

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION A: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
		<b><u>SECTION A: PRELIMINARY AND GENERAL</u></b>					
	A 8.3	<b><u>FIXED-CHARGE ITEMS</u></b>					
A.1	A 8.3.1	Contractual Requirements	Sum	1			
	A 8.3.2	Establishment of Facilities on the Site :					
		a) <u>Facilities for Engineer (As described under SANS 1200 AB)</u>					
A.2	A 8.3.2.1(a)	i) Provision to be made for waterproof offices as described under item SANS 1200 AB 3.2: Office Building(s)	Sum	1			
A.3	A 8.3.2.1(c)	ii) Name boards (2 No and described under SANS 1200 AB 5.1). As per attached drawing	Sum	1			
	A 8.3.2.2	b) <u>Facilities for the Contractor</u>					
A.4	(a)	Offices and storage sheds	Sum	1			
A.5	(b)	Workshops	Sum	1			
A.6	(d)	Living accommodation	Sum	1			
A.7	(e)	Ablution and latrine facilities	Sum	1			
A.8	(f)	Tools and equipment	Sum	1			
A.9	(g)	Water supplies, electric power and communications	Sum	1			
A.10	(h)	Dealing with water	Sum	1			
	A 8.3.3	<u>Other fixed-charge obligations</u>					
A.11	PS A 8.3.3 (a)	Provision to comply to the Environmental Management Plan (SANS 1200 PS A 5.9)	Sum	1			
		<b>NOTE:</b> Bidders are advised to study the Health & Safety Specifications according to The Occupational Health & Safety Act (Act 85 of 1993) and the Construction Regulation 2014 (SANS 1200 A 5.7) before pricing this bill.					
Total Carried Forward							

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Brought Forward							
A.12	PS A 8.3.3 (b)	<p>Bidders must note that it is compulsory to price all items as specified regarding Health and Safety in this bill, the Occupational Health and Safety Act (Act 85 of 1993) and the 2014 Construction Regulations.</p> <p><b>FAILURE TO DO SO WILL INVALIDATE THE TENDER</b></p> <p>The following items serve as a breakdown of the expected cost items for the requirements of the Act and have to be duly completed and returned with the tender form (refer to the Occupational Health and Safety Specification for detail of clauses as listed).</p> <p>a) Preparation of Health and Safety Plan</p> <p>The sum shall cover all costs involved in the preparing of the Health and Safety Plan (which includes the risk assessment), which shall include the preparation of all permit applications and notifications as required by this specification and shall include the employment cost of all health and safety personnel employed for the preparation of the Contractor's Health and Safety Plan</p>	Sum	1			
A.13	PS A 8.3.3 (b)	<p>b) Health and Safety Training</p> <p>The sum shall cover all costs involved in preparation of all necessary Health and Safety Induction Training materials required from the training of the Contractor's employees, Sub-Contractors and all visitors to the Works.</p>	Sum	1			
A.14	PS A 8.3.3 (b)	<p>c) Personal Protective Clothing and Equipment</p> <p>The sum shall cover all costs involved in the initial provision of all personal protective clothing and equipment for the Contractor's employees and Sub-contractors and any visitors to the Works, as required by this specification (which includes the requirements of the Occupational Health and Safety Act, 1993 and its regulations, as amended).</p>	Sum	1			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
A.15	PS A 8.3.3 (b)	d) Fences, Signs and Baricades  The sum shall cover all costs involved in the initial provision of all fences, signs and barricades necessary for the protection of all persons, plant, vehicles, equipment or facilities, as required by this specification (which includes the requirements of the Occupational Health and Safety Act, 1993 and it's regulations, as amended).	Sum	1			
A.16	PS A 8.3.3 (b)	e) Establishment of Safety Administration  The sum shall cover all costs involved in establishment of all administrative matters required by this specification which shall include, but not limited to, the establishment of the Health and Safety File.	Sum	1			
A.17	PS A 8.3.3 (b)	f) Other Health and Safety Fixed-charge Obligations  The sum shall cover the fixed costs of all other obligations that are required for the safe execution of the Works in accordance with the requirements of this specification and that are not specifically covered in A.11 to A.15	Sum	1			
A.18	PS A 8.3.3 (c)	Supervision & Co-operation with Other Contractors (SANS 1200 PS A 5.10)					
A.19		i) With Electrical & Mechanical Contractor	Sum	1			
A.19		ii) With Other Contractors	Sum	1			Rate Only
	A 8.4	<u>TIME-RELATED ITEMS</u>					
A.20	A 8.4.1	Contractual Requirements	Sum	1			
A.21	A 8.4.2.1(a)	Operate and maintain facilities for the Engineer on the Site	Sum	1			
	A 8.4.2.2	<u>Facilities for Contractor for duration of construction, except where otherwise stated</u>					
A.22	(a)	Offices and storage sheds	Sum	1			
A.23	(d)	Living accommodation	Sum	1			
Total Carried Forward							

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Brought Forward							
A.24	(g)	Water supplies, electric power and communications.	Sum	1			
A.25	(e)	Ablution and latrine facilities	Sum	1			
A.26	(f)	Tools and equipment	Sum	1			
A.27	PS A 8.4.5(b)	<p>a) Implementation and Maintenance of Health and Safety Plan (PS A 5.7)</p> <p>The sum shall cover all costs involved in the implementation and maintenance of the Health and Safety Plan. This shall include but shall not be limited to the following:</p> <ol style="list-style-type: none"> <li>1) The employment cost of all health and safety personnel including consultants, health and safety officers, inspectors, supervisors and issuers required in terms of the Contractor's Health and Safety Plan.</li> <li>2) Updating the Health and Safety Plan as needed.</li> <li>3) Carrying out of periodic audits and follow-up audits.</li> <li>4) Compiling ongoing risk assessments and risk assessment reports as required by the Works.</li> <li>5) Convening of regular safety meetings with the Safety Representatives.</li> <li>6) Accompanying and supporting the Employer of his Safety Agent during ad hoc audits.</li> <li>7) Compilation of monthly safety reports and statistics for the Employer or his Safety Agent.</li> </ol>	Sum	1			
A.28	PS A 8.4.5(b)	<p>b) Implementation and maintenance of Training</p> <p>The sum shall cover all costs involved in the implementation of the induction training of the Contractor's employees, Sub-contractors and all visitors to the Works.</p>	Sum	1			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
A.29	PS A 8.4.5(b)	c) Maintenance of Personnel Protective Clothing and Equipment  The sum shall cover all costs involved in maintenance, repair or replacement of personal protective clothing required by the Contractor's employees or Sub-contractors and all visitors to the Works.	Sum	1			
A.30	PS A 8.4.5(b)	d) Maintenance of Fences, Signs and Barricades  The sum shall cover all costs involved in maintenance, repair or replacement for whatever reason of fences, signs and barricades used for the Works. The rate shall include for the provision of security guards for the safeguarding of the items provided should this be necessary.	Sum	1			
A.31	PS A 8.4.5(b)	e) Implementation and Maintenance of Safety Administration  The sum shall cover all costs involved in establishment of all administrative matters required by this specification which shall include, but not limited to, the maintenance of the Health and Safety File or the completion and recording of the safety check lists required by this specification.	Sum	1			
A.32	PS A 8.4.5(b)	f) Other Health and Safety Fixed-charge Obligations  The sum shall cover the time-related costs of all other obligations that are required for the proper execution of the Works in accordance with the requirements of this specification and that are not specifically covered in A.27 to A.32	Sum	1			
A.33	PSA 8.4.5(a)	Appointment of Environmental Control Officer (ECO)	Sum	1			
	A 8.4.5	<u>OTHER TIME-RELATED OBLIGATIONS</u>					
A.34	PS A 8.6	a) Provision to be made for remuneration of the Community Liaison Officer (CLO)	Months				
A.35		b) Handling fee for Contractor to CLO	%				
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<u>TEMPORARY WORKS</u>					
A.36	PS A 8.8.9	Water Connection	Sum	1			
A.37	PS A 8.8.10	Electrical Connection	Sum	1			
		<u>FACTORY ACCEPTANCE TESTING (FAT)</u>					
A.40		PC amount for the travelling, accommodation and subsistence of the engineers and client <b>only</b> to execute the FAT applicable for the new pumps and sewerage grinder.  The contractor must price / allow for his own travelling, accommodation and subsistence elsewhere.	PC Sum	1	60,000.00	60,000	00
Total Carried Forward To Summary							

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**SECTION B: MECHANICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
		<b><u>SECTION B: MECHANICAL</u></b>					
		Supply, delivery, off-loading, storage, installation, testing and commissioning of a dry sump installed sewer pump complete. The pumps will be complete with IE3 high efficiency motor, supplied as a unit. The pump should be able to pump 20 ℓ/s @ a head of 50 m. Electrical termination of motor to be done by qualified registered electrical contractor, measured under electrical cable installation (liaise with electrical contractor for complete commissioning of pumps) type Goremann-Rupp U3A-B-1 (26.1 kW) or similar and approved by Engineer.					
B.1	MEC 11.2	a) Supply, delivery, offloading and/or storage	P C Sum	1	350,000.00	350,000	00
B.2	MEC 11.2	b) Install	P C Sum	1	35,000.00	35,000	00
B.3	MEC 11.2	c) Testing and commissioning	P C Sum	1	15,000.00	15,000	00
		Supply, delivery, off-loading, storage, installation, testing and commissioning of an open channel configuration sewerage grinder complete to fit 160 mm Ø sewer pipe outlet, installed with control panel, mounting frame & brackets and fully encased extension shafts (to fit assembly shown on drawing), sewerage grinder to be able to handle 20 ℓ/s flow. Grinder to be coated by 2 coats heavy epoxy coating. Electrical motor to be energy efficient. Electrical termination of control box to be done by qualified registered electrical contractor (liaise with electrical contractor for complete commissioning of sewerage grinder)					
B.4	MEC 11.2	a) Supply, delivery, offloading and/or storage	P C Sum	1	200,000.00	200,000	00
B.5	MEC 11.2	b) Install	P C Sum	1	20,000.00	20,000	00
B.6	MEC 11.2	c) Testing and commissioning	P C Sum	1	10,000.00	10,000	00
Total Carried Forward To Summary							

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**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
		<b><u>SECTION C: ELECTRICAL</u></b>					
		<b>Refer to Project Specifications in the Tender Document</b>					
		<b><u>BILL NO 1: PRELIMINARIES AND GENERAL</u></b>					
		<b>Allow for all preliminary and general items required to provide the electrical installation for this project, but excluding items priced elsewhere in these Bills (These amounts will be paid pro rata to the rest of the amounts claimed by the contractor relative to the tender amount)</b>					
		<b><u>FIXED CHARGE ITEMS</u></b>					
		Contractual requirements, establish facilities on site:					
C.1		a) Office and storage sheds	L/Sum	1			
C.2		b) Living accommodation	L/Sum	1			
C.3		c) Ablution and toilet facilities	L/Sum	1			
C.4		d) Water supplies, electric power and access	L/Sum	1			
C.5		e) Temporary works	L/Sum	1			
C.6		Remove Contractor's site on completion	L/Sum	1			
C.7		Allow for project notice board	L/Sum	1			
C.8		Allow for co-operation and programming with other parties that may be working on site.	L/Sum	1			
C.9		Allow for submission for revisions of Works programme.	L/Sum	1			
C.10		Allow for the submission of instruction manuals and record drawings.	L/Sum	1			
C.11		Allow for the required surety of 10 % of the contract amount.	L/Sum	1			
C.12		Allow for the compliance with all statutory requirements as specified.	L/Sum	1			
Total Carried Forward							



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**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<u>HEALTH AND SAFETY</u>					
		The Contractor shall, as a condition of the contract ensure that the site of the Works and the Works at all times comply with all relevant legislation regarding Health and Safety of employees, as well as public legitimately on the Site or in the vicinity of the Site, while preventing unauthorised access to the Site of the Works. Contractor to list all items of Health and Safety included in the lump sum cost and provide the Employer with the aforementioned list at tender.					
C.13		Training	L/Sum	1			
C.14		Health and Safety Plan (documentation)	L/Sum	1			
		<u>TIME RELATED ITEMS</u>					
		Allow for the following insurance:					
C.15		a) Of the works	L/Sum	1			
C.16		b) Public liability	L/Sum	1			
C.17		c) Plant and equipment	L/Sum	1			
C.18		d) Common law liability	L/Sum	1			
C.19		e) Any other insurance	L/Sum	1			
C.20		f) Specify:	L/Sum	1			
		Supervision and Maintenance:					
C.21		a) Allow for supervision	L/Sum	1			
C.22		b) Allow for maintenance	L/Sum	1			
		Contractual Requirements, establish facilities on site:					
C.23		a) Vehicles	L/Sum	1			
C.24		b) Living accommodation	L/Sum	1			
C.25		c) Telephone and fax facilities	L/Sum	1			
		Specify other related obligations not covered above:					
C.26		Specify:	L/Sum	1			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<b><u>BILL NO 2: ELECTRICAL BULK SUPPLY</u></b>					
		<b><u>SURVEYING</u></b>					
C.27		PC Sum for complete surveying of the proposed new cable route including surveying of all existing services which may or will affect the proposed 11kV cable route by an approved land surveyor.	Sum	1	35,000.00	35,000	00
		<b>Complete surveying of, supply, excavate, erect, install and compact medium voltage poles and strut poles, including strut pole hardware.</b>					
		11 m Wood poles, 160 mm to 179 mm top, with plant depth at 1,8 m					
C.28		Supply	No			Rate Only	
C.29		Install	No			Rate Only	
		11 m Wood poles, 220 mm to 239 mm top, with plant depth at 1,8 m					
C.30		Supply	No	2			
C.31		Install	No	2			
		12 m Wood poles, 220 mm to 239 mm top, with plant depth at 2,0 m					
C.32		Supply	No	4			
C.33		Install	No	4			
		11 m Wood strut poles (including strut bracket, stay plate, soil anchor & anti-climbing barrier)					
C.34		Supply	No			Rate Only	
C.35		Install	No			Rate Only	
		2,5 mm Wood cross-arm, with 160 mm top (including bracing strap and nut, washers, etc.)					
C.36		Supply	No	7			
C.37		Install	No	7			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<b>Supply, excavate, erect, install, backfill and compact medium voltage stays</b>					
		Stay (D-DT-0341)					
C.38		Supply	No	4			
C.39		Install	No	4			
		Flying stay (excluding pole measured above)					
C.40		Supply	No	1		Rate Only	
C.41		Install	No	1		Rate Only	
		<b>Medium voltage structures complete, including the supply and attachment of hardware to structures and the <u>insulation co-ordination bonding of earths to the poles</u></b>					
		Intermediate/Suspension assembly (D-DT-1870)					
C.42		Supply	No	2			
C.43		Install	No	2			
		Strain assembly (0 deg) excluding pole and stays measured above (D-DT-1763)					
C.44		Supply	No			Rate Only	
C.45		Install	No			Rate Only	
		Strain assembly (0-60 deg) excluding pole and stays measured above (D-DT-1764)					
C.46		Supply	No			Rate Only	
C.47		Install	No			Rate Only	
		H-Pole strain-terminal assembly excluding pole and stays measured above (D-DT-1766)					
C.48		Supply	No	1			
C.49		Install	No	1			
		H-pole transformer assembly excluding poles and stays measured above (D-DT-1861) including jumpers and 22 kV pin insulators for jumper rigidity.					
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.50		Supply	No	1			
C.51		Install	No	1			
		<p><b>Supply, Erect and Install Transformer Structure Equipment</b></p> <p>The distribution pole mounted transformer shall comply with SANS 780 and must include the following Nama-Khoi Local Municipality requirements:</p> <p>a) Copper Windings</p> <p>b) Off-load tap changer with five taps, -5%, -2,5%, 0%, +2,5%, +5%.</p> <p>c) Oil filler valve</p> <p>d) Oil drain valve</p> <p>e) Oil level indication</p> <p>50 kVA, 11 kV/400V, DYN11, pole mounted transformer with tap changer</p>					
C.52		Supply	No	1			
C.53		Install	No	1			
		Complete new 1,5 mm thick, 3CR12 steel, pole mounted LV distribution board including 1 x Main 80A TP 5kA circuit breaker, complete internal wiring, terminations, bus bars for phases, neutral bar and earth bar as required, Enermax maximum demand kVA meter and 3 x 100 A/1A CT's and the COC for the board as specified for a 50kVA transformer, with two hinged padlockable doors as manufactured by an approved distribution board supplier and galvanised angle iron or c-channel for mounting to single-pole structure:					
C.54		Supply	No	1			
C.55		Install	No	1			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		Supply, delivery and installation of the following copper cables between the various distribution points in trenches or sleeves as specified including delivery on site, unloading and storing. Stranded copper core, PVC/PVC/SWA/PVC 600/1000V copper cables:					
C.56		a) 25 mm <sup>2</sup> x 4-core copper core PVC/PVC/SWA/PVC cable Supply	m	10			
C.57		Install	m	10			
		Supply and installation of all <b>indoor cable terminations</b> complete with neoprene shroud, brass lock nuts, cable crimping lugs, cut-off cable gland openings in kiosks and gland plates connected to the relevant cable, etc.					
C.58		a) 25 mm <sup>2</sup> x 4-core copper core PVC/PVC/SWA/PVC cable outdoor termination with heat shrink at transformer bushings Supply	No	1			
C.59		Install	No	1			
C.60		b) 25 mm <sup>2</sup> x 4-core copper core PVC/PVC/SWA/PVC cable indoor terminations Supply	No	1			
C.61		Install	No	1			
		Supply and installation of bare stranded copper earth wire strapped to the relative size PVC insulated copper cables at 600 mm (minimum) intervals including terminations at both ends of each earth wire.					
C.62		a) 16 mm <sup>2</sup> bare stranded copper conductor Supply	m	10			
C.63		Install	m	10			
		22 kV Fuse-links, 100A drop-out links and holders complete					
Total Carried Forward							

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						R	c
Brought Forward							
C.64		Supply	No	3			
C.65		Install	No	3			
		11 kV Surge arresters and holders complete					
C.66		Supply	No	3			
C.67		Install	No	3			
		6 kV Surge arresters and holders complete					
C.68		Supply	No	1			
C.69		Install	No	1			
		<b>The supply and erection of <u>ALL</u> danger labels and identification labels as required by the OHS Act.</b>					
		At transformer structure					
C.70		Supply	No	1			
C.71		Install	No	1			
		<b>Earthing and Bonding</b>					
		(Insulation co-ordination bonding of poles measured with structure assemblies)					
		a) Supply, excavate, install, lay and connect the single earth peg.(including backfilling and compacting)					
C.72		Supply	No	1			Rate Only
C.73		Install	No	1			Rate Only
		b) Supply, excavate install, lay and connect the three point star earthing. (including backfilling and compacting)					
C.74		Supply	No	2			
C.75		Install	No	2			
		c) Supply, install and connect the BIL wire strands and strapping complete on the wooden cross arms					
C.76		Supply	No	6			
C.77		Install	No	6			
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Brought Forward							
C.78		d) Supply, install and connect the BIL wire strands and strapping complete on the wooden poles  Supply	No	6			
C.79		Install	No	6			
		<b>Conductor</b>  Supply, erect, install and string MV conductors complete including splicing, clamping, terminating, tensioning, sagging and attachment to line hardware at all types of MV pole structures:  ACSR bare "Mink" conductor (total conductor length)					
C.80		Supply	m	700			
C.81		Install	m	700			
C.82		<b>Bush clearing for the entire MV line route, 5 m wide (measured route length)</b>  <b>3 m x 20 mm Ø Galvanised steel conduit, including pole mounting steel bracing straps at 500 mm intervals</b>	m			Rate Only	
C.83		Supply	m	10			
C.84		Install	m	10			
		<u>GENERAL</u>  Testing and Commissioning					
C.85		Allow for the testing, recording and commissioning of the MV network  Any additional items that the Tenderer deems necessary for the successful and total completion of this assessment stage (state in detail):  a)  b)  c)  d)	L/Sum	1			
Total Carried Forward							

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
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Brought Forward							
		<b><u>BILL NO 3: LOW VOLTAGE SUPPLY CABLE</u></b>					
		<b><u>CABLE TRENCHES</u></b>					
		All cable trenching necessary to lay new cables, including backfilling. All to specification with 150 mm earth bed and 150 mm earth blanket for cables in soft and hard rock trenches (500 mm wide x 750 mm deep).					
C.86		Excavations in earth 0%	m <sup>3</sup>	1		Rate Only	
C.87		Excavations in hard rock 100%	m <sup>3</sup>	5			
C.88		Bedding (300 mm x 500 mm)	m <sup>3</sup>	3			
		<b><u>DANGER TAPE</u></b>					
C.89		Supply	m	20			
C.90		Install	m	20			
		<b><u>SLEEVES</u></b>					
		Supply, delivery and installation of all sleeves for the cables installed in trenches, bedding and walls of building complete with adapters between standard lengths					
		50 mm diameter sleeve (sewer grinder and pump supply cables)					
C.91		Supply	m	15			
C.92		Install	m	15			
		110 mm diameter sleeve (genset and MCC supply cables)					
C.93		Supply	m	15			
C.94		Install	m	15			
		Supply, delivery and installation of all sleeve bends (90° slow bend) for the cables installed in trenches, bedding and walls of building complete with adapters between standard lengths					
		50 mm diameter sleeve					
C.95		Supply	No	4			
Total Carried Forward							



**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.96		Install 110 mm diameter sleeve	No	4			
C.97		Supply	No	2			
C.98		Install  <u>LOW VOLTAGE CABLES</u>  Supply, delivery and installation of the following copper cables between the various distribution points in trenches or sleeves as specified including delivery on site, unloading and storing. Stranded copper core, PVC/PVC/SWA/PVC 600/1000V copper cables:  25 mm <sup>2</sup> x 4-core copper PVC/PVC/SWA/PVC cable supply to genset and MCC	No	2			
C.99		Supply	m	20			
C.100		Install  16 mm <sup>2</sup> x 3-core (3-phase) copper PVC/PVC/SWA/PVC cable supply to VSD drives and sewer pumps 1 and 2	m	20			
C.101		Supply	m	10			
C.102		Install  6 mm <sup>2</sup> x 4-core copper PVC/PVC/SWA/PVC cable supply to sewer grinder	m	10			
C.103		Supply	m	12			
C.104		Install  4 mm <sup>2</sup> x 3-core copper PVC/PVC/SWA/PVC cable area lighting	m	12			
C.105		Supply	m	50			
C.106		Install  <u>CABLE GLANDS</u>	m	50			
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		Supply and installation of all cable glands complete with neoprene shroud, brass lock nuts, cable crimping lugs, cut-off cable gland openings in kiosks and gland plates connected to the relevant cable, etc.					
		25 mm <sup>2</sup> x 4-core copper PVC/PVC/SWA/PVC cable					
C.107		Supply	No	4			
C.108		Install	No	4			
		16 mm <sup>2</sup> x 3-core copper PVC/PVC/SWA/PVC cable					
C.109		Supply	No	6			
C.110		Install	No	6			
		6 mm <sup>2</sup> x 4-core copper PVC/PVC/SWA/PVC cable					
C.111		Supply	No	2			
C.112		Install	No	2			
		4 mm <sup>2</sup> x 3-core copper PVC/PVC/SWA/PVC cable					
C.113		Supply	No	4			
C.114		Install	No	4			
		<u>EARTH WIRE</u>					
		Supply and installation of <b>bare stranded copper earth wire</b> strapped to the relative size PVC insulated copper cables at 600 mm (minimum) intervals including terminations at both ends of each earth wire,					
		16 mm <sup>2</sup> bare stranded copper conductor-supply to genset and MCC					
C.115		Supply	m	20			
C.116		Install	m	20			
		4 mm <sup>2</sup> bare stranded copper conductor-supply to muffin monster					
C.117		Supply	m	12			
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.118		Install  Supply and installation of <b>PVC Insulated copper earth wire</b> strapped to the relative size PVC insulated copper cables at 600 mm (minimum) intervals including terminations at both ends of each earth wire  10 mm <sup>2</sup> bare stranded copper conductor-supply to VSD drives and sewer pumps 1 and 2	m	12			
C.119		Supply	m	10			
C.120		Install  <u>CABLE TRAYS</u>  Galvanised wiremesh baskets including all splices, T-pieces, bends, fixing screws, cutting and cleaning for wiring purposes against concrete walls or roof trusses for electrical cables, including uni-strut supports to concrete walls, steel and timber roof trusses.  O-Line GS50-100 mm Wide x 50 mm high for supply cables	m	10			
C.121		Supply	m	1			Rate Only
C.122		Install  <u>WIRING CHANNELS AND TRUNKING</u>  Galvanised trunking including all splices, T-pieces, end caps, corner units, cover plates, fixing screws, cutting and cleaning for wiring purposes.  O-Line 2200, 50 x 50 mm	m	1			Rate Only
C.123		Supply	m				Rate Only
C.124		Install	m				Rate Only
C.125		<u>TESTING AND COMMISSIONING</u>  Allow for the testing, recording and commissioning of the LV network	Sum	1			
Total Carried Forward							

***Tender No : BOD/NC***

**NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<p><u>GENERAL ITEMS</u></p> <p>Any additional items that the Tenderer deems necessary for the successful and total completion of the portion of the work required for this Bill (specify):</p> <p>a)</p> <p>b)</p> <p>c)</p> <p>d)</p>					
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<b><u>BILL NO 4: SMALL POWER &amp; LIGHTING</u></b>					
		<b><u>GALVANISED CONDUIT</u></b>					
		Conduit, including all couplings, locknuts and plugs, fixing saddles and screws, cutting, bending, reaming, fixing, cleaning for wiring purposes, surface mounting and chasing in brick walls ( All wasted cut-offs must be included in the tender price).					
		<b>20 mm Galvanised Conduit</b> surface mounted to ceiling trusses and concrete walls.					
C.126		Supply	m	20			
C.127		Install	m	20			
		<b>25 mm Galvanised Conduit</b> surface mounted to ceiling trusses and concrete walls.					
C.128		Supply	m	1		Rate Only	
C.129		Install	m	1		Rate Only	
		<b>32 mm Galvanised Conduit</b> surface mounted to ceiling trusses and concrete walls.					
C.130		Supply	m	15			
C.131		Install	m	15			
		<b><u>DRAW BOXES</u></b>					
		Supply and installation of pressed steel hot dipped galvanised boxes for sockets, draw boxes, etc. flush mounted in brickwork or cast into concrete connected to the conduit installation as specified					
		<b>Galvanised round</b> 65 mm dia x 50 mm deep for 20 mm conduit (Security and Fire cabling)					
C.132		Supply	No	1		Rate Only	
C.133		Install	No	1		Rate Only	
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.134		100 x 50 x 50 mm boxes Supply	No	1		Rate Only	
C.135		Install	No	1		Rate Only	
		<u>LIGHT SWITCHES</u>					
		Supply and installation of the light switches installed in 100 x 50 x 50 mm deep galvanised draw box or 65 mm deep round box complete with fixing screws and cover plate					
		16A, Weatherproof, rotary, one way industrial type surface mounted light switch					
C.136		Supply	No	1			
C.137		Install	No	1			
		<u>SWITCH SOCKETS</u>					
		Supply and installation of the switch sockets installed in 100 x 50 x 50 mm deep galvanised draw box or 65mm deep round box complete with fixing screws and cover plate					
		16A, Single, Industrial type surface mounted Crabtree steel switch socket					
C.138		Supply	No	1		Rate Only	
C.139		Install	No	1		Rate Only	
		60A, 3-Phase, 5-pin, Industrial type surface mounted welding switch socket					
C.140		Supply	No	1		Rate Only	
C.141		Install	No	1		Rate Only	
		<u>CONDUCTORS</u>					
		PVC insulated stranded copper conductors for electrical circuits installed in conduit, power skirting, bed-head trunking, wiring channels, etc., grouped and connected to equipment ( All wasted cut-offs must be included in the tender price).					
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.142		1.5 mm Supply	m	50			
C.143		Install	m	50			
C.144		2.5 mm Supply	m	1			Rate Only
C.145		Install	m	1			Rate Only
C.146		4 mm Supply	m	1			Rate Only
C.147		Install	m	1			Rate Only
		Bare stranded copper earth wire for all electrical circuits installed in conduit, grouped and connected to the equipment. (All wasted cut-offs must be included in the tender price).					
C.148		2.5 mm <sup>2</sup> Supply	m	25			
C.149		Install	m	25			
		<u>LIGHT FITTING</u>					
		Supply and installation of the following light fittings including lamps, wiring, connections and earthing as per the description on the lighting drawing and specification.					
		Type A (rate per point complete).					
C.150		Supply	No	4			
C.151		Install	No	4			
		Type B (rate per point complete).					
C.152		Supply	No	4			
C.153		Install	No	4			
		<u>TESTING AND COMMISSIONING</u>					
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.154		Allow for the testing, recording and commissioning of the small power & lighting system  <u>GENERAL ITEMS</u>  Any additional items that the Tenderer deems necessary for the successful and total completion of the portion of the work required for this Bill (specify):  a)  b)  c)  d)	Sum	1			
Total Carried Forward							



**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<b><u>BILL NO 5: MCC AND PUMP CONTROL</u></b>					
		<b><u>MOTOR CONTROL CENTRE (MCC)</u></b>					
		Supply, install, connect, test and commissioning of the MCC in the position as indicated on the drawings, complete with all internal equipment, switchgear and wiring as specified in the specification and shown on the schematic wiring diagram. Including all wire trays, doors, labels, legend cards, busbars, surge arrestors, status-, control- and fault annunciation equipment, conduit connections and wiring connections. (Supply of cable connections are excluded)					
		IP55, MCC including sections for main incomer, local distribution, central control & annunciation, motor control for sewer pumps 1,2 and sewer grinder as specified. (with VSD blue tooth hand-off key-pads)					
C.155		Supply	No	1			
C.156		Install	No	1			
C.157		Allow for the testing, recording and commissioning of the complete MCC Panel.	Sum	1			
		<b><u>VARIABLE SPEED DRIVES (VSD'S)</u></b>					
		Supply, delivery, installation, commissioning and training of <b>IP55, wall mounted VSD with 3c3 rated PC boards</b> , including all control, switchgear and circuit breakers as specified.					
		30 kW, Type ABB ACQ 580 VSD or equal and approved.					
C.158		Supply	No	2			
C.159		Install	No	2			
		Communication cable/link between VSD's for inegrated parallel operation as prescribed by manufacturer.					
C.160		Supply	Sum	1			
C.161		Install	Sum	1			
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.162		Neta21 Expansion cards and Cat6 cabling for communication ability to GSM Modem	No	2			
C.163		Allow for the testing, recording and commissioning of the complete VSD installation by specialist.	Sum	1			
C.164		Training of user department staff as specified by specialist	Sum	1			
C.165		Compilation of Operation and Maintenance Manuals	Sum	1			
		<u>LEVEL DETECTION</u>					
		Supply, delivery, installation and commissioning of Level Detection Devices in wet sump as specified.					
		Complete non-contact, corrosion resistant, IP68 ultrasonic level detector type ABB LST 400, including communication cabling as specified. (Remote sensor display housed in MCC)					
C.166		Supply	No	1			
C.167		Install	No	1			
		Complete liquid relay level detector unit, type ABB CM-ENS or equal and approved, including corrosion resistant probes for <b>back-up</b> level detection of "high"- and "low" level including control cabling as specified.					
C.168		Supply	No	1			
C.169		Install	No	1			
		<u>RE MOTE EMERGENCY STOP BUTTONS</u>					
		Supply, delivery, installation and commissioning of an IP65, local emergency stop button at each sewer motor including the control wire as specified. Including Unistrut support and mounting bracket required to rigidly post mount the emergency button at 1.5 m AFFL.					
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.170		IP65, 550V, 10A, weatherproof Local emergency-stop polyamide control button with silver-nickel- or gold-plated contacts with either screw or spring cage terminals complete with unistrut support and mounting bracket required to rigidly post mount the stations at 1.5 m AFFL.	No	2			
C.171		Supply	No	2			
C.172		Install	No	2			
C.172		Allow for the testing, recording and commissioning of the local control stations.	Sum	1			
<u>GSM MODEM</u>							
C.173		Supply, delivery, installation and commissioning of a GSM Modem type Phoenix Contact or equal and approved as specified. (Housed in MCC)	No	1			
C.174		Allow for the testing, recording and commissioning of the complete modem and communication system by specialist.	Sum	1			
<u>CONTROL CABLES</u>							
C.175		Supply, delivery and installation of the following copper control cables between MCC, VSD and motors on cable trays as specified including delivery on site, unloading and storing. Stranded copper core, PVC/PVC/SWA/PVC 600/1000V copper cables:  <b>Local Emergency Stop buttons</b> -sewer pumps 1 and 2 (2,5 mm <sup>2</sup> , 3-core, PVC SWA PVC)	m	10			
C.176		<b>MCC-Thermistor</b> -sewer pumps 1 and 2 (2,5 mm <sup>2</sup> , 3-core, PVC SWA PVC)	m	10			
<u>COMMUNICATION CABLES</u>							
C.177		Supply, delivery and installation of the following communication cables between the VSD and MCC:  2-Core, Screened multistrand twisted pair, low noise	m	10			
Total Carried Forward							

***Tender No : BOD/NC*****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION****Schedule of Quantities****SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		Any other items the contractor may deem necessary for the successful completion of this MCC and pump control installation:  a)  b)  c)					
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
		<b><u>BILL NO 6: STANDBY GENERATOR SET</u></b>					
		<u>100 kVA STANDBY GENSET</u>					
		Engine, complete with all equipment as specified:					
C.178		Supply	No	1			
C.179		Installation	No	1			
		Alternator complete with all equipment as specified:					
C.180		Supply	No	1			
C.181		Installation	No	1			
		Switchboard complete with all equipment as specified:					
C.182		Supply	No	1			
C.183		Installation	No	1			
		Fuel Tank, including fuel pump and fuel pipes:					
C.184		Supply	No	1			
C.185		Installation	No	1			
		Battery complete with all equipment as specified:					
C.186		Supply	No	1			
C.187		Installation	No	1			
		All required notices and labels, complete as specified:					
C.188		Supply	Sum	1			
C.189		Installation	Sum	1			
		A set of earmuffs for hearing protection					
C.190		Supply	No	1			
C.191		Installation	No	1			
Total Carried Forward							

***Tender No : BOD/NC*****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION****Schedule of Quantities****SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.192		Carbon Dioxide fire extinguisher, 5 kg mounted inside outdoor weatherproof canopy Supply	No	1			
C.193		Installation	No	1			
C.194		Maintenance and repair during the 12 month defects liability period	Sum	1			
C.195		Maintenance and repair during the 12 months following the completion of the guarantee period	Sum	1			
C.196		Training of user department staff as specified	Sum	1			
C.197		Compilation of Operation and Maintenance Manuals	Sum	1			
C.198		Earth mat as specified on drawing.	No	1			
C.199		Weather-proof canopy, complete as specified Supply	No	1			
C.200		Installation  Any other items the contractor may deem necessary for the successful completion of this standby genset installation:  a)  b)  c)	No	1			
Total Carried Forward							

**Tender No : BOD/NC**

NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION

Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.201		<b><u>BILL NO 7: PORTABLE HAZARDOUS GAS DETECTION SYSTEM (PGDS)</u></b>  <u>PGDS</u>  PC Amount for the supply, delivery, installation, commissioning, testing and training of a Portable Hazardous Multi-Gas Detection System by an approved specialist which continuously measures O2, CO, H2S and CH4	Sum	1	20,000.00	20,000	00
Total Carried Forward							

**Tender No : BOD/NC****NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**

## Schedule of Quantities

**SECTION C: ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	
						R	c
Brought Forward							
C.202		<p><b><u>BILL NO 8: COMMISSIONING</u></b></p> <p>Tenderers to allow for all the commissioning requirements, including testing, attendance, as-built drawings, manuals, etc. as set out in the specification, prior to the installation being taken over as complete.</p> <p><b><u>GENERAL ITEMS</u></b></p> <p>Any additional items that the Tenderer deems necessary for the successful and total completion of the portion of the work required for this Bill (specify):</p> <p>a)</p> <p>b)</p> <p>c)</p> <p>d)</p> <p>e)</p> <p>f)</p>	Sum	1			
Total Carried Forward To Summary							



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NABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION

Schedule of Quantities

**SECTION D : CONTINGENCIES**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT		
						R	c	
D.1		<p><b><u>SECTION D: CONTINGENCIES</u></b></p> <p>Provide an amount that can be used in total or partially to cover for unforeseen or additional work as instructed in writing by the Engineer. This amount will be deducted from the contract amount should it not be required.</p> <p>Amount = 0,10 (Sum of Section A - C)            = 0,10 x R.....            Amount = R.....</p>	%	10				
Total Carried Forward To Summary								

NAMA KHOI LOCAL MUNICIPALITYTENDER NONABABEEP: ELECTRICAL AND MECHANICAL WORKS FOR THE NEW GAATJIE SEWER PUMP STATION**SCHEDULE OF QUANTITY SUMMARY**

<b>SECTION NO</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
A	PRELIMINARY AND GENERAL	R -
B	MECHANICAL	R -
C	ELECTRICAL	R -
D	CONTINGENCIES	R -
	Nett Tender Total <b>Excluding</b> VAT	R -
	ADD : VAT @ 15% on Nett Tender Total	R -
	TOTAL CARRIED TO TENDER FORM, <b>INCLUDING VAT @ 15%</b>	R -