in concrete	m^3	10		
6.3.9		Encasing of 600mm dia outlet pipe in concrete	m^3	15		
6.4	**SANS 1200LG**	**PIPE JACKING**				
	8.2.6	Supply and install pipes by pipe jacking method, complete with excavations				
6.4.1		for 500mm steel pipe	m	20		
6.4.2		for 600mm steel pipe	m	21		
		SEWERS				
6.5	**SANS 1200DB**	**Excavation**				
	PSD 8.3.3 (a)	Excavate in all materials for backfill, compact and dispose of material				
6.5.1		0m - 2m	m^3	639		
	PSD 8.3.3 (b)	**Extra-over items for excavating in**				
6.5.2		Intermediate material	m^3	383		
6.5.3		Hard rock material	m^3	256		
6.5.4		Extra over items 6.5.1 to 6.5.3 for additional excavations required by the Employer's Agent after excavation has been completed	m^3	90		
6.6	**SANS 1200LB**	**BEDDING**				
	8.2.2.1	**Provision of Bedding Material from Trench or Other Excavations within Freehaul Distance**				
6.6.1	(a)	Selected granular material	m^3	70		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
	8.2.2.3	**Provision of bedding material by importation from commercial sources**				
6.6.3	(a)	Selected granular material	m^3	20		
6.6.4	(b)	Selected fill blanket	m^3	30		
6.6.5	8.2.3	Grade 20/19 concrete in bedding cradle	m^3	50		
6.7	**SANS 1200LD**	**SEWER RETICULATION**				
	8.2.1	**Supply, Lay, Joint and test uPVC Pipes**				
6.7.1		50 mm diameter uPVC basin drain from guard house	m	100		
6.7.2		110 mm diameter PVC sewer drainage pipe connecting from guard house	m	800		
6.7.3		200 mm diameter uPVC sewer drainage pipe connecting from guard house	m	750		
		Manholes				
	8.2.3	**Manholes 1250 mm inside diameter complete with concrete base, type 4 cover and frame, for depths**				
6.7.4		0.5 m - 1.0 m	No.	2		
6.7.5		1.0 m - 1.5 m	No.	2		
		Extra over for type 2A manhole cover and frame	No.	2		
	(a)	**Services that Intersect a pipe trench**				
6.7.6		Electrical cables (irrespective of diameter)	No.	2		
6.7.7		Pipeline (irrespective of diameter)	No.	2		
	(b)	**Services that adjoin a pipe trench**				
6.7.8		Pipeline (irrespective of diameter)	m	100		
6.7.9	8.2.7	Encasement of pipes in class 15/20 concrete where directed by the Employer's Agent only	m^3	25		
	8.2.11	**Connection Existing Sewer Line**				
6.7.10		Tie into exisiting 500 dia. pipe	Sum	1		
6.7.11		Tie into exisiting 600 dia. pipe	Sum	1		
6.7.12	8.2.12	Raising or lowering of existing manholes	No	4		
		Building Pipes into Brickwork				
	8.4	**SUPPLYING AND BUILDING HDPE OR uPVC PIPES AS SPECIFIED INTO BRICKWORK (FOR CABLE SLEEVES OR PIPE SLEEVES)**				
6.7.13		50 mm dia. uPVC Tee piece	No.	2		
6.7.14		110 mm dia. uPVC Tee piece	No.	2		
		TOTAL FOR SECTION 6 (Carried to Summary)				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 7: GUARD HOUSE				
7.1	**SANS 1200 D**	**EARTHWORKS**				
		Restricted Excavation				
	8.3.3	**Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose**				
7.1.1		Strip Footings	m^3	12		
		Apron Slab	m^3	2		
	PSD 8.3.3 (b)	**Extra-over items for excavating in**				
7.1.2		Intermediate material	m^3	213		
7.1.3		Hard rock material	m^3	213		
7.1.4		Extra over items 7.1.2 to 7.1.4 for additional excavations required by the Engineer after excavation has been completed	m^3	90		
7.1.5	8.3.6	Overhaul	$m^3.km$	250		
7.2	**SANS 1200G**	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.1	**Rough Formwork**				
		Plane Vertical				
7.2.1		Sides of Footings	m^2	7		
	8.2.2	**Smooth Formwork**				
		Plane Vertical				
7.2.2		Edge of roof slab	m^2	7		
7.2.3		Edge of apron slab (80mm thick)	m^2	2		
		Plane Horizontal				
7.2.4		Soffit of Roof slab	m^2	18		
	PSG 8.3	**Reinforcement**				
7.2.5		High tensile steel bars	t	0.21		
7.2.6		Mild steel bars	t	0.06		
		High Tensile Welded Mesh				
7.2.7		Ref. 245 for floor slabs	m^2	8		
7.2.8		Ref. 193 for apron slabs	m^2	23		
	8.1.3	**Concrete**				
	8.4.2	**Blinding Layer in Grade 15/19 concrete with 50mm thickness**				
7.2.9		Underneath footing	m^2	12		
		Strength Concrete 25/19				
7.2.10		Strip footing (600 mm wide, 250 mm thick)	m^3	10		
7.2.11		Floor slab	m^3	10		
7.2.12		Apron Slabs (80mm thick)	m^3	2		
	8.4.4 a)	**Wood float finish for upper surfaces of:**				
7.2.13		Top of floors and apron slabs	m^2	25		
SUB-TOTAL CARRIED FORWARD						

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	8.5	**Joints**				
	8.5.2	**Filled Joints**				
		Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m^3 including bullnose finish to both sides of joint and tear off strip				
7.2.14		10 mm wide between 100 mm concrete apron	m	1		
7.2.15		20 mm wide between concrete and brickwork	m	40		
	8.5.3	**Sealed Joints**				
		Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker				
7.2.16		20 mm joint between brick and concrete	m	39		
	PSU	**Building Work**				
7.3	**PSU 8.8**	**IRONMONGERY**				
		Doors and Windows				
		Steel doors, frames and windows (as per schedule on drawing 13214-73-04-003)				
7.3.1	PSU 8.8.1 (b)	1000mm x 2000mm High Single Panel Steel Combination Door & Frame	No.	1		
7.3.2	PSU 8.8.3	1000mm x 2000mm High Single Panel Steel Security Gate.	No.	1		
7.3.3		800mm x 2100mm High standard semi-solid door to be supplied with frame, cabin hook and a level 3 lock set complete with two keys. All fittings, door restraints and hinges solid brass	No.	1		
7.3.4		1020mm x 950mm Windows SSF43 with burglar proofing	No.	3		
7.3.5		410mm x 610mm - M fixed with trim. Including 12mm diameter MS burglar proofing on full face of window, glazed and painted to system A2.	No.	1		
7.3.6	PSU 8.15 (b)	Painting of doors and windows	No.	2		
7.3.7	PSU 8.15 (c)	Painting of windows	No.	3		
7.4	**PSLE**	**POLYETHYLENE SHEETING**				
7.4.1	8.2.18	250 micron polyethylene underneath strip footing and floor slab including ANT poison to SANS 618	m^2	10		
		Brickwork				
7.4.2	PSU 8.1 (b)	230mm thick, both faces, 14 MPa face brick Exterior wall including brick force	m^2	5		
7.4.3	PSU 8.1 (c)	115mm thick, 14 MPa face brick Interior Wall including brick force	m^2	5		
7.5		**GENERAL - FIXTURES**				
7.5.1		Installation of Wall Mounted Wash basin with Basin Taps	No.	1		
7.5.2		Installation of Front Flush Toilet Suite	No.	1		
		EXISTING SERVICES				
7.5.3		Water supply to guard house	Sum	1		
		TOTAL FOR SECTION 7 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 8: TELEMETRY HUT				
8.1	SANS1200D	**EARTHWORKS**				
	8.3.3	**Restricted Excavation**				
	8.3.3 a)	**Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose**				
8.1.1		Footings	m^3	8		
8.1.2		Apron Slab	m^3	2		
	PSD 8.3.3 (b)	**Extra-over items for excavating in**				
8.1.3		Intermediate material	m^3	7.5		
8.1.4		Hard rock material	m^3	6		
8.1.5		Extra over items 8.1.1 to 8.1.3 for additional excavations required by the Engineer after excavation has been completed	m^3	5.5		
8.1.6	8.3.6	Overhaul	m^3.km	250		
8.2	SANS 1200G	**CONCRETE (STRUCTURAL)**				
	8.2	**Formwork**				
	8.2.1	**Rough Formwork**				
		Plane Vertical				
8.2.1		Sides of Footings	m^2	5		
8.2.2		Edge of apron slab (80mm thick)	m^2	2		
		Plane Horizontal				
8.2.3		Soffit of Roof slab	m^2	16		
	8.2.5	**Narrow width (up to 300mm wide)**				
8.2.4		Sides of floor slabs	m	11		
8.2.5		Sides of roof slab	m	16		
	PSG 8.2.6	**Box Out Holes/Form Voids**				
	PSG 8.2.6 (a)	**Cylindrical Openings with Volume**				
		Over and up to and Including				
8.2.6		(ii) 0,01-0,05 m^3	No.	4		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
8.2.7		25 mm along edge of roof	m	25		
	8.3.2	**High Tensile Welded Mesh**				
8.2.8		Ref. 245 for floor slabs	m^2	10		
8.2.9		Ref. 193 for apron slabs	m^2	16		
	8.1.3	**Concrete**				
	PSG 8.4.3	**Strength of Concrete: 15/19**				
8.2.10	8.4.2	Blinding layer 50mm thick under footing (horizontal)	m^2	10		
		Strength Concrete : 25/19				
8.2.11		Strip footing (650 mm wide, 250 mm thick)	m^3	5		
8.2.12		Apron Slabs (80mm thick)	m^3	2		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
8.2.13		Floor slab	m^3	2		
8.2.14		Roof	m^3	4		
	8.4.4 a)	**Wood float finish for upper surfaces of:**				
8.2.15		Floor Slab	m^2	10		
8.2.16		Apron Slab	m^2	16		
	PSG 8.5	**Joints**				
8.2.17		10 mm Joint with approved polysulphide sealant as per drawing 13214-73-005-001	m	10		
	8.5.2	**Filled Joints**				
		Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m3 including bullnose finish to both sides of joint and tear off strip				
8.2.18		20 mm wide between concrete members	m	5		
8.2.19		20 mm wide between concrete and brickwork	m	35		
	8.5.3	**Sealed Joints**				
		Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker				
8.2.20		20 mm joint between brick and concrete	m	32		
		Building Work				
8.3	**PSLE**	**POLYETHYLENE SHEETING**				
8.31	8.2.18	250 micron polyethylene underneath strip footing and floor slab including ANT poison to SANS 618	m^2	10		
8.3.2		DPC as specified by the employer's agent	m^2	5		
8.4	**PSU**	**BRICKWORK**				
8.4.1	PSU 8.1 (b)	230mm thick, both faces, 14 MPa face brick including brick force	m^2	5		
	PSU 8.8	**Ironmongery**				
	PSU 8.8.1	**Doors and Windows**				
		Steel doors, frames and windows (as per schedule on drawings 13214-73-05-001: Doors)				
8.4.2	PSU 8.8.1 (b)	900mm x 2100mm High Single Panel Steel Combination Door & Frame	No.	1		
8.4.3	PSU 8.8.3	1000mm x 2000mm High Single Panel Steel Security Gate.	No.	1		
		TOTAL FOR SECTION 8 (Carried to Summary)				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 9: VALVE BUILDING				
9.1	SANS1200D	EARTHWORKS				
	PSD 8.3.3	**Restricted Excavation**				
	PSD 8.3.3 (a)	**Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose**				
9.1.1		0 to 2m deep	m^3	320		
9.1.2		2m to 4m deep	m^3	265		
	PSD 8.3.3 (b)	**Extra over items 9.1.1 to 9.1.2 for**				
9.1.3		Soft material	m^3	280		
9.1.4		Intermediate material	m^3	123		
9.1.5		Hard rock material	m^3	133		
9.1.6		Extra over items 9.1.3 to 9.1.5 for additional excavations required by the Engineer after excavation has been completed				
9.1.7	8.3.3.4	Overhaul	m^3.km	250		
	PSLD	**Building Pipes into Concrete Work**				
	8.3(a)	**Pipes Supplied and Installed by the Contractor (Irrespective of type)**				
9.1.8		500mm Stainless Steel Inlet	No	2		
9.1.9		600mm Stainless Steel Outlet	No	2		
	SANS 1200L	PIPEWORK				
	PSL 8.2.5	**Pipe Specials**				
9.1.10		Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Valve Building (building in of pipes measured elsewhere)	Sum	1		
9.2	SANS 1200G	CONCRETE (STRUCTURAL)				
	8.2	**Formwork**				
		Smooth Formwork				
		Plane Vertical				
9.2.1		Edge of floor slab	m^2	320		
9.2.2		Internal & External Sump walls	m^2	8		
9.2.3		Internal & External valve building walls	m^2	302		
9.2.4		Edge of walkway	m^2	15		
9.2.5		Sides of stairs	m^2	5		
9.2.6		Risers of stairs	m^2	5		
9.2.7		Columns	m^2	67		
9.2.8		Ring beam	m^2	81		
9.2.9		Support beam	m^2	162		
9.2.10		Edge of concrete roof	m^2	15		
9.2.11		Pipe supports	m^2	14		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
		Plane Horizontal				
9.2.12		Soffit of walkway	m²	25		
9.2.13		Soffit of ring beams	m²	15		
9.2.14		Soffit of support beams	m²	15		
9.2.15		Soffit of roof	m²	254		
		Plane Sloping				
9.2.16		Soffit of staircase	m²	7		
	PSG 8.2.7	**Chamfers larger than 20mm x 20mm**				
9.2.17		25 mm along edge of roof	m	125		
	8.4	**Concrete**				
	8.4.3	**Strength of Concrete: 15/19**				
9.2.18		Screed on top of floor	m²	160		
	8.4.3	**Strength of Concrete: 15/19**				
9.2.19		Blinding layer 50mm thick	m²	160		
		Strength of Concrete: 25/19				
9.2.20		Apron	m³	15		
	8.4.3	**Strength of Concrete: 35/19**				
9.2.21		Floor	m³	80		
9.2.22		Walls	m³	65		
9.2.23		Pipe supports	m³	5		
9.2.24		Walkway	m³	15		
9.2.25		Stairs	m³	2		
9.2.26		Columns	m³	5		
9.2.27		Ring beams	m³	10		
9.2.28		Support beams	m³	20		
9.2.29		Roof	m³	59		
9.2.30		Concrete Sump	m³	5		
9.2.31	8.3	**Reinforcement**				
9.2.32	8.3.1	High Tensile Reinforced Bars	t	15		
9.2.33		Mild Steel Reinforced to Structural Concrete Work	t	5		
	8.4.4	**Unformed Surface Finishes**				
	8.4.4 (a)	**Wood Floated Finish**				
9.2.34		Top of floor	m²	160		
9.2.35		Top of walkway	m²	30		
9.2.36		Treads of stairs	m²	5		
	8.5	**Joints**				
	8.5.2	**Filled Joints (Including Formwork)**				
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
		Joint Filler Consisting of Closed Cell Expanded Polyethylene with Density not less than 120 kg/m3 including Bullnose Finish to both sides of Joint.				
9.2.37		20 mm wide between 100 mm concrete apron	m	14		
9.3	**SANS 1200HA**	**STRUCTURAL STEELWORK (SUNDRY ITEMS)**				
	8.3.1	**Crawl Beam**				
		Supply and Installation of 254x146x31 kg/m Galvanized M.S I-Beam complete with stops ends, etc. All as shown on drawing 13214-73-05-006, including testing and a certificate proving compliance with the requirements of the department of labour				
9.3.1		14 700 mm long	No.	2		
9.3.2		M20 galvanized cast in U-bolts complete with spacers, washers and nuts and M20 anchor bars for fixing of crawl beam	No.	32		
	PSHA 8.3.2(b)	**Handrail Assembly Complete**				
9.3.3		Supply and installation of complete 3CR12 stainless steel handrail assembly	m	35		
9.4	PSU	**BUILDING WORK**				
	8.1	**Brickwork**				
9.4.1	PSU 8.1 (b)	230mm thick, both faces, 7MPa face brick including brick force and damp proofing	m²	306		
		Air Bricks				
9.4.2		170 mm x 170 mm Standard vermin proof air bricks	No.	4		
9.5	**PSU 8.6**	**WATERPROOFING OF CONCRETE ROOFS**				
9.5.1		Valve Building	Sum	1		
9.6	**PSU 8.8**	**IRONMONGREY**				
	PSU 8.8.1	**Steel doors, frames and windows (as per schedule on drawings 13214-73-05-005)**				
9.6.1	PSU 8.8.1 (b)	D2 standard single steel door and frame (940 wide x 2 134 mm high)	No.	1		
9.6.2	PSU 8.8.1 (c)	Windows SS43 with burglar proofing	No.	10		
9.6.3		Industrial Type Roller shutter door (3m wide x 3m high)	No.	1		
9.7		**WATER SAMPLING POINT**				
9.7.1		Lockable sample box to be fixed to building as per drawing 13214-73-05-006 (700mm wide x 1200mm long x 1200mm high from 4.5mm 304 SS)	No.	1		
9.8		**MECHANICAL EQUIPMENT**				
9.8.1		Underhung overhead crane to fit onto the two fixed crawl beams (item 9.3.1) 10.17m apart (motorised)	No.	1		
9.8.2		Submersible pump to deliver 3 l/s at a head of 10m including 40mm dia. GMS piping inside the building	No.	1		
9.8.3		Submersible pump to deliver 3 l/s at a head of 10m including 20m long 40mm dia. Flexible pipe	No.	1		
		TOTAL FOR SECTION 9 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SECTION 10: ELECTRICAL AND C&I				
10.1	**PSY 1.2**	**ELECTRICAL CALBLE RACKS**				
		Rate to include for the Supply only of the following Plant And Equipment Including Delivery, Storage, Quality Assurance and All Necessary Insurance				
		Supply and Deliver Cable Ladder				
10.1.1		100mm wide x 76mm	m	30		
		Supply and Deliver of Horizontal Bends				
10.1.2		100mm wide x 76mm	ea	4		
		Supply and Deliver of Vertical Bends				
10.1.3		100mm wide x 76mm	ea	4		
		Supply and Deliver of Internal Bends				
10.1.4		100mm wide x 76mm	ea	4		
		Supply and Deliver of **External Bends**				
10.1.5		100mm wide x 76mm	ea	3		
		Supply and Deliver of Tee-Pieces				
10.1.6		100mm wide x 76mm	ea	3		
		Supply and Deliver of **Cable Ladder Support Struts Material**				
10.1.7		P1000 (41x41 x 2.5mm thickness)	m	6		
10.1.8		P1000T (41x41 x 2.5mm thickness, slot 25x11@50centers)	m	18		
		Supply and Deliver of **Cable Ladder Support Cantilever Arms** P1000 arm				
10.1.9		150mm	ea	4		
10.1.10		200mm	ea	8		
10.1.11		250mm	ea	2		
10.2	**PSY 1.2**	**Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel**				
	E02.8	Installation of **Cable Ladder**				
10.2.1		100mm wide x 76mm	m	30		
	E02.8	**Installation of Horizontal Bends**				
10.2.2		100mm wide x 76mm	ea	4		
	E02.8	**Installation of Vertical Bends**				
10.2.3		100mm wide x 76mm	ea	4		
	E02.8	**Installation of Internal Bends**				
10.2.4		100mm wide x 76mm	ea	4		
	E02.8	**Installation of External Bends**				
10.2.5		100mm wide x 76mm	ea	3		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
10.2.6	E02.8	**Installation of Tee-Pieces** 100mm wide x 76mm	ea	3		
	E02.8	**Installation of Cable Ladder Support Struts Material**				
10.2.7		P1000 (41x41 x 2.5mm thickness)	m	6		
10.2.8		P1000T (41x41 x 2.5mm thickness, slot 25x11@50centers)	m	18		
	E02.8	**Installation of Cable Ladder Support Cantilever Arms** P1000 arm				
10.2.9		150mm	ea	4		
10.2.10		200mm	ea	8		
10.2.11		250mm	ea	2		
10.3	**Vol3**	**SCADA System**				
		Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances				
10.3.1		PC Amount for SCADA Software	Prov. Sum	1	R 950 000	R 950 000.00
10.3.2		% Makup on SCADA Software	%	R 950 000		
10.3.3		PC Amount for SCADA Programing	Prov. Sum	1	R 555 000	R 555 000.00
10.3.4		% Makup on SCADA Programing	%	R 555 000		
10.4		**ELECTRICAL DISTRIBUTION SYSTEM**				
		Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances				
10.4.1	PSX 2	Level sensor and kiosk at Carlswarld Reservoir	No.	1		
10.4.2	PSX 3	Flow meter installation and kiosk at Reservoir Inlet	Sum	1		
10.4.3	PSX 3	Flow meter installation and kiosk at Reservoir Outlet	Sum	1		
10.4.4		Notices at all Buildings	Sum	1		
10.4.5	PSY 6	Lightning protection of Carlswarld Reservoir	Sum	1		
10.4.6	PSX 8.1	Main Distrubution Board in Valve Building	Sum	1		
10.5		**Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment**				
10.5.1	PSX 2	Level sensor and kiosk at New Carlswarld Reservoir	No.	1		
10.5.2	PSX 3	Flow meter installation and kiosk at Reservoir Inlet	Sum	1		
10.5.3	PSX 3	Flow meter installation and kiosk at Reservoir Outlet	Sum	1		
10.5.4		Notices at all Buildings	Sum	1		
10.5.5	PSY 6	Lightning protection of New Carlswarld Reservoir	Sum	1		
10.5.6	PSX 8.1	Main Distrubution Board in Valve Building	Sum	1		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
10.6		**Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel**				
10.6.2	PSX 3	Flow meter installation and kiosk at Reservoir Inlet	Sum	1		
10.6.3	PSX 3	Flow meter installation and kiosk at Reservoir Outlet	Sum	1		
10.6.4		Notices at all Buildings	Sum	1		
10.6.5	PSY 6	Lightning protection of New Carlswarld Reservoir	Sum	1		
10.6.6	PSX 8.1	Main Distrubution Board in Valve Building **ELECTRICAL INSTALLATION IN BUILDINGS AND ON STRUCTURES**	Sum	1		
10.7		**Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance**				
10.7.1	PSY 8.2	Complete electrical installation in new Carswarld valve buiding DB-01	Sum	1		
10.7.2	DRW's	Type A Light Fitting	No.	3		
10.7.3	DRW's	Type B Light Fitting	No.	3		
10.7.4	DRW's	Type C Light Fitting	No.	4		
10.7.5	PSY 4.2	Area Lighting Fitting	No.	8		
10.7.6	PSY 4.3	Aviation Light Fitting on the Reservoir	No.	4		
10.7.7	PSY 8.3	Area Light Fitting on the Reservoir	No.	6		
10.7.8	PSY 8.3	Complete electrical installation in new Carswarld ReservoirReservoir Telemetry Hut DB-02	Sum	1		
10.7.9	DRW's	Type A Light Fitting	No.	1		
10.7.10	PSY 4	Area Lighting Fitting	No.	4		
10.7.11	PSY 8.3	Complete electrical installation in new Carswarld Reservoir Guard Hut DB-03	Sum	1		
10.7.12	DRW's	Type A Light Fitting	No.	1		
10.7.13	DRW's	Type B Light Fitting	No.	1		
10.7.14	PSY 4	Area Lighting Fitting	No.	4		
	PSY 4	**Lighting installation on Carswarld Reservoir Site**				
10.7.15	PSY 4.1	15m Highmast pole with 3X208W LED type Flood lights for area lighting	No.	2		
10.8		**Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment**				
10.8.1	PSY 8.2	Complete electrical installation in new Carswarld valve buiding DB-01	Sum	1		
10.8.2	DRW's	Type A Light Fitting	No.	3		
10.8.3	DRW's	Type B Light Fitting	No.	3		
10.8.4	DRW's	Type C Light Fitting	No.	4		
		SUB-TOTAL CARRIED FORWARD				

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
10.8.5	PSY 4.2	Area Lighting Fitting	No.	8		
10.8.6	PSY 4.3	Aviation Light Fitting on the Reservoir	No.	4		
10.8.7	PSY 8.3	Area Light Fitting on the Reservoir	No.	6		
10.8.8	PSY 8.3	Complete electrical installation in new Carswarld ReservoirReservoir Telemetry Hut DB-02	Sum	1		
10.8.9	DRW's	Type A Light Fitting	No.	1		
10.8.10	PSY 4	Area Lighting Fitting	No.	4		
10.8.11	PSY 8.3	Complete electrical installation in new Carswarld Reservoir Guard Hut DB-03	Sum	1		
10.8.12	DRW's	Type A Light Fitting	No.	1		
10.8.13	DRW's	Type B Light Fitting	No.	1		
10.8.14	PSY 4	Area Lighting Fitting	No.	4		
	PSY 4	**Lighting installation on Carswarld Reservoir Site**				
10.8.15	PSY 4.1	15m Highmast pole with 3X208W LED type Flood lights for area lighting	No.	2		
10.9		**Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel**				
10.9.1	PSY 8.2	Complete electrical installation in new Carswarld valve buiding DB-01	Sum	1		
10.9.2	DRW's	Type A Light Fitting	No.	3		
10.9.3	DRW's	Type B Light Fitting	No.	3		
10.9.4	DRW's	Type C Light Fitting	No.	4		
10.9.5	PSY 4.2	Area Lighting Fitting	No.	8		
10.9.6	PSY 4.3	Aviation Light Fitting on the Reservoir	No.	4		
10.9.7	PSY 8.3	Area Light Fitting on the Reservoir	No.	6		
10.9.8	PSY 8.3	Complete electrical installation in new Carswarld ReservoirReservoir Telemetry Hut DB-02	Sum	1		
10.9.9	DRW's	Type A Light Fitting	No.	1		
10.9.10	PSY 4	Area Lighting Fitting	No.	4		
10.9.11	PSY 8.3	Complete electrical installation in new Carswarld Reservoir Guard Hut DB-03	Sum	1		
10.9.12	DRW's	Type A Light Fitting	No.	1		
10.9.13	DRW's	Type B Light Fitting	No.	1		
10.9.14	PSY 4	Area Lighting Fitting	No.	4		
	PSY 4	**Lighting installation on Carswarld Reservior Site**				
10.9.15	PSY 4.1	15m Highmast pole with 3X208W LED type Flood lights for area lighting	No.	2		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
	PSX 5	**TELEMETRY SYSTEM**				
10.10		**Rate to include for the Supply only of the following Plant And Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances**				
10.10.1		Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below	Sum	1		
10.10.2		New telemetry system at Carlswarld Reservoir	Sum	1		
10.11		**Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment**				
10.11.1		Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below	Sum	1		
10.11.2		New telemetry system at Carlswarld Reservoir	Sum	1		
10.12		**Rate to include only for Installation, Commissioning, Testing and Adjusting the following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation and Accommodation for personnel**				
10.12.1		Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below	Sum	1		
10.12.2		New telemetry system at Carlswarld Reservoir	Sum	1		
		MULTICORE CABLES AND EARTHWIRES				
10.13	PSY 1.7 & PSY 1.9	**Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance**				
10.13.1	a	2.5mm² 3 - Core Cable	m	280		
10.13.2	b	70mm² Bare Copper Earth Wire	m	300		
10.13.3	c	16mm² 3 - Core Cable	m	655		
10.13.4	d	16mm² Bare Copper Cable	m	265		
10.13.5	e	16mm² 4-Core Cable	m	75		
10.13.6	E06.4.17	Cable route markers	No.	12		
10.13.7	E06.4.1	Concrete cable slabs (200 x 400 x 40)	No.	220		
10.13.8	E06.9	Cable name tags	Sum	1		
10.13.9	E06.3.6	Cable supports	Sum	1		
10.13.10		Pump set sensor termination cubicle	No.	1		
10.13.11		Core drilling 100mm diameter holes through 250mm concrete	No.	5		
10.14	PSY 1.7	**Rate to include only for Installation, Commissioning, Testing and Adjusting the following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation and Accommodation for personnel**				
10.14.1	a	2.5mm² 3 - Core Cable	m	280		
10.14.2	b	70mm² Bare Copper Earth Wire	m	300		
10.14.3	c	16mm² 3 - Core Cable	m	655		
10.14.4	d	16mm² Bare Copper Cable	m	265		
10.14.5	e	16mm² 4-Core Cable	m	75		
SUB-TOTAL CARRIED FORWARD						

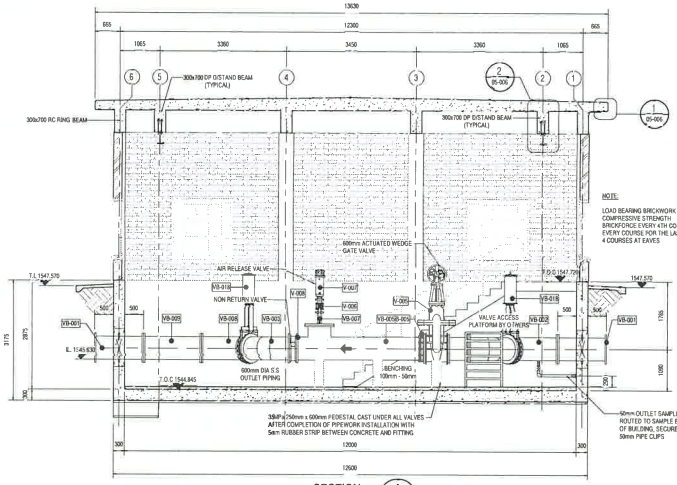
ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward:				
	E16	**POWER SUPPLY UNITS**				
10.15		**The tendered rate shall include full compensation for the manufacture, supply, testing and delivery of the UPS incorporating all options/extras as detailed in the detail specification.**				
10.15.1	E16.10	Supply and deliver UPS	No.	2		
10.15.2	E16.10	Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights.	No.	2		
10.16		**The tendered rate shall include full compensation for the installation, site testing and commissioning plus the 12 months maintenance of the UPS incorporating all options/extras as detailed in the detail specification.**				
10.16.1	E16.10	Install standby UPS	No.	2		
10.16.2	E16.10	Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights	No.	2		
10.17		**The tendered rate shall include full compensation for the manufacture, supply, testing and delivery of the support platform/stand for UPS as detailed in the detail specification.**				
10.17.1	E16.10	Supply and deliver support platform/stand for UPS	No.	2		
10.17.2	E16.10	Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights	No.	2		
10.18		**The tendered rate shall include full compensation for the installation of the support platform/stand as detailed in the detail specification.**				
10.18.1	E16.10	Install support platform/stand for UPS	No.	2		
10.18.2	E16.10	Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights	No.	2		
10.19		**ACCESS CONTROL AND CCTV SYSTEM**				
		Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance				
10.19.1		PC Amount for Access control system	Prov. Sum	-	R 350 000.00	R 350 000.00
10.19.2		% Makup on Acces control system	%	R 350 000		
10.19.3		PC Amount for CCTV system	Prov. Sum	1	R 2 000 000	R 2 000 000.00
10.19.4		% Markup on CCTV System	%	R 2 000 000		
		BULK ELECTRICAL CONNECTION				
10.20		**Rate to include the supply of the following Plant and Equipment including Delivery, Storage, Quality Assurance and all necessary insurance.**				
10.20.1		PC Amount for 60A 3 Phase Connection from Eskom	Prov. Sum	1	R 55 000.00	R 55 000.00
10.20.2		% Makup on 3Phase connection from Eskom	%	R 55 000		
10.20.3		PC Amount for Infrustructure to get Bulk Connection	Prov. Sum	1	R 75 000.00	R 75 000.00
10.20.4		% Makup on Item above	%	R 75 000		
		EARTHING AND LIGHTING PROTECTION				
10.21	**PSY1.6**	**Rate to include the supply of the following Plant and Equipment including Delivery, Storage, Quality Assurance and all necessary insurance.**				
10.21.1	E11.17	Earth resistivity tests	No	1		
		SUB-TOTAL CARRIED FORWARD				

Employer:		Contractor:	
Witness:		Witness:	

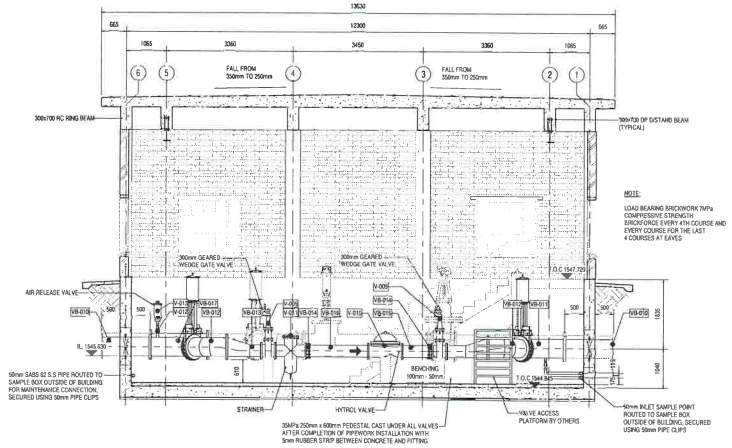
ITEM NO	PAYMENT CLAUSE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		brought forward				
10.21.2	E11.17	Design of a Lightning Protection System (LPS) ..	No	1		
10.21.3	PSY 1.6	Installation of a structure LPS	Sum	1		
10.21.4	E11.17	Extra over for the supply and installation of additional 6m rod type earth electrodes including welding/clamps for the connection of earth-termination conductors	No	20		
10.21.5	E11.17	Provision for additional earthing as required	Prov. Sum	1	R 35 000	R 35 000.00
10.21.6	E11.17	Testing of a LPS.	Sum	1		
10.22		**STANDBY GENERATOR**				
10.22.1		The complete supply, delivery, installation, testing and commissioning of a 15kVA, 380V, standby emergency generator including fuel tank, weather proof & sound proof enclosure	Sum	1		
10.22.2		All necessary electical cabling, DB, etc between standby generator and power supply of Reservoir facility	Sum	1		
		TOTAL FOR SECTION 10 (Carried to Summary)				

Employer:		Contractor:	
Witness:		Witness:	

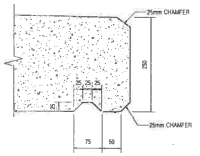
SUMMARY OF BILL OF QUANTITIES		
Section	**Description**	**Amount (R)**
1	Preliminary and General	
2	Site Preparation and Fencing	
3	Roads & Stormwater	
4	Reservoir	
5	Chambers & Boxes	
6	Interconnecting Pipework	
7	Guard House	
8	Telemetry Building	
9	Valve Building	
10	Electrical and C&I	
	Sub-Total 1	R -
PSA 8.10.1	The above prices are Not Firm. In respect of the total value of work done by approved SMME's at 30% of Sub Total 1 (This total shall include all amounts payable to SMME's, including P&G's) = R..... (A) Allowance as a percentage (maximum 15%) for appointing and handling work done by approved SMME's.....% (B)	
	Sub Total 2 [Handling fees for sub contracting = (A) x (B)]	
	Sub Total 3 = Sub Total 1 + Sub Total 2	R -
ADD	**10% Contingency**	R -
	Sub-Total 4	
ADD	**VAT @ 15%**	R -
	TOTAL CARRIED TO FORM OFFER	



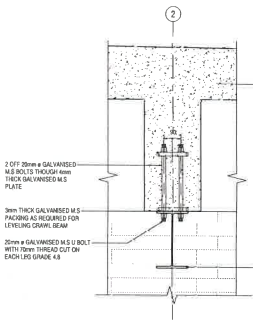
SECTION A
1 : 50 (05-005)



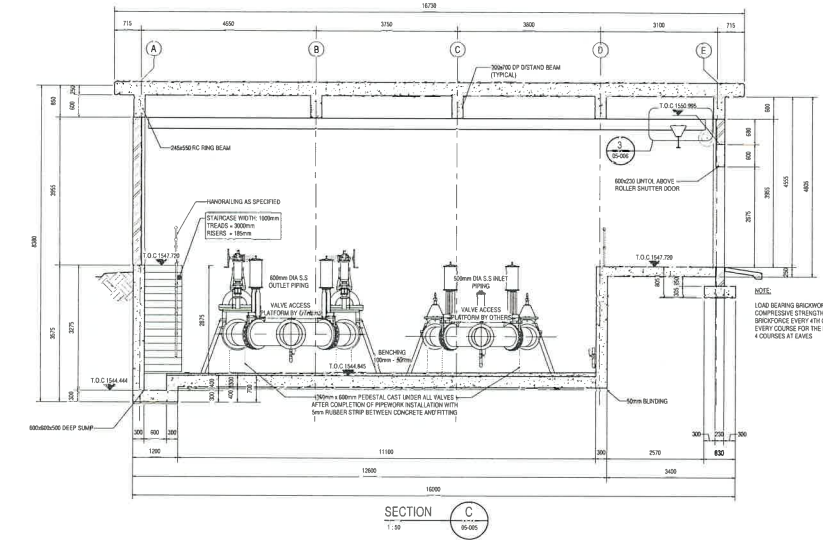
SECTION B
1 : 50 (05-005)



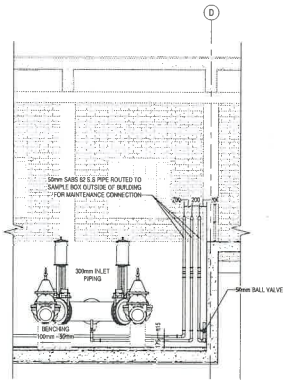
DETAIL 1
1 : 5 (05-006)



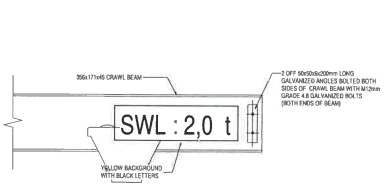
DETAIL 2
1 : 10 (05-006)



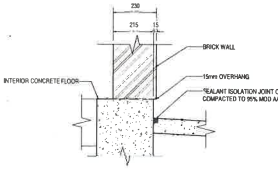
SECTION C
1 : 50 (05-005)



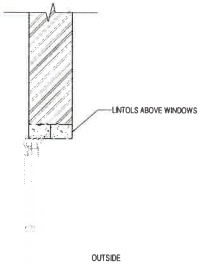
ELEVATION SHOWING MAINTENANCE PIPING
1 : 50

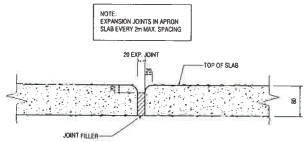


DETAIL 3
1 : 10 (05-006)

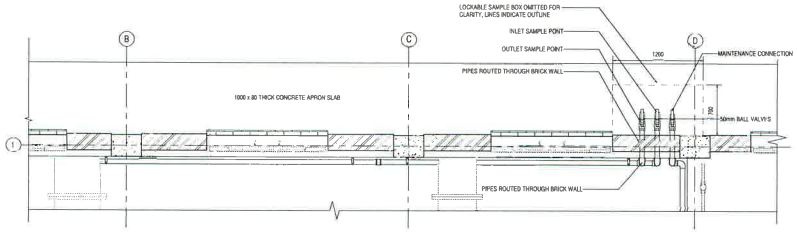


TYPICAL WALL TO FLOOR DETAIL
1 : 10

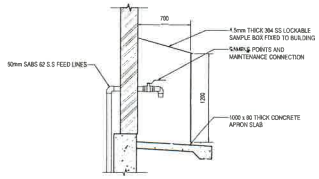




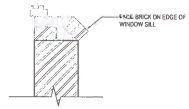
TYPICAL APRON JOINT DETAIL
1 : 5



LAYOUT OF SAMPLE & MAINTENANCE POINTS
1 : 25



SECTION THROUGH SAMPLE BOX
1 : 25



TYPICAL WINDOW DETAIL
1 : 10

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

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FAX. 086 674 6121
EMAIL mail@zitholele.co.za

SURVEYED	KK
DESIGNED	BG
DRAWN	BP
CHECKED	BG
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	J. SWART
Pr. Eng. No.	880169
DATE	18.08.2023

JOHANNESBURG WATER (SOC) LTD

Johannesburg Water

TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN

TEL: (011) 688 1400
FAX: (011) 688 1529

CITY OF JOHANNESBURG

CONSTRUCTION OF 20ML
CARLSWALD RESERVOIR
BUILDINGS
VALVE BUILDING
SECTIONS & DETAILS

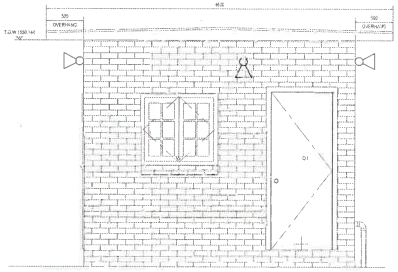
DESIGN MANAGER

DATE

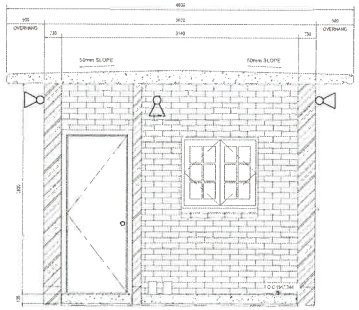
SCALE: AS SHOWN

AMENDMENTS		APPROVED	DATE
700	ISSUED FOR INTERNAL REVIEW	M.G	08.12.2021
701	ISSUED FOR INTERNAL REVIEW	S.M	27.07.2022
702	ISSUED FOR TENDER	J.S	18.08.2023
703	DIMENSIONS ADDED TO SAMPLE BOX	J.S	22.09.2023

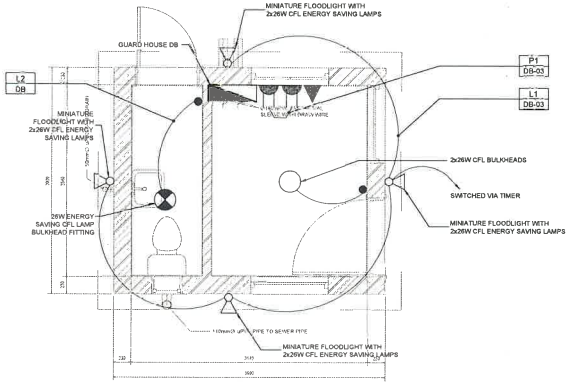
DRAWING NUMBER
JW NUMBER: JW14302
CONSULTANT'S NUMBER: 13214-73-05-006
FILE NUMBER
T 0 3



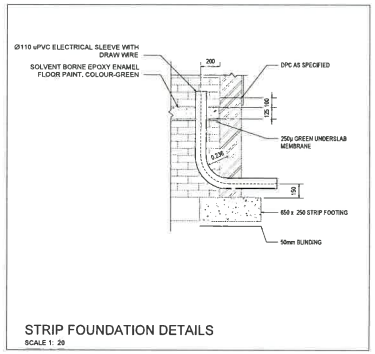
NORTH ELEVATION
SCALE 1: 25



EAST ELEVATION
SCALE 1: 25



FLOOR PLAN
SCALE 1: 25



STRIP FOUNDATION DETAILS
SCALE 1: 20

Light Fittings

Note: All luminaires must be approved by the Engineers representative prior to the installation of or any order being placed. Only light fittings as well as all light fitting components carrying the SABS mark of approval will be acceptable. All fluorescent light fittings shall be equipped with electronic control gear.

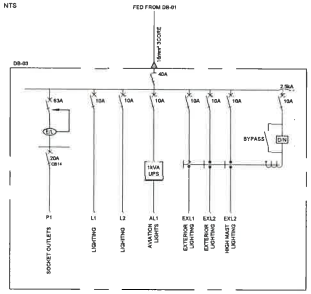
Type A :	18W LED Ceiling mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekabulk from Beka plus 1hour EMG maintained (emergency).	
Type B :	32W LED wall mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekanova from Beka plus 1hour EMG maintained (emergency).	
Type C :	55W LED enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 55W LED's lamps. Equal or similar to Roughguard from Beka plus 1hour EMG maintained (emergency).	
Area lighting fitting	38W LED wall mounted Flood light natural white enclosed dust, moisture, vandal and corrosion proof luminaire. Similar and equal to Beka Omni star Micro	

ELECTRICAL LEGEND

- DISTRIBUTION BOARD
- TELEPHONE OUTLET (BLANK)
- DOUBLE SOCKET OUTLET (FLUSH)
- 1 x 26W CEILING MOUNTED BULKHEAD
- WALL MOUNTED BULKHEAD
- MINIATURE FLOODLIGHT
- LIGHT SWITCH
- WALL MOUNTED PHOTOCELL
- 2 x 26W CFL BULKHEAD

NOTE: ALL WIRING TO BE INSTALLED IN CONDUIT CHASED INTO WALLS

SINGLE LINE DIAGRAM
SCALE 1: NTS



LEGEND

SYMBOL	DESCRIPTION
XA SP	SINGLE POLE CIRCUIT BREAKER.
XA TP	THREE POLE CIRCUIT BREAKER.
XA SP	SINGLE POLE ISOLATOR.
XA TP	THREE POLE ISOLATOR.
XA TP	THREE POLE MOTOR RATED 3POLE CIRCUIT BREAKER.
CA	ANTI ISLAND SERIES CONTACTOR A - 63A
CB	ANTI ISLAND SERIES CONTACTOR B - 63A
XA ACB TP	AIR CIRCUIT BREAKER TRIPLE POLE
XA MCCB TP	MOULDED CASE CIRCUIT BREAKER TRIPLE POLE
XA MCCB SP	MOULDED CASE CIRCUIT BREAKER TRIPLE POLE
XA MCB SP	MINI CIRCUIT BREAKER SINGLE POLE
C	3 POLE CONTACTOR 22A
METER M	DIRECT IN LINE, DIN RAIL ENERGY METER
	40A DIN RAIL MOUNTED, 3 POLE CHANGE OVER SWITCH WITH ROTARY HANDLE FOR 1-0-11
	24 HOUR TIME SWITCH, WITH BATTERY BACK UP
XA SP	EARTH LEAKAGE.
	INVERTER
D/N	DAY NIGHT SWITCH
	CONTACTOR

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

ZITHOLELE CONSULTING

ZITHOLELE
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Tel: +27 12 349 1199
e-mail: mail@jjjc.co.za

SURVEYED	C.K
DESIGNED	J.v.T
DRAWN	L.C
CHECKED	J.v.T
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	J. v TONDER
Pr. Eng. No.	970379
DATE	18.08.2023

JOHANNESBURG WATER (SOC) LTD

Johannesburg Water

TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

CARLSWALD

CONSTRUCTION OF 20 Ml CARLSWALD RESERVOIR

GUARD HUT POWER AND LIGHTING LAYOUT

DESIGN MANAGER

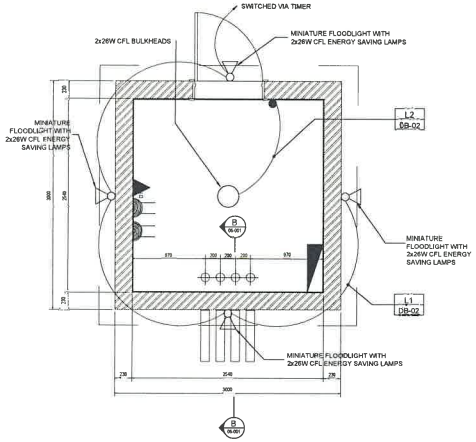
DATE

SCALE: AS SHOWN

A0
DO NOT SCALE

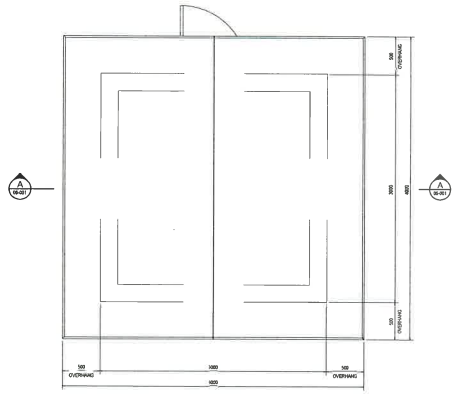
AMENDMENTS		APPROVED	DATE
100	ISSUED FOR INTERNAL REVIEW	J.v.T	08.10.2021
101	ISSUED FOR TENDER	J.v.T	18.08.2023
102	LIGHT FITTING TABLE ADDED	J.v.T	27.09.2023

DRAWING No.
JW NUMBER
JW14302
CONSULTANT'S NUMBER
13214-73-06-008
FILE No
T 0 2



REFER TO DRAWING ../402
FOR ELECTRICAL LAYOUT

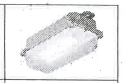
FLOOR PLAN
SCALE 1: 25



ROOF PLAN
SCALE 1: 25

Light Fittings

Note: All luminaires must be approved by the Engineers representative prior to the installation of or any order being placed. Only light fittings as well as all light fitting components carrying the SABS mark of approval will be acceptable. All fluorescent light fittings shall be equipped with electronic control gear.

Type A	:	18W LED Ceiling mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekabulk from Beka plus 1hour EMG maintained (emergency).	
Type B	:	32W LED wall mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekanova from Beka plus 1hour EMG maintained (emergency).	
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Area lighting fitting		38W LED wall mounted Flood light natural white enclosed dust, moisture, vandal and corrosion proof luminaire. Similar and equal to Beka Omni star Micro	

ELECTRICAL LEGEND

- DISTRIBUTION BOARD
- TELEPHONE OUTLET (BLANK)
- DOUBLE SOCKET OUTLET (FLUSH)
- 1 x 26W CEILING MOUNTED BULKHEAD
- WALL MOUNTED BULKHEAD
- MINIATURE FLOODLIGHT
- LIGHT SWITCH
- WALL MOUNTED PHOTOCELL
- 2 x 26W CFL BULKHEAD

NOTE : ALL WIRING TO BE INSTALLED IN CONDUIT CHASED INTO WALLS

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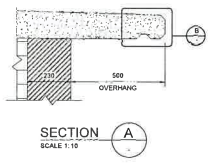
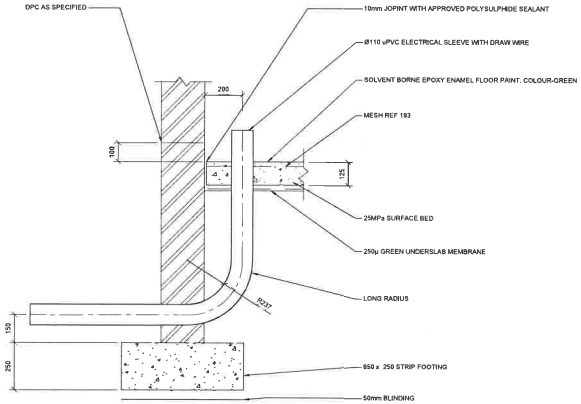
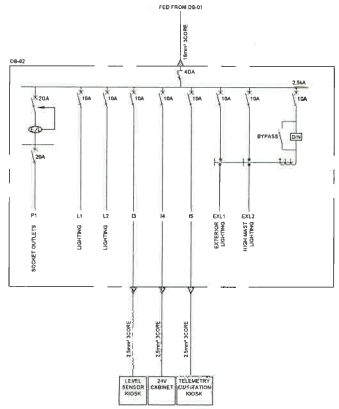
C	3 POLE CONTACTOR 22A
METER M	DIRECT IN LINE, DIN RAIL ENERGY METER
	40A DIN RAIL MOUNTED, 3 POLE CHANGE OVER SWITCH WITH ROTARY HANDLE FOR 1-0-11
	24 HOUR TIME SWITCH, WITH BATTERY BACK UP
xA SP	EARTH LEAKAGE.
	INVERTER
D/N	DAY NIGHT SWITCH
	CONTACTOR



SECTION A
SCALE 1:10



SECTION B
SCALE 1:10



SINGLE LINE DIAGRAM
SCALE 1: NTS

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

ZITHOLELE CONSULTING

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SURVEYED	C.K
DESIGNED	J.v.T
DRAWN	L.C
CHECKED	J.v.T
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	J. v TONDER
Pr. Eng. No.	970379
DATE	18.08.2023

JOHANNESBURG WATER (SOC) LTD

Johannesburg Water

TURBINE HALL
65 HITEMI PILISO STREET
NEWTOWN

TEL: (011) 688-1400
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CITY OF JOHANNESBURG

CARLSWALD

CONSTRUCTION OF 20 Ml CARLSWALD RESERVOIR

TELEMETRY HUT

DESIGN MANAGER

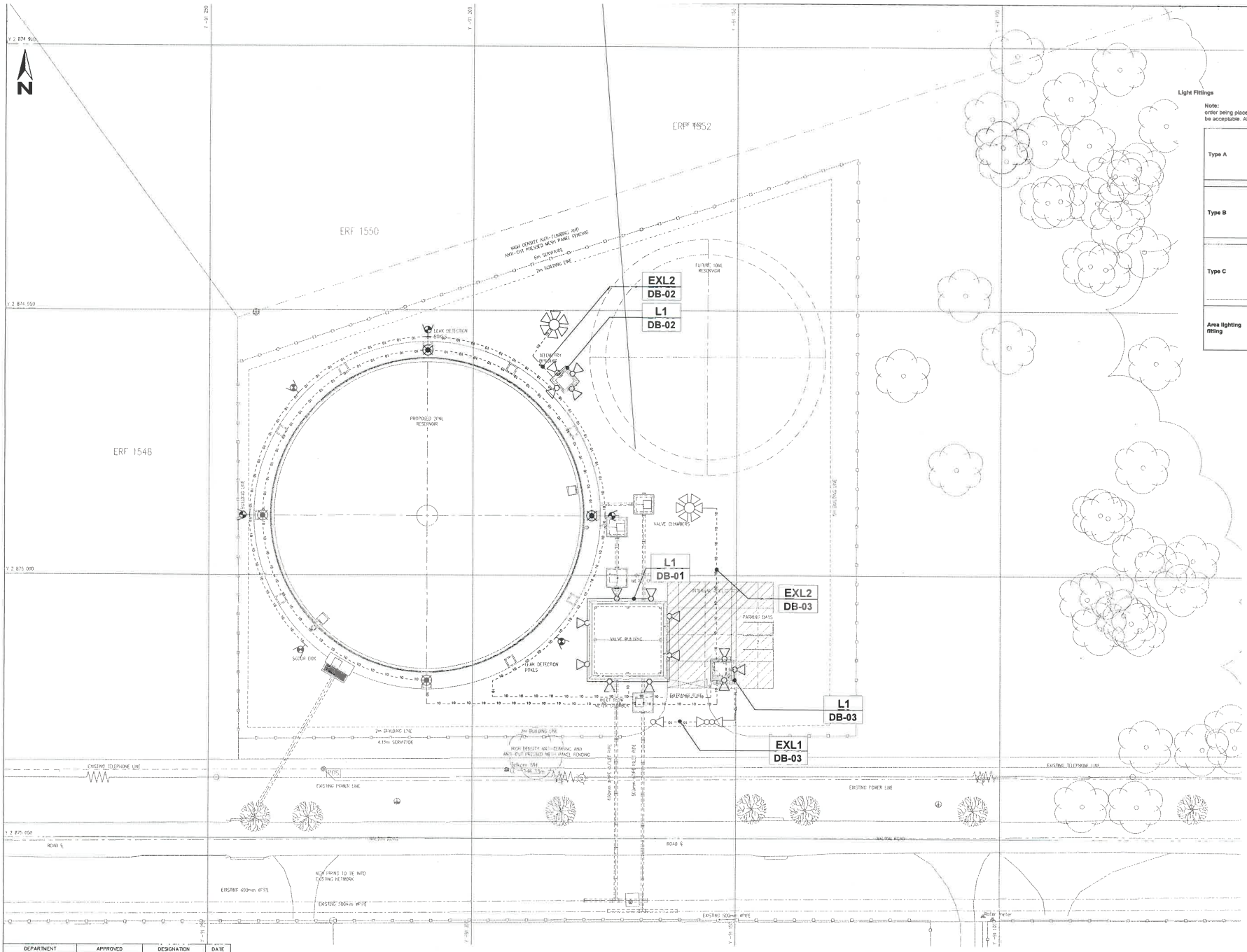
DATE

SCALE: AS SHOWN

AMENDMENTS	APPROVED	DATE
TOD ISSUED FOR INTERNAL REVIEW	J.v.T	08.10.2021
TDR ISSUE FOR TENDER	J.v.T	18.08.2023
TD2 LIGHT FITTING TABLE ADDED	J.v.T	27.09.2023

A0
DO NOT SCALE

DRAWING No.
JW NUMBER
JW14302
CONSULTANTS NUMBER
13214-73-06-009
FILE No
T 0 2

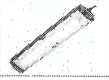
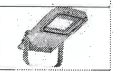


CABLE ROUTES
1:250

CABLE LEGEND	
—— 10 —— 10 ——	10mm² 3C CABLE
	BASIC LED BASED AVIATION OBSTRUCTION LIGHT WITH FLASH
	57W BEKA LED FLOAD MOUNTED AT 6000mm AFFL, OR SIMILAR APPROVED
	MINIATURE FLOODLIGHT WITH 30W CFL ENERGY SAVING LAMPS, OR SIMILAR APPROVED

Light Fittings

Note: All luminaires must be approved by the Engineers representative prior to the installation of or any order being placed. Only light fittings as well as all light fitting components carrying the SABS mark of approval will be acceptable. All fluorescent light fittings shall be equipped with electronic control gear.

Type A	18W LED Ceiling mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekabulk from Beka plus 1hour EMG maintained (emergency).	
Type B	32W LED wall mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekanova from Beka plus 1hour EMG maintained (emergency).	
Type C	55W LED enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 55W LED's lamps. Equal or similar to Roughguard from Beka plus 1hour EMG maintained (emergency).	
Area lighting fitting	36W LED wall mounted Flood light natural white enclosed dust, moisture, vandal and corrosion proof luminaire. Similar and equal to Beka Omni ster Micro	

DEPARTMENT	APPROVED	DESIGNATION	DATE

A0
DO NOT SCALE

CONSULTING ENGINEERS

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SERVICES CHECKED	
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SERVITUDES	
APPROVED	J. v TONDER
Pr. Eng. No.	970379
DATE	18.08.2023

JOHANNESBURG WATER (SOC) LTD
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CITY OF JOHANNESBURG
CARLSWALD
CONSTRUCTION OF 20 Ml CARLSWALD RESERVOIR
EXTERIOR LIGHTING LAYOUT

DESIGN MANAGER
DATE

SCALE: AS SHOWN

AMENDMENTS	APPROVED	DATE
100 ISSUED FOR INTERNAL REVIEW	J.vT	08.10.2021
101 ISSUED FOR TENDER	J.vT	18.08.2023
102 LIGHT FITTING TABLE ADDED	J.vT	07.09.2023

DRAWING No.
JW NUMBER
JW14302
CONSULTANT'S NUMBER
13214-73-06-013
FILE No
T 0 2

Light Fittings

Note: All luminaires must be approved by the Engineers representative prior to the installation of or any order being placed. Only light fittings as well as all light fitting components carrying the SABS mark of approval will be acceptable. All fluorescent light fittings shall be equipped with electronic control gear.

Type A	:	18W LED Ceiling mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekabulk from Beka plus 1hour EMG maintained (emergency).
Type B	:	32W LED wall mounted Bulkhead Neutral white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. Equal or similar to Bekanova from Beka plus 1hour EMG maintained (emergency).
Type C	:	55W LED enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 55W LED's lamps. Equal or similar to Roughguard from Beka plus 1hour EMG maintained (emergency).
Area lighting fitting		38W LED wall mounted Flood light natural white enclosed dust, moisture, vandal and corrosion proof luminaire. Similar and equal to Beka Omni star Micro

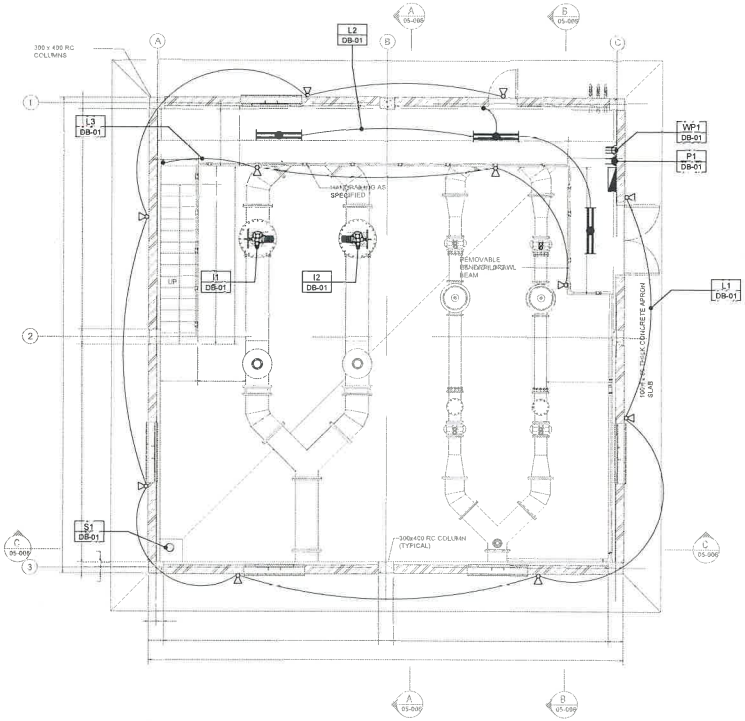
ELECTRICAL LEGEND

- DISTRIBUTION BOARD
- TELEPHONE OUTLET (BLANK)
- DOUBLE SOCKET OUTLET (FLUSH)
- WELDING PLUG OUTLET
- 1 x 28W CEILING MOUNTED BULKHEAD
- WALL MOUNTED BULKHEAD
- 1200mm OPEN CHANNEL FLUORESCENT (2 x 28W)
- MINIATURE FLOODLIGHT
- LIGHT SWITCH
- WALL MOUNTED PHOTOCELL
- 2 x 28W CFL BULKHEAD
- 3-PHASE ISOLATOR

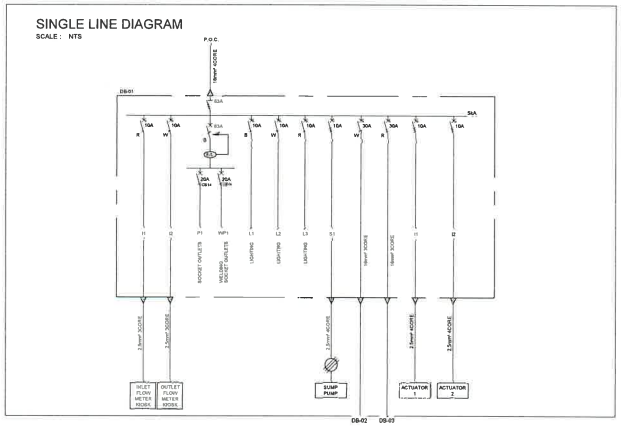
NOTE: ALL WIRING TO BE INSTALLED IN CONDUIT CHASED INTO WALLS

LEGEND

SYMBOL	DESCRIPTION
XA SP	SINGLE POLE CIRCUIT BREAKER.
XA TP	THREE POLE CIRCUIT BREAKER.
XA SP	SINGLE POLE ISOLATOR.
XA TP	THREE POLE ISOLATOR.
XA TP	THREE POLE MOTOR RATED 3POLE CIRCUIT BREAKER.
CA	ANTI ISLAND SERIES CONTACTOR A - 63A
CB	ANTI ISLAND SERIES CONTACTOR B - 63A
XA ACB TP	AIR CIRCUIT BREAKER TRIPLE POLE
XA MCCB TP	MOULDED CASE CIRCUIT BREAKER TRIPLE POLE
XA MCCB SP	MOULDED CASE CIRCUIT BREAKER TRIPLE POLE
XA MCB SP	MINI CIRCUIT BREAKER SINGLE POLE
C	3 POLE CONTACTOR 22A
METER M	DIRECT IN LINE, DIN RAIL ENERGY METER
	40A DIN RAIL MOUNTED, 3 POLE CHANGE OVER SWITCH WITH ROTARY HANDLE FOR 1-0-11
	24 HOUR TIME SWITCH, WITH BATTERY BACK UP
XA SP	EARTH LEAKAGE.
	INVERTER
DIN	DAY NIGHT SWITCH
690	CONTACTOR



GROUNDFLOOR LAYOUT
SCALE : 50



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CITY OF JOHANNESBURG

CARLSWALD

CONSTRUCTION OF 20 Ml CARLSWALD RESERVOIR

VALVE BUILDING POWER AND LIGHTING LAYOUT

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE
DATE	AS SHOWN	T00 ISSUED FOR INTERNAL REVIEW	J.v.T	08.10.2023
		T01 ISSUED FOR TENDER	J.v.T	18.08.2023
		T02 LIGHT FITTING TABLE ADDED	J.v.T	27.09.2023

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DO NOT SCALE

DRAWING No.

JW NUMBER
JW14302

CONSULTANTS NUMBER
13214-73-06-014

FILE No
T 0 2