KOSTER SWITCHING STATION REFURBISHMENT BOQ SUMMARY

Item	Description	Amount	Comment
1	Preliminary and General		
2	Civil Works		
3	Elecrical Works		
4	Control Cabling		
5	Miscellaneous		
6	Integrated Security System		
7	Sundries		
8	**Sub-Total - A**		
9	**Contigency (10%)**		
10	**Sub Total - B**		
11	**VAT (15%)**		
12	**TOTAL**		

Preliminary and General

Item No	Description	Unit	Qty	Supply Rate	Amount (R)
1	**Preliminary and General**				
1a	Allow for complying with all General and Special Conditions of Contract, labour requirements, site establishment and the provision of a site office for use of the contractor, client , water and sanitary facilities, first aid services	sum	1		
1b	Allow for all Engineering designs, drawings and calculations.	sum	1		
1c	Allow for attendance to all site meetings and inspections, transport and time, related to such meetings and inspections.	sum	1		
1d	Allow for Construction to be done in close proximaty of energized HV/MV equipment. Suitably qualified personel and time constraints to be allowed for to accomodate for the substation being alive at all times. The live sections within the substation will not be isolated for prolonged periods. Outages will be limited by network conditions.	sum	1		
STORAGE, INSURANCE AND GUARANTEE					
2a	Allow for the storage and safe keeping of all materials and equipment including the provision of insurances as stipulated in the Conditions of Contract. Allow for 24 hour security for the duration of the contract.	sum	1		
2b	Allow for the costs to cover the provision of providing a Performance Guarantee and/or Surety as stipulated in the Conditions of Contract.	SUM	1		
2c	Allow for the costs of providing a 12 month guarantee against defects on all workmanship, material and equipment, (Normal maintenance, abuse, wear and tear excluded) and visiting the site when required for inspections.	sum	1		
	Total for item 2				
3	PERMITS AND NOTICES				
3a	Allow for obtaining all necessary permits for transport of equipment and/or giving of notices to any other authority or institute involved, as well as co- operation agreements with other traders/contractors involved with the project.	sum	1		
3b	Acquire Wayleave approval from North West Roads Agency for all cable work to be done in the road reserve	sum	1		
	Total for item 3				
4	**MANAGEMENT AND CO-ORDINATION**				
4a	Allow for all costs for supervision, management and co-ordination of all domestic sub contractors, other contractors and other parties involved in the construction process.	sum	1		

5	**OHS ACT REQUIREMENTS**				
5a	Allow for compliance with the requirements of the Construction Regulations and attendance of 4-day Municipality specific course for site supervisors.	sum	1		
6	**DRAwiNGS**				
6a	Allow for marking-up a full set of drawings to show the exact positions of cables, cable joints, road crossings etc. These "As Built" drawings must be handed to the engineer at commissioning of the equipment. Also all maintenance manuals, including all technical literature, test certificates and wiring diagrams as per specification.	SUM	1		
7	**SPECIALISED SERVICES**				
7a	Provisional amount for services rendered by a specialist on request or instruction by the client or engineer.	SUM	1		
7b	Allow for work to be done within a live substation restricted environment. Outages will be limited by network conditions. Contractor to ensure all staff working within the substation is suitably qualified.	sum	1		
7c	All costs to comply with the EMP plan	sum	1		
7d	Allow for the transport of all obsolete materials to Stores or dumpsite, whichever is suitable.	**SUITI**	1		
7e	Provisional amount to repair an damage to existing earthmat, if required	sum	1		
7f	Allowance for under ground services scan and report	m2	150		
7g	Allow for training for six People as stipulated in 3.1.28	sum	1		
8	ADDITIONAL ITEMS				
8a	Any additional item(s), not shown in the schedules, that the tenderer consider essential and wish to detail and price. (Provide full details)				
8b		sum	1		
8c		sum	1		
8d		SUM	1		
8e		SUM	1		
8f		SUM	1		
8g		SUM	1		
	Total for Item 8				
	P& G Total				

	CIVIL					
ITEM	**Description**	**UNIT**	**QTY.**	**MATERIAL**	**LABOUR**	**TOTAL**
1	Assess existing switch gear room building for structural damage	Sum	1			
2	Refurbish Control room (Design and approval required)	Sum	1			
3	Civil Works (Stormwater Management & Paving)	Sum	1			
TOTALS						

Item No	Description	Unit	Qty	Materials	Labour	Amount (R)
	11kV PRIMARY QUIPMENT					
1	**11kV SWITCHBOARD (without protection)**					
a	Incomer Breaker	each	1			
b	Outgoing Feeder Breaker	each	5			
c	Assemble and Install switchgear by OEM	lot	1			
d	Decommission and remove damaged switchgear and return to Stores	lot	1			
2	**11kV POWER CABLING - Incomer cables**					
a	Disconnect, cut and remove existing cables between Eskom transformer and Koster incomer panel	lot	1			
b	Supply and install cable support from basement floor to roof level to support all the power cables terminated into the new board, the cable clamps must be secured onto the structure.	lot	1			
3	**11kV DISTRIBUTION CABLES - Distribution cables**					
a	Supply, deliver and install 300mm2 x 3c 11kV Alumnium XLPE SWA cable		500			
b	Supply, terminate and connect 11kV 300mm2 x 3c indoor terminations for Alumnium XLPE 300mm2 cable	each	5			
c	Remove all existing cut all old MV distribution cables replaced by the new tails. Return all cables to Stores	Lot	1			
d	Allow for cable ID and location testing of the existing cables outside the substation yard. Test equipment to be supplied by the contractor.	each	10			
e	Install suitable cable racks to carry 3 x 300mm2 Aluminium XLPE cables per racking system. More than 1 cable rack to be installed where cable quantity required.	m	60			

4	**11kV Busbar Extension and Clamp**					
a	not applicable	no	0			
	CONTROL PANELS, DB's AND JUNCTION					
5	**PROTECTION AND CONTROL PANELS (All**					
a	11kV Incomer differential protection scheme	no	1			
b	11kV Feeder schemes Main Feeder	no	5			
c	11 KV Metering Panel	no	1			
d	Install LV cable racking system on the wall behind the control panels from the existing duct. All control cables to be securely tied onto the racking system.	m	80			
6	DC DISTRIBUTION SYSTEMS					
a	Batteries	Lot	1			
b	110V Battery charger	no	1			
c	SOV DC/DC converter	no	1			
d	DC Distribution Board	no	1			
e	Remove the existing DC distribution board	no	1			
f	Lay and terminate all DC cables between batteries and battery chargers	Lot	1			
7	**Total for Item 6**					

CONTROL CABLING

Item	Description	Unit	Qty	Material Rate	Labour Rate	Total
7	LOW VOLTAGE 1000/600 CABLES					
	Supply and install 1000/600V PVC/SWA/PVC cables according to Detail Specification					
7a	4mm2 Core	m	1000			
7b	4mm2 4 Core	m	1000			
7c	2.5mm2 19 Core	m	1000			
7d	2.5mm2 27 Core	m	1000			
8	END TERMINATION of 1000/600V CABLES					
	4, 12, 19 and 27 core Cable					
8a	End termination of 1000/600V cables 4, 12, 19, 27 core cable	Lot	1			
8b	Termination of cable cores	Lot	1			
9	Excavations for Cable Installation not in					
9a	Hard pickable Soil	m3	150			
9b	Hard pickable soil with large boulders	m3	30			
9c	Remove and dump excess rock at a suitable	m3	20			
9d	Supply new soil to replace any rock removed	m3	20			
9e	Cut tar	m2	25			
9f	Supply and install suitable soil bedding	m3	10			
10	Backfill & Compaction					
10a	Fill and Compact to MOD AASHTO 90%	m3	100			
10b	Re-instate tar	m2	25			
11	Testing					
11a	Test all installed cables	Lot	1			
11b	Tan Delta, VLF & Partial Discharge Testing of	Lot	1			
	Total for Item 11					
12	Safety and Prohibition Signs					

Item	Description	Unit	Qty	Amout	Total
12a	Safety Signs	Lot	1		
12b	Prohibition Signs	Lot	1		
12c	Indication Signage	Lot	1		
	Total for Item 12				
13	Security Locks				
13a	Security Locks - City Power Equipment	Lot	2		
14	Fire Extinguisher suitable for Fire Types AB&C	Lot	1		
15	**Total Carried Forward**				

7.1	ACCESS CONTROL SYSTEM					
Item	**Description**	**Unit**	**Qty**		**Amt**	**Total**
7.1.2	Door Reader Controller (supports OSDP Readers) - 12 VDC, 2 Reader Interface, W/M, 8 inputs, 6 (SA) form C relays		3			
7.1.3	Power Supply & Enclosure - 12VDC output, 220/230 VAC (1.6 amps) input continuous supply current with enclosure (24” x 18" x 4.5"). Lock and open frame trasformer, tamper switch, power distribution module, UPS capable CE Approved, houses 6 controller boards	each	1			
7.1.4	Battery 12 V 7.2 AH	each	2			
7.1.5	HID iCLASS SE R10, Mini-Mullion, Wiegand Interface, Pigtail, Black(32-bit 14443A CSN standerd iCLASS + SIO (EV1, MIFARE, iCLASS, SEOS), LED RED, FLSH GRN, BZRON)	each	4			
7.1.6	Emergency green break glass unit	each	4			
7.1.7	5A Power Supply with battery backup for maglocks (6 Maglocks per PSU)		1			
7.1.8	Electromagnetic Lock, 300Kg Holding Force, Surface Mounted 12/24VDC Selectable with back box and accessories, including door monitor	each	4			
7.1.9	L Mount Bracket for 300Kg magnets for Electromagnetic Lock	each	4			
7.1.10	Surface mount contact, screw terminals	each	4			
7.1.11	Request to Exit Button Surface Mounted	each	4			
7.1.12	System designs, drawings, documentation and commissioning	sum	1			
7.1.13	Sundries	sum	1			
7.2.1	Interlogix TVB-5401 H264,TruVision 2MPx Low Light IP Bullet Camera, H.265/H.264, 2.0MPx, 2.8-12mm Motorized Lens, Super Low Light, WDR, True D/N, 50m IR, Audio, Alarm, BNC, Micro SD/SHDC Slot, Intelligence, PoE (802.3-af)/12VDC, Heater, IP66	each	9			
7.2.2	Interlogix TVD-x203 H264,TruVision@ IP Megapixel Dome IR Cameras by Interlogix bring high definition images to the mass video surveillance market. With 2MPx, 4MPx or 8MPx (4K) resolution options, these cameras provide flexibility for a wide variety of applications.	each	4			
7.2.3	Interlogix TVP-x122 H264,The TruVisiono 2MPx and 3MPx IP Compact PTZ cameras from Interlogix deliver the benefits of a PTZ solution while offering high definition image capture. This PTZ camera has advanced technology and can be installed in a wide range of applications and environmental conditions.	each	1			

7.2.4	**Lenel Network Video Recorder software license single channel for cameras**	**each**	**14**			
7.2.5	The TruVision@ NVR 11 (TVN 11) is a cost effective, network video recorder with up to 16 built-in PoE ports designed to support video streams from IP video cameras. With a total of 40/80/160Mbps of incoming bandwidth available, the NVR 11 can support up to 16 cameras at HD resolution in real-time (30fps) and many other configurations.	each	1			
7.2.6	**Sundries**	**each**	**1**			
7.3	**Fire Detection System**					
7.3.1	ZP2 Analogue Addressable 2 Loop Fire Control Panel with Back up Batteries, 230V, EN54 approved	each	1			
7.3.2	Addressable Optical Smoke Sensor	each	6			
7.3.3	Addressable Manual Call Point - Red	each	5			
7.3.4	Addressable Interface unit	each	2			
7.3.5	Addressable Fire Sounder with Strobe	each	2			
7.3.6	Detector Base surface mounting - Addressable	each	6			
7.3.7	Detector Base isolated - Addressable	each	0			
7.3.8	24 VDC-3Am Power Supply	each	1			
7.3.9	fault/Fire Interface to Lenel System	each	1			
7.3.10	System designs, drawings, documentation and commissioning (NFPA Approval)	each	1			
7.3.11	NFPA Approval	each	1			
7.3.12	Removal of existin Fire Detection System	each	1			
7.3.13	Sundries					
7.4	**Intrusion System**					
7.4.1	Input Control Module (Series two) - 12/24 VDC, 16 zone input monitor module, (32) 1K resistors (with 2 programmable output relays), RoHS, CE, C-Tick and UL294 certified	each	1			
7.4.2	Command Display terminal Keypad - 32-character back-lit LCD display with a 16 position keypad, supports both direct RS-485 communication with the ISC and Wiegand Input, 12VDC+15% @175mA (keypad only). C- Tick Certified	each	1			
7.4.3	PIR Infrared motion sensor, 360 degrees, ceiling mounted	each	6			
7.4.4	PIR Infrared motion sensor, Outdoor, 10m wall mounted Takex	each	5			
7.4.5	Magnetic door contacts (door & gate monitor)	each	8			
7.4.6	IR Beams - External 60m	each	0			
7.4.7	Panic Button for guard house	each	0			
8	**Total Carried Forward**					

Sundries

Item	Description	Unit	Qty	Rate	Total Amt
7.5	**Cable & Trenching**				
7.5.1	Supply and Install Mylar Cable, 2-Pair, 0.22mm - Pushbutton, RS 485 Bus	m	500		
7.5.2	Supply and Install Mylar 3-Pair 0.22mm- Reader	m	250		
7.5.3	Supply and Install Mylar 1-Pair 0.5mm - Door monitor	m	250		
7.5.4	Supply and Install Mylar 1-Pair 1.0mm - Ma lock	m	250		
7.5.5	PH30 Fire Resistance 2-core-1mm	m	400		
7.5.6	3 core 4mm PVP-SWA-PVC electrical cable	m	20		
7.5.7	Bosal conduit, 25mm plus spacer saddles at 1,5m distances including fixin s for access control and CAT 6 cable	m	1000		
7.5.8	Sundries	sum	1		
7.6	**Networking and Data Cables**				
7.6.1	Cisco 3850 24 Port POE Switch	each	1		
7.6.2	Cisco3850 Stackin Kit Client requested/Optional	each	1		
7.6.3	1000BASE-LX SFP 1310 nm, for distances up 10km	each	2		
7.6.4	19" Data Cabinet 42U x 600 x 1000mm deep complete with 4way, 10way power, bottom land late and perforated doors	each	1		
7.6.5	UPS Rack mounted 5kVA - 8-hour battery capacity complete with circuit breakers	each	1		
7.6.6	Class II Surge Arrestor for City Power Feed	each	1		
7.7	**Services**				
7.7.1	Project Management	sum	0		
7.7.2	Installation & Commissioning	sum	1		
7.7.3	Drawings/Designs	sum	1		
7.7.4	Software Engineering (programming and configuration)	sum	1		
7.8	**Programming of headend for systems above**				
7.8.1	Scan, add and configure all devices from Depot into Lenel Headend	sum	1		
7.8.2	Import graphic screens from CAD files into Leel Headend	sum	1		
7.8.3	Add all devices onto graphic screens	sum	1		
7.8.4	Add all cameras into NVR's	sum	1		
7.8.5	Stetup logic and rules for actions and alarms	sum	1		
7.8.6	Classify alarm types	sum	1		
7.8.7	Configure reports as per standard Municipal Reports	sum	1		
7.8.8	Commission Depot with Installation contractor	sum	1		
Total Carried Forward					