

**CHIEF ALBERT LUTHULI MUNICIPALITY  
EXTENTION OF BULK AND NETWORK SEWER AT EMANZANA  
CONTRACT No. ALMP04/2014  
MANZANA WASTE WATER TREATMENT PLANT UPGRADE  
CONSTRUCTION OF REINFORCED CONCRETE STRUCTURES AND ASSOCIATED CIVIL WORKS**

**BILL OF QUANTITIES SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
A1	Preliminary & General	
A2	Earthworks	
A3	Concrete Works	
A4	Brick And Plaster	
A5	Steel and Metal Work	
A6	Pipework	
A7	Sundries	
<b>SUBTOTAL 1</b>		
Add: 10% Allowance for Contingencies		
<b>SUBTOTAL 2</b>		
Add: 8% Allowance for Escalation		
<b>SUBTOTAL 3</b>		
Add: VAT @ 15%		
<b>PROJECT TOTAL</b>		

CHIEF ALBERT LUTHULI MUNICIPALITY  
MANZANAWASTE WATER TREATMENT PLANT UPGRADE  
CONTRACT No. ALMT10/2023: EMANZANA WASTEWATER TREATMENT PLANT UPGRADE - CIVIL ENGINEERING WORKS  
SECTION A: PRELIMINARY AND GENERAL

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SABS 1200A	SECTION A: PRELIMINARY AND GENERAL				
A1	PSA 8.2.1	Fixed - Charge Items				
A1.1	8.3.1	Contractual requirements	Sum	1		
	8.3.2	Establish Facilities on Site				
A2	8.3.2(a)	Facilities for the Engineer (SABS 1200 AB):				
A2.1		Nameboard as detailed on Drawing	Sum	2		
A2.2		Survey equipment	Sum	1		
A2.3		Furnished Site Office	Sum	1		
A3	8.3.2(b)	Facilities for the Contractor:				
A3.1		Offices, storage sheds, workshops, living accommodation, ablution and latrine facilities, tools and equipment, water supplies, electric power, communications, access and plant as per the Contractor's requirements	Sum	1		
A4	PSA 5.5	Dealing with water:				
A4.1		Generally on site	Sum	1		
A5	8.3.3	Other fixed charge obligations	Sum	1		
A6	8.3.4	Remove Contractor's site establishment on completion	Sum	1		
A7	PE	Preparation of risk assessments, safe work procedures, the project H&S file, the H&S plan, the provision of PPE and protective clothing, and other H&S matters that the contractor deems necessary	Sum	1		
A8	PE	Completing and checking the project H&S file and handing over to the Client on completion of the works	Sum	1		
A8.1		Provision of full time OHS Officer for the duration of construction	Sum	1		
A9	PES	Complying with the Environmental Specification	Sum	1		
		Supervision of Subcontractors	Sum	1		
	PSA 8.2.2	Time Related Items				
A10	8.4.1	Contractual requirements	Month	12		
A11	8.4.2	Operate and maintain facilities on the site for the duration of construction:				
A11.1	8.4.2.1	Facilities for the Engineer:				
A11.1.1		Nameboard as detailed on Drawing N° J014-09	Month	12		
A11.1.2		Survey Equipment (including the use of a trained survey assistant)	Month	12		
A11.1.3		Engineer's site office	Month	12		
A11	8.4.2(b)	Facilities for the Contractor:				
A11.1		Contractor's establishment as per Item A.3	Month	12		
A12	PSA 5.5	Dealing with water:				
A12.1		Generally on site	Month	12		
A.13	8.4.3	Supervision for duration of construction	Month	12		
A14	PE	Updating and amending the risk assessments, safe work procedures, the project H&S file, the H&S plan, the provision of PPE and protective clothing and any other H&S matters that the contractors deems necessary	Month	12		
A15	PE	Full compliance with all H&S matters during the construction of the works under the contract	Month	12		
A16	PES	Complying with the Environmental Specification	Month	12		
A17	8.4.3	Other time related obligations	Month	12		
	8.5	Provisional Sums				
A18		Geotechnical investigations and inspections and surveys	Sum			250 000.00
A19		Relocation of existing services and fences where ordered	Sum			10 000.00
A20		Locating existing services, only where ordered by the Engineer	Sum			100 000.00
A21		Provisional sum for compliance requirements	Sum			500 000.00
A22		Independent inspector for the inspection of pipework and foundations, where ordered by the Engineer	Sum			200 000.00
A23		CLO Salary	Sum			90 000.00
A24		ER cell phone costs	Sum			10 000.00
A25		ER accommodation costs	Sum			50 000.00
A26		OHS Audits by H&S Practitioner	Sum			300 000.00
A27		Environmental Audits by ECO	Sum			300 000.00
A28		Contractor's mark-up	%	1 810 000.00		
		Dayworks				
A29		Labour	Sum	1		50 000.00
A30		Materials	Sum	1		50 000.00
A31		Plant	Sum	1		100 000.00
TOTAL FOR SECTION A CARRIED TO SUMMARY :						

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## SECTION B: EARTHWORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<b>SECTION B: EARTHWORKS</b>				
		<b>Site Clearance</b>				
B1.1	8.2.1	Clear and grub vegetation	ha	6000		
	<b>SABS 1200D</b>	<b>Excavation</b>				
B2	8.3.1.2	Remove topsoil to a nominal depth of 150mm, stockpile & maintain for further use	m <sup>2</sup>	5000		
B3	8.3.2	Bulk excavation for structures in all materials & use as backfill or embankment or dispose of on site as ordered for:				
B3.1		Biological reactor	m <sup>3</sup>	1441		
B3.2		Clarifier	m <sup>3</sup>	1422		
B3.3		Return sludge sump and pumpstation	m <sup>3</sup>	67		
B3.4		Sludge drying beds	m <sup>3</sup>	1741		
B3.5		Minor chambers and structures	m <sup>3</sup>	56.4		
B4	8.3.3	Extra-over Items B3 for (PROVISIONAL):				
B4.1		Intermediate excavation	m <sup>3</sup>	400		
B4.2		Hard rock excavation	m <sup>3</sup>	6000		
B4.3		Boulder excavation Class A	m <sup>2</sup>	100		
B4.4		Boulder excavation Class B	m <sup>3</sup>	100		
		<b>Restricted Excavation</b>				
B5	8.3.3	Excavate for footings and restricted foundations in all materials and use as backfill or embankment or dispose, as ordered	m <sup>3</sup>	150		
B6	8.3.3	Extra-over Items B5 for (PROV):				
B6.1		Intermediate excavation	m <sup>3</sup>	15		
B6.2		Hard rock excavation	m <sup>3</sup>	20		
B6.3		Boulder excavation Class A	m <sup>3</sup>	5		
B6.4		Boulder excavation Class B	m <sup>3</sup>	5		
		<b>Embankments</b>				
B7		Import suitable fill material and form embankments around structures including adding water and compacting to 96% MOD AASHTO (PROV)	m <sup>3</sup>	3000		
B8.1	8.3.4	Import hardcore 100mm thick from commercial sources, place and compact to 96% MOD AASHTO	m <sup>3</sup>	200		
B9		Allow the Provisional Sum of R15,000.00 for the Engineer's soil tests	Sum	15000		
B.9.1		.....% to cover all expenses on item B9	Sum	0		
		<b>Topsoiling and Grassing</b>				
B10	8.3.10	Topsoiling from stockpiles to a nom. depth of 100mm on embankments, terraces and designated areas	m <sup>2</sup>	1002		
B11	8.3.11	Grassing to embankments, terraces and designated areas	m <sup>2</sup>	1002		
	<b>SABS 1200DB</b>	<b>Trenching</b>				
B13	8.3.2	Excavate in all materials for trenches, backfill, compact or dispose of surplus / unsuitable material, for:				
B13.1		Pipes up to 400mm dia for depths:				
		Over and Up to:				
B13.1.1		0,0 m 1,0m	m	600		
B13.1.2		1,0m 1,5m	m	400		
B13.1.3		1,5m 2,0m	m	1000		
B14	8.3.2(b)	Extra-over Items B13 incl. for (PROV):				
<b>CARRIED FORWARD</b>						

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SECTION B: EARTHWORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
BROUGHT FORWARD						
B14.1		Intermediate excavation	m³	100		
B14.2		Hard rock excavation	m³	300		
B15	SABS 1200 DB	Imported Backfill Material				
B15.1	8.3.3.1	Imported backfill material from commercial sources	m³	350		
		Surface Water Channels				
		Subsoil Drainage				
B16		Supply and install subsoil drain pipe including excavation and backfilling	m	200		
B17		1000mm wide x 300mm deep 'V' drain to nearby river for storm water drainage	m	300		
TOTAL FOR SECTION B CARRIED TO SUMMARY :						0.00

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## SECTION C: CONCRETE WORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SABS 1200G 1982	SECTION C: CONCRETE WORK				
	8.1.3	Concrete				
C1	8.4.2	Blinding layer in 15 Mpa / 20mm concrete:				
C1.1		50mm minimum thickness	m <sup>2</sup>	800		
C2	8.4.3	No-fines layer in 1:8 cement:stone				
C2.1		75mm minimum thickness under floors	m <sup>2</sup>	749		
C2.2		Around sumps and elsewhere as ordered	m <sup>3</sup>	2		
C2.3		Strength concrete				
C3	8.4.3	Strength concrete Grade 10 Mpa/40mm:				
C3.1		Mass filling where ordered(PROV.)	m <sup>3</sup>	10		
C3.2	8.4.3	Strength concrete Grade 15 Mpa/20mm:				
C3.2.1		Encasing to pipes under structures and mass concrete stairs.	m <sup>3</sup>	40		
C3.2.2		Benching	m <sup>3</sup>	20		
C3.2.3		Footings to brick walls at sludge drying beds	m <sup>3</sup>	50		
C3.2.4		False floors	m <sup>3</sup>	25		
C3.2.5		Manhole bases, headwalls, valve and meter chamber bases	m <sup>3</sup>	5		
C4		Strength concrete Grade 20 mPa/19mm:				
C4.1		Sludge drying beds floor slab, 75mm thick	m <sup>3</sup>	121		
C4.2		Strength concrete Grade 20 Mpa/19mm complete with formwork, etc. to anchor block and isolated minor structures, where ordered (PROV)	m <sup>3</sup>	50		
C5	8.4.3	Strength concrete Grade 25 Mpa/19mm:				
C5.1	8.4.3	Floors, foundations, roof beams and slabs to control house and other non-water retaining structures	m <sup>3</sup>	80		
C6	8.4.3 PSGS.5.1.7	Strength concrete Grade 35 Mpa/19mm:				
C6.1		Reactor floor, wall foundations, walls, platforms and walkways and outlet boxes	m <sup>3</sup>	600		
C6.2		Clarifier ring footing, ring wall, launder, floor slab, central foundation and column, outlet box and scum outlet boxes	m <sup>3</sup>	145		
C6.3		Sludge sump and pumpstation	m <sup>3</sup>	15		
C6.4		Splitter boxes and other minor structures	m <sup>3</sup>	20		
C7	8.6	Supply and install precast Grade 25 Mpa/15mm concrete elements:				
C7.1		2875mm long x 760 wide x 100 thick panels at clarifier baffle	N°	12		
C7.3		Slab 1000 x 1000 x 75mm for drying beds	N°	10		
	8.1.2	Reinforcement				
C8	8.3.1	Mild steel bars up to and including 12mm basic price (PROV)	t	1		
C9	8.3.1	High tensile steel bars 25mm dia, basic price (PROV)	t	200		
C10		Extra-over Item C9 (provisional quantities) for bars of diameter:				
C10.1		10mm	t	1		
C10.2		12mm	t	39		
C10.3		16mm	t	36		
C10.4		20mm	t	30		
C11	8.1.2.3c	High tensile welded mesh (PROV):				
C11.1		Type reference 359	m <sup>2</sup>	50		
C11.2		Type reference 245	m <sup>2</sup>	1698		
C11.3		Type reference 617	m <sup>2</sup>	200		
	8.1.1	Formwork:				
C12	8.2.1	Rough vertical plane to concealed surfaces:				
C12.1		External straight faces of structures	m <sup>2</sup>	83		
C12.2		External battered face of reactor peripheral wall	m <sup>2</sup>	506		
C12.3		Clarifier central foundation	m <sup>2</sup>	20		
C13	8.2.1	Rough horizontal to concealed surfaces:				
C13.1		Soffit of clarifier launder	m <sup>2</sup>	65		
C13.2		Soffits of reactor and clarifier outlet boxes	m <sup>2</sup>	40		
C14	8.2.1	Rough curved vertical to concealed surfaces:				
C14.1		External face of clarifier walls from level 724.00 down	m <sup>2</sup>	201		
C14.2		Clarifier foundation ring beam	m <sup>2</sup>	60		
C15	8.2.2	Smooth vertical plane to:				
C15.1		External exposed faces and internal faces of reactor walls	m <sup>2</sup>	955		
CARRIED FORWARD						

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## SECTION C: CONCRETE WORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>						
C15.2		Clarifier central channel and outlet boxes	m <sup>2</sup>	56		
C15.3		Return sludge sump and pumpstation walls	m <sup>2</sup>	129		
C16	8.2.2	Smooth horizontal to:				
C16.1		Soffit of clarifier column head and baffle platform	m <sup>2</sup>	198		
C17		Smooth sloping to top surface:				
C17.1		Reactor and clarifier outlet boxes benching	m <sup>2</sup>	93		
C17.2		Sludge sump	m <sup>2</sup>	1		
C17.3		Clarifier 400 x 400 conical splays at central column	m <sup>2</sup>	10		
C18	8.2.2	Smooth curved vertical to:				
C18.1		External exposed and internal face of clarifier ring wall	m <sup>2</sup>	360		
C18.2		Clarifier central column including for fixing in place stainless steel inlet pipe	m <sup>2</sup>	153		
C19	8.2.5	Narrow widths:				
C19.1		Vertical 0 - 150 wide	m	100		
C19.2		Vertical 151-300 wide	m	197		
C20		Sloping to tops of weirs:				
C20.1		100 x 50	m	1		
C20.2		100 x 50 peripheral at clarifier launder	m	59		
C21		Horizontal to soffits:				
C21.1		0-150 wide	m	25		
C22		Grooves and Ducts				
C22.1		40 x 40mm rebate for open flooring	m	33		
C23	8.2.6	Box out holes of area up to and including 0,1m <sup>2</sup> , for depths:				
		Over and Up to				
C23.1		0,00m 0,25m	N°	3		
C23.2		0,25m 0,50m	N°	5		
C24	8.2.6	Box out holes of area up to 0,5m <sup>2</sup> , for depths:				
		Over and Up to				
C24.1		0,00m 0,25m	N°	6		
C24.2		0,25m 0,50m	N°	6		
C25	8.2.6	Box out holes of area over 0,5m <sup>2</sup> and up to 1m <sup>2</sup> for depths:				
		Over and Up to				
C25.1		0,00m 0,25m	N°	5		
C25.2		0,25m 0,50m	N°	5		
C25.3		0,5m 0,750m	N°	5		
C26		Setting the following pipes or fittings into or through concrete work, including for forming formwork around the pipes and fixing the pipes to the designated lines and levels (pipes measured elsewhere)				
C26.1		Pipes not exceeding 150mm NB	N°	12		
C26.2		Pipes greater than 150 and up to 250mm NB	N°	8		
C26.3		Pipes greater than 250 and up to 400mm NB	N°	6		
C27		Supply and cast into concrete the following plain ended pipes as drains or as sleeves for electric cables including bends and for all cutting and waste and for supply and installation of all loose sockets and for jointing in accordance with the manufacturer's instructions:				
C27.1		75mm NB HDPE to clarifier central column including draw wire	m	25		
C27.2		Cable sleeves for aerators and mixers as detailed	m	52		
C28	8.5	Joints				
C28.1		Reactor wall joints as detailed	m	45		
<b>CARRIED FORWARD</b>						

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SECTION C: CONCRETE WORKS

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
BROUGHT FORWARD						
C28.2		Reactor and clarifier floor joints as detailed	m	173		
C29	8.4.4	Unformed Surface Finishes				
C29.1		Wood floated finish	m²	65		
C29.2		Steel floated finish	m²	2410		
C30		Special steel floated finish for sliding joints including dusting with neat cement and applying two coats of approved bituminous paint	m²	12		
C31		As for item C30 above for Clarifier wheel tracks	m²	19		
C32		Supply and lay screed to clarifier floors, including for preparing surfaces of concrete, laying in panels and narrow widths, levelling screed to suit rotating mechanism and finishing with steel trowel: (Screed to be laid under the supervision of the M&E Contractor after rotating mechanism has been installed.)	m²	50		
C34		Testing units for watertightness ,including waterfor testing the structures and taking all precautions to ensure the soundness of the structures in this respect:				
C36		50mm thick Mortar Screed on No fines Concrete	m²	900		
C37		PVC Coated Geomesh	m²	1400		
C38		PVC Sheeting	m²	1800		
C39		Testing for Watertightness				
C39.1		Reactor	Sum	1		
C39.2		Clarifier	Sum	1		
C39.3		Chambers and sumps (max 50m3)	No	4		
TOTAL FOR SECTION C CARRIED TO SUMMARY :						

## MANZANAWASTE WATER TREATMENT PLANT UPGRADE

## SECTION D: BRICKWORK AND PLASTER

C11



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## SECTION E: STEEL AND OTHER METALWORK

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<b>SECTION E: STEEL AND OTHER METALWORK</b>				
E3		Aluminium sluice gates and frames suitably designed for installation in the following channels ( Contractor to supply drawings or brochures of proposed gates and frames at tender stage)				
E3.1		850 wide x 1200mm deep at mixed liquor outlet	N°	2		
E3.4		Gate and frame at sludge drying beds (3 N° gates per set)	N°	20		
E4		Stainless steel tubular handrailing assemblies complete and installed:				
E4.1		Horizontal	m	96		
E4.2		Shaped ends	N°	12		
E5		Supply and build in galvanised malleable cast iron stepirons as specified	N°	30		
E6		Supply and install open grid flooring	m²	10		
E7		Supply and install crawl beam and chain block in pumpstation building	sum	1		
		Supply and install fibreglass baffles,450mm wide x 2880mm long at clarifier inlet	sum	1		
<b>TOTAL FOR SECTION E CARRIED TO SUMMARY :</b>						

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SECTION F: PIPEWORK

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<b>SECTION F: PIPEWORK</b>				
F1	SABS 1200LB	<b>Pipe Bedding</b>				
F1.1	8.2.1	Provision of bedding from trench excavation and/or other excavations without the need for screening or other treatment				
F1.1.1		Selected granular material	m <sup>3</sup>	115		
F1.1.2		Selected fill material	m <sup>3</sup>	115		
	8.2.2	Provision of bedding from trench excavation and/or other excavations including for screening and/ or other treatment				
F1.2.1		Selected granular material	m <sup>3</sup>	200		
F1.2.2		Selected fill material	m <sup>3</sup>	200		
F1.3		Supply of bedding from commercial sources, where ordered incl. all costs for additional handling and transport:				
F1.3.1		Selected granular material	m <sup>3</sup>	300		
F1.3.2		Selected fill material	m <sup>3</sup>	300		
F2		<b>Pipe Laying</b>				
F2.1	SABS 1200L	uPVC pipes in 6 m lengths (SABS 966-2)				
		Supply, handle lay joint and test uPVC pipes and fittings in bedding for flexible pipes				
F2.1.1		160mm dia Class 12	m	400		
F2.1.2		200mm dia Class 12	m	469		
F2.1.3		355mm dia Class 12	m	243		
F2.1.4		400mm dia Class 12	m	0		
F2.1.5		E O Item F2.1.1 and F2.1.2 cutting pipes to length to suit on site and for bevelling of ends	N°	12		
F2.1.6		E O items F2.1.3 and F2.1.4 for cutting pipes to length to suit on site and for bevelling of ends	N°	0		
		<b>uPVC bends (Z Lok one end)</b>				
F2.1.8		160mm dia x 11¼° bend	N°	8		
F2.1.9		160mm dia X 22½ bend	N°	12		
F2.1.10		160mm dia x 45° bend	N°	5		
F2.1.11		160mm dia x 90° bend	N°	24		
F2.1.16		355mm dia x 11¼° bend	N°	1		
F2.1.17		355mm dia x 22½° bend	N°	1		
F2.1.18		355mm dia x 45° bend	N°	1		
F2.1.19		355mm dia x 90° bend	N°	1		
F2.1.20		400mm dia x 11¼° bend	N°	1		
F2.1.21		400mm dia x 22½° bend	N°	1		
F2.1.22		400mm dia x 45° bend	N°	1		
F2.1.23		400mm dia x 90° bend	N°	1		
		Z lok cast iron fittings for PVC pipes - flanges to SABS 1123 - Table 1200				
F2.1.24		100mm x 100mm pe tee	N°	1		
F2.1.25		100mm dia CI FL adaptor	N°	1		
F2.1.30		200mm dia CI FL adaptor	N°	8		
F2.1.27		355mm dia CI FL adaptor	N°	4		
F2.1.31		400mm dia CI FL adaptor	N°	1		
F2.2		<b>Steel Pipes and Specials. (Flanges Table 1200/3 SABS 1123)</b>				
		Supply, handle, lay, joint and test mild steel pipes and fittings. Rate to include for all bolts, nuts, gaskets, jointing material, etc.				
		<b>Pipes</b>				
F2.2.1		100mm dia x 1000mm long FL/PE puddle pipe with puddle collar 0.1mm from PE	N°	1		
F2.2.2		200mm dia x 0.7m long FL/PE puddle pipe with puddle collar 0.115m from PE	N°	1		
F2.2.3		350mm dia x 0.7m long FL/PE puddle pipe with puddle collar 0.115m from PE	N°	2		
F2.2.4		400mm dia x 0.7m long FL/PE puddle pipe with puddle collar 0.115m from PE	N°	1		
CARRIED FORWARD						

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## SECTION F: PIPEWORK

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>						
F2.2.5		100mm dia x 1.1m long D/FL pipe	N°	3		
		<b>Bends</b>				
F2.2.6		100mm dia x 90° D/FL bend 300mm C/F - 3 segment	N°	14		
F2.2.7		100mm dia x 90° FL/PE bend 300mm C/F - 3 segment	N°	14		
F2.2.8		350mm dia x 90° D/FL bend 230mm C/F - 3 segment	N°	2		
		350mm dia FL/PE 106° bend	N°	1		
		<b>Tees</b>				
F2.2.9		100mm dia x 100mm dia D/FL tee 350mm C/F	N°	12		
F2.2.10		200mm dia x 200mm dia D/FL tee 400mm C/F	N°	2		
		<b>Couplings, Flange Adaptors and Blank Flanges</b>				
F2.2.11		350mm dia flexible coupling for connecting to OD of 350mm dia. Pe MS pipes	N°	5		
F2.2.12		350mm dia flange adaptor joint	N°	2		
		<b>Valves</b>				
F2.2.13		Supply, handle, lay and test SABS approved, wedge gate valves. Rate to include for all nuts, bolts, gaskets and jointing material				
		<b>Valves</b>				
F2.2.14		100mm dia gate valve with handwheel	N°	17		
F2.2.15		<b>Assembly 1</b>				
F2.2.16		160mm dia Perforated Pipe	m	250.00		
F2.2.18		100mm dia RAS Magflow Meter Chamber				
F2.2.19		200mm flange Adaptor	No	2		
F2.2.20		200mm x 630 mm Gaw Puddle pipe	No.	2		
F2.2.21		200mm x 100 mm Gaw Reducing Tee	No.	2		
F2.2.22		100mm x 1665 mm Gaw Pipe	No.	1		
F2.2.23		200mm x 100 mm Gaw Reducer	No.	2		
F2.2.24		100mm x 500 mm Gaw Pipe	No.	1		
F2.2.25		114mm Flex fim Adaptor	No.	1		
F2.2.26		100mm x 300mm Gaw Pipe	No.	1		
F2.2.27		200mm Gasket	No.	8		
		100mm dia WAS Magflow Meter Chamber				
		150mm x 630mm Gaw Puddle pipe	No.	2		
		150mm x 100mm Gaw Reducing Tee	No.	2		
		100mm x 1590mm Gaw Pipe	No.	1		
		150mm x 100mm Gaw Reducer	No.	2		
		100mm x 500mm Gaw Pipe	No.	1		
		114mm Flex fim Adaptor	No.	1		
		100mm x 300mm Gaw Pipe	No.	1		
F2.2.28		100mm Gasket	No.	9		
		<b>Assembly 2</b>				
		150mm dia valve with SQ Cap	No.	2		
		150mm dia x 0.6m long D/FL	No.	2		
		150mm dia x 5.10m long	No.	3		
		150mm dia x 0.45m long FL/PE pipe	No.	5		
		150mm dia x 2.0 mm long FL/PE pipe	No.	1		
		<b>Assembly 3</b>				
		150mm dia x 7.150m long D/FL Pipe	No.	1		
		150mm dia x 0.6m long D/FL Pipe	No.	4		
		150mm dia x 0.8m long FL/PE Pipe	No.	1		
		150mm dia x 7.750m long D/ FL	No.	1		
		<b>Assembly 5</b>				
		350mm dia x 4.50m long FL/PE Pipe	No.	1		
		<b>Assembly 6</b>				
		200mm dia x 80 deg PE Bend	No.	1		
		200mm dia x 1.20m long FL/PE	No.	1		
		200mm dia x 0.8m long D/FL Puddle	No.	1		
		200mm dia Valve	No.	1		
		200mm dia x 90 deg Bend	No.	1		
		200mm dia x 0.58m long FL/PE	No.	1		
		<b>Assembly 7</b>				
		350mm dia FL Adaptor for uPVC	No.	1		
		350mm dia x 0.5mm long FL/PE Puddle	No.	1		
<b>CARRIED FORWARD</b>						

CHIEF ALBERT LUTHULI MUNICIPALITY  
MANZANAWASTE WATER TREATMENT PLANT UPGRADE  
CONTRACT No. ALMT10/2023: EMANZANA WASTEWATER TREATMENT PLANT UPGRADE – CIVIL ENGINEERING WORKS  
SECTION F: PIPEWORK

ITEM No.	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>						
		<b>Assembly 8</b>				
		200mm dia x 90 deg D/FL	No.	4		
		200mm dia x 1.25m long D/FL	No.	2		
		200mm dia x 0.5m long FL/PE	No.	2		
		<b>Assembly 9</b>				
		200mm dia x 1.75m long D/FL Pipe	No.	1		
		200mm dia x 90 deg D/FL	No.	2		
		<b>Assembly 10</b>				
		150mm dia x 90 deg D/FL Bend	No.	4		
		150mm dia x 1250mm long D/FL Pipe	No.	2		
		150mm dia x 150mm dia Tee FL/PE	No.	1		
		150mm dia VJ FL Adaptor	No.	2		
		160mm dia FL Adaptor	No.	6		
		150mm dia x 0.45m long FL/PE	No.	1		
		<b>Assembly 11</b>				
		150mm dia x 90 deg D/FL	No.	2		
		150mm dia x 1500mm long D/FL	No.	1		
		160mm dia FL Adaptor for u PVC	No.	1		
		150mm dia x 3.90m long D/FL Pipe	No.	1		
		150mm dia x 150mm dia Flanged Tee	No.	1		
		150mm dia - 100mm dia Flanged Reducer	No.	2		
		160mm dia Class 12	m	298		
		<b>Assembly 12</b>				
		500mm dia Class 12 uPVC pipes	m	75		
		<b>BENDS</b>				
		160mm dia uPVC Bends				
		11¼° bend (Ass 1=1)	No.	1		
		22½° bend (Ass 10=2, Ass 1=1)	No.	3		
		45° bend	No.	2		
		90° bend	No.	4		
		200mm dia uPVC bends				
		11¼° bend (Ass 9=1)	No.	1		
		22½° bend (Ass 9=1)	No.	1		
		45° bend (Ass 9=0)	No.	1		
		90° bend (Ass 9=1)	No.	1		
		<b>Pipe Assemble Linking WAS and RAS Pipelines</b>				
		150mm dia CI FL adaptor	N°	6		
		160mm dia uPVC Class 12 pipe	m	100		
		150mm dia Valve	N°	3		
		150mm x 1500mm dia CI tee	N°	3		
		Valve Chambers	N°	3		
		450mm Outflow Meter	N°	1		
		Outflow meter chamber civil works	sum	1		
		<b>HDPE Pipeline</b>				
		Supply, lay and test 32mm dia HDPE pipe	m	964		
		Install complete standpipes	N°	2		
<b>TOTAL FOR SECTION F CARRIED TO SUMMARY :</b>						

SECTION G: SUNDRIES

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CHIEF ALBERT LUTHULI MUNICIPALITY  
MANZANAWASTE WATER TREATMENT PLANT UPGRADE  
CONTRACT No. ALMT10/2023: EMANZANA WASTEWATER TREATMENT PLANT UPGRADE – CIVIL ENGINEERING WORKS  
SECTION H: DAYWORKS

ITEM No .	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		<b>SECTION H: DAYWORKS SCHEDULE</b>				
H1		<b>Labour</b>				
H1.1		Plumber	hrs	16		
H1.2		Foreman	hrs	16		
H1.3		Bricklayer	hrs	16		
H1.4		Carpenter	hrs	16		
H1.5		General labour	hrs	16		
H1.6		Watchmen	hrs	16		
H2		<b>Plant</b>				
H2.1		Plate compactor	hrs	12		
H2.2		Dewatering pump	hrs	15		
H2.3		Generator	hrs	16		
H2.4		Front End Loader/TLB	hrs	16		
		Excavator	hrs	20		
H3		<b>Materials</b>				
H3.1		19mm stone	m³	20		
H3.2		River sand	m³	50		
H3.3		190mm Thick blockwork	m²	50		
H3.4		Cement	Bag	10		
<b>TOTAL SECTION H CARRIED FORWARD TO SUMMARY</b>						

**CHIEF ALBERT LUTHULI MUNICIPALITY**  
**CONTRACT No. ALMT10/2023**  
**eMANZANA WASTE WATER TREATMENT PLANT UPGRADE**  
**SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRO-MECHANICAL EQUIPMENT AT**  
**eMANZANA WWTP**

**BILL OF QUANTITIES SUMMARY**

Section 1 : P & G's	R	-
Section 2 : Mechanical Mixers	R	-
Section 3 : Mechanical Aerators	R	-
Section 4: clarifier	R	-
Section 5: Pumps	R	-
Section 6: Electrical and Miscellaneous equipment	R	-
<b>SUBTOTAL 1</b>	<b>R</b>	<b>-</b>
Add: 10% Allowance for Contingencies	R	
<b>SUBTOTAL 2</b>	<b>R</b>	
Add: 8% Allowance for Escalation	R	
<b>SUBTOTAL 3</b>	<b>R</b>	
Add: VAT @ 15%	R	
<b>PROJECT TOTAL</b>	<b>R</b>	

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

A WASTE	SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTROMECHANICAL EQUIPMENT AT eMANZANA WWTP	Short Description	Unit	Qty	Rate	Amount
1		<b>PRELIMINARY AND GENERAL</b>		Total		
1.1		Compliance with all contractual requirements	SUM	1		
1.2		Contractor's establishment on site	SUM	1		
1.3		Contractor's supervision during erection and commissioning	SUM	1		
1.4		Accommodation and transport for Contractor's erection and commissioning staff	SUM	1		
1.5		Health and Safety matters as specified				
1.5.1		Preparation of risk assessments, safe work procedures, the Health and Safety Plan and the provision of PPE e.t.c.	SUM	1		
1.5.2		Completion and checking the Health and Safety File and handing over on completion of the works.	SUM	1		
1.5.3		Updating and amending risk assessments, safe work procedures, H&S File, H&S Plan, the provision of PPE and protective clothing etc for the duration of the contract.	SUM	1		
1.5.4		Full compliance with all H&S matters for the duration of the contract.	SUM	1		
1.6		Instructing and supervising the building/civil engineering Contractor regarding the grouting in of pipework and other plant.	SUM	1		
1.7		Removal of Contractor's establishment from site on completion of the works	SUM	1		
1.8		Full compliance with all Environmental matters for the duration of the contract.	SUM	1		
1.9		Dealing with water (refer SANS 1921-1 Clause 4.6)	SUM	1		
<b>Sub Total (Carried forward)</b>						



**CONTRACT No. ALMT10/2023**

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## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
<b>2</b>	<b>MECHANICAL MIXERS</b>				
<b>2.1</b>	<b>Design, supply &amp; delivery to site of the following plant and equipment including, quality assurance, factory testing, temporary storage and painting.</b>				
2.1.1	1.5 kW settler anoxic mixer in accordance with the specification	N°	1		
2.1.2	4 kW anaerobic mixer in accordance with the specification	N°	1		
2.1.3	11 kW anoxic mixer in accordance with the specification	N°	1		
<b>2.2</b>	<b>Taking delivery, handling, erection, installation, testing, final painting and quality assurances of the following plant and equipment</b>				
2.2.1	1.5 kW settler anoxic mixer	N°	1		
2.1.2	4 kW anaerobic mixer in accordance with the specification	N°	1		
2.1.3	11 kW anoxic mixer in accordance with the specification	N°	1		
<b>2.3</b>	<b>Testing, commissioning and adjusting the plant and equipment supplied and installed under this Contract after completion of erection and installation, including instructing Employers staff as specified</b>				
2.3.1	1.5 kW settler anoxic mixer	N°	1		
2.1.2	4 kW anaerobic mixer in accordance with the specification	N°	1		
2.1.3	11 kW anoxic mixer in accordance with the specification	N°	1		
2.3.3	Supply Operating and Maintenance Instructions as specified (3 copies)	SUM	1		
<b>TOTAL FOR SECTION 2 (Carried Forward to Summary)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
<b>3</b>	<b>MECHANICAL AERATORS</b>				
<b>3.1</b>	<b>Design, supply &amp; delivery to site of the following plant and equipment including, quality assurance, factory testing, temporary storage and painting</b>				
3.1.1	22 kW platform mounted slow speed aerator in accordance with the specification	N°	4		
<b>3.2</b>	<b>Taking delivery, handling, erection, installation, testing, final painting and quality assurance of the following plant and equipment</b>				
3.2.1	22 kW platform mounted slow speed aerator in accordance with the specification	N°	4		
<b>3.3</b>	<b>Testing, commissioning, and adjusting the plant and equipment supplied and installed under this Contract after completion of erection and installation, including instructing Employer's staff as specified</b>				
3.3.1	22 kW platform mounted slow speed aerator in accordance with the specification	N°	4		
3.3.4	Supply Operating and Maintenance Instructions as specified (3 copies)	SUM	1		
<b>TOTAL FOR SECTION 3 (Carried Forward to Summary)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
<b>4</b>	<b>CLARIFIER</b>				
<b>4.1</b>	<b>Design, supply &amp; delivery to site of the following plant and equipment including, quality assurance, factory testing, temporary storage and painting</b>				
4.1.1	Peripherally driven bridge mechanism for the proposed 20 m diameter clarifier including flow baffles on inlet, fibre glass central stilling well, scum removal system, manually adjusted telescopic valve and outlet weir plates in accordance with the specification	N°	1		
<b>4.2</b>	<b>Taking delivery, handling, erection, installation, testing, final painting and quality assurance of the following plant and equipment</b>				
4.2.1	Proposed 20 m diameter clarifier equipment	N°	1		
<b>4.3</b>	<b>Testing, commissioning, and adjusting the plant and equipment supplied and installed under this Contract after completion of erection and installation, including instructing Employer's staff as specified</b>				
4.3.1	Proposed 20 m diameter clarifier equipment	N°	1		
4.3.3	Supply Operating and Maintenance Instructions as specified	N°	1		
4.4	Provide and bolt temporary strut onto scraper truss to act as template for screeding and supervise screeding by civil contractor	N°	1		
<b>TOTAL FOR SECTION 4 (Carried Forward to Summary)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
<b>5</b>	<b>PUMPS</b>				
<b>5.1</b>	<b>Design, supply &amp; delivery to site of the following plant and equipment including, quality assurance, factory testing, temporary storage and painting.</b>				
5.1.1	Dry well Return Activated Sludge (RAS) pumpsets including baseplates and holding down bolts, couplings, motor, coupling and guard in accordance with the specifications. (Duty point: 50l/s at 10m)	N°	2		
5.1.2	Dry well Return Activated Sludge (WAS) pumpsets including baseplates and holding down bolts, couplings, motor, coupling and guard in accordance with the specifications. (Duty point: 100l/s at 20m)	N°	3		
5.1.3	Associated valves and pipework for RAS pumpsets	SUM	1		
5.1.4	Associated valves and pipework for WAS pumpsets	SUM	1		
5.1.5	One suction and one discharge pressure gauge mounted on a common stand including all necessary tubing and 3 way isolating ball valve per pumpset	Set	4		
5.1.6	Propeller pumps or similar approved for mixed liquor internal recycling (Duty point: 110l/s x 5m)	N°	3		
<b>5.2</b>	<b>Taking delivery, handling, erection, installation, testing, final painting and quality assurance of the following plant and equipment</b>				
5.2.1	RAS pumpsets, pipework, valves, pressure gauges and interconnecting pipework including for setting up baseplates and holding down bolts	SUM	1		
5.2.2	Internal recycle pumpsets, pipework, valves, and interconnecting pipework including for setting up baseplates and holding down bolts	SUM	1		
<b>5.3</b>	<b>Testing, commissioning, and adjusting the plant and equipment supplied and installed under this Contract after completion of erection and installation, including instructing Employer's staff as specified</b>				
5.3.1	RAS pumpsets and equipment	N°	1		
5.3.4	Supply Operating and Maintenance Instructions as specified (3 copies)	SUM	1		
<b>TOTAL FOR SECTION 5 (Carried Forward to Summary)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
6	<b>ELECTRICAL and MISCELLANEOUS EQUIPMENT</b>				
	Design, supply, deliver to site, install, test and commission the following plant and equipment including, quality assurance, factory testing, temporary storage and painting and instructing the Employer's staff in operation.				
6.1	<b>Main Power Supply</b>				
6.1.1	100 kVA floor mounted transformer complete, including cabling and all other ancillary equipment	N°	1		
6.2	<b>LV Reticulation</b>				
6.2.1	Main MCC in Control Building and Pumpstations as specified	N°	3		
6.2.2	Remote stop/start panels at aerators and mixers, complete with enclosures	N°	15		
6.2.3	Electrodes and mountings in sump for automatic control of two RAS pumpsets	N°	2		
6.2.4	Supply all cables as specified including cable marking tape in trenches				
	<b>Power Cables</b>				
	Electrical Cable installations from Transformer to MCC building	m	100		
6.2.4.1	From MCC in control building to aerators	m	450		
6.2.4.2	From MCC in control building to mixers	m	540		
6.2.4.3	From MCC in control building to secondary clarifier	m	160		
6.2.4.4	From MCC in control building to RAS pumpsets	m	140		
6.2.4.5	From MCC in control building to magnetic flow meter in waste sludge line	m	160		
6.2.4.6	From MCC in control building to area lighting	m	300		
	<b>Control Cables</b>				
6.2.4.7	From RAS wet well electrodes to RAS pumpstation MCC	m	140		
<b>Sub Total (Carried forward)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
<b>Sub Total (Brought forward)</b>					
6.2.4.7	From sludge wasting magnetic flow meter to remote indicator in control building	m	160		
<b>6.3</b>	<b>Electrical Installation in Control Building</b>				
6.3.1	Distribution board as per specification	N°	1		
6.3.2	Internal double tube approved flurescent lights 1,200 mm long complete with sealed diffusers	N°	4		
6.3.3	16 A light switches with cover	N°	4		
<b>6.4</b>	<b>Area Lighting</b>				
6.4.1	6.6 m galvanised/glass fibre pole (mounting height of Luminaire 5m), single spigot complete with gland plates and 5A mcb	N°	12		
6.4.2	125 W MH street lighting luminaires complete with lamps	N°	12		
<b>6.5</b>	<b>Flow Measurement</b>				
6.5.1	Ultrasonic flow measuring device for measuring total incoming flow at xisting flume	N°	1		
6.5.2	80mm dia. Magnetic flow meter for measuring waste activated sludge	N°	1		
6.5.3	80mm dia. Magnetic flow meter for measuring treated effluent	N°	1		
<b>6.6</b>	<b>Trenching</b>				
6.6.1	Excavate in all materials for cable trenches not exceeding 1.0m deep, including for selected bedding around cables and backfill and placing marker tape	m	500		
6.6.2	E/O item 6.5.1 for				
6.6.2.1	Intermediate materials	m	50		
6.6.2.2	Rock	m <sup>3</sup>	200		
6.6.2.3	300mm diameter concrete sleeves for cables across roads	m	30		
6.6.2.4	Supply and install HDG U-channel for cables on aerator platforms	m	100		
<b>6.7</b>	<b>Plant Operation</b>				
	Operation of the works upon issuing of the Certificate of Completion including provision of staff and training of CALM employees (inclusive of all costs and profit)				
6.7.1	Office Overheads including management	SUM	1		
<b>Sub Total (Carried forward)</b>					

## CHIEF ALBERT LUTHULI MUNICIPALITY

CONTRACT No. ALMT10/2023

Item N°	Short Description	Unit	Qty	Rate	Amount
			Total		
<b>Sub Total (Brought forward)</b>					
6.7.2	Class 2 Operator (full time - 24hrs)	weeks	20		
6.7.3	Class 1 Operators (full time - 24 hrs)	weeks	20		
6.7.4	Operator Assistant (full time - 24 hrs)	weeks	20		
6.7.5	Quality tests and submission of results on a monthly basis	weeks	20		
6.7.6	Provision of materials/consumables for onsite testing as part operation of the plant	SUM	1		
6.8	<b>Chlorine Dosing Equipment</b>				
6.8.1	Chlorine dosing pump sets with a max capacity of 5mg/l and 22kg/h	N°	2		
6.8.2	100kg chlorine gas cylinders	N°	4		
6.8.3	Pipework, valves and all associated OHS requirements including shower facility and alarm system in accordance with applicable	SUM	1		
6.9	<b>Generator</b>				
6.9.1	300kVA (or as appropriate) Standby Generator set complete with control panel	N°	1		
6.9.2	Cabling from Generator to MCC in control building to enable automatic changeover etc.	m	50		
6.9.3	Supply, install, commission and operate for four months after commission a 25,000 litre fuel holding tank c/w stand and associated pipework to serve the generator including level controls, locking mechanism and steel	N°	1		
6.9.4	Supply and delivery of fuel to run generator	ltrs	20000		
6.10	<b>Manual Screens</b>				
6.10.1	Supply and install manual hand reked screens at the inlet works	N°	2		
	Provisional Sum				
	Provisional Sum for other work as determined on site	Sum			R 1 000 000.00
<b>TOTAL FOR SECTION 6 (Carried Forward to Summary)</b>					



**CONTRACT No. ALMT10/2023**

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