

SUMMARY OF BILL OF QUANTITIES - MAKHATHINI SUBSTATION CAPACITOR BANKS

Page No	Description	Amount
NB: ALL MATERIAL TO COMPLETE THE ENTIRE SCOPE OF WORK TO BE SUPPLIED BY THE CONTRACTOR UNLESS OTHERWISE STATED		
1	Bill No. 1 - Preliminary and General	
2	Bill No. 2 - Bulk Earthworks	
3	Bill No. 3 - Surface Drainage	
4	Bill No. 4 - Bund Areas	
5	Bill No. 5 - Main Earthmat	
6	Bill No. 6 - Security Fencing	
7	Bill No. 7 - Foundations	
8	Bill No. 8 - Steelwork	
9	Bill No. 9 - Equipment	
10	Bill No. 10 - Control Plant	
11	Bill No. 11 - Stringing	
12	Bill No. 12 - Capacitor Banks	
TOTAL (Excl. VAT)		
VAT @ 15%		
TOTAL (Incl.VAT)		

DESIGN APPROVER: Jayant Raghubir



DATE: 10/01/2025

ENGINEER (ELECTRICAL): Jayant Raghubir



DATE: 10/01/2025

ENGINEER (CIVIL):

Murmero



MOAB

DATE:

13/01/2025

ENGINEER (CONTROL PLANT): Ardon Sukhnandan



DATE: 13/01/2025

QS:

M. Nkosi



DATE: 10/01/2025

PM:

Dave Oerder



DATE 13 January 2025

BILL NO. 1 - PRELIMINARY AND GENERAL				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	Contractual Requirements				
1.1	"The sum shall cover the contractor's initial costs of providing sureties, insurance of the Works and plant, third party or public liability insurance and unemployment insurance to cover his compliance with the requirements of the Workmen's Compensation Act, 1941 (Act NO. 30 of 1941) and any other initial financing obligations of a preliminary and general nature, such as contributions to the CEITB."	Sum	1		
2	Establishment of facilities on site:				
2.1	a) Supply and Install Diamond mesh fencing at 1.8 Meters high	Sum	1		
2.2	b) Temporary diamond mesh lockable double leaf gate 1.8m high x 6m wide	No.	1		
2.3	c) Temporary diamond mesh lockable pedestrian gate, 1m wide	No.	1		
2.4	d) Site Office/Meeting Room	Sum	1		
2.5	e) Storage shed	Sum	1		
2.6	f) Water Supply & Ablution facilities	Sum	1		
2.7	g) Plant, tools & equipment	Sum	1		
3	Removal of all items indicated above upon completion of construction and making good and restoring of the Site to the satisfaction of the Project Manager.	Sum	1		
4	Provision of "As Built" drawings.	Sum	1		
5	Construction Name Board - The Contractor shall supply, install and maintain one project signboard bearing the name of the project, the name and logo of Eskom, and the Contractor.	Sum	1		
6	Provision of samples of materials to be used (only materials supplied by contractor). <i>(Provisional)</i>	Sum	1		
7	Provision for the compilation of the Construction Programme, updated on a fortnight basis and Quality Assurance Programme for the works.	Sum	1		
8	Occupational Health & Safety Requirements				
8.1	Provision of personal protective equipment and clothing for all the contractor's staff, including sub-contractors.	Sum	1		
8.2	Provision of safety measures, e.g.. Fall arrest systems, shoring for safety purposes etc.	Sum	1		
8.3	Compliance with OH&S Act & Construction Regulations, for other provisions not accounted for elsewhere	Sum	1		
9	Compliance with the Requirements for the Expanded Public Works Programme				
	<i>Note: The reports are to be submitted with the contractors monthly invoice.</i>				
9.1	Compliance with the Requirements for the Expanded Public Works Programme (incl. monthly reports).	No Charge			
SUB TOTAL SECTION A					

10	Time Related Items (To maintain site for the duration of the project)				
	Operate and Maintain Facilities on Site:				
10.1	a) Site Office/Meeting Room	Month	24		
10.2	b) Storage shed	Month	24		
10.3	c) Staff living accommodation	Month	24		
10.4	b) Ablution facilities	Month	24		
10.5	c) Plant, tools & equipment	Month	24		
10.6	d) Temporary water supply	Month	24		
10.7	e) Temporary electric power supply	Month	24		
11	Construction Manager				
11.1	Contractor shall provide a competent SACPCMP registered Construction Manager for the management and the supervision of the whole construction works on a full-time basis	Month	24		
12	Community Liaison Forum				
12.1	The contractor is to establish a local stakeholder steering committee made up of the community traditional leadership, political leadership, business forums and other parties deemed necessary for the forum. This committee must hold formal monthly meetings (at a minimum) and manage the allocation of sub-contractor work, community and land-owner issues related to this project and mitigate disruptions to work on site. Time and money must be allowed for this committee and time for the disruptions that may occur is to be accommodated in the construction programme. (<i>Rate is Provisional</i>)	Month	24		
12.2	Community Liaison Officer conversant in Zulu and local cultural norms	Month	24		
13	Safety Officer				
13.1	Contractor shall provide a competent SACPCMP registered Safety Officer to ensure the safety of all individuals on site. The Safety Officer is to ensure all construction and safety regulations are adhered to on site.	Month	24		
14	Storeman				
14.1	Storeman is required to reconcile and quantify All material on site including Eskom supplied material using the correct material return to stores forms. The Storeman shall adhere to the implementation and maintenance plan for Materials Management System for the duration of the contract.	Month	24		
15	Security				
15.1	Contractor shall provide security guard/s to ensure the site including offices, storage sheds and all Eskom material are protected from theft or any damage. The Contractor needs to ensure that the above mentioned is guarded 24hrs a day.	Month	24		
SUB TOTAL SECTION B					
TOTAL SECTION A & B					

BILL NO. 2 - BULK EARTHWORKS				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	EXTERNAL WORK				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	EARTHWORKS				
	Excavations, filling, base courses, etc				
1	Preparation of site and stripping of topsoil and grass to a depth of 150mm and stockpile. To be stockpiled in an accessible position adjacent to the site.	m ³	56.00		
2	Cut to spoil for yard extention compacted to 90% MOD AASHTO, measured in cut. (<i>Provisional</i>)	m ³	170.00		
3	Rip and recompact upper 150mm layer of in-situ subgrade to 90% MOD AASHTO, measured in cut.	m ³	56.00		
4	Construct base (150mm thick) using imported G4 graded crusher stone compacted to 95% MOD AASHTO. <i>Note: Certificate to be provided for the required material. If Quarry cannot provide certificate, Contractor to provided Geotech Specialist to certify the mat</i>	m ³	81.00		
5	<i>Extra over Earthworks for excavation of boulders and hard rock (provisional). All rock and boulder holes to be verified by the Project Engineer prior to excavation.</i>				
5.1	Hard Rock (<i>Provisional</i>)	m ³	170.00		
5.2	Boulders (<i>Provisional</i>)	m ³	12.00		
	WEED KILLERS, INSECTICIDES, ETC (complete with certificate)				
6	Applicaton of herbicide and pesticide to substation yard prior to placing yard stone	m ²	490.00		

7	YARD STONE				
7.1	Removal of existing Yard Stone (11mx11m 0.1m x 2) to required depth	m3	30.00		
7.2	Supply & spread 100mm thick layer of 26.5mm Granite/Tillite, single size, unweathered stone (to cover the Yard platform). Note: Stone needs to be washed before being laid on Yard platform.	m3	100.00		
7.3	Top up the existing yard stones with 50mm thick layer of 26.5mm Granite/Tillite, single size, unweathered stone (to cover the Yard platform). Note: Stone needs to be washed before being laid on Yard platform	m3	100.00		
	REHABILITATION				
9	Site rehabilitation	m²	300.00		
	TESTS				
	<u>Prescribed tests to determine degree of compaction or other properties of ground or filling</u>				
10	Modified AASHTO Density test	No	1.00		
TOTAL					

BILL NO. 3 - SURFACE DRAINAGE					AMOUNT	
ITEM NO.	REF.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
		<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
		CONCRETE STORMWATER CHANNELS ETC				
		ER00024-17-01-07				
1		<u>New dissipator</u> (ER00024-20-06-01)				
1.1		Excavation in earth not exceeding 2m deep	m ³	2.12		
1.2		100 - 150mm Boulder stone to dissipator	m ³	2.12		
1.3		Extra over for excavation in Rock (Provisional QTY)	m ³	2.12		
2		<u>Concrete cut-off drain</u> (ER00024-20-06-01)				
2.1		Excavation in earth not exceeding 2m deep	m ³	43.00		
2.2		Soil poisoning to excavations	m ²	144.00		
2.3		25MPa concrete	m ³	21.00		
2.4		Construction joints at 5000mm centres using 10mm polystyrene sheet in 100mm thick slab	m	28.00		
2.5		0.15mm Polyethylene sheeting	m ²	144.00		
3		<u>Stormwater Pipe</u> (ER00024-20-11-00)				
3.1		Excavation for trench, including backfilling, not exceeding 2m deep	m ³	16.00		
3.2		Extra over for excavation in Rock (Provisional QTY)	m ³	16.00		
3.3		Soil poisoning to excavations	m ²	54.00		
3.4		Class C bedding	m ³	6.00		
3.5		450mm Dia Concrete pipe	m	18.00		
4		<u>Manhole</u>				
4.1		Manhole complete including all excavation, brickwork, plaster, reinforcement and concrete	No.	1.00		
5		<u>Headwall</u> (ER00024-20-06-01)				
5.1		Excavation in earth not exceeding 2m deep	m ³	0.70		
5.2		25Mpa concrete, including formwork	m ³	1.00		
5.3		Type ref 311 weldmesh reinforcement	m ²	3.35		
6		<u>Stilling Basin</u> (ER00024-20-06-01)				
6.1		Excavation in earth not exceeding 2m deep	m ³	4.00		
6.2		100 - 150mm boulder - grouted stone pitching	m ³	4.00		
					TOTAL	

BILL NO. 4 - BUND AREAS				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	EARTHWORKS				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
1	EXCAVATION, FILLING, ETC., OTHER THAN BULK EXCAVATION				
	Excavation in earth not exceeding 2m deep				
1.1	Strip footings to capacitor banks 1 & 2 bundwalls	m ³	16.00		
2	SOIL POISONING				
	Approved brand of anti - termite poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten:				
2.1	To bottoms and sides of trenches, bases, etc.	m ²	95.00		
	CONCRETE, FORMWORK AND REINFORCEMENT				
3	REINFORCED CONCRETE				
3.1	20MPa/19mm concrete				
3.2	Strip footings to capacitor banks 1 & 2 bundwalls	m ³	2.60		
4	CONCRETE SUNDRIES				
	Test cubes, etc.				
4.1	Making and testing 150 x 150 x 150mm concrete strength test cube and complete with certificate.	No.	4.00		
	Precast concrete				
4.2	500 x 500 x 30mm Precast concrete slab	No.	2.00		
	MASONRY				
5	BRICKWORK IN SUPERSTRUCTURE				
	Brickwork of Firelight Satin facebricks in class II mortar				
5.1	220mm one brick wall to capacitor banks 1 & 2 bundwalls	m ²	19.00		
5.2	Roller course capping to bundwalls	m	47.00		
6	FACE BRICKWORK				
	35 Mpa Min firelight satin facebrick laid fairface with pointed joints finish:				
6.1	Extra over brickwork for facing	m ²	18.00		
7	BRICKWORK SUNDRIES				
7.1	75mm Galvinised pipe, fitted with tee-off syphon pipe and gate valve	No	2.00		
8	SCREEDS				
	Screeds on concrete:				
8.1	100mm concrete screed to inside of capacity bundwalls in minimum slope 1:200 as per drawings ER00024-20-09 and ER00024-20-10	m ²	63.00		

	EXTERNAL WORK				
9	KERBING				
	Channelling, kerbing, edging, etc				
9.1	Precast concrete kerbing as per ER00024-17-04-05, including excavation, concrete and backfilling	m	58.00		
10	FENCING				
	Fencing, posts, gates, etc				
10.1	Diamond mesh fence for capacitor banks, 1.8m high complete with steel posts and foundations, no overhang in accordance with detailed drawings: D-DT-5237 SH2A & 2B, latest revision	m	40.00		
10.2	Diamond mesh single leaf gate - 1.5m opening in accordance with the detailed drawings: D-DT-5237 SH 2A & 2B	No.	2.00		
	ELECTRICAL WORK				
11	EARTHING				
11.1	Excavation for Earth Mat trenches (500mm Wide x 1000mm Deep Trench), including backfilling and compaction	m ³	20.00		
11.2	Extra Over for Excavation in Rock (<i>Provisional QTY</i>)	m ³	10.00		
11.3	The supply and installation of Main Grid Earth Mat – Ø: 10mm Annealed Cu Round Bar (0,7kg/m)	m	40.00		
11.4	The supply and installation of Earth Tails – 50mm x 3mm Flat Copper Strips (1,4kg/m)	m	30.00		
				TOTAL	

BILL NO. 5 - MAIN EARTHMAT				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	ELECTRICAL WORK				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	EARTHMAT INSTALLATION				
1	Earthworks, etc.				
1.1	Excavation for Earth Mat trenches (500mm Wide x 1000mm Deep Trench), including backfilling and compaction	m ³	74.00		
1.2	Extra Over for Excavation in Rock (<i>Provisional QTY</i>)	m ³	22.20		
2	Earth Mat & Earth Tails				
	<i>The unit rate shall include the supply and installation of earth mat as per Eskom Earthing Standard D-DT-5240 (Sheets 01 to 21), Eskom Foundation Drawings and Design Drawings ER00024-17-04-05</i>				
2.1	Main Grid Earth Mat – Ø: 10mm Annealed Cu Round Bar (0,7kg/m)	m	147.00		
3	Earth Mat Connections				
3.1	Main Earth Mat to Main Earth Mat	No.	21.00		
4	Testing				
	<i>Allowance shall be made for the testing of the Earth Mat in accordance with SANS 10199 and Eskom Specifications (SCSASAAL9 Rev2 and SCSASABK3 Rev0). Included shall be the provision of test certificates and all documentation as required. Tests to be done using the 61.8% and four potential method. There shall be two of these tests done diagonally on the opposite sides of the substation platform. Test shall be approved and witnessed by the Project Engineer or Site Representative. The above mentioned needs to be carried out by a professional earthing contractor.</i>				
4.1	Measuring of Earth Mat Resistance (in accordance to SANS 10199).	Sum	1.00		
5	Soil Resistivity Testing				
	<i>Allowance shall be made for the testing of the Soil Resistivity in accordance with SANS 10199 and Eskom Specifications (SCSASAAL9 Rev2 and SCSASABK3 Rev0). Test to be done only after completion of the Cut and Fill for the platform. Included shall be the provision of test certificates and all documentation as required. Test to be done using the Wenner method. Two sets of readings shall be taken diagonally across the site, maintaining the centre position of the probes. Test shall be approved and witnessed by the Project Engineer or Site Representative. The above mentioned needs to be carried out by a professional earthing contractor.</i>				
5.1	Measuring of Soil Resistivity	Sum	1.00		RATE ONLY
TOTAL					

BILL NO. 6 - SECURITY FENCING				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	DISMANTLING				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	<u>Taking down and removing</u>				
1	Steel palisade security fence with concrete posts, including gate. To be disposed off at an appropriate waste site	m	29.00		
	EXTERNAL WORK				
	KERBING				
	<u>Channelling, kerbing, edging, etc</u>				
2	Precast concrete kerbing as per ER00024-17-04-05, including excavation, concrete and backfilling	m	40.00		
3	FENCING				
	<u>Fencing, posts, gates, etc</u>				
3.1	Steel Palisade security fence, 2.4m in height, complete with posts and foundations as detailed in ER00024-17-04-05	m	40.00		
3.2	Extra Over for Excavation in Rock (<i>Provisional QTY</i>)	m ³	2.00		
	ELECTRICAL WORK				
	EARTHING				
4	Earth Tails – 50mm x 3mm Flat Copper Strips (1,4kg/m)	m	1.20		
5	Earth Mat Connections				
5.1	Installation of main earth mat to fence tails	No	2.00		
5.2	Installation of earth tails to fence posts	No	2.00		
				TOTAL	

BILL NO. 7 - FOUNDATIONS				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	CONCRETE, FORMWORK AND REINFORCEMENT				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	CONCRETE SUNDRIES				
1	Equipment Foundations				
	<i>Setting out, excavation, removal of excavated material, shuttering, casting, curing and finishing of the following concrete foundations (incl. the supply delivery and installation of all holding down bolts, nuts, steel reinforcement, earth tails and including curing compound). Refer to Drawing ER00024 Set 17 (Sht 03) for foundation layout.</i>				
1.1	22kV Capacitor Bank Foundation	No.	2.00		
1.2	22kV Isolator Foundation (D-DT 5205/AR9)	No.	2.00		
1.3	22kV Kiosk Breaker Foundation (D-DT 5216/BR6)	No.	2.00		
1.4	22kV Neutral CT Foundation	No.	2.00		
1.5	22kV Reactor Foundation	No.	2.00		
1.6	Extra Over for Excavation in Rock (<i>Provisional QTY</i>)	m ³	11.00		
2	CONCRETE SUNDRIES				
	Test cubes, etc.				
2.1	Making and testing 150 x 150 x 150mm concrete strength test cube and complete with certificate. (Provisional)	No.	12.00		
2.2	Concrete slump test	No.	3.00		
3	Certificates				
3.1	Concrete work, Test Certificates, compaction	Sum	1.00		
TOTAL					

BILL NO. 8 - STRUCTURAL STEELWORK				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	STRUCTURAL STEELWORK				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	<u>Supply, Assembling and Erection of Steelwork (As per standard drawings)</u>				
	<i>This activity includes the supply of all bolts, nuts, washers etc. according to the bolt schedules on the Standard Drawings and for attaching the equipment to the steel work. Refer to Drawing ER00024 Set 17 (Sht 2) for General Arrangement and Steelwork Marking Plan.</i>				
1	Support, 22kV Isolator, 167.08kg	Each	2		
2	Support, 22kV, Combo Breaker	Each	2		
TOTAL FOR STEELWORK					

BILL NO. 9 - EQUIPMENT				AMOUNT		
ITEM NO.	DESCRIPTION	UNIT	QTY	SUPPLY RATE	INSTALL RATE	TOTAL PRICE (SA RANDS)
	EQUIPMENT					
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>					
	<i>Install and adjust, fit for operation, the following equipment to the relevant manufacturers' specification and requirements on the erected supports, including earthing and labelling:</i>					
1	ISOL, 22kV 2500A 25kA CRDB 16Aux Sw, 31mm/kV, 50mm Pad	Each	2			
2	BKR,CIRC:COMBO ;22 KV ;1250 A ;25 KA (110VDC)	Each	2			
3	S/ARRESTER, 22kV 10kA, S/class, Polymer, MCOV 24kV, 31mm/kV	Each	6			
TOTAL FOR EQUIPMENT						

BILL NO. 10 - CONTROL PLANT				AMOUNT	
ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL PRICE (SA RANDS)
	CAPACITOR BANK PROTECTION SCHEME				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
1	Design, Supply and installation of C70 type Scheme for Protection and Control of Capacitor bank and associated equipment including commissioning , terminations, design drawings, etc	Each	2		
2	Supply, mount and earth Swing Frame Panel 2400mm h x 800mm d x 600mm w	Each	2		
3	2nd Rear communication port for IED where applicable	Each	2		
4	SERIAL TRAY WITH 1 MOXA . 01 X 4 U MOXA RACK MOUNT BOX WITH SILK SCREEN (ISTE-304300)	Each	1		
	PROTECTION CABLING AND MISCELLANEOUS				
	<i>Note: The cables must be laid and buried in trenches 700 mm deep and 450 mm wide. The cables buried in a trench outside the HV yard must have warning tape (PVC org/blk d 8013) installed 300 mm above and the total length of the cables.</i>				
5	Earthworks, etc.				
5.1	Excavate trenches to install new control technology cables, including backfilling and compaction. Quantity is Provisional. To be re measured on site.	m	600		
5.2	Extra Over for Excavation in Rock (Provisional QTY)	m ³	56.70		
	Supply and Install 1kV control cables:				
	Quantity is Provisional and should be confirmed with the Eskom PM and Eskom Control Plant engineer before ordering and installation.				
6	BVX 12 DCV of size = 2.5 mm ²	m	300		
7	BVX 19 DCV of size = 2.5 mm ²	m	300		
8	BVX 4 ECV of size = 4 mm ²	m	500		
9	BVX 4 ECV of size = 2.5 mm ²	m	500		
	Supply and Install cable glands:				
10	Size 1	Each	30		
11	Size 2	Each	15		
	Labelling				
12	Label all the cables according to Eskom standards	ITEM	1		
	SCADA CABLING AND MISCELLANEOUS				

13	Cable, Communication: Armoured; Conductor: 4 Pair Twisted; Conductor Size: 22/24 AWG; For EIA - RS 485 DATA;	m	30		
TOTAL FOR CONTROL PLANT					

BILL NO. 11 - STRINGING				AMOUNT	
ITEM. NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL
	STRINGING				
	<i>Contractor is to undertake site survey and quantity verification and price accordingly. Rates to include all work, plant, equipment, labour & material necessary to complete the Item as per the Detailed Specification. Contractor to supply all material required to complete the work unless otherwise stated.</i>				
	<i>Install clamps to manufacturer specifications and string conductor jumpers and droppers as per design specifications</i>				
1	CONDUCTOR, AAC, HORNET 16.3mm, 26kN	m	6		
2	CONDUCTOR, AAC, CENTIPEDE, 26.5mm, 67kN	m	60		
3	Clamps, bolted - compression	No.	48		
4	Clamps, bolted - bolted	No.	12		
TOTAL FOR STRINGING					

BILL NO. 12 - CAPACITOR BANKS						
MAKHATHINI 2 X 22kV 3MVAR CAPACITOR BANK C-TYPE 3H FILTER						
BILL OF ACTIVITIES AND DURATION						
Note	<i>The Bill of Activities for the Makhathini Capacitor Bank is as below, but not limited to these activities. The contractor can add additional activities to the following. The contractor is to provide timelines for the following activities. Rates to be inclusive of labour & material to complete the activity</i>					
No.	ACTIVITY	Unit	Quantity	Rate	Total (ZAR)	Duration (days)
1.1	Completion of Switching and other related Studies					
1.2	Project Management & Planning					
1.3	Design and Engineering of Capacitor Bank and associated equipment					
1.4	Design and Drawings Review					
1.5	Manufacture of Capacitor Bank, Filter and associated equipment (<i>Material and Labour</i>)					
1.6	Inspection and Testing (Factory Acceptance Tests and Type Tests) - Type test rates only					
1.7	Transport, Freight and off loading on site					
1.8	Site Erection and Installation Works, excluding stringing and clamping from bay equipment to cap bank yard measured under "stringing", and cap bank foundations, measured under "foundations"					
1.9	Field Acceptance Tests & Commissioning					
1.10	Manufacture and Supply of Spares, Safety Earthing kit, capacitance meters, special tools, etc					
1.11	Training of Eskom Employees					
1.12	Supply of all related documentation, manuals and drawings					
1.13	RAM Monitoring and Reporting					
	TOTAL					

