

CONTRACT: MIS 262 984 C
 CONTRACT TITLE: UPPER MHLAHLANE EXT WATER SUPPLY:
 COMPLETION OF BULK RISING MAIN AND BULK GRAVITY MAIN

BILL OF QUANTITIES

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1		PRELIMINARY & GENERAL				
1.1	SANS 1200A 8.3	FIXED - CHARGE ITEMS				
1.1.1	8.3.1	Contractual Requirements	Sum	1		
	8.3.2	Establishment of Facilities on Site:				
	PSA 8.3.2.1	1) Facilities for Engineer (SANS 1200 AB) as amended in PSAB				
1.1.2	PSAB 8.2.2	a) Furnished office	Sum	1		
1.1.3	PSAB 8.2.2	b) Meeting room	Sum	1		
1.1.4	PSAB 8.2.4	c) Nameboards (2 No.)	Sum	1		
1.1.5	PSAB 8.2.5	d) Survey assistant	Sum	1		
1.1.6	PSAB 8.2.6	e) Survey equipment	Sum	1		
1.1.7	PSAB 8.2.7	f) Covered Parking Bays (2 No.)	Sum	1		
1.1.8	PSAB 8.2.8	g) All other specified facilities (incl wifi internet connection and printer)	Sum	1		
	8.3.2.2	2) Facilities for Contractors				
1.1.9		a) Office and storage sheds	Sum	1		
1.1.10		b) Workshops	Sum	1		
1.1.11		c) Laboratories	Sum	1		
1.1.12		d) Living accommodation	Sum	1		
1.1.13		e) Ablution and latrine facilities	Sum	1		
1.1.14		f) Tools and equipment	Sum	1		
1.1.15		g) Water supplied, electric power and communications.	Sum	1		
1.1.16		h) Dealing with water (Sub-clause 5.5)	Sum	1		
1.1.17		i) Access (Sub-clause 5.8)	Sum	1		
1.1.18		j) Plant	Sum	1		
1.1.19	8.3.3 PSA 8.10	General Responsibilities and other fixed charge obligations (including making allowance for effects and payments taking up to 60 days from date of invoice)	Sum	1		
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		BROUGHT FORWARD				
1.1.20	8.3.4	Removal of Engineer's and Contractor's site establishment on completion of works	Sum	1		
1.1.21	PSA 8.9 PS - OHS	Fixed charges associated with complying with Health and Safety Requirements: a) Preparation of risk assessments, safe work procedures, the project H&S File, the H&S Plan, medicals for all workers, the provision of PPE and protective clothing, and all other fixed charge H&S matters that fulfill OHS Act 85 of 1993 and construction regulation 2014 requirements	Sum	1		
1.1.22		b) Completing and checking the Project H&S File and handing over the Client on completion of the works and exit medicals for all workers	Sum	1		
1.1.23		c) Provision of HIV/Aids Awareness plan and all necessary fixed charge items to achieve compliance with SANS 1921 Part 6 HIV/Aids Awareness	Sum	1		
1.1.24	PSA 8.9	Fixed charges associated with complying with the Environmental Management Plan all environmental authorizations	Sum	1		
1.2	PSAB 8.2.1	TIME-RELATED ITEMS				
1.2.1	8.4.1	Contractual Requirements	Sum	1		
	8.4.2	Operate and maintain of Facilities on Site for the duration of the construction, except where otherwise stated:				
	8.4.2.1	1) Facilities for Engineer as per PSAB clause				
1.2.2	PSAB 8.2.2	a) Furnished office	Sum	1		
1.2.3	PSAB 8.2.2	b) Meeting room	Sum	1		
1.2.4	PSAB 8.2.4	c) Nameboards (2 No.)	Sum	1		
1.2.5	PSAB 8.2.5	d) Survey assistant	Sum	1		
1.2.6	PSAB 8.2.6	e) Survey equipment	Sum	1		
1.2.7	PSAB 8.2.7	f) Covered Parking Bays (2 No.)	Sum	1		
1.2.8	PSAB 8.2.8	g) All other specified facilities (incl wifi internet connection and printer)	Sum	1		
	8.4.2.2	2) Facilities for Contractor				
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
1.2.9		a) Office and storage sheds	Sum	1		
1.2.10		b) Workshops	Sum	1		
1.2.11		c) Laboratories	Sum	1		
1.2.12		d) Living accommodation	Sum	1		
1.2.13		e) Ablution and latrine facilities	Sum	1		
1.2.14		f) Tools and equipment	Sum	1		
1.2.15		g) Water supplied, electric power and communications.	Sum	1		
1.2.16		h) Dealing with water (Sub-clause 5.5)	Sum	1		
1.2.17		i) Access (Sub-clause 5.8)	Sum	1		
1.2.18		j) Plant	Sum	1		
1.2.19	8.4.3	Supervision for duration of construction	Sum	1		
1.2.20	8.4.4	Company and head office overhead costs for the duration of the contract	Sum	1		
	PSA 8.9 PS - OHS	Time-related charges associated with complying with Health and Safety Requirements:				
1.2.21		a) Updating and amending the risk assessments, safe work procedures, the project H&S File, the H&S Plan, medicals for all workers, the provision of PPE and protective clothing and all other H&S matters that fulfill OHS Act 85 of 1993 and construction regulation 2014	Sum	1		
1.2.22		b) Full compliance with all H&S matters during the construction of the works under the Contract	Sum	1		
1.2.23		c) Compliance with SANS 1921 Part 6 HIV/Aids Awareness plan during the contract	Sum	1		
1.2.24	PSA 8.9	Time-related charges associated with complying with the Environmental Management Plan and all environmental authorizations	Sum	1		
1.3	8.8	TEMPORARY WORKS				
1.3.1	8.8.1	Construct and maintain access to works	Sum	1		
1.3.2	8.8.2	Accommodation of traffic	Sum	1		
	8.8.4	EXISTING SERVICES				
1.3.3		(c) Excavate by hand in soft material to expose services. (Provisional)	m ³	20		
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2		BROUGHT FORWARD				
		DAYWORKS, PROVISIONAL SUMS AND PRIME COST ITEMS				
2.1	SANS 1200A	DAYWORKS				
	8.7	LABOUR				
2.1.1		a) Team leader / charge hand	hr	50		
2.1.2		b) Artisan	hr	50		
2.1.3		c) Skilled	hr	100		
2.1.4		d) Semi-skilled	hr	200		
2.1.5		e) Unskilled	hr	200		
	8.7	PLANT				
		For plant used in execution of dayworks				
2.1.6		As agreed with engineer	PC Sum	1	50 000,00	50 000,00
2.1.7		Mark up on item 2.1.6 above	%	50 000,00		
	8.7	MATERIALS				
2.1.8		For materials used in execution of dayworks as agreed with engineer	PC Sum	1	75 000,00	75 000,00
2.1.9		Mark up on item 2.1.8 above	%	75 000,00		
2.2	8.5	SUMS STATED PROVISIONALLY BY THE ENGINEER				
		ENGINEER				
2.2.1		Cellphone allowance for the Engineer for the duration of the contract (R1000 pm).	Prov. Sum	1	14 000,00	14 000,00
2.2.2		Transportation for the Engineer for the duration of the contract (R25000 pm).	Prov. Sum	1	350 000,00	350 000,00
2.2.4		Allow for Supervision by the Engineer's Site Representative for the Duration of the Contract	Prov. Sum	1	1 100 000,00	1 100 000,00
2.2.5 (i)		Overheads, Charges and Profit on item 2.2.1 above	%	1 464 000,00		
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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
2.2.5		Equipment for the Engineer	Prov. Sum	1	50 000,00	50 000,00
2.2.6		Overheads, Charges and Profit on item 2.2.5 above	%	50 000,00		
2.2.7		Additional Acceptance control testing as may be required by the Engineer (Note that the Contractor's tendered rates are to include for all Quality Control testing required to achieve compliance with the specifications and that this scheduled item is to cover only the Engineer's additional testing that the Engineer may require)	Prov. Sum	1	100 000,00	100 000,00
2.2.8		Overheads, Charges and Profit on item 2.2.7 above	%	100 000,00		
		TOPOGRAPHICAL SURVEY				
2.2.9		Ad-hoc survey as requested by the Engineer.	Prov. Sum	1	50 000,00	50 000,00
2.2.10		Overheads, Charges and profit on item 2.2.9 above	%	50 000,00		
		CATHODIC PROTECTION				
2.2.11		Pipe Current Mapping or DCVG survey by others progressively with pipe laying, all under the direction of the Employer's specialist Cathodic Protection professional service provider (test for pipe coating).	Prov. Sum	1	75 000,00	75 000,00
2.2.12		Overheads, Charges and Profit on item 2.2.11 above	%	75 000,00		
2.2.13		Specialist design and installation of impressed current cathodic protection system	Prov. Sum	1	350 000,00	350 000,00
2.2.14		Overheads, Charges and Profit on item 2.2.13 above	%	350 000,00		
2.2.15		Independent inspectorate (Welds, corrosion protection)	Prov. Sum	1	200 000,00	200 000,00
2.2.16		Overheads, Charges and Profit on item 2.2.15 above	%	200 000,00		
		COMMUNITY LIASON OFFICER				
2.2.17	PS3	Employment of CLO for the duration of the contract (R7500 pm plus R500 pm cellphone allowance)	Prov. Sum	1	120 000,00	120 000,00
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		BROUGHT FORWARD				
2.2.18		Overheads, Charges and Profit on item 2.2.19 above	%	104 000,00		
2.2.19		Employment of PSC for duration of contract (6 No. at R500 pm each)	Prov. Sum	1	42 000,00	42 000,00
2.2.20		Overheads, Charges and Profit on item 2.2.21 above	%	45 000,00		
		INSTITUTIONAL AND SOCIAL DEVELOPMENT (ISD)				
2.2.21		ISD Consultant costs during the Construction Phase as per RFQ procurement process	Prov. Sum	1	300 000,00	300 000,00
2.2.22		Overheads, Charges and Profit on item 2.2.23 above	%	300 000,00		
		ENVIRONMENTAL & OH&S OFFICERS				
2.2.23		Cost of Environmental Compliance Officer as per RFQ procurement process	Prov. Sum	1	260 000,00	260 000,00
2.2.24		Overheads, Charges and Profit on item 2.2.25 above	%	260 000,00		
2.2.25		Employer's OH&S Agent as per RFQ procurement process	Prov. Sum	1	310 000,00	310 000,00
2.2.26		Overheads, Charges and Profit on item 2.2.27 above	%	310 000,00		
		TRAINING				
2.2.27		Allowance for training of local unskilled labour	Prov. Sum	1	100 000,00	100 000,00
2.2.28		Overheads, Charges and profit on item 2.2.27 above	%	100 000,00		
2.2.29		Transport and accommodation of workers for training where it is not possible to undertake the training in close proximity to the site	Prov. Sum	1	18 000,00	18 000,00
2.2.30		Overheads, Charges and profit on item 2.2.29 above	%	18 000,00		
		STUDENT				
2.2.31		Sudent monthly allowance for the for the duration of the contract (R10000 pm).	Prov. Sum	1	140 000,00	140 000,00
2.2.32		Overheads, Charges and Profit on item 2.2.34 above	%	140 000,00		
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		BROUGHT FORWARD				
2.2.33		Transportation for the Student for the duration of the contract (R1000 pm	Prov. Sum	1	14 000,00	14 000,00
2.2.34		Overheads, Charges and Profit on item 2.2.35 above	%	14 000,00		
2.2.35		Accommodation for the Student for the duration of the contract (R2500 pm).	Prov. Sum	1	35 000,00	35 000,00
2.2.36		Overheads, Charges and Profit on item 2.2.38 above	%	35 000,00		
		REVEGETATION				
2.2.37		Revegetation of site.	Prov. Sum	1	75 000,00	75 000,00
2.2.38		Overheads,charges and profit on Item No 2.2.31	%	75 000,00		
2.3		PRIME COST ITEMS				
		LOCAL SUBCONTRACTOR				
2.3.1		Provisional Sum to cover any difference in Main Contractor's tendered rates and approved local subcontractor's tendered rates (incl subcon's P&G costs)	PC Sum	1	500 000,00	500 000,00
2.3.2		Dealing with existing laid pipeline, Inspect pipes for damage. Repairs , clean in preparation for re-use	PC Sum	1	100 000,00	100 000,00
3		DN300 RISING MAIN - WTW TO COMMAND RESERVOIR				
		THE PIPELINES (RISING MAIN AND GRAVITY MAIN) WILL BE LAID IN THE SAME TRENCH. EARTHWORKS QUANTITIES FOR BOTH PIPES ARE ALLOWED FOR UNDER THIS SECTION				
		SITE CLEARANCE				
3.1	SANS 1200DB	EARTHWORKS (PIPE TRENCHES)				
		Site Clearance and Removal of Topsoil				
3.1.1	8.3.1	a) Clear and grub area including clearing vegetation and trees of girth up to 1 m along the route of the pipeline (working strip of up to 20m width) for Steel Pipes	m	5500		
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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.1.2	8.3.1	c) Remove topsoil to a depth of 150mm along the route of the pipeline for up to 10m wide working strip over trench, Stockpile and	m ²	55000		
3.1.3	8.3.1	c) Where necessary, on slopes cut working bench for ease of movement of construction plant and personnel, cut to be done along the route of the pipeline for up to 10m wide working strip over trench, Stockpile and maintain for re-instatement of material	m	650		
3.1.4	SANS D 8.3.10	Replace topsoil on completion	m ²	55000		
3.2		DEMARCATIION FENCING				
3.2.1	PSA 8.9	Demarcation of construction corridor each side (1m high poles painted white, at 15m intervals. Measured by length of pipeline)	m	5500		
3.2.2	PSC 8.5	Supply and install demarcation fence on both sides of the working area during construction and remove on completion of works (backfilling). Fence is to comprise Bonnox 4 x 4 mesh fencing (maximum opening not exceeding 100mm) Bonnox pattern 1972/4, with straining posts, straining wires, stays, etc as required. Plastic warning tape is to be wound zig-zag top wire to bottom wire along full length and warning signs in English and isiXhosa in appropriate locations. Rate includes for provision and control of gates for construction access purposes as and where required. Rate to include for surveillance of fencing integrity on a	m	11000		
3.2.3	PSC 8.6	Extra over 3.2.2 for fixing suitably robust plastic square mesh on demarcation fence in occupied areas to act as a childproof barrier	m	500		
3.3		EXCAVATION				
	SANS 1200DB	EXCAVATION (PIPE TRENCHES)				
		TRENCH WIDTH IS 1.85m TO ACCOMMODATE BOTH RISING MAIN AND GRAVITY MAIN				
	8.3.2 PSDB 8.1.4	(a) Excavate in all material for trenches backfill and dispose of surplus and unsuitable material. Rate to include for all temporary works including trimming, shoring and dewatering where necessary:				
CARRIED FORWARD						

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		BROUGHT FORWARD				
		Over Up to and including				
3.3.1		0m 1.5m	m	4642		
3.3.2		1.5m 2.5m	m	472		
3.3.3		2,5m 3.5m	m	8		
3.3.4		3,5m 4.0m	m	3		
3.3.5		Over 4.0m	m	-		Rate Only
	8.3.2	(b) Extra over item 3.3.1 to 3.3.5 for excavation in:				
3.3.6		1) Intermediate material	m ³	5		
3.3.7		2) Hard rock (blasting)	m ³	362		
3.3.8		3) Hard rock excavation near residential buildings (Mounted hydraulic breaker where directed by the Engineer)	m ³	5		
3.3.9	8.3.2	(c) Excavate unsuitable material from the trench bottom and dispose of at spoil site. (Provisional)	m ³	100		
	SANS 1200DA 8.3.1 (c)	(b) Extra over item 3.3.1 to 3.3.5 for excavation in:				
3.3.10		1) Boulder excavation, Class A (Prov.)	m ³	149		
3.3.11		2) Boulder excavation, Class B (Prov.)	m ³	149		
3.3.12	SANS 1200DB 8.3.3	EXCAVATION ANCILLARIES				
	8.3.3.1	Make up deficiency in backfill material: (Provisional)				
3.3.13		a) from other necessary excavations on site	m ³	660		
3.3.14	8.3.3.3	Selected fill material compacted in 150 mm thick layers to 93% Mod AASHTO in road reserve. Location and depths to be specified by Engineer (Prov)	m ³	5		
3.3.15	PSDB 8.5	Stabilise backfill on steep slopes using precast concrete lintel beams as per drawing J26137/307	No.	20		
	8.3.6	FINISHING				
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.3.16	8.3.6.1	a) Reinstate gravel finishing roads and drainage after construction (Remove spoil and other foreign material from road surface, fill in pockets with G6/G7 gravel and compact to 95% mod AASHTO to form even travelling surface)	m ³	445		
3.4		BEDDING				
	SANS 1200LB PSL 8.2.5	BEDDING FROM TRENCH EXCAVATIONS (PIPES)				
	8.2.1	Provision of bedding material from trench excavations				
3.4.1		a) Selected granular material	m ³	3005		
3.4.2		BEDDING IMPORTATION				
	8.2.2	Provision of bedding material imported from commercial sources/ approved borrow pits selected by the Contractor				
3.4.2.1		a) Selected granular material	m ³	150		
3.5		PIPEWORK				
	SANS 1200L	MEDIUM PRESSURE PIPELINES: DUCTILE IRON				
3.5.1	8.2.1	Transport on-site to the working area, lay, joint, bed, test. Including all pipe inspection, cutting and preparation as required, and making good of all internal linings and external coatings and keeping clean as laying progresses and flushing pipes before filling, all as specified: Grade X42 steel, 5.5m long, bell ended one side Cement mortar lined and "Sintakote" or "3LPE" or "Polyurethane" coated pipe: 4.5mm thick steel pipes				
3.5.2		a) DN 300	m	4424		
3.5.3	8.2.1	Supply, Lay, joint, bed, test. Including all cutting and preparation as required, welding, and making good of all internal linings and external coatings and keeping clean as laying progress and flushing pipes before filling, all as specified: Grade X42 steel, 12m long, bell ended one side Cement mortar lined and "Sintakote" or "3LPE" or "Polyurethane" coated pipe:				
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		BROUGHT FORWARD				
		4.5mm thick steel pipes				
3.5.4		a) DN 300	m	701		
3.5.5		Excavate,remove,clean and prepare for re-use DN300 ductile iron pipes	m	601		
	PSL 8.18	Extra over item 3.5.2 & 3.5.4 for stabilising bedding material and selected backfill material with 8% cement for:				
3.5.6		a) Backfilling over/around pipes on steep slopes (where directed by the Engineer)	m ³	100		
3.5.7		b) Road reserve and water crossings, over/around pipes (where directed by the Engineer)	m ³	100		
3.5.8	SANS 1200L	PIPE FITTINGS DUCTILE IRON				
	8.2.2	Extra over item 3.5.2 for the inspection, handling, laying, jointing , testing and bedding of DN300 bends including for making good internal linings and external coatings and for all corrosion protection measures:				
3.5.8.1		Bend >9° to 15° degree (2 segment bend):	No.	32		
3.5.9		Bend 15° to 30° degree (3 segment bend):	No.	36		
3.5.10		Bend 30° to 45° degree (4 segment bend):	No.	6		
3.5.11		Bend 45° to 60° degree (5 segment bend):	No.	1		
	PSL 8.2.15	Special wrapping in Corrosive soils for flanges, adaptor joints and valves as per PSL 3.9.2.11				
3.5.12		a) DN300	No.	32		
3.5.13	SANS 1200L	VALVE ASSEMBLIES				
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		BROUGHT FORWARD				
	8.2.5	Extra over item 3.5.1 for the supply of materials, fabrication, handling, laying, jointing, testing and bedding of steel pipe specials and fittings as shown on detail drawings and for the supply, fabrication, and installation of all crotch plates and wrappers or collars , and for the supply and installation of all flanges (including blank flanges where applicable) and couplings and fixings (GMS bolts nuts and washers) and gaskets, and for making good of all internal linings and external coatings. (All DN300 and smaller pipe specials "Fusion Bonded Epoxy" coated and				
3.5.13.1		1) Non-Return Valve Assembly (all fittings, specials and flange drillings PN 40), ref drawing J26137/ 305:				
3.5.14		Item B1: DN300xDN200 epoxy coated and lined ductile iron tee, flanged one end and plain ended the other, with DN80 flanged branch. DN200 tee branch to be located 1400mm c/plain end and extend 400mm c/f. DN80 branch to be located 1400mm c/f and extend 350mm c/f.	No.	1		
3.5.15		Item B2: DN200 epoxy coated ductile iron blank flange, with DN80 flanged riser pipe 200mm long.	No.	1		
3.5.16		Item B3: DN300 Non-Return Valve, flanged. (Vent-o-Mat NCV-BK nozzle type or similar approved).	No.	1		
3.5.17		Item B4: DN300 FBE coated and lined dismantling joint.	No.	1		
3.5.18		Item B5: DN300 epoxy coated & lined ductile iron, plain one end to suit weld to CML pipe & flanged the other with DN80 flanged branch. DN300 pipe barrel to be 1750mm f/plain end. DN80 branch to be located 600mm c/f and extend 350mm c/f.	No.	1		
3.5.19		Item B6: DN80 epoxy lined & coated ductile iron short radius 90° bend, flanged both ends. 200mm c/f.	No.	2		
3.5.20		Item B7: DN80 VJ flange adaptor.	No.	2		
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		BROUGHT FORWARD				
3.5.21		Item B8: DN80 epoxy lined & coated ductile iron straight pipe, plain ended both ends, 1145mm long (to be confirmed on site).	No.	1		
3.5.22		Item B9: DN80 resilient seal gate valve, flanged with hand wheel.	No.	2		
3.5.23		Item B10: DN80 flanged, anti-shock air valve.	No.	1		
		2) Air Valve assembly (all fittings, specials and flange drillings PN 40), ref drawing J26137/302 DN80 Air Valve				
3.5.24		Item 1: DN300XDN200 Tee FL branch 400 C/F plain ends	No.	14		
3.5.25		Item 2: DN80 D/FL pipe, 300 F/F One flange DN80 and one flange DN300	No.	14		
3.5.26		Item 3: DN80 D/FL resilient seal gate valve, with non-rising spindle and handwheel	No.	14		
3.5.27		Item 4: DN80x50 flanged tee. DN80 D/FL barrel 300 F/F and DN50 FL branch 225 C/F with blank DN50	No.	14		
3.5.28		Item 5: DN80 'VENT-O-MAT' or similar approved air valve, double-acting non-slam 3) Double Scour Valve Assembly , ref drawing J26137/ 302 All fittings, specials and flange drillings PN 40	No.	14		
3.5.29		Item 1: 110mm DN Class 9 PVC-u Spindle Sleeve	No.	6		
3.5.30		Item 2: 25mm GMS Schedule 40 Tube with valve cap top one end and cap adaptor other end,m length to suit (Approx 1.5m long) Item 3: Ductile Iron Scour Tee	No.	6		
3.5.31		DN300 x DN150 Item 4: Flanged Wedge Gate-valve with cap-top	No.	3		
3.5.32		DN150 Item 5: 1000mm Flanged Steel Pipe	No.	3		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.5.33		DN150 Item 6: Stub Flange (Welded on)	No.	3		
3.5.34		DN150	No.	3		
3.5.35		Item 7: DN150 Outlet Pipe, PE 100, HDPE (Max 6m Length)	No.	3		
3.6	SANS 1200L	VALVE CHAMBERS				
3.7	8.2.14 (a)	1) AIR VALVE MANHOLE (ref detail drawing J26137/303) (including ground beams)				
3.7.1		Item 1: Supply and install "Infraset" or similar approved precast reinforced 45/19 concrete chamber wall elements 1000 mm high, 1500 mm internal diameter complete with step irons	No.	14		
3.7.2		Item 2: Supply and install "Infraset" or similar approved precast reinforced 45/19 concrete chamber roof slab 1500mm diameter	No.	14		
3.7.3		Item 3: Casting manhole frames into precast air valve slab as indicated on the drawings:	No.	14		
3.7.4		Item 4: Form 50 mm diameter holes through precast air valve chamber walls.	No.	224		
3.7.5		Item 5: Supplying and fixing 150 mm x 150 mm (heavy duty hot-dipped) galvanised expanded metal mesh 'Vitex' 30-2R (or similar approved) through middle of 50 diameter holes (wall centre) including all formwork and sealing	No.	224		
3.7.6		Item 6: Supply and construct 200mm deep chamber floor with 19mm Stone	m ²	15		
3.7.7		Item 7: Construct 25/19MPa reinforced concrete ground beams according to detail drawing	No.	28		
3.7.8		Item 8: Supply and install 1:3 cement/sand mortar fillet all around the chamber	No.	14		
3.7.9		Item 9: Supply and install 600 x 600 GMS hinged covered frame for airvalves as per standard drawing detail J26137C/210	No.	14		
3.7.10		Item 10: Supply and install "Multilocks" (MC10M-T-L) with standard pop shackle and master	No.	14		
3.7.11	8.2.14 (b)	Extra over item 3.6.2 for chamber wall height exceeding 1000 mm per 250 mm additional depth	No.	20		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.7.12	8.2.14 (a)	2) DOUBLE SCOUR VALVE MANHOLE (As per detail drawing J26137C/302)				
3.7.12.1		Item 1: Supply and install 750mm Precast Concrete manhole rings to minimum height 1300mm	No.	6		
3.7.13		Item 2: Supply and install 25/19 MPa concrete cover slab (medium duty)	No.	6		
3.7.14		Item 3: Extra over item 6.4.15: Supply and cast polymer concrete municipal valve box type 3A by "Maverick Trading" or similar including cap and chain	No.	6		
3.7.15		Item 4: Supply and install 300x100 Grade 15/19 MPa Concrete footing (circular)	m ³	1		
3.7.16		Item 5: Supply and construct 150mm deep chamber floor with 19mm Stone	m ²	3		
3.7.17		Item 6: Supply and construct 150mm layer free-draining selected granular material compacted to 93% MOD AASHTO density	m ²	3		
3.8		ANCHOR/THRUST BLOCKS				
3.8.1		a) Reinforced concrete thrust blocks complete including concrete, rough formwork and steel (100kg/m ³) as per detail drawings and excavation	m ³	40		
3.8.2		b) Mass concrete anchor blocks including rough formwork , as per detail drawing (including mass concrete portion of reinforced concrete anchor blocks)	m ³	15		
3.8.3		c) Reinforced concrete thrust beam (for hydraulic testing) complete including excavation , concrete reinforcement (100kg/m ³) and rough formwork	m ³	15		
3.8.4		d) Flanged 1.5m long Rilsan coated and lined puddle pipe as per detail drawing including steel to ductile iron adaptors and temporary blank flange (testing every 2000m and at each end)	m ³	3		
3.9		STRUCTURES				
3.9.1		NON-RETURN VALVE CHAMBER (See drawing J26137/305)				
	SANS 1200 GA 8.1.1.4	FORMWORK				
CARRIED FORWARD						

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BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.9.1.1	8.2.1	Rough vertical to concealed faces	m ²	32		
3.9.2	8.2.3	Rough vertical in narrows widths not exceeding 300 mm wide.	m	14		
3.9.3	8.2.2	Smooth vertical to exposed surfaces	m ²	31		
3.9.4	8.2.3	Smooth vertical in narrow widths not exceeding 300 mm wide.	m	27		
	8.2.4	Box out holes in roof slabs up to 300 mm thick for manhole frames (measured elsewhere) as indicated on the drawings:				
3.9.5		b) Form for vent holes through chamber roof as shown on the drawings.	No.	1		
3.9.6		d) Form 650 x 650 mm box-out hole for frame as per standard drawing	No.	1		
	8.2.4	Casting pipework in box-cut in reinforced concrete walls up to 300 mm thick, including maintaining strict line and level, and puddling concrete around pipe to watertight condition (pipe measured elsewhere):				
3.9.7		c) Form box-out in 300mm wall for DN300 steel puddle pipe.	No.	2		
		UNFORMED SURFACE FINISH				
3.9.8	8.4.4	Wood float to roof slab	m ²	21		
	8.3.1	REINFORCEMENT				
3.9.9		High tensile bars (all sizes)	kg	1591		
3.9.10		Mild steel bars (all sizes)	kg	318		
		CONCRETE				
	PSGA 8.4.1	Prescribed Mix Concrete				
3.9.11		Grade 15/19 MPa in pipe surround	m ³	1		
3.9.12		Grade 15/19 MPa in blinding layer 50 mm thick	m ²	11		
	PSGA 5.4.1.5	Strength concrete:				
3.9.13		Grade 25/19 MPa in floor slabs	m ³	3,32		
3.9.14		Grade 25/19 MPa in roof slabs	m ³	3,32		
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.9.15		Grade 25/19 MPa in walls	m ³	9,2		
	PSGA 5.4.1.5	Screeding to chamber floors in Grade 15/19 concrete, including steel float finish:				
3.9.16		100 mm to 30 mm thick	m ³	3		
	PSA 8.9	AIR VENTS				
3.9.17		Construct precast concrete air vent blocks and cast into chamber roofs complete as shown on detail drawing J26137/210, including DN110 uPVC pipework, end cap with holes and gauze, formwork and mesh reinforcement:	No.	1		
3.9.18		Extra over Item 3.7.18 for extended 110 mm diameter Class 6 uPVC pipe droppers inside chambers, including supply and installation of aluminium holderbats & drilling and grouting same into walls	m	3		
3.9.19	SANS 1200 HA	STEELWORK FOR VALVE CHAMBERS				
	PSA 8.9	1) NON-RETURN VALVE CHAMBER (as per detail drawing J26137/305)				
3.9.19.1		Supply and install 650 x 650 GMS hinged covered frame as per standard drawing detail	No.	1		
3.9.20		Supply and install 4 No. 20mm diameter galvanized lifting eye bars cast with chamber roof slab	No.	1		
3.9.21		Supply and install 4 No. internal lifting eye as according to drawing No. J26137/305	No.	1		
	8.3.3	Supply everything necessary, fabricate, handle and install the following fabricated GMS elements complete, including all anchors, fixings, bolts, welding, hot dip galvanising, site measurement prior to fabrication, and fixing/casting in position, all as detailed on the drawings: Permanent ladders (including safety cages)				
3.9.22		3m up to 4m o/a height	No.	1		
3.10	PSL7	HYDRAULIC PRESSURE TESTING				
3.10.1		Allow for filling pipeline with water for testing	Sum	1		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
3.10.2		Supply and install temporary blank flanges and/or spade pieces as required, provide temporary anchorages, and pressure test the pipeline and all fittings, valves and appurtenances	Sum	1		
3.11		MISCELLANEOUS				
3.11.1		PIPEWORK				
3.11.1.1	PSA 8.9	Supply and install pipeline markers as per detail drawing complete	No.	75		
3.11.1.2		Supply and install additional DN300 rubbers for laying of ductile iron pipes	No.	60		
3.11.2	SABS 1200DK	EROSION PROTECTION				
		SCOUR VALVE				
3.11.2.1	8.2.2	a) Supply and installation of 1m x 1m x 1m Gabion Basket constructed of PVC coated 2,7 mm galvanized wire, mesh size 80 x 100 mm, diaphragm spacing 1 m, selvedge 3,4 mm, including rock fill.	m ³	2,5		
3.11.2.2	8.2.2	a) Supply and installation of a 6000mm x 230mm RENO Mattress on Geotextile	m ³	3,5		
3.11.2.3	8.2.4	Geofabric (Bidim A4 or Similar approved)	m ²	23		
4		DN350 GRAVITY MAIN - COMMAND RESERVOIR TO WTW				
		SITE CLEARANCE, EARTHWORKS AND BEDDING ARE ALLOWED FOR UNDER SECTION 3				
4.1		PIPEWORK				
	SANS 1200L	MEDIUM PRESSURE PIPELINES: DUCTILE IRON				
4.1.1	8.2.1	Transport on-site to the working area, lay, joint, bed, test. Including all pipe inspection, cutting and preparation as required, and making good of all internal linings and external coatings and keeping clean as laying progresses and flushing pipes before filling, all as specified:				
	PSL 3.9.2.2	Grade X42 ductile iron, 6m long, bell ended one side Cement mortar lined and 'Sintakote' or '3LPE' or 'Polyurethane' coated pipe:				
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.1.2		4.5mm thick steel pipes a) DN 350	m	3800		
4.1.3	8.2.1	Supply, Lay, joint, bed, test. Including all cutting and preparation as required, welding, and making good of all internal linings and external coatings and keeping clean as laying progress and flushing pipes before filling, all as specified: Grade X42 steel, 5.5m long, bell ended one side Cement mortar lined and "Sintakote" or "3LPE" or "Polyurethane" coated pipe:				
4.1.4		4.5mm thick steel pipes a) DN 350	m	1216		
	PSL 8.18	Extra over item 4.10.2 for stabilising bedding material and selected backfill material with 8% cement for:				
4.1.5		a) Backfilling over/around pipes on steep slopes (where directed by the Engineer)	m ³	28		
4.1.6		b) Road reserve and water crossings, over/around pipes (where directed by the Engineer)	m ³	15		
4.1.7	SANS 1200L	PIPE FITTINGS DUCTILE IRON				
	8.2.2	Extra over item 4.10.2 for the supply, fabrication, handling, laying, jointing by welding, testing and bedding of DN350 bends including for making good internal linings and external coatings and for all corrosion protection measures:				
4.1.7.1		Bend >9° to 15° degree (2 segment bend):	No.	50		
4.1.8		Bend 15° to 30° degree (3 segment bend):	No.	60		
4.1.9		Bend 30° to 45° degree (4 segment bend):	No.	15		
4.1.10		Bend 45° to 60° degree (5 segment bend):	No.	4		
4.1.11		Bend 60° to 75° degree (6 segment bend):	No.	1		
	PSL 8.2.15	Special wrapping in Corrosive soils for flanges, adaptor joints and valves as per PSL 3.9.2.11				
4.1.12		a) DN350	No.	34		
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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.1.13	SANS 1200L	VALVE ASSEMBLIES: Steel pipes				
	8.2.5	Extra over item 4.10.2 for the supply of materials, fabrication, handling, laying, jointing, testing and bedding of ductile iron specials and fittings and for the supply, fabrication, and installation of all crotch plates and wrappers or collars as shown on detail drawings, and for the supply and installation of all flanges (including blank flanges where applicable) and couplings and fixings (GMS bolts nuts and washers) and gaskets, and for making good of all internal linings and external coatings. (All DN350 and smaller pipe specials "Fusion Bonded Epoxy"				
		1) Air Valve assembly (all fittings, specials and flange drillings PN 25), ref drawing J26137/304				
		DN80 Air Valve				
4.1.13.1		Item 1: DN350XDN250 Tee FL branch 400 C/F plain ends	No.	7		
4.1.14		Item 2: DN80 D/FL pipe, 300 F/F One flangeDN80 and one flange DN350	No.	7		
4.1.15		Item 3: DN80 D/FL resilient seal gate valve, with non-rising spindle and handwheel	No.	7		
4.1.16		Item 4: DN80x50 flanged tee. DN80 D/FL barrel 300 F/F and DN50 FL branch 225 C/F with blank DN50	No.	7		
4.1.17		Item 5: DN80 'VENT-O-MAT' or similar approved air valve, double-acting non-slam	No.	7		
		1) Air Valve assembly (all fittings, specials and flange drillings PN 40), ref drawing J26137/304				
		DN80 Air Valve				
4.1.18		Item 1: DN350XDN250 Tee FL branch 400 C/F plain ends	No.	3		
4.1.19		Item 2: DN80 D/FL pipe, 300 F/F One flangeDN80 and one flange DN350	No.	3		
4.1.20		Item 3: DN80 D/FL resilient seal gate valve, with non-rising spindle and handwheel	No.	3		
4.1.21		Item 4: DN80x50 flanged tee. DN80 D/FL barrel 300 F/F and DN50 FL branch 225 C/F with blank DN50	No.	3		
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.1.22		Item 5: DN80 'VENT-O-MAT' or similar approved air valve, double-acting non-slam 2) Double Scour Valve Assembly , ref drawing J26137/302 All fittings, specials and flange drillings PN 40	No.	3		
4.1.23		Item 1: 110mm DN Class 9 PVC-u Spindle Sleeve	No.	6		
4.1.24		Item 2: 25mm GMS Schedule 40 Tube with valve cap top one end and cap adaptor other end,m length to suit (Approx 1.5m long) Item 3: Ductile Iron Scour Tee	No.	6		
4.1.25		DN350 x DN150 Item 4: Flanged Wedge Gate-valve with cap-top	No.	3		
4.1.26		DN150 Item 5: 1000mm Flanged Steel Pipe	No.	6		
4.1.27		DN150 Item 6: Stub Flange (Welded on)	No.	3		
4.1.28		DN150	No.	3		
4.1.29		Item 7: DN150 Outlet Pipe, PE 100, HDPE (Max 6m Length) 1) Isolating and Air Valve Assembly, ref drawing J26137/209 All fittings, specials and flange drillings PN 40. Mild steel pipe work to be CML lined and FBE coated and 6mm wall thickness AT SLOPING AREAS	No.	3		
4.1.30		Item 1: DN300 VJ Flange Adaptor	No.	4		
4.1.31		Item 2: DN300 flanged RSV gate valve with non rising spindle and hand wheel	No.	2		
4.1.32		Item 3: DN300 flanged O/E MS pipe, 780mm long plain the other	No.	2		
4.1.33		Item 4: DN300 FBE coated lined dismantling joint	No.	2		
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
BROUGHT FORWARD						
4.1.34		Item B1: DN300 D/FL PIPE 1370mm long with elliptical puddle flange 450mm FOR outer FL/E with DN250 flanged branch tee. flanged branch tee 290mm FROM O/E and 400mm C/F	No.	2		
4.1.35		Item B2: DN300 D/FL 970mm long pipe with elliptical puddle flange 400mm for outer FL/E (pipe cut to suit on site)	No.	2		
4.1.36		Item B3:DN80 flanged mild steel riser, 150mm long. One flange DN250 and other DN80	No.	2		
4.1.37		Item B4: DN80 flanged RSV gate valve with handwheel	No.	2		
4.1.38		Item B5 DN80 flanged antishock air release and vacuum break valve (Vent - O - Met RBX series or similar approved)	No.	2		
4.1.39		DN300 steel pipe 1m rocker pipe(plain both ends)	No.	4		
4.1.40		DN300 VJ coupling	No.	4		
4.1.41	SANS 1200L	VALVE CHAMBERS				
4.1.42	8.2.14 (a)	1) AIR VALVE MANHOLE (ref detail drawing J26137/304) (including ground beams)				
4.1.42.1		Item 1: Supply and install "Infraset" or similar approved precast reinforced 45/19 concrete chamber wall elements 1000 mm high, 1500 mm internal diameter complete with step irons	No.	10		
4.1.43		Item 2: Supply and install "Infraset" or similar approved precast reinforced 45/19 concrete chamber roof slab 1500mm diameter	No.	10		
4.1.44		Item 3: Casting manhole frames into precast air valve slab as indicated on the drawings:	No.	10		
4.1.45		Item 4: Form 50 mm diameter holes through precast air valve chamber walls.	No.	160		
4.1.46		Item 5: Supplying and fixing 150 mm x 150 mm (heavy duty hot-dipped) galvanised expanded metal mesh 'Vitex' 30-2R (or similar approved) through middle of 50 diameter holes (wall centre) including all formwork and sealing	No.	160		
4.1.47		Item 6: Supply and construct 200mm deep chamber floor with 19mm Stone	m ²	15		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.1.48		Item 7: Construct 25/19MPa reinforced concrete ground beams according to detail drawing	No.	20		
4.1.49		Item 8: Supply and install 1:3 cement/sand mortar fillet all around the chamber	No.	10		
4.1.50		Item 9: Supply and install 600 x 600 GMS hinged covered frame for airvalves as per standard drawing detail Frame cast-in)	No.	0		
4.1.51		Item 10: Supply and install "Multilocks" (MC10M-T-L) with standard pop shackle and master	No.	10		
4.1.52	8.2.14 (b)	Extra over item 4.10.42 for chamber wall height exceeding 1000 mm per 250 mm additional depth	No.	20		
4.1.53	8.2.14 (a)	2) DOUBLE SCOUR VALVE MANHOLE (As per detail drawing J26137/302)				
4.1.53.1		Item 1: Supply and install 750mm diam Precast Concrete manhole rings to minimum height 1300mm	No.	6		
4.1.54		Item 2: Supply and install 25/19 MPa concrete cover slab (medium duty)	No.	6		
4.1.55		Item 3: Extra over item 4.10.55: Supply and cast polymer concrete municipal valve box type 3A by "Maverick Trading" or similar including cap and chain	No.	6		
4.1.56		Item 4: Supply and install 300x100 Grade 15/19 MPa Concrete footing (circular)	m ³	1		
4.1.57		Item 5: Supply and construct 150mm deep chamber floor with 19mm Stone	m ²	3		
4.1.58		Item 6: Supply and construct 150mm layer free-draining selected granular material compacted to 93% MOD AASHTO density	m ²	3		
4.2		ANCHOR/THRUST BLOCKS				
4.2.1		a) Reinforced concrete thrust blocks complete including concrete, rough formwork and steel (100kg/m3) as per detail drawings and excavation	m ³	40		
4.2.2		b) Mass concrete anchor blocks including rough formwork , as per detail drawing (including mass concrete portion of reinforced concrete anchor blocks)	m ³	15		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.2.3		c) Reinforced concrete thrust beam (for hydraulic testing) complete including excavation , concrete reinforcement (100kg/m3) and rough formwork	m ³	15		
4.2.4		d) Flanged 1.5m long Rilsan coated and lined puddle pipe as per detail drawing including steel to ductile iron adaptors and temporary blank flange (testing every 2000m and at each end)	m ³	3		
4.3		STRUCTURES				
4.3.1		ISOLATING AND AIR VALVE CHAMBER AT SLOPING AREAS (ref detail drawing J26137C/306)				
	SABS 1200DA	RESTRICTED EXCAVATION IN ALL MATERIALS FOR ISOLATING AND AIR VALVE CHAMBER AT SLOPING AREAS				
4.3.1.1		Site clearance	m ²	20		
4.3.2		Excavation	m ³	44		
	SANS 1200 GA 8.1.1.4	FORMWORK				
4.3.3	8.2.1	Rough vertical plane to outside of walls of chambers	m ²	20		
4.3.4	8.2.2	Smooth horizontal plane to roof soffit	m ²	16		
4.3.5	8.2.2	Smooth vertical to inside wall of chamber	m ²	18		
4.3.6	8.2.3	Rough vertical in narrow widths of 150mm thick at perimeter of roof slab	m	22		
4.3.7		Rough vertical to four sides of pedestal (280mm x 200mm x 400mm)	No.	4		
		Casting pipework in reinforced concrete walls up to 300mm thick, including maintaining strict line and level, to watertight condition for the following pipe diameter:				
4.3.8		DN300 ductile iron puddle pipe.	No.	4		
		UNFORMED SURFACE FINISH				
4.3.9	8.4.4	Wood float to roof slab	m ²	16		
4.3.10	8.4.4	Steel float to base slab	m ²	10		
		REINFORCEMENT				
CARRIED FORWARD						

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		BROUGHT FORWARD				
4.3.11	8.3.1	High tensile bars (12mm)	kg	146		
4.3.12		High tensile welded mesh: Mesh ref. 888 centrally placed	m ²	22		
	PSGA 8.4.1	CONCRETE Prescribed Mix Concrete				
		Concrete grade 15MPa/19mm				
4.3.13		50 mm blinding	m ²	22		
4.3.14		70mm to 25mm thick screed to chamber floor	m ³	2		
	PSGA 5.4.1.5	Strength concrete				
		Concrete grade 25MPa/19mm				
4.3.15		Roof slab of chamber	m ³	4		
4.3.16		Base slab of chamber	m ³	8		
4.3.17		Walls of chamber	m ³	6		
4.3.18		Sump of chamber	m ³	2		
4.3.19		Pedestal	m ³	2		
	8.2.4	JOINTS				
4.3.20		Slip joint with 2 ply malthoid over steel floated mortar bed	m	22		
	PSA 8.9	AIR VENTS				
4.3.21		Construct concrete air vent blocks into chamber roofs complete as shown on detail drawing J26137/210, including DN110 uPVC pipework, end cap with holes and gauze, formwork and mesh reinforcement:	No.	4		
4.3.22		Extra over for extended 110 mm diameter Class 6 uPVC pipe droppers inside chambers, including supply and installation of aluminium holderbats & drilling and grouting same into walls	m	8		
	SABS 1200HA	METAL WORKS FOR ISOLATING AND AIR VALVE CHAMBER AT SLOPING AREAS				
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.3.23		Supply and cast into chamber roof slab bar handle as in drawing No. J26137/306	No.	2		
4.3.24		Supply and cast into chamber roof slab 20mm diameter galvanized mild steel lifting eye as in drawing No. J26137/210	No.	2		
4.3.25		Supply and install 1200 x 1200 galvanized mild steel cover for roof slab	No.	2		
4.3.26		Supply and cast into chamber walls Step Irons 300 c/c vertical, 200 c/c horizontal staggered	No.	12		
4.4	PSL7	HYDRAULIC PRESSURE TESTING				
4.4.1		Allow for filling pipeline with water for testing	Sum	1		
4.4.2		Supply and install temporary blank flanges and/or spade pieces as required, provide temporary anchorages, and pressure test the pipeline and all fittings, valves and appurtenances	Sum	1		
4.5		MISCELLANEOUS				
4.5.1		PIPEWORK				
4.5.1.1	PSA 8.9	Supply and install pipeline markers as per detail drawing complete	No.	130		
4.5.2		Supply and install additional DN350 rubbers for laying of ductile iron pipes	No.	200		
4.5.3		INTERCONNECTION OF DAMAGED ASBESTOS CEMENT PIPELINE				
4.5.3.1		Replace exposed DN350 (CID) Asbestos Cement pipe in donga crossing with welded steel pipe, provide gabions and mass concrete as deemed necessary by the Engineer on site. Steel pipe will be 'free-issue' to the Contractor	PC Sum	1	750 000,00	750 000,00
4.5.4	SABS 1200DK	EROSION PROTECTION				
		SCOUR VALVE				
4.5.4.1	8.2.2	a) Supply and installation of 1m x 1m x 1m Gabion Basket constructed of PVC coated 2,7 mm galvanized wire, mesh size 80 x 100 mm, diaphragm spacing 1 m, selvedge 3,4 mm, including rock fill.	No.	3		
4.5.5	8.2.2	a) Supply and installation of a 6000mm x 230mm RENO Mattress on Geotextile	No.	3		
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
4.5.6	8.2.4	Geofabric (Bidim A4 or Similar approved)	m ²	18		
5		CONCRETE CHAMBERS ON DN350 GRAVITY MAIN.				
5.1		EXCAVATION				
5.2	SANS 1200DB	EXCAVATION (PIPE TRENCHES)				
	8.3.2 PSDB 8.1.4	(a) Excavate in all material for trenches backfill and dispose of surplus and unsuitable material. Rate to include for all temporary works including trimming, shoring and dewatering where necessary:				
		Over Up to and including				
5.2.1		0m 1,5m	m	6		
5.2.2		1.5m 2,5m	m	8		
5.2.3		2,5m 3,5m	m	2		
5.2.4		3,5m 4,0m	m	3		
5.2.5		Over 4,0m	m	2		
	8.3.2	(b) Extra over item 4.1.1 to 4.1.5 for excavation in:				
5.2.6		1) Intermediate material	m ³	7		
5.2.7		2) Hard rock (blasting)	m ³	3		
5.2.8		3) Hard rock excavation near residential buildings (Mounted hydraulic breaker where directed by the Engineer)	m ³	3		
5.2.9	8.3.2	(c) Excavate unsuitable material from the trench bottom and dispose of at spoil site. (Provisional)	m ³	12		
	SABS 1200DA 8.3.1 (c)	(b) Extra over item 4.1.1 to 4.1.5 for excavation in:				
5.2.10		1) Boulder excavation, Class A (Prov.)	m ³	3		
5.2.11		2) Boulder excavation, Class B (Prov.)	m ³	2		
5.3	SABS 1200DB 8.3.3	EXCAVATION ANCILLARIES				
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.3.1	8.3.3.1	Make up deficiency in backfill material: (Provisional) a) from other necessary excavations on site	m ³	18		
5.3.2	8.3.3.3	Selected fill material compacted in 150 mm thick layers to 93% Mod AASHTO in road reserve. Location and depths to be specified by Engineer (Prov)	m ³	18		
5.3.3	PSDB 8.5	Stabilise backfill on steep slopes using precast concrete lintel beams as per drawing J26137/208	No.	2		
	8.3.6	FINISHING				
5.3.4	8.3.6.1	a) Reinststate gravel finishing roads and drainage after construction (Remove spoil and other foreign material from road surface, fill in pockets with G6/G7 gravel and compact to 95% mod AASHTO to form even travelling surface)	m ³	4		
5.4		BEDDING				
5.5	SANS 1200LB PSL 8.2.5	BEDDING FROM TRENCH EXCAVATIONS (PIPES)				
	8.2.1	Provision of bedding material from trench excavations				
5.5.1		a) Selected granular material	m ³	45		
5.6		BEDDING IMPORTATION				
	8.2.2	Provision of bedding material importated from commercial sources/ approved borrow pits selected by the Contractor				
5.6.1		a) Selected granular material	m ³	130		
5.7		PIPEWORK				
5.8	SANS 1200L	MEDIUM PRESSURE PIPELINES: STEEL				
5.8.1	8.2.1	Supply, Lay, joint, bed, test. Including all cutting and preparation as required, welding, and making good of all internal linings and external coatings and keeping clean as laying progress and flushing pipes before filling, all as specified:				
	PSL 3.9.2.2	Grade X42 steel, 12m long, bell ended one side Cement mortar lined and 'Sintakote'" or 3LPE coated pipe:				
CARRIED FORWARD						

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.8.2		4.5mm thick steel pipes a) DN 350	m	24		
	PSL 8.18	Extra over item 6.1.2 for stabilising bedding material and selected backfill material with 8% cement for:				
5.8.3		a) Backfilling over/around pipes on steep slopes (where directed by the Engineer)	m ³	-		Rate Only
5.8.4		b) Road reserve and water crossings, over/around pipes (where directed by the Engineer)	m ³	-		Rate Only
5.9	SANS 1200L	PIPE FITTINGS STEEL				
	8.2.2	Supply, fabrication, handling, laying, jointing by welding, testing and bedding of DN300 bends including for making good internal linings, external coatings and for all corrosion protection measures:				
5.9.1		Bend 60° to 75° degree (6 segment bend):	No.	1		
	8.2.2	Supply, fabrication, handling, laying, jointing by welding, testing and bedding of DN350 bends including for making good internal linings, external coatings and for all corrosion protection measures:				
5.9.2		Bend 45° to 60° degree (5 segment bend):	No.	1		
	PSL 8.2.15	Special wrapping in Corrosive soils for flanges, adaptor joints and valves as per PSL 3.9.2.11				
5.9.3		a) DN350 CUTTING INTO EXISTING PIPELINES	No.	3		
CARRIED FORWARD						

CONTRACT: MIS 262 984 C
 CONTRACT TITLE: UPPER MHLAHLANE EXT WATER SUPPLY:
 COMPLETION OF BULK RISING MAIN AND BULK GRAVITY MAIN

BILL OF QUANTITIES

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
	PSL 8.2.17	Allow for everything necessary to carry out the removal of existing pipes and installation of new connections and/or closures. Rates are to include for all excavation, carefully exposing the existing pipelines, making arrangements with the Employer's staff to temporarily shut off the existing pipelines to facilitate making the connections, cleaning and preparing the pipes for cutting, cutting, dealing with all water (including that from leaking valves), preparing the pipe ends for jointing, welding / jointing, and connecting the new pipework, making good internal linings, and external coatings, re-commissioning the pipeline, and including all temporary supports, bedding and backfill, and loading and transporting of removed sections to the pipe yard. The whole installation is to be completed within a maximum of 8 hours. (All new pipes, valves and fittings that are required Connection to existing pipework at Mthatha River (The work shall include all material, installations and all other costs necessary for complete installation as directed by the Engineer). See connection detail on drawing Dwg No.J26137 /211				
5.9.4		Install DN 350, G.M.S puddle pipe flanged both ends length (Approx1200). Puddle flange 600mm from flanged end of pipe.	No	2		
5.9.5		Install Flanged DN350 wedge gate valve with non rising spindle and hand wheel.	No	2		
5.9.6		Install DN 350 dismantling joint complete with bolts.	No	2		
5.9.7		Install DN350 flanged pipe,1700mm long with DN350 45°branch. Centre to flange of branch 1100mm. Branch=420mm from one end of pipe	No	1		
5.9.8		Install DN350 G.M.S puddle pipe with elliptical puddle flange (approx length 2100)puddle flange 45° to pipe 1000mm from one end of	No	1		
5.9.9	8.2.14 (a)	2) DOUBLESCOUR VALVE MANHOLE (As per detail drawing J26137C/204)				
5.9.10		Item 1: Install 750mm diameter Precast Concrete manhole rings to minimum height 1300mm	No.	6		
CARRIED FORWARD						

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 CONTRACT TITLE: UPPER MHLAHLANE EXT WATER SUPPLY:
 COMPLETION OF BULK RISING MAIN AND BULK GRAVITY MAIN

BILL OF QUANTITIES

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.9.11		Item 2: Install 25/19 MPa concrete cover slab (medium duty)	No.	6		
5.9.12		Item 3: Extra over item 6.4.15: Supply and cast polymer concrete municipal valve box type 3A by "Maverick Trading" or similar including cap and chain	No.	6		
5.9.13		Item 4: Supply and install 300x100 Grade 15/19 MPa Concrete footing (circular)	m ³	1		
5.9.14		Item 5: Supply and construct 150mm deep chamber floor with 19mm Stone	m ²	3		
5.9.15		Item 6: Supply and construct 150mm layer free-draining selected granular material compacted to 93% MOD AASHTO density	m ²	3		
5.10		STRUCTURES				
5.10.1		3) BIFURCATION CHAMBER (ref detail drawing J26137/211/)				
	SANS 1200GA	FORMWORK				
	8.1.1.4					
5.10.1.1	8.2.1	Rough vertical plane to outside of walls of chambers	m ²	25		
	8.2.4	Casting pipework in box-cut in reinforced concrete walls up to 300mm thick, including maintaining strict line and level, to watertight condition for the following pipe diameter:				
5.10.2		DN350 steel puddle pipe.	No.	6		
		Box out holes in roof slabs up to 300 mm thick for manhole frames (measured elsewhere) as indicated on the drawings:				
5.10.3		c) Form box-out hole for manhole cover and frame Type 1B as per detail drawing.	No	2		
5.10.4		3) 800 x 800mm frame	No.	4		
5.10.5		4) "Maverick" cover	No.	2		
		UNFORMED SURFACE FINISH				
5.10.6	8.4.4	Wood float to roof slab	m ²	5		
5.10.7	8.4.4	Steel float to base slab	m ²	5		
CARRIED FORWARD						

CONTRACT: MIS 262 984 C
 CONTRACT TITLE: UPPER MHLAHLANE EXT WATER SUPPLY:
 COMPLETION OF BULK RISING MAIN AND BULK GRAVITY MAIN

BILL OF QUANTITIES

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
		REINFORCEMENT				
5.10.8	8.3.1	High tensile bars (all sizes)	kg	6700		
		Mild steel bars (all sizes)				
		CONCRETE				
	PSGA 8.4.1	Prescribed Mix Concrete				
		Concrete grade 15MPa/19mm				
5.10.9		50 mm blinding	m ²	22		
5.10.10		100mm to 30mm thick screed to chamber floor	m ³	1		
	PSGA 5.4.1.5	Strength concrete				
		Concrete grade 25MPa/19mm				
5.10.11		Roof slab of chamber	m ³	15		
5.10.12		Base slab of chamber	m ³	35		
5.10.13		Walls of chamber	m ³	14		
5.10.14		Sump of chamber	m ³	2		
	8.5	JOINTS				
5.10.15		Slip joint with 2 ply malthoid over steel floated mortar bed	m	33		
5.11	SABS 1200HA	3) METAL WORKS FOR BIFURCATION CHAMBER AT SLOPING AREAS				
		Supply everything necessary, fabricate, handle and install the following fabricated steel elements complete, including all anchors, fixings, bolts, welding, hot dip galvanising, site measurement prior to fabrication, and fixing/casting in position, all as detailed on the drawings:				
5.12		Supply and install galvanised steel pipe supports in chambers as shown in detail drawing J26137C/211	No	9		
	PSA 8.9	MANHOLE COVERS AND FRAMES				
5.13		Supply and install galvanised mild steel manhole cover and frame as per detail drawing for the following sizes;	No	0		
CARRIED FORWARD						

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 COMPLETION OF BULK RISING MAIN AND BULK GRAVITY MAIN

BILL OF QUANTITIES

BILL:

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
5.14		1500mm square	No	1		
		HYDRAULIC PRESSURE TESTING				
5.15	PSL7	Allow for filling pipeline with water for testing	Sum	1		
5.16		Supply and install temporary blank flanges and/or spade pieces as required, provide temporary anchorages, and pressure test the pipeline and all fittings, valves and appurtenances	Sum	1		
5.17		MISCELLANEOUS				
5.17.1		PIPEWORK				
5.17.1.1	PSA 8.9	Supply and install pipeline markers as per detail drawing complete	No.	15		
5.17.2	PSL 8.2.17	Make connection to existing flange at reservoir flange at inlet chamber(fitting measured separately)	sum	1		
5.17.3	SABS 1200DK	EROSION PROTECTION				
		SCOUR VALVE				
5.17.3.1	8.2.2	a) Supply and installation of 1m x 1m x 1m Gabion Basket constructed of PVC coated 2,7 mm galvanized wire, mesh size 80 x 100 mm, diaphragm spacing 1 m, selvedge 3,4 mm, including rock fill.	No.	3		
5.17.4	8.2.2	a) Supply and installation of a 6000mm x 230mm RENO Mattress on Geotextile	No.	3		
5.17.5	8.2.4	Geofabric (Bidim A4 or Similar approved)	m ²	18		
TOTAL FOR BILL CARRIED FORWARD TO SUMMARY						