

ECC3 : WITZENBERG SUBSTATION 2 x 66 kV, 9.5 Mvar SHUNT CAPACITOR BANKS: DESIGN, MANUFACTURE, TEST, SUPPLY, INSTALL, TEST AND COMMISSION					CONTRACTOR NAME	
ITEM NO.		DESCRIPTION	UNIT	QTY	Rate	Amount
A		PRELIMINARIES AND GENERAL				
		General and Time-related Items				
1.1		Contractual Requirements (Refer to SANS 1200A clause 8.3.1)	per month	9.00		R0.00
1.2		Setting up of a latrine facility (two) on site (provisional)	per month	9.00		R0.00
1.3		Supervisor with scope of works related authorization (Provisional)	per month	9.00		R0.00
1.4		Community Liaison Officer (CLO) (provisional when needed) signed timesheets to be submitted with payment claims	per day	135.00		R0.00
1.5		PSIRA Certified Security guard (Group C) (price for a single guard for a shift of 12 hours) (provisional if and where needed as recommended and specified by Eskom Protective Services)	rate per guard per 12 hour shift	540.00		R0.00
		Travelling and Accomodation				
1.6		Travelling to and from base to site once a day with a LDV (if no base in Cape Town then the base will be taken as Eskom Engineering Complex in Brackenfell). Kilometers will only be paid if site is further than 20km from the base or from Eskom Brackenfell. All kilometer claims should be accompanied with a trip kilometer tracker sheet. (Provisional)	km	4880.00		R0.00
1.7		Accommodation (3-Star), proof of payment e.g. invoice with amount paid to be submitted when claimed (Provisional allowance). Where possible accomodation should be arranged as close to the site as possible to limit kilometers travelled between accomodation and site. Eskom does not pay for any food and drink claims.	Per month (Actual Cost + 5%)	9.00		R0.00
		Health & Safety				
1.8		Compile and maintain project specific safety file on site	per month	9.00		R0.00
1.9		Project Specific health and Safety Plan for the construction duration	Item	1.00		R0.00
1.10		Compliance with the applicable safety legislative requirements as per Health and Safety Specification provided by Eskom	per month	9.00		R0.00
		Environmental Requirements				
1.11		Compliance with the applicable Environmental requirements as per Environmental Specification provided by Eskom	Item	1.00		R0.00
2		TIME - BASED LABOUR RATES (only to be used when pricing for compensation events)				
		Normal Rates per Category				
2.1		Authosorised Site Supervisor (ORHVS,Level 1-10)	hr	rate only		rate only
2.2		Authosorised Health and Safety Representative	hr	rate only		rate only
2.3		Engineer	hr	rate only		rate only
2.4		Site Supervisor/ General Foreman	hr	rate only		rate only
2.5		Foreman	hr	rate only		rate only
2.6		Skilled Labourer	hr	rate only		rate only
2.7		Semi-Skilled Labourer	hr	rate only		rate only
2.8		General Labourer	hr	rate only		rate only
		Electrical Engineers				
2.9		Electrical Engineer (not registered; 1 - 4 years experience)	hr	rate only		rate only
2.10		Electrical Engineer - PrEng 5 - 9 years	hr	rate only		rate only
2.11		Electrical Engineer - PrEng 10 - 19 years	hr	rate only		rate only
		Electrician				
2.12		Electrician with a Master Certificate	hr	rate only		rate only
2.13		Electrician	hr	rate only		rate only
2.14		Semi-Skilled (electrical)	hr	rate only		rate only
2.15		Labourer (electrical)	hr	rate only		rate only
3		TIME - BASED PLANT RATES (only to be used when pricing for compensation events)				
3.1		Truck (7 ton) hire	day	rate only		rate only
3.2		LDV hire	day	rate only		rate only
3.3		Crane (7 ton) hire	day	rate only		rate only
		TOTAL (P&Gs)				R0.00
B		SHUNT CAPACITOR BANKS PHASE				
		Pricing note: Since this section has pricing units as "sum" the contractors should be aware that on request Eskom can ask for a breakdown of how this sum was calculated in order to compare the pricing sum.				

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ITEM NO.		DESCRIPTION	UNIT	QTY	Rate	Amount
1		DESIGN PHASE				R0.00
1.1		Harmonic and Switching Studies	sum			R0.00
1.2		Full detail drawings (i.e. preliminary, construction and as built drawings) for 2 x 66 kV, 9.5 MVAR Shunt Capacitor Banks (detailed design package)	sum			R0.00
2		MANUFACTURE				R0.00
2.1.1		2 x 66 kV, 9.5 MVAR Shunt Capacitor Banks complete with structural steel support, accessories and including Factory Acceptance Test, report and quality plan manuals <u>If any material in item 2.1.1 needs to be imported from a foreign country, please stipulate the rand value of that portion in the items below and do not include it as part of the cost in item 2.1.1 (the Forex will be negotiated at tender stage with the contractor during evaluations); if no foreign currency is applicable then item 2.1.2 to 2.1.5 should be priced zero. Please be able to provide the breakdown on request with regards to the specific material and currency applicable to currency 1 to 4</u>	sum			R0.00
2.1.2		Foreign currency no 1	sum			R0.00
2.1.3		Foreign currency no 2	sum			R0.00
2.1.4		Foreign currency no 3	sum			R0.00
2.1.5		Foreign currency no 4	sum			R0.00
		MANUALS				R0.00
2.2		Operation Manuals	sum			R0.00
2.3		Maintenance Manuals	sum			R0.00
3		TYPE TESTING				R0.00
3.1		CAPACITORS				R0.00
3.1.1		Thermal Stability Test	sum			R0.00
3.1.2		Measurement of Tan Delta	sum			R0.00
3.1.3		AC Voltage Test between container and bushing	sum			R0.00
3.1.4		Lightning Impulse test between container and bushing	sum			R0.00
3.1.5		Short Circuit Discharge Test	sum			R0.00
3.1.6		Overvoltage Test	sum			R0.00
3.2		DAMPING/FILTER REACTOR				R0.00
		Type Testing				R0.00
3.3		POST INSULATORS	sum			R0.00
3.4		CURRENT TRANSFORMERS	sum			R0.00
3.5		Damping Resistors				R0.00
		Type Testing	sum			R0.00
4		TRANSPORT				R0.00
4.1		Transportation from factory to SA port	sum			R0.00
4.2		Local transport and off loading to site	sum			R0.00
5		SITE WORKS				R0.00
5.1		INSTALLATION COMPLETE				R0.00
		2 x 66 kV, 9.5 MVAR Shunt Capacitor Banks complete with structural steel support, accessories including portable earthing gear	sum			R0.00
6		COMMISSIONING & TESTING				R0.00
6.1		COLD COMMISSION				R0.00
6.1.1		2 x 66 kV, 9.5 MVAR Shunt Capacitor Banks commissioning and testing	sum			R0.00
6.2		HOT COMMISSION				R0.00
6.2.1		Engineer and technician (8 hours per capacitor bank)	sum			R0.00
7		SUNDRIES				R0.00
7.1		Provide on-site training to 10 Eskom Personnel (Contractor to prepare the training manuals and plan).	sum			R0.00
7.2		Safety portable earthing gear x 1	sum			R0.00
7.3		Testing equipment and lifting device x 1	sum			R0.00
8		SUPPLY OF COMMISSIONING SPARES AS PER SPECIFICATION				R0.00
8.1		1 x CT of each type and rating	sum			R0.00
8.2		5 % of capacitor units of installed base (min 10 of each type)	sum			R0.00
8.3		1 x Damping Reactor	sum			R0.00
8.4		1 set of PI's and 2 PI's spare for each reactor supplied	sum			R0.00
8.5		1 x Damping Resistor	sum			R0.00
						R0.00

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ITEM NO.		DESCRIPTION	UNIT	QTY	Rate	Amount
TOTAL (SHUNT CAPACITOR BANKS PHASE)						R0.00
C	CIVIL WORKS					
		<u>SUPPLY AND INSTALL</u>				R0.00
	SANS 1200C	<u>SECTION 1200C: SITE CLEARANCE</u>				R0.00
C 1	1200C - 8.2.1	Clear and grub:	m ²	5.00		R0.00
	SANS 1200D	<u>SECTION 1200D: EARTHWORKS</u>				R0.00
D 12	VA-D - 8.3.3	Restricted Excavation				R0.00
D 13	VA-D - 8.3.3	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or dispose	m ³	48.00		R0.00
D 14	VA-D - 8.3.3	b) Extra-over for				R0.00
D 15	1)	Intermediate excavation	m ³	30.00		R0.00
D 16	2)	Hard rock excavation	m ³	18.00		R0.00
D 20	VA-D - 8.3.3	d) Excavate in all materials and spoil	m ³	20.00		R0.00
D 21	1200D - 8.3.4	Importing of materials				R0.00
D 22	1200D - 8.3.4	a) Extra-over items D 2 and D 12 for importation of materials from commercial sources or from borrow pits	m ³	5.00		R0.00
D 23	1200D - 8.3.8	Existing services				R0.00
D 25	1200D - 8.3.8	c) Excavation by hand in soft material to expose existing services	m ³	1.00		R0.00
D 33	VA-1200D - 8.3.14	Applicaton of herbicide to substation yard prior to placing yard stone	m ²	175.00		R0.00
D 34	VA-1200D - 8.2.15	Substation Yard Stone				R0.00
D 35	VA-1200D - 8.2.15	a) Removal of existing Yard Stone to required depth				R0.00
D 36	1)	To stockpile	m ³	20.00		R0.00
D 37	2)	To spoil	m ³	10.00		R0.00
D 38	VA-1200D - 8.2.15	b) Cleaning and Re-Utilizing Existing Yard Stone				R0.00
D 39	1)	Clean, Wash and Process Existing Fouled Yard Stone	m ³	20.00		R0.00
D 40	2)	Extra-over item D 39 for Stockpiling of Cleaned Yard Stone Cleaned	m ³	20.00		R0.00
D 41	VA-1200D - 8.2.15	c) Place, spread, level to nominal depth of 100mm, and lightly roll Yard Stone	m ³	20.00		R0.00
	SANS 1200DB	<u>SECTION 1200DB: EARTHWORKS (PIPE TRENCHES)</u>				R0.00
DB 1	1200DB - 8.3.2 a)	Excavate in all materials for trenches, backfill, compact and dispose of surplus material				R0.00
DB 6	1200DB - 8.3.2 a)	b) Pipes over 100mm dia up to 300mm dia for depths:				R0.00
DB 7	1)	over 0,0m up to 1,0m	m	27.36		R0.00
DB 22	1200DB - 8.3.2 b)	Extra-over item DB 1 for:				R0.00
DB 23		a) Intermediate excavation	m ³	7.50		R0.00

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ITEM NO.		DESCRIPTION	UNIT	QTY	Rate	Amount
DB 24		b) Hard rock excavation	m ³	2.50		R0.00
DB 25	1200DB - 8.3.3.1	Make up deficiency n backfill material				R0.00
DB 26		c) by importation from commercial or off-site sources selected by the Contractor	m ³	3.00		R0.00
	SANS 1200DM	SECTION 1200DM: EARTHWORKS (ROADS,SUBGRADE)				R0.00
DM 1	1200DM - 8.3.3	Treatment of Road-Bed				R0.00
DM 2	1200DM - 8.3.3	a) Road-bed , underneath slabs- and foundation- preparation and compaction of material to:				R0.00
DM 3	1)	Minimum of 93% of modified AASHTO maximum density	m ³	30.00		R0.00
	SANS 1200G	SECTION 1200G: CONCRETE STRUCTURAL				R0.00
G228	VA-1200G-8.13	Construction of new oil catchment area complete as indicated				R0.00
		a) Oil Catchment Floor Area - Drawing - DWC7609-19-02-00	no	2.00		R0.00
	SANS 1200LB	SECTION 1200LB: BEDDING (PIPES)				R0.00
LB 1	1200LB - 8.2.2.3	Supply only of bedding by importation				R0.00
LB 2	1200LB - 8.2.2.3	a) From commercial sources				R0.00
LB 3	1)	Selected granular material	m ³	4.00		R0.00
LB 4	2)	Selected fill material	m ³	4.00		R0.00
	SANS 1200LD	SECTION 1200LD: SEWERS				R0.00
		Supply, Lay, Joint, Bed (Class 34), and Test Pipeline				R0.00
	8.2.1	a) 110mm Diameter pipe	m	1.00		R0.00
	VA 1200LD 8.2.13	Soak Away Tank				R0.00
		a) Construction of Soak Away tank complete as indicated -Drawing DWC-19-03-00	No	1.00		R0.00
	SANS 1200LE	SECTION 1200LE: STORMWATER DRAINAGE				R0.00
LE 1	1200LE - 8.2.1	Supply and lay concrete pipe culverts on class B bedding:				R0.00
LE 2	1200LE - 8.2.1	a) Type SC 100-D-Load pipes with Spigot and Socket joints				R0.00
LE 5	3)	Ø 300 mm	m	26.00		R0.00
LE 44	1200LE - 8.2.4	Extra-over items LE 1 and LE 44 for cutting end units of culverts on site				R0.00
LE 45		a) Straight cut	no	2.00		R0.00
LE 46		b) Skew cut	no	2.00		R0.00
LE 64	1200LE - 8.2.8	Supply and install Manholes, Catchpits and the like:				R0.00
LE 65	1200LE - 8.2.8	a) Manholes:				R0.00

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ITEM NO.		DESCRIPTION	UNIT	QTY	Rate	Amount
LE 66	1)	Typical manhole structure, complete to detail as indicated on drawing DWC-7609-19-03-00	no	2.00		R0.00
						R0.00
LE 67	2)	Typical oil trap structure, complete as indicated on drawing DWC-7609-19-03-00	no	1.00		R0.00
						R0.00
	3)	Typical oil sump grid inlet, complete as indicated on drawing DDT 5231 SHT 1B	no	2.00		R0.00
						R0.00
	SANS 1200MK	SECTION 1200MK: KERBING AND CHANNELING				R0.00
						R0.00
MK 1	1200MK - 8.2.1	Precast concrete kerbing:				R0.00
						R0.00
MK 2	1200MK - 8.2.1	a) MK11 kerb				R0.00
						R0.00
MK 3	1)	Circular sections (Radius to 20m)	m	1.00		R0.00
						R0.00
MK 4	2)	Straight sections (radius greater than 20 and straight)	m	82.80		R0.00
						R0.00
						R0.00
TOTAL (CIVIL WORKS)						R0.00
D	POWER PLANT					
		POWER PLANT ACTIVITIES				R0.00
						R0.00
		CIVIL POWER PLANT ACTIVITIES (SUPPLY AND INSTALL)				R0.00
						R0.00
		Set out earth works				R0.00
1		Setting Out Of Pegs	each	80.00		R0.00
		Excavation:				R0.00
2		Excavations soft	m ³	121.13		R0.00
3		Excavations intermediate	m ³	121.13		R0.00
4		Excavations hard rock	m ³	161.51		R0.00
		Shoring				R0.00
5		Shoring	m ²	80.00		R0.00
		Backfill and compact				R0.00
6		Backfill and compact (Normal)	m ³	1.96		R0.00
7		Backfill and compact (Cable Trench)	m ³	1.80		R0.00
		Clearing of excess material to spoil				R0.00
8		Clearing of excess material to spoil	m ³	26.28		R0.00
		Foundations				R0.00
9		Setting & Marking of foundations	each	20.00		R0.00
10		Concrete formwork	m ²	74.00		R0.00
11		Supply and place concrete	m ³	28.78		R0.00
		Laying cable trench cover/checkerplate				R0.00
12		Supply and lay cable trench cover	each	72.00		R0.00
		Install kerbing				R0.00
13		Supply and install kerbing	m	51.00		R0.00
		Install Diamond Mesh fencing & gates				R0.00
14		Supply and install diamond mesh fencing	m	100.00		R0.00
15		Supply and install gate (5m double)	each	2.00		R0.00
		Earthing				R0.00
16		Supply and lay main earthmat	m	370.42		R0.00
17		Bond main earthmat	each	713.52		R0.00
18		Bonding of fence to earthmat	each	19.00		R0.00
19		Earthing of steel structures (per tail)	each	88.00		R0.00
		Finishing:				R0.00
20		Finishing Foundation	each	20.00		R0.00
						R0.00
		ELECTRICAL ACTIVITIES				R0.00
						R0.00
		Layout of structures:				R0.00
21.1		Supply structures - Lattice	ton	3.55		R0.00

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ITEM NO.	DESCRIPTION	UNIT	QTY	Rate	Amount
21.2	Layout of structures - Lattice	ton	3.55		R0.00
	Assemble Structures				R0.00
22	Assemble Structures - Lattice	ton	2.62		R0.00
	Errect Structures				R0.00
23	Errect Structures	ton	3.55		R0.00
	Erect 132/66/44 kV equipment:				R0.00
24	Erect 132/66/44 kV Current Transformer (CT)	each	6.00		R0.00
25	Erect 132/66/44 kV Breakers post type	set	2.00		R0.00
	Erect 132/66/44 kV Isolators				R0.00
26	Erect 132/66/44 kV Hand operated device (HOD)	each	2.00		R0.00
	BUSBARS				R0.00
27	Terminate jumper to busbar Clamp/compress bolted	each	60.00		R0.00
28	Terminate jumper to busbar Clamp/bolted clamps	each	12.00		R0.00
	Stringing HV				R0.00
29	Conductor Run Out & Hang - Single	phm	180.00		R0.00
	Con Tension Reg. & Terminate - Single	phm	180.00		R0.00
	Earthing				R0.00
30	Bond and earth equipment	each	14.00		R0.00
	Finishing:				R0.00
31	Finishing Handing Over Documentation	stru	74.00		R0.00
32	Finishing Torque nuts	each	136.00		R0.00
					R0.00
	SECONDARY PLANT ACTIVITIES (SUPPLY AND INSTALL)				R0.00
					R0.00
	Electrical installations				R0.00
33	Supply and install yard lights	each	8.00		R0.00
34	Supply and install warning signs	each	15.00		R0.00
					R0.00
TOTAL (POWER PLANT)					R0.00
E	CONTROL PLANT				
					R0.00
	SECONDARY PLANT ACTIVITIES (SUPPLY AND INSTALL)				R0.00
					R0.00
	Electrical installations				R0.00
1	Transportation of Panels	km	274.00		R0.00
2	Supply and install metering & protection panels	each	2.00		R0.00
3	Earthing of panels	each	2.00		R0.00
4	Supply and install Junction Boxes/AC Yard Box	each	2.00		R0.00
5	Supply and install AC/DC boards	each	4.00		R0.00
6	Supply and install labeling	each	2.00		R0.00
7	Modify and install checker plating	each	2.00		R0.00
8	Open and close Trench covers	m	50.00		R0.00
9	Supply and lay cables (< 1000V)	m	1010.00		R0.00
10	Glanding of Cables (per gland) (< 1000V)	each	32.00		R0.00
11	Label & Loom Cable (< 1000V)	core	120.00		R0.00
12	Terminate and support cable (< 1000V)	each	120.00		R0.00
					R0.00
TOTAL (CONTROL PLANT)					R0.00
TOTAL COST EXCLUDING VAT					R0.00