

FORM C: TENDER FORM

CURRENT TENDER DETAILS	
Request number:	29/08/2023/GAU-(EL)
Request for Tender:	APPOINTMENT OF A CONTRACTOR FOR THE REBUILDING, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 3kV DC TRACTION AND DISTRIBUTION EQUIPMENT AT SUBSTATIONS ALONG THE DAVEYTON-JOHANNESBURG CORRIDOR FOR METRORAIL GAUTENG PROVINCE

I / We _____
(Insert Name of Tendering Entity)

of _____

(Full address)
Conducting business under the style or title of:

Represented by:

in my capacity as:

being duly authorised thereto by a Resolution of the Board of Directors / Certificate of Partners, Members or Participants, as the case may be, dated _____, a certified copy of which is annexed hereto, hereby offer to undertake and complete the above-mentioned work (hereinafter called "the WORKS") at the prices quoted in the bills of quantities / schedule of quantities or, where these do not form part of the contract, at a lump sum, in accordance with the terms set forth in the accompanying letter(s) reference _____ and dated _____ (if any) and the documents listed in the accompanying schedule of tender documents for the sum of R _____ (amount in words), (All

applicable taxes included)

- N.B.** (i) In the event of any discrepancy, the amount in words will take precedence over the amount in figures.
- (ii) Where items in the priced bills of quantities submitted with the tender for the WORKS other than architectural building work are incorrectly extended arithmetically, the unit rate will be treated as decisive.
- (iii) In tenders for architectural building work the total amount will be treated as decisive. If amounts for individual items cannot be reconciled with the total amount, the amounts for individual items shall be adjusted to the satisfaction of the PRASA to conform to the total amount.

The following list of persons are hereby authorised to negotiate on behalf of the abovementioned entity, should PRASA decide to enter into Post Tender Negotiations with shortlisted bidder(s).

FULL NAME(S)	CAPACITY	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

I/We hereby offer to supply the abovementioned Services at the prices quoted in the schedule of prices in accordance with the terms set forth in the documents listed in the accompanying schedule of RFP documents.

I / We accept that should PRASA accept my / our tender and issue me / us with the notice of acceptance, this tender and, if any, its covering letter and any subsequent exchange of correspondence together with the PRASA acceptance thereof, such acceptance shall be subject to a written contract to be concluded between the PRASA and me / us.

I / We undertake to produce acceptable documentary proof of the necessary coverage for Workmen's Compensation, Securities and Insurance within **30 (thirty)** working days of notification of awarding of the contract, and to sign a formal contract if called upon by the PRASA to do so within **7 (seven)** working days of notification by the PRASA that the contract documents are ready for signature.

I / We undertake to complete the whole of the WORKS within _____
(in words) from the date of notification to me / us of acceptance of the tender, subject to completion in stages if and as laid down in the project specification and to such extensions of time as may be granted. Failing completion of the WORKS or any stage of the WORKS within the period(s) stipulated or by such extended date(s) as may be allowed by the PRASA I / we shall pay to the PRASA in terms of the Conventional Penalties Act 15 of 1962, the penalty for which provision is made in the project specification. The ordering of any alterations, extras, additions or omissions shall not in any way prejudice the PRASA claim for such penalty.

Application for relief from the obligation to pay a penalty will be considered by the PRASA, but shall be granted only if I / we can prove to the reasonable satisfaction of the PRASA that the penalty is out of proportion to the prejudice suffered by the PRASA by reason of the act or omission in respect of which the penalty was stipulated.

I / We declare that this tender holds good until _____ **(a minimum period of 90 days from closing date is required).**

I / We further agree that if, after I / we have been notified of the acceptance of my / our tender, I / we fail to enter into a formal contract if called upon to do so, or fail to furnish satisfactory security for the due and proper completion of the WORKS, the PRASA may, without prejudice to any other legal remedy which it may have, recover from me / us any expense to which it may have been put in calling for tenders afresh and / or having to accept any less favourable tender.

I / We undertake, in the event of my / our tender being accepted, to deposit with the PRASA as security for the due and proper completion of the WORKS, a Performance Bond issued by a South African registered Bank to the value of **ten (10) per cent** of the contract price (VAT inclusive).

I/ We declare that, being a company / partnership / close corporation / joint venture, I / we have duly completed the annexe hereto and certified it as correct.

The several documents involved are to be taken as complementary to each other. In the event of any conflict between the content of any of the documents listed in the schedule of tender documents (other than the project specification) and the project specification, the latter shall prevail. In the event of any conflict between the letter that accompanies the tender or other relevant correspondence and the contents of the documents listed in the schedule of tender documents (including the project specification) such letter or correspondence shall prevail.

I/we agree that non-compliance with any of the material terms of this RFP, including those mentioned above, will constitute a material breach of contract and provide PRASA with cause for cancellation.

THUS DONE and SIGNED at _____
on this _____ day of _____

DULY AUTHORISED SIGNATORY(IES)

WITNESSES

1. _____

2. _____

3. _____

1. _____

2. _____

3. _____

Pricing Schedule

Bidders to note that the schedule of quantity shall be completed in full (all rows to be completed). Pricing shall either be a zero, or an amount provided and shall not be left blank. A blank row will lead to the bid being non-responsive and disqualified.

A provision for Preliminaries and Generals (P's and G's) has been in the bill of quantities in order to aid the successful bidder with the initial costs of setting up site office/ camp, security and other costs associated with the contract. The payment of the P's and G's shall be as follows:

- An initial sum of 10% of the total quoted shall be paid when the client's representative is satisfied that the site office has been set up, security in place and the safety file approved.

The rest of the amount shall be assessed as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the total of prices.

ALLIANCE TRACTION 3kV DC SUBSTATION (22kV Nominal Voltage - Double Unit)					
<p style="text-align: center;"><i>BILL OF QUANTITIES</i></p> <p style="text-align: center;">ELECTRICAL AND CIVIL WORKS</p>					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
	SECTION 1				
1.0	Dismantling and Removal of Existing equipment (including fence and doors)	SUM	LOT		
2.0	Transportation of equipment from site to Driehoek stores	SUM	LOT		
3.0	Outdoor Yard				
3.1	Removal of weeds and treatment of soil (entire substation yard)	/m ²	500		
3.2	Supply Crusher Stone 25 mm	/m ³	1000		
3.3	Supply Auxiliary Transformer Fence (including poles)	/m	8		
3.4	Trenching for Feeder Cables	/m	500		
3.5	Supply Perimeter/HT yard fence	/m	400		
4.0	Outdoor Equipment				
4.1	Supply AC Disconnects	/Set	2		
4.2	Supply Surge Arrestors (one per phase)	/Set	2		
4.3	Supply Primary Circuit Breaker	Ea.	2		
4.4	Supply Bus-bars (PCB, CT, AC Disconnects)	/m	100		
4.5	Supply Bus-bars (Transformer to PCB)	/m	10		

4.6	Supply Bus-bars (Transformer to wall bushings)	/m	20		
4.7	Supply Wall Bushings (set of six bushings)	/Set	2		
4.8	Supply Negative Return (Cables and Connection thereof)	/m	100		
4.9	Supply control cables complete	SUM	LOT		
4.10	Supply 35mm ² 400/1000V pole mounted transformer (incl. supply the H frame) complete with terminations and lugs, etc	/m	500		
	Transformers				
5.1.	Supply Auxiliary Transformer (100 kVA)	Ea.	2		
5.2	Supply Current Transformers (incl. structure)	Ea.	6		
5.3	Supply Traction Transformer (6 MVA) (incl. bund walls)	Ea.	2		
5.4	Supply Isolating Transformer	Ea.	1		
5.5	Supply 100KVA pole mounted transformer	Ea.	1		
6	Wave Filter Equipment				
6.1.	Supply 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	2		
7	Earthing				
7.1.	Supply AC Earthing (including earth mat) double unit	SUM	LOT		
7.2	Supply DC Earthing double unit	SUM	LOT		
7.3	Supply AC Earth Leakage (Inc. CT)	Ea.	2		
7.4	Supply DC Earth Leakage	Ea.	2		

8	Indoor Equipment (Supply and Install)				
8.1	Dismantling and Removal of old equipment	SUM	LOT		
8.2	Delivery of old indoor equipment to Driehoek stores	SUM	LOT		
8.3	Supply Reactor Coil	Ea.	2		
8.4	Supply Rectifier (6MW)	Ea.	2		
8.5	Supply solid bus bars from the wall bushings to the rectifier	/m	50		
8.6	Supply bus bars from the rectifier to the reactor (aluminium)	/m	30		
8.7	Supply cables from the reactor to the Positive Isolator 500mm2 complete with accessories	/m	30		
8.8	Supply cable from the Positive Isolator to the breaker panels complete with accessories	/m	50		
8.9	Supply fence and gate at the Rectifier Bay (to be painted)	/m	8		
8.10	Supply AC/ DC Distribution Panel	Ea.	1		
8.11	Supply PCB Control Panel	Ea.	2		
8.12	Supply complete set of interlocking equipment	SUM	LOT		
8.13	Supply Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
8.14	Supply Battery Bank complete with charger (250AH) Gel type	/set	1		
8.15	Supply Modular HSCB panels	Ea.	5		
8.16	Supply HSCB's 2600A (mounted in trolley)	Ea.	4		

8.17	Supply HSCB's 4000A (mounted in trolley)	Ea.	1		
8.18	Supply ECR complete	Ea.	5		
8.19	Supply a Positive Isolator including undervoltage relay	Ea.	2		
8.20	Supply control cables complete	SUM	LOT		
8.21	Supply chequer plates	SUM	LOT		
8.22	Supply 500mm ² single core XLPE cable from the busbar chamber to the track switch structure	/M	500		
8.23	Supply 800mm ² Al conductor	/M	500		
9	Substation Building				
9.1	Demolish all buildings on site and remove all rubble to dumping site	SUM	LOT		
9.2	Substation Building Design	SUM	LOT		
9.3	Substation building complete rebuild	SUM	LOT		
9.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
9.5.	Supply Security Lighting	Ea.	4		
9.6	Supply Wall Mounted fan complete with controls and louvres and filters	Ea.	1		
9.7	Supply wheely birds	Ea.	2		
10	Safe Doors				
10.1	Supply Double Doors	Ea.	1		
10.2	Supply Single Doors	Ea.	2		
10.3	Double roller door	Ea.	1		

10.4	Supply Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
11.0	Fire Extinguishers				
11.1	Supply Fire Extinguishers	Ea.	2		
12.1	Supply Feeder Cable Structures	Sum	LOT		
12.2	Supply 800mm ² Al feeder	/m	1500		
12.3	Supply Capacitors	Ea.	4		
12.4	Supply Lightning arrestors	Ea.	4		
13.0	P's and G's				
13.1	Preliminary and General (site establishment, security, etc)	SUM	LOT		
14	Supply As built drawings	Sum	LOT		
15.0	Testing and commissioning				
15.1	Test and commission all supplied and installed equipment double unit	SUM	LOT		
SECTION 16 (INSTALLATION)					
16.1	Install Crusher Stone 25mm	/m ³	1000		
16.2	Install Auxiliary Transformer Fence (including poles)	/m	8		
16.3	Install Perimeter/HT yard fence	/m	400		
16.4	Install AC Disconnects	/Set	2		
16.5	Install Surge Arrestors (one per phase)	/Set	2		
16.6	Install Primary Circuit Breaker	Ea.	2		
16.7	Install Bus-bars (PCB, CT, AC Disconnects)	/m	100		
16.8	Install Bus-bars (Transformer to PCB)	/m	10		

16.9	Install Bus-bars (Transformer to wall bushings)	/m	20		
16.10	Install Wall Bushings (set of six bushings)	/Set	2		
16.11	Install Negative Return (Cables and Connection thereof)	/m	100		
16.12	Install control cables complete	SUM	LOT		
16.13	Install 35mm ² 400/1000V pole mounted transformer (incl. Install the H frame) complete with terminations and lugs, etc	/m	500		
16.14	Install Auxiliary Transformer (100 kVA)	Ea.	2		
16.15	Install Current Transformers (incl. structure)	Ea.	6		
16.17	Install Traction Transformer (6 MVA) (incl. bund walls)	Ea.	2		
16.18	Install Isolating Transformer	Ea.	1		
16.19	Install 100KVA pole mounted transformer	Ea.	1		
16.20	Install 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	2		
16.21	Install AC Earthing (including earth mat) double unit	SUM	LOT		
16.22	Install DC Earthing double unit	SUM	LOT		
16.23	Install AC Earth Leakage (Inc. CT)	Ea.	2		
16.24	Install DC Earth Leakage	Ea.	2		
16.25	Install Reactor Coil	Ea.	2		
16.26	Install Rectifier (6MW)	Ea.	2		

16.27	Install solid bus bars from the wall bushings to the rectifier	/m	50		
16.28	Install bus bars from the rectifier to the reactor (aluminium)	/m	30		
16.29	Install cables from the reactor to the Positive Isolator 500mm ² complete with accessories	/m	30		
16.30	Install cable from the Positive Isolator to the breaker panels complete with accessories	/m	50		
16.31	Install fence and gate at the Rectifier Bay (to be painted)	/m	8		
16.32	Install AC/ DC Distribution Panel	Ea.	1		
16.33	Install PCB Control Panel	Ea.	2		
16.34	Install complete set of interlocking equipment	SUM	LOT		
16.35	Install Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
16.36	Install Battery Bank complete with charger (250AH) Gel type	/set	1		
16.37	Install Modular HSCB panels	Ea.	5		
16.38	Install HSCB's 2600A (mounted in trolley)	Ea.	4		
16.39	Install HSCB's 4000A (mounted in trolley)	Ea.	1		
16.40	Install ECR complete	Ea.	5		
16.41	Install a Positive Isolator including undervoltage relay	Ea.	2		
16.42	Install control cables complete	SUM	LOT		
16.43	Install chequer plates	SUM	LOT		
16.44	Install 500mm ² single core XLPE cable from the busbar chamber to the track switch structure	/M	500		

16.45	Install 800mm ² Al conductor	/M	500		
16.46	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
16.47	Install Security Lighting	Ea.	4		
16.48	Install Wall Mounted fan complete with controls and louvres and filters	Ea.	1		
16.49	Install wheely birds	Ea.	2		
16.50	Install Double Doors	Ea.	1		
16.51	Install Single Doors	Ea.	2		
16.52	Install Double roller door	Ea.	1		
16.53	Install Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
16.54	Install Fire Extinguishers	Ea.	2		
16.55	Install Feeder Cable Structures	Sum	LOT		
16.56	Install 800mm ² Al feeder	/m	1500		
16.57	Install Capacitors	Ea.	4		
16.58	Install Lightning arrestors	Ea.	4		
TOTAL(A) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

BILL OF QUANTITIES

ELECTRICAL AND CIVIL WORKS

A bidder shall refer to the Project specification for detailed information per item

Item	Description	Unit	Quantity	Rate	Amount
	SECTION 1				
1.0	Dismantling and Removal of Existing equipment (including fence and doors)	SUM	LOT		
2.0	Transportation of equipment from site to Driehoek stores	SUM	LOT		
3.0	Outdoor Yard				
3.1.	Removal of weeds and treatment of soil (entire substation yard)	/m	500		
3.2.	Supply Crusher Stone 25 mm	/m³	1000		
3.4.	Supply Auxiliary Transformer Fence (including poles)	/m	4		
3.5	Trenching for Feeder Cables	/m	500		
3.6	Supply Perimeter fence(incl. 5m wide sliding gate)	/m	300		
3.7	Supply HT yard fence fence(incl. 5m wide sliding gate)	/m	300		
4.0	Outdoor Equipment				
4.1.	Supply AC Disconnects	/Set	2		
4.2	Supply Surge Arrestors (one per phase)	/Set	2		
4.3	Supply Primary Circuit Breaker	Ea.	2		
4.4	Supply Bus-bars (PCB, CT, AC Disconnects)	/m	50		
4.5	Supply Bus-bars (Transformer to PCB)	/m	20		

4.6	Supply Bus-bars (Transformer to wall bushings)	/m	50		
4.7	Supply Wall Bushings (set of six bushings)	/Set	2		
4.8	Supply Negative Return (Cables and Connection thereof)	/m	100		
4.9	Supply control cables complete	SUM	LOT		
4.10	Supply 35mm ² LV complete with terminations and lugs, etc	/m	500		
4.11	Supply 70mm ² Al cable and termination to 1:1 Transformer	/m	10		
	Transformers				
5.1.	Supply Auxiliary Transformer (100 kVA)	Ea.	2		
5.2	Supply Current Transformers (incl. structure)	Ea.	6		
5.3	Supply Traction Transformer (6 MVA) (incl. bund walls)	Ea.	2		
5.4	Supply Isolating Transformer	Ea.	1		
5.5	Supply 100KVA pole mounted transformer incl. connection from ABC/ transmission line with accessories	Ea.	1		
6	Wave Filter Equipment				
6.1.	Supply 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	2		
7	Earthing (Supply and Install)				
7.1.	Supply AC Earthing (including earth mat) double unit	SUM	LOT		
7.2	Supply DC Earthing double unit	SUM	LOT		

7.3	Supply AC Earth Leakage (Inc. CT)	Ea.	2		
7.4	Supply DC Earth Leakage	Ea.	2		
8	Indoor Equipment				
8.1	Dismantling and Removal of old equipment	SUM	LOT		
8.2	Delivery of old indoor equipment to Driehoek stores	SUM	LOT		
8.3	Supply Reactor Coil	Ea.	2		
8.4	Supply Rectifier (6MW)	Ea.	2		
8.5	Supply solid bus bars from the wall bushings to the rectifier	/m	50		
8.6	Supply bus bars from the rectifier to the reactor (aluminium)	/m	30		
8.7	Supply cables from the reactor to the Positive Isolator 500mm ² complete with accessories	/m	30		
8.8	Supply cable from the Positive Isolator to the breaker panels complete with accessories	/m	60		
8.9	Supply fence and gate at the Rectifier Bay (to be painted)	/m	30		
8.10	Supply AC/ DC Distribution Panel	Ea.	1		
8.11	Supply PCB Control Panel	Ea.	2		
8.12	Supply complete interlocking equipment	Sum	Lot		
8.13	Supply Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
8.14	Supply Battery Bank complete with charger (250AH) Gel type	/set	1		

8.15	Supply Modular HSCB panels	Ea.	9		
8.16	Supply HSCB's 2600A (one additional on a trolley)	Ea.	9		
8.17	Supply HSCB's 4000A (mounted in trolley)	Ea.	1		
8.18	Supply ECR complete	Ea.	9		
8.19.	Supply a Positive Isolator including undervoltage relay	Ea.	2		
8.20	Supply control cables complete	SUM	LOT		
8.21	Supply chequer plates	SUM	LOT		
8.22	Supply 800mm ² Al conductor	/M	1000		
9	Substation Building				
9.1.	Demolish all buildings on site and remove all rubble to dumping site	SUM	LOT		
9.2	Substation Building Design	SUM	LOT		
9.3	Substation building complete rebuild	SUM	LOT		
9.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
9.5	Supply Security Lighting	Ea.	4		
9.6	Supply Wall Mounted fan complete with controls and louvres and filters	Ea.	2		
9.7	Supply wheely birds	Ea.	2		
10	Safe Doors				
10.1	Supply Double Doors	Ea.	2		
10.2	Supply Single Doors	Ea.	2		
10.3	Supply Double roller door	Ea.	1		

10.4	Supply Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
11.0	Fire Extinguishers				
11.1	Supply Fire Extinguishers	Ea.	2		
12.1	Supply Feeder Cable Structures	Sum	LOT		
12.2	Supply 800mm ² Al feeder wire with terminations	/m	800		
12.3	Supply Capacitors	Ea.	8		
12.4	Supply Lightning arrestors	Ea.	8		
13.0	P's and G's				
13.1	Preliminary and General (site establishment, security, etc)	SUM	LOT		
14	Supply As built drawings	Sum	LOT		
15.0	Testing and commissioning				
15.1	Test and commission all supplied and installed equipment double unit	SUM	LOT		
SECTION 16 (INSTALLATION)					
16.1	Install Crusher Stone 25mm	/m ³	1000		
16.2	Install Auxiliary Transformer Fence (including poles)	/m	4		
16.3	Install Perimeter/HT yard fence (5m wide sliding gate	/m	300		
16.4	Install AC Disconnects	/Set	2		
16.5	Install Surge Arrestors (one per phase)	/Set	2		
16.6	Install Primary Circuit Breaker	Ea.	2		
16.7	Install Bus-bars (PCB, CT, AC Disconnects)	/m	50		

16.8	Install Bus-bars (Transformer to PCB)	/m	20		
16.9	Install Bus-bars (Transformer to wall bushings)	/m	50		
16.10	Install Wall Bushings (set of six bushings)	/Set	2		
16.11	Install Negative Return (Cables and Connection thereof)	/m	100		
16.12	Install control cables complete	SUM	LOT		
16.13	Install 35mm ² 400/1000V pole mounted transformer (incl. Install the H frame) complete with terminations and lugs, etc	/m	500		
16.14	Install 70mm ² Al cable and termination to 1:1 Transformer	/m	10		
16.15	Install Auxiliary Transformer (100 kVA)	Ea.	2		
16.16	Install Current Transformers (incl. structure)	Ea.	6		
16.17	Install Traction Transformer (6 MVA) (incl. bund walls)	Ea.	2		
16.18	Install Isolating Transformer	Ea.	1		
16.19	Install 100KVA pole mounted transformer	Ea.	1		
16.20	Install 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	2		
16.21	Install AC Earthing (including earth mat) double unit	SUM	LOT		
16.22	Install DC Earthing double unit	SUM	LOT		

16.23	Install AC Earth Leakage (Inc. CT)	Ea.	2		
16.24	Install DC Earth Leakage	Ea.	2		
16.25	Install Reactor Coil	Ea.	2		
16.26	Install Rectifier (6MW)	Ea.	2		
16.27	Install solid bus bars from the wall bushings to the rectifier	/m	50		
16.28	Install bus bars from the rectifier to the reactor (aluminium)	/m	30		
16.29	Install cables from the reactor to the Positive Isolator 500mm ² complete with accessories	/m	30		
16.30	Install cable from the Positive Isolator to the breaker panels complete with accessories	/m	60		
16.31	Install fence and gate at the Rectifier Bay (to be painted)	/m	30		
16.32	Install AC/ DC Distribution Panel	Ea.	1		
16.33	Install PCB Control Panel	Ea.	2		
16.34	Install complete set of interlocking equipment	SUM	LOT		
16.35	Install Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
16.36	Install Battery Bank complete with charger (250AH) Gel type	/set	1		
16.37	Install Modular HSCB panels	Ea.	9		
16.38	Install HSCB's 2600A (mounted in trolley)	Ea.	9		
16.39	Install HSCB's 4000A (mounted in trolley)	Ea.	1		
16.40	Install ECR complete	Ea.	9		

16.41	Install a Positive Isolator including undervoltage relay	Ea.	2		
16.42	Install control cables complete	SUM	LOT		
16.43	Install chequer plates	SUM	LOT		
16.44	Install 800 mm ² Al conductor	/M	1000		
16.45	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
16.46	Install Security Lighting	Ea.	4		
16.47	Install Wall Mounted fan complete with controls and louvres and filters	Ea.	2		
16.48	Install wheely birds	Ea.	2		
16.49	Install Double Doors	Ea.	2		
16.50	Install Single Doors	Ea.	2		
16.51	Install Double roller door	Ea.	1		
16.52	Install Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
16.53	Install Fire Extinguishers	Ea.	2		
16.54	Install Feeder Cable Structures	Sum	LOT		
16.55	Install Capacitors	Ea.	8		
16.56	Install Lightning arrestors	Ea.	8		
TOTAL(B) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

ANGELO TRACTION 3kV DC SUBSTATION 44kV Nominal Voltage)					
<p><i>BILL OF QUANTITIES</i></p> <p>ELECTRICAL AND CIVIL WORKS</p> <p>A bidder shall refer to the Project specification for detailed information per item</p>					
Item	Description	Unit	Quantity	Rate	Amount
SECTION 1					
1.0	Dismantling and Removal of Existing equipment (including fence and doors)	SUM	LOT		
2.0	Transportation of equipment from site to Driehoek stores	SUM	LOT		
3.0	Outdoor Yard				
3.1	Removal of weeds and treatment of soil (entire substation yard)	/m ²	500		
3.2	Supply Crusher Stone 25mm	/m ³	1000		
3.4	Supply Auxiliary Transformer Fence (including poles)	/m	6		
3.5	Trenching for Feeder Cables	/m	200		
3.6	Supply Perimeter fence(incl. 5m wide sliding gate)	/m	500		
4.0	Outdoor Equipment				
4.1	Supply AC Disconnects	/Set	1		
4.3	Supply Surge Arrestors (one per phase)	/Set	1		
4.5	Supply Primary Circuit Breaker	Ea.	1		

4.7	Supply Bus-bars (PCB, CT, AC Disconnects)	/m	80		
4.9	Supply Bus-bars (Transformer to PCB)	/m	50		
4.11	Supply Bus-bars (Transformer to wall bushings)	/m	50		
4.13	Supply Wall Bushings (set of six bushings)	/Set	1		
4.15	Supply Negative Return (Cables and Connection thereof)	/m	500		
4.17	Supply and install control cables complete	SUM	LOT		
4.19	Supply 35mm ² LV complete with terminations and lugs, etc	/m	1500		
	Transformers				
5.1.	Supply Auxiliary Transformer (100 kVA)	Ea.	1		
5.2.	Supply Current Transformers (incl. structure)	Ea.	3		
5.3	Supply Traction Transformer (6 MVA) (incl. bund walls)	Ea.	1		
5.4	Supply Isolating Transformer	Ea.	1		
5.5	Supply 100KVA pole mounted transformer incl. connection from ABC/ transmission line with accessories	Ea.	1		
6	Wave Filter Equipment				
6.1.	Supply 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	2		
7	Earthing (Supply and Install)				

7.1.	Supply AC Earthing (including earth mat) double unit	SUM	LOT		
7.2.	Supply DC Earthing double unit	SUM	LOT		
7.3.	Supply AC Earth Leakage (Inc. CT)	Ea.	1		
7.4.	Supply DC Earth Leakage	Ea.	1		
8	Indoor Equipment				
8.1	Dismantling and Removal of old equipment	SUM	LOT		
8.2	Delivery of old indoor equipment to Driehoek stores	SUM	LOT		
8.3	Supply Reactor Coil	Ea.	1		
8.4	Supply Rectifier (6MW)	Ea.	1		
8.5	Supply solid bus bars from the wall bushings to the rectifier	/m	50		
8.6	Supply bus bars from the rectifier to the reactor (aluminium)	/m	30		
8.7	Supply cables from the reactor to the Positive Isolator 500mm ² complete with accessories	/m	30		
8.8	Supply cable from the Positive Isolator to the breaker panels complete with accessories	/m	60		
8.9	Supply fence and gate at the Rectifier Bay (to be painted)	/m	4		
8.10	Supply AC/ DC Distribution Panel	Ea.	1		
8.11	Supply PCB Control Panel	Ea.	1		
8.12	Supply complete interlocking equipment	Sum	Lot		

8.13	Supply Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
8.14	Supply Battery Bank complete with charger (250AH) Gel type	/set	1		
8.15	Supply Modular HSCB panels	Ea.	6		
8.16	Supply HSCB's 2600A (one additional on a trolley)	Ea.	7		
8.17	Supply ECR complete	Ea.	9		
8.18	Supply a Positive Isolator including undervoltage relay	Ea.	1		
8.19	Supply control cables complete	SUM	LOT		
8.20	Supply chequer plates	SUM	LOT		
8.21	Supply 800 mm ² aerial Al conductor from the switch structure closer to the substation and switch structure next to the OHTE(incl. structure, termination lugs, and all other accessories	/M	1500		
9	Substation Building				
9.1	Demolish all buildings on site and remove all rubble to dumping site	SUM	LOT		
9.2	Substation Building Design	SUM	LOT		
9.3	Substation building complete rebuild	SUM	LOT		
9.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
9.5	Supply Security Lighting	Ea.	4		
9.6	Supply Wall Mounted fan complete with controls and louvres and filters	Ea.	2		

9.7	Supply wire mesh in the windows	Ea.	3		
9.8	Supply wheely birds	Ea.	2		
10	Safe Doors				
10.1	Supply Double Doors	Ea.	2		
10.2	Supply Single Doors	Ea.	2		
10.3	Supply Double roller door	Ea.	1		
10.4	Supply Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
11.0	Fire Extinguishers				
11.1	Supply Fire Extinguishers	Ea.	1		
12.1	Supply Feeder Cable Structures	Sum	LOT		
12.2	Supply 800mm ² Al feeder wire with terminations	/m	800		
12.3	Supply Capacitors	Ea.	7		
12.4	Supply Lightning arrestors	Ea.	7		
13.0	P's and G's				
13.1	Preliminary and General (site establishment, security, etc)	SUM	LOT		
14	As built drawings	Sum	LOT		
15.0	Testing and commissioning				
15.1	Test and commission all supplied and installed equipment double unit	SUM	LOT		
SECTION 16 (INSTALLATION)					
16.1	Install Crusher Stone 25mm	/m ³	1000		
16.2	Install Auxiliary Transformer Fence (including poles)	/m	6		

16.3	Install Perimeter/HT yard fence (5m wide sliding gate	/m	500		
16.4	Install AC Disconnects	/Set	1		
16.5	Install Surge Arrestors (one per phase)	/Set	1		
16.6	Install Primary Circuit Breaker	Ea.	1		
16.7	Install Bus-bars (PCB, CT, AC Disconnects)	/m	80		
16.8	Install Bus-bars (Transformer to PCB)	/m	50		
16.9	Install Bus-bars (Transformer to wall bushings)	/m	50		
16.10	Install Wall Bushings (set of six bushings)	/Set	1		
16.11	Install Negative Return (Cables and Connection thereof)	/m	500		
16.12	Install control cables complete	SUM	LOT		
16.13	Install 35mm ² 400/1000V pole mounted transformer (incl. install the H frame) complete with terminations and lugs, etc	/m	1500		
16.14	Install 70mm ² Al cable and termination to 1:1 Transformer	/m	10		
16.15	Install Auxiliary Transformer (100 kVA)	Ea.	1		
16.16	Install Current Transformers (incl. structure)	Ea.	3		
16.17	Install Traction Transformer (6 MVA) (incl. bund walls)	Ea.	1		
16.18	Install Isolating Transformer	Ea.	1		
16.19	Install 100KVA pole mounted transformer	Ea.	1		

16.20	Install and Install 12 pulse wave filter equipment complete with a protection fuse, bus bars, insulators, wooden door with interlocking, etc.	Ea.	1		
16.21	Install AC Earthing (including earth mat) double unit	SUM	LOT		
16.22	Install DC Earthing double unit	SUM	LOT		
16.23	Install AC Earth Leakage (Inc. CT)	Ea.	1		
16.24	Install DC Earth Leakage	Ea.	1		
16.25	Install Reactor Coil	Ea.	1		
16.26	Install Rectifier (6MW)	Ea.	1		
16.27	Install solid bus bars from the wall bushings to the rectifier	/m	50		
16.28	Install bus bars from the rectifier to the reactor (aluminium)	/m	30		
16.29	Install cables from the reactor to the Positive Isolator 500mm ² complete with accessories	/m	30		
16.30	Install cable from the Positive Isolator to the breaker panels complete with accessories	/m	60		
16.31	Install fence and gate at the Rectifier Bay (to be painted)	/m	4		
16.32	Install AC/ DC Distribution Panel	Ea.	1		
16.33	Install PCB Control Panel	Ea.	1		
16.34	Install complete set of interlocking equipment	SUM	LOT		
16.35	Install Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
16.36	Install Battery Bank complete with charger (250AH) Gel type	/set	1		

16.37	Install Modular HSCB panels	Ea.	6		
16.38	Install HSCB's 2600A (mounted in trolley)	Ea.	7		
16.39	Install ECR complete	Ea.	9		
16.40	Install a Positive Isolator including undervoltage relay	Ea.	1		
16.41	Install control cables complete	SUM	LOT		
16.42	Install chequer plates	SUM	LOT		
16.43	Install 800mm ² aerial Al conductor from the switch structure closer to the substation and switch structure next to the OHTE(incl. structure, termination lugs, and all other accessories	/M	1500		
16.44	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
16.45	Install Security Lighting	Ea.	4		
16.46	Install Wall Mounted fan complete with controls and louvres and filters	Ea.	2		
16.47	Install wheely birds	Ea.	2		
16.48	Install Double Doors	Ea.	2		
16.49	Install Single Doors	Ea.	2		
16.50	Install Double roller door	Ea.	1		
16.51	Install Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
16.52	Install Fire Extinguishers	Ea.	1		
16.53	Install Feeder Cable Structures	Sum	LOT		
16.54	Install Capacitors	Ea.	7		
16.55	Install Lightning arrestors	Ea.	7		

TOTAL (C) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES	
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Van Ryn Tie-Station 3kV DC					
BILL OF QUANTITIES					
ELECTRICAL AND CIVIL WORKS					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
1.0	SECTION 1				
	Dismantling and Removal of Existing equipment (including fence and doors)	SUM	LOT		
	Transportation of equipment from site to Driehoek stores	SUM	LOT		
3.0	Outdoor Yard				
3.1	Removal of weeds and treatment of soil (entire substation yard)	/m ²	200		
3.2	Supply Crusher Stone 25mm	/m ³	500		
3.3	Trenching for Feeder Cables	/m	800		
3.4	Supply Perimeter/HT yard fence	/m	250		
3.5	Supply 35mm ² LV ABC complete with terminations and lugs, etc	/m	500		

3.6	Supply 100KVA pole mounted transformer incl. connection from ABC/ transmission line with accessories	Ea.	1		
4	Earthing				
4.1	Supply DC Earthing tie unit	SUM	LOT		
4.2	Supply DC Earth Leakage	Ea.	1		
5	Indoor Equipment				
5.1	Dismantling and Removal of old equipment	SUM	LOT		
5.2	Delivery of old indoor equipment to Driehoek stores	SUM	LOT		
5.3	Supply AC/ DC Distribution Panel	Ea.	1		
5.4	Supply Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
5.5	Supply Battery Bank complete with charger (250AH) Gel type	/set	1		
5.6	Supply Modular HSCB panels	Ea.	4		
5.7	Supply HSCB's 2600A (one additional on a trolley)	Ea.	4		
5.8	Supply ECR complete	Ea.	4		
5.9	Supply control cables complete	SUM	LOT		
5.10	Supply chequer plates	SUM	LOT		
5.11	Supply 500mm ² single core XLPE cable from the busbar chamber to the track switch structure	/M	1500		
6	Substation Building				
6.1	Substation building complete rebuild	SUM	LOT		

6.2	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
6.3	Supply Security Lighting	Ea.	4		
6.4	Supply Wall Mounted fan complete with controls and louvres and filters	Ea.	1		
6.5	Supply wire mesh in the windows	Ea.	6		
6.6	Supply wheely birds	Ea.	2		
7	Safe Doors				
7.1	Supply Double Doors	Ea.	1		
7.2	Supply Single Doors	Ea.	2		
7.3	Supply Double roller door	Ea.	1		
7.4	Supply Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
8.0	Fire Extinguishers				
8.1	Supply Fire Extinguishers	Ea.	1		
9.1	Supply Feeder Cable Structures	Sum	LOT		
9.2	Supply 800mm ² Al feeder wire with terminations	/m	1000		
9.3	Supply Capacitors	Ea.	4		
9.4	Supply Lightning arrestors	Ea.	4		
10.0	P's and G's				
10.1	Preliminary and General (site establishment, security, etc)	SUM	LOT		
11	Supply As built drawings	Sum	LOT		
12.0	Testing and commissioning				

12.1	Test and commission all supplied and installed equipment double unit	SUM	LOT		
SECTION 13 (INSTALLATION)					
13.1	Install Crusher Stone 25mm	/m³	500		
13.2	Install Perimeter/HT yard fence (5m wide sliding gate	/m	250		
13.3	Install Negative Return (Cables and Connection thereof)	/m	500		
13.4	Install control cables complete	SUM	LOT		
13.5	Install 35mm² 400/1000V pole mounted transformer (incl. Install the H frame) complete with terminations and lugs, etc	/m	500		
13.6	Install 70mm² Al cable and termination to 1:1 Transformer	/m	10		
13.7	Install Isolating Transformer	Ea.	1		
13.8	Install 100KVA pole mounted transformer	Ea.	1		
13.9	Install DC Earthing tie unit	SUM	LOT		
13.10	Install DC Earth Leakage	Ea.	1		
13.11	Install AC/ DC Distribution Panel	Ea.	1		
13.12	Install Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
13.13	Install Battery Bank complete with charger (250AH) Gel type	/set	1		
13.14	Install Modular HSCB panels	Ea.	4		
13.15	Install HSCB's 2600A (mounted in trolley)	Ea.	4		
13.16	Install ECR complete	Ea.	4		
13.17	Install control cables complete	SUM	LOT		

13.18	Install chequer plates	SUM	LOT		
13.19	Install 800mm ² aerial Al conductor from the switch structure closer to the substation and switch structure next to the OHTE(incl. structure, termination lugs, and all other accessories	/M	1500		
13.20	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
13.21	Install Security Lighting	Ea.	4		
13.22	Install wire-mesh in the windows	Ea.	6		
13.23	Install wheely birds	Ea.	2		
13.24	Install Double Doors	Ea.	1		
13.25	Install Single Doors	Ea.	2		
13.26	Install Double roller door	Ea.	1		
13.27	Install Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
13.28	Install Fire Extinguishers	Ea.	1		
13.29	Install Feeder Cable Structures	Sum	LOT		
13.30	Install Capacitors	Ea.	4		
13.31	Install Lightning arrestors	Ea.	4		
TOTAL (D) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

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Dunswart Tie-Station 3kV DC					
<i>BILL OF QUANTITIES</i>					
ELECTRICAL AND CIVIL WORKS					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
	SECTION 1				
1.0	Dismantling and Removal of Existing equipment (including fence and doors)	SUM	LOT		
2.0	Transportation of equipment from site to Driehoek stores	SUM	LOT		
3.0	Outdoor Yard				
3.1	Removal of weeds and treatment of soil (entire substation yard)	/m ²	200		
3.2	Supply Crusher Stone 25mm	/m ³	500		
3.3	Trenching for Feeder Cables	/m	1000		
3.4	Supply Perimeter/HT yard fence	/m	200		
3.5	Supply 35mm ² 400/1000V ABC cable (incl. supply the H frame) complete with terminations and lugs, etc	/m	500		
3.6	Supply 100KVA pole mounted transformer incl. connection from ABC/ transmission line with accessories	Ea.	1		
4	Earthing				
4.1	Supply DC Earthing tie unit	SUM	LOT		
4.2	Supply DC Earth Leakage	Ea.	1		
5	Indoor Equipment				

5.1	Dismantling and Removal of old equipment	SUM	LOT		
5.2	Delivery of old indoor equipment to Driehoek stores	SUM	LOT		
5.3	Supply AC/ DC Distribution Panel	Ea.	1		
5.4	Supply Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
5.5	Supply Battery Bank complete with charger (250AH) Gel type	/set	1		
5.6	Supply Modular HSCB panels	Ea.	8		
5.7	Supply HSCB's 2600A (one additional on a trolley)	Ea.	8		
5.8	Supply ECR complete	Ea.	8		
5.9	Supply control cables complete	SUM	LOT		
5.10	Supply chequer plates	SUM	LOT		
6	Substation Building				
6.1	Substation building complete rebuild	SUM	LOT		
6.2	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
6.3	Supply Security Lighting	Ea.	4		
6.4	Supply Wall Mounted fan complete with controls and louvres and filters	Ea.	1		
6.5	Supply wheely birds	Ea.	2		
7	Safe Doors				
7.1	Supply Double Doors	Ea.	1		
7.2	Supply Single Doors	Ea.	2		

7.3	Supply Double roller door	Ea.	1		
7.4	Supply Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
8.0	Fire Extinguishers				
8.1	Supply Fire Extinguishers	Ea.	1		
9.1	Supply Feeder Cable Structures	Sum	LOT		
9.2	Supply 800mm ² Al feeder wire	/m	1500		
9.3	Supply Capacitors	Ea.	8		
9.4	Supply Lightning arrestors	Ea.	8		
10.	P's and G's				
10.1	Preliminary and General (site establishment, security, etc)	SUM	LOT		
11	Supply As built drawings	Sum	LOT		
12.0	Testing and commissioning				
12.1	Test and commission all supplied and installed equipment double unit	SUM	LOT		
SECTION 13 (INSTALLATION)					
13.1	Install Crusher Stone 25mm	/m ³	500		
13.2	Install Perimeter/HT yard fence (5m wide sliding gate	/m	200		
13.3	Install Negative Return (Cables and Connection thereof)	/m	500		
13.4	Install 35mm ² 400/1000V pole mounted transformer (incl. Install the H frame) complete with terminations and lugs, etc	/m	500		
13.5	Install 70mm ² Al cable and termination to 1:1 Transformer	/m	10		

13.6	Install Isolating Transformer	Ea.	1		
13.7	Install 100KVA pole mounted transformer	Ea.	1		
13.8	Install DC Earthing tie unit	SUM	LOT		
13.9	Install DC Earth Leakage	Ea.	1		
13.10	Install AC/ DC Distribution Panel	Ea.	1		
13.11	Install Tele-control (*Required cards are listed in clause 5.10.4 above)	/set	1		
13.12	Install Battery Bank complete with charger (250AH) Gel type	/set	1		
13.13	Install Modular HSCB panels	Ea.	8		
13.14	Install HSCB's 2600A (mounted in trolley)	Ea.	8		
13.15	Install ECR complete	Ea.	8		
13.16	Install control cables complete	SUM	LOT		
13.17	Install chequer plates	SUM	LOT		
13.18	Install 800mm ² aerial Al conductor from the switch structure closer to the substation and switch structure next to the OHTE(incl. structure, termination lugs, and all other accessories	/M	1500		
13.19	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
13.20	Install Security Lighting	Ea.	4		
13.21	Install wheely birds	Ea.	2		
13.22	Install Double Doors	Ea.	1		
13.23	Install Single Doors	Ea.	2		
13.24	Install Double roller door	Ea.	1		

13.25	Install Substation High Voltage Signs (indoor, outdoor complete) including markers A and B units	SUM	LOT		
13.26	Install Fire Extinguishers	Ea.	1		
13.27	Install Feeder Cable Structures	Sum	LOT		
13.38	Install Capacitors	Ea.	8		
13.29	Install Lightning arrestors	Ea.	8		
TOTAL (E) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

<i>BILL OF QUANTITIES (BOQ)</i>					
Joburg-Daveyton TELECOMMUNICATION WORKS					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
1.0	TELECONTROL TRANSMISSION NETWORK SYSTEMS				
1.1	Supply of Telecontrol Transmission Network Node, Din rail mount, complete accessories at Electrical Substations in Gauteng Region.	Each	11		
1.2	Supply of 19"INCH Din rail mount plate	Each	11		
1.3	Supply of 110 - 48VDC power supply unit	Each	11		
1.4	Supply of a Serial Drop cable (3m) - 2 per card.	Each	33		
1.5	Supply of 1U 19" brush panels and accessories.	Each	22		
1.6	Supply of a ground copper bar and accessories.	Each	11		
1.7	Supply of SFP 1310nm – EX, 40 km range.	Each	22		

1.8	Supply of SFP 1550nm – ZX, 70 km range.	Each	4		
1.9	Supply of OS License (one per node)	Each	1		
1.10	Supply of Redundancy licence. (one per node)	Each	4		
1.11	Supply of Node license (one per node) up to 100 nodes	Each	11		
1.12	Supply of Power cable, 2-wire, 10 A, 110VDC, 2,5m Length	Each	22		
1.13	Supply of Ethernet CAT5e Patch Lead Cable 1m, complete with RJ45 connectors.	Each	33		
1.14	Supply duplex Single mode APC LC - LC patch lead 10m.	Each	33		
1.15	Supply of 12U 19inch: 600mm (H) x 600mm (W) x 450mm (D) cabinet at Electrical Substations	Each	11		
1.16	Supply of an Interface Module (IFM): Gigabit Ethernet Interface, 4-SFP 1G Ports Base-X	Each	1		
1.17	Supply of an Interface Module (IFM): 10 Gigabit Ethernet Interface, 1-SFP 10G Port	Each	2		
1.18	Supply of an Interface Module (IFM): Ethernet Interface, 4-Ethernet Ports LAN	Each	1		
1.19	Supply of an Interface Module (IFM): 7-Serial Interface card for RS232	Each	1		
1.20	Supply of Telecontrol Transmission Network Node, rack mount 19"INCH and accessories at the Electrical corridor junctions.	Each	1		
1.21	Supply of a Node Support module (NSM) slot 1.	Each	15		
1.22	Supply of an DC Power Supply Unit (PSU): Input range: 18-60VDC	Each	15		
1.23	Supply duplex Single mode APC LC - LC patch lead 10m.	Each	30		
2.0	TRAINING				
2.1	The contractor shall provide training for installation and commissioning of the network node.	Each	4		
3.0	TEST, COMMISSIONING AND HANDOVER				

3.1	Test, commissioning, and handing over of the entire installation.	sum	1		
3.2	Supply electronic and hardcopy (2) copies of complete "As build/ As installed" equipment manuals.	sum	1		
4.0	Section 4				
4.1	Install of Telecontrol Transmission Network Node, Din rail mount, complete accessories at Electrical Substations in Gauteng Region.	Each	11		
4.2	Install of 19"INCH Din rail mount plate	Each	11		
4.3	Install of 110 - 48VDC power Install unit	Each	11		
4.4	Install of a Serial Drop cable (3m) - 2 per card.	Each	33		
4.5	Install of 1U 19" brush panels and accessories.	Each	22		
4.6	Install of a ground copper bar and accessories.	Each	11		
4.7	Install of SFP 1310nm – EX, 40 km range.	Each	22		
4.8	Install of SFP 1550nm – ZX, 70 km range.	Each	4		
4.9	Install of OS License (one per node)	Each	1		
4.10	Install of Redundancy licence. (one per node)	Each	4		
4.11	Install of Node license (one per node) up to 100 nodes	Each	11		
4.12	Install of Power cable, 2-wire, 10 A, 110VDC, 2,5m Length	Each	22		
4.13	Install of Ethernet CAT5e Patch Lead Cable 1m, complete with RJ45 connectors.	Each	33		
4.14	Install duplex Single mode APC LC - LC patch lead 10m.	Each	33		
4.15	Install of 12U 19inch: 600mm (H) x 600mm (W) x 450mm (D) cabinet at Electrical Substations	Each	11		
4.16	Install of an Interface Module (IFM): Gigabit Ethernet Interface, 4-SFP 1G Ports Base-X	Each	1		
4.17	Install of an Interface Module (IFM): 10 Gigabit Ethernet Interface, 1-SFP 10G Port	Each	2		

4.18	Install of an Interface Module (IFM): Ethernet Interface, 4-Ethernet Ports LAN	Each	1		
4.19	Install of an Interface Module (IFM): 7- Serial Interface card for RS232	Each	1		
4.20	Install of Telecontrol Transmission Network Node, rack mount 19"INCH and accessories at the Electrical corridor junctions.	Each	1		
4.21	Install of a Node Support module (NSM) slot 1.	Each	15		
4.22	Install of an DC Power Install Unit (PSU): Input range: 18-60VDC	Each	15		
4.23	Install duplex Single mode APC LC - LC patch lead 10m.	Each	30		
TOTAL (F) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					R

SCHEDULE OF QUANTITIES AND RATES / ALLIANCE 6,6KV INTAKE Distribution SUBSTATION (nominal Voltage 22kV)					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
1.0	Outdoor equipment				
1.1	Supply AC Disconnects	Set	1		
1.2	Supply Surge Arrestors (one per phase)	Set	1		
1.3	Supply Primary Circuit Breaker	Each	1		
1.4	Supply 3MVA 22/11/6.6KV Transformer	Each	1		
1.5	Supply current Transformer	Each	3		

1.6	Supply Busbars from AC Disconnects to the Transformer	m	50		
1.7	Supply 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
1.8	Supply Control Cables Complete	Sum	LOT		
1.9	Supply Link Switches	Each	3		
1.10	Removal of weeds and treatment of soil (entire substation yard)	Sum	LOT		
1.11	Supply Crusher Stone 25mm	m3	300		
2	Indoor equipment				
2.1	Supply 12kV MV switchgear (3MVA transformer)	Each	2		
2.2	Supply 12kV MV switchgear (Cable)	Each	2		
2.3	Supply 26AH battery and 10A charger	Each	1		
2.4	Supply Substation earthing complete	SUM	LOT		
2.5	Supply PCB Control Panel Including Interfacing with the PCB	Each	1		
2.6	Supply Control cables complete	SUM	LOT		
2.7	Supply Telecontrol complete	Each	1		
2.8	Supply 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
3	Substation Building				
3.1	Demolish all building on site and remove all rubble and dispose of it to dumping site	SUM	LOT		
3.2	Supply substation designs	SUM	LOT		

3.3	Rebuild Substation Building complete	SUM	LOT		
3.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
3.5	Supply Security Lighting	Each	2		
3.6	Supply Double door	Each	1		
3.7	Supply Single door	Each	1		
3.8	Supply Control cables complete	SUM	LOT		
3.9	Supply Chequer plates	SUM	LOT		
4	Fire Extinguishers				
4.1	Supply of fire extinguisher	Each	2		
5	Testing and commissioning				
5.1	Supply As built drawings	SUM	LOT		
5.2	Test and commission all supplied and installed equipment distribution substation	SUM	LOT		
6.0	WARNING NOTICES AND SIGNS				
6.1	Supply a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
7.0	DECOMISSIONING				
7.1	P's and G's	sum	LOT		
7.2	Decommissioning of existing equipment. The rate to including transportation to a storage facility at Driehoek stores including non- ferrous metals (i.e. cable conductors, etc.)	sum	1		
8.0	Section 8 (Installation)				

8.1	Install AC Disconnects	Set	1		
8.2	Install Surge Arrestors (one per phase)	Set	1		
8.3	Install Primary Circuit Breaker	Each	1		
8.4	Install 3MVA 22/11/6.6KV Transformer	Each	1		
8.5	Install current Transformer	Each	3		
8.6	Install Busbars from AC Disconnects to the Transformer	m	50		
8.7	Install 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
8.8	Install Control Cables Complete	Sum	LOT		
8.9	Install Link Switches	Each	3		
8.10	Install Crusher Stone 25mm	m3	300		
8.11	Install 12kV MV switchgear (3MVA transformer)	Each	2		
8.12	Install 12kV MV switchgear (Cable)	Each	2		
8.13	Install 26AH battery and 10A charger	Each	1		
8.14	Install Substation earthing complete	SUM	LOT		
8.15	Install PCB Control Panel Including Interfacing with the PCB	Each	1		
8.16	Install Control cables complete	SUM	LOT		
8.17	Install Telecontrol complete	Each	1		
8.18	Install 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
8.19	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		

8.20	Install Security Lighting	Each	2		
8.21	Install Double door	Each	1		
8.22	Install Single door	Each	1		
8.23	Install Control cables complete	SUM	LOT		
8.24	Install Chequer plates	SUM	LOT		
8.25	Install of fire extinguisher	Each	2		
8.26	Install a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
TOTAL(G) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

SCHEDULE OF QUANTITIES AND RATES / BOKSBURG EAST 6,6KV INTAKE Distribution SUBSTATION (nominal Voltage 22kV)					
	BILL OF QUANTITIES				
	ELECTRICAL AND CIVIL WORKS				
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
1.0	Outdoor equipment				
1.1	Supply AC Disconnects	Set	1		
1.2	Supply Surge Arrestors (one per phase)	Set	1		
1.3	Primary Circuit Breaker	Each	1		
1.4	Supply 3MVA 22/11/6.6KV Transformer	Each	1		
1.5	Supply current Transformer	Each	3		

1.6	Supply Busbars from AC Disconnects to the Transformer	m	50		
1.7	Supply 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
1.8	Supply Control Cables Complete	Sum	LOT		
1.9	Supply Link Switches	Each	3		
1.10	Removal of weeds and treatment of soil (entire substation yard)	Sum	LOT		
1.11	Supply Crusher Stone 25mm	M ³	300		
2	Indoor equipment				
2.1	Supply 12kV MV switchgear (3MVA transformer)	Each	2		
2.2	Supply 12kV MV switchgear (Cable)	Each	2		
2.3	Supply 26AH battery and 10A charger	Each	1		
2.4	Supply Substation earthing complete	SUM	LOT		
2.5	Supply PCB Control Panel Including Interfacing with the PCB	Each	1		
2.6	Supply Control cables complete	SUM	LOT		
2.7	Supply Telecontrol complete	Each	1		
2.8	Supply 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
3	Substation Building				
3.1	Demolish all building on site and remove all rubble and dispose of it to dumping site	SUM	LOT		
3.2	Supply substation designs	SUM	LOT		

3.3	Rebuild Substation Building complete	SUM	LOT		
3.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
3.5	Supply Security Lighting	Each	2		
3.6	Supply Double door	Each	1		
3.7	Supply Single door	Each	1		
3.8	Supply Control cables complete	SUM	LOT		
3.9	Chequer plates	SUM	LOT		
4	Fire Extinguishers				
4.1	Supply of fire extinguisher	Each	2		
5	Testing and commissioning				
5.1	As built drawings	SUM	LOT		
5.2	Test and commission all supplied and installed equipment distribution substation	SUM	LOT		
6.0	WARNING NOTICES AND SIGNS				
6.1	Supply a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
7.0	DECOMMISSIONING				
7.1	P's and G's	sum	LOT		
7,2	Decommissioning of existing equipment. The rate to including transportation to a storage facility at Driehoek stores including non- ferrous metals (i.e. cable conductors, etc.)	sum	1		
8.0	Section 8 (Installation)				

8.1	Install AC Disconnects	Set	1		
8.2	Install Surge Arrestors (one per phase)	Set	1		
8.3	Install Primary Circuit Breaker	Each	1		
8.4	Install 3MVA 22/11/6.6KV Transformer	Each	1		
8.5	Install current Transformer	Each	3		
8.6	Install Busbars from AC Disconnects to the Transformer	m	50		
8.7	Install 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
8.8	Install Control Cables Complete	Sum	LOT		
8.9	Install Link Switches	Each	3		
8.10	Install Crusher Stone 25mm	M ³	300		
8.11	Install 12kV MV switchgear (3MVA transformer)	Each	2		
8.12	Install 12kV MV switchgear (Cable)	Each	2		
8.13	Install 26AH battery and 10A charger	Each	1		
8.14	Install Substation earthing complete	SUM	LOT		
8.15	Install PCB Control Panel Including Interfacing with the PCB	Each	1		
8.16	Install Control cables complete	SUM	LOT		
8.17	Install Telecontrol complete	Each	1		
8.18	Install 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
8.19	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		

8.20	Install Security Lighting	Each	2		
8.21	Install Double door	Each	1		
8.22	Install Single door	Each	1		
8.23	Install Control cables complete	SUM	LOT		
8.24	Install Chequer plates	SUM	LOT		
8.25	Install of fire extinguisher	Each	2		
8.26	Install a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
TOTAL (H) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

<p align="center">SCHEDULE OF QUANTITIES AND RATES / DAVEYTON 6,6KV Distribution SUBSTATION</p> <p align="center">BILL OF QUANTITIES</p> <p align="center">ELECTRICAL AND CIVIL WORKS</p> <p>A bidder shall refer to the Project specification for detailed information per item</p>					
Item	Description	Unit	Quantity	Rate	Amount
1.0	Outdoor equipment				
1.1	Supply 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
1.2	Supply 95mm ² XLPE Cu cable 0.6/1kV (including termination kits,	m	200		

	lugs and all other accessories) (including trenching and backfilling)				
1.3	Supply Control Cables Complete	Sum	LOT		
1.4	Supply Link Switches	Each	3		
1.5	Removal of weeds and treatment of soil (entire substation yard)	Sum	LOT		
1.6	Supply Crusher Stone 25mm	M ³	300		
2	Indoor equipment				
2.1	Supply 12kV MV switchgear (transformer)	Each	2		
2.2	Supply 500KVA 6.6/0.4KV Distribution Transformer	Each	1		
2.3	Supply 26AH battery and 10A charger	Each	1		
2.4	Supply Substation earthing complete	SUM	LOT		
2.5	Supply PCB Control Panel Including Interfacing with the PCB	Each	1		
2.6	Supply Control cables complete	SUM	LOT		
2.7	Supply Telecontrol complete	Each	1		
2.8	Supply LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
2.9	Supply 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
3	Substation Building				
3.1	Demolish all building on site and remove all rubble and dispose of it to dumping site	SUM	LOT		
3.2	Supply substation designs	SUM	LOT		

3.3	Rebuild Substation Building complete	SUM	LOT		
3.4	Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
3.5	Supply Security Lighting	Each	4		
3.6	Supply Double door	Each	2		
3.7	Supply Single door	Each	2		
3.8	Supply Control cables complete	SUM	LOT		
3.9	Supply Chequer plates	SUM	LOT		
4	Fire Extinguishers				
4.1	Supply of fire extinguisher	Each	2		
5	Testing and commissioning				
5.1	As built drawings	SUM	LOT		
5.2	Test and commission all supplied and installed equipment distribution substation	SUM	LOT		
6.0	WARNING NOTICES AND SIGNS				
6.1	Supply a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
7.0	DECOMISSIONING				
7.1	P's and G's	sum	LOT		
7,2	Decommissioning of existing equipment. The rate to including transportation to a storage facility at Driehoek stores including non-ferrous metals (i.e. cable conductors, etc.)	sum	1		
8.0	Section 8 (Installation)				

8.1	Install 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	300		
8.2	Install 95mm ² XLPE Cu cable 0.6/1kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	200		
8.3	Install Control Cables Complete	Sum	LOT		
8.4	Install Link Switches	Each	3		
8.5	Install Crusher Stone 25mm	M ³	300		
8.6	Install 12kV MV switchgear (transformer)	Each	2		
8.7	Install 500KVA 6.6/0.4KV Distribution Transformer	Each	1		
8.8	Install 26AH battery and 10A charger	Each	1		
8.9	Install Substation earthing complete	SUM	LOT		
8.10	Install PCB Control Panel Including Interfacing with the PCB	Each	1		
8.11	Install Control cables complete	SUM	LOT		
8.12	Install Telecontrol complete	Each	1		
8.13	Install LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
8.14	Install 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
8.15	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
8.16	Install Security Lighting	Each	4		
8.17	Install Double door	Each	2		

8.18	Install Single door	Each	2		
8.19	Install Control cables complete	SUM	LOT		
8.20	Install Chequer plates	SUM	LOT		
8.21	Install of fire extinguisher	Each	2		
8.22	Install a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
TOTAL (I) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

SCHEDULE OF QUANTITIES AND RATES / ALLIANCE 6,6KV Distribution SUBSTATION					
BILL OF QUANTITIES					
ELECTRICAL AND CIVIL WORKS					
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
1.0	Outdoor equipment				
1.1	Supply 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	100		
1.2	Supply 95mm ² XLPE Cu cable 0.6/1kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	200		

1.3	Supply Control Cables Complete	Sum	LOT		
1.4	Supply Link Switches	Each	3		
1.5	Removal of weeds and treatment of soil (entire substation yard)	Sum	LOT		
1.6	Supply Crusher Stone 25mm	M ³	100		
2	Indoor equipment (Supply)				
2.1	Supply 12kV MV On load Isolator (transformer)	Each	1		
2.2	Supply 12kV MV switchgear (Cable)	Each	3		
2.3	Supply 100KVA 6.6/0.4KV Distribution Transformer	Each	1		
2.4	Supply 26AH battery and 10A charger	Each	1		
2.5	Supply Substation earthing complete	SUM	LOT		
2.6	Telecontrol complete	Each	1		
2.7	Supply LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
2.8	Supply 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
3	Substation Building				
3.1	Demolish all building on site and remove all rubble and dispose of it to dumping site	SUM	LOT		
3.2	Supply substation designs	SUM	LOT		
3.3	Rebuild Substation Building complete	SUM	LOT		
3.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		

3.5	Supply Security Lighting	Each	4		
3.6	Supply Double door	Each	2		
3.7	Supply Single door	Each	2		
3.8	Supply Control cables complete	SUM	LOT		
3.9	Supply Chequer plates	SUM	LOT		
4	Fire Extinguishers				
4.1	Supply of fire extinguisher	Each	1		
5	Testing and commissioning				
5.1	As built drawings	SUM	LOT		
5.2	Test and commission all supplied and installed equipment distribution substation	SUM	LOT		
6.0	WARNING NOTICES AND SIGNS				
6.1	Supply a complete set of warning notices and signs as per the specifications, including substation name, ratings, and substation Equipment labelling.	sum	LOT		
7.0	DECOMISSIONING				
7.1	P's and G's	sum	LOT		
7,2	Decommissioning of existing equipment. The rate to including transportation to a storage facility at Driehoek stores including non- ferrous metals (i.e. cable conductors, etc.)	sum	LOT		
8.0	Section 8 (Installation)				
8.1	Install 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	100		

8.2	Install 95mm ² XLPE Cu cable 0.6/1kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	200		
8.3	Install Control Cables Complete	Sum	LOT		
8.4	Install Link Switches	Each	3		
8.5	Install Crusher Stone 25mm	M ³	100		
8.6	Install 12kV MV on load isolator (transformer)	Each	1		
8.7	Install 12kV MV Switchgear (cable)	Ea.	3		
8.8	Install 100KVA 6.6/0.4KV Distribution Transformer	Each	1		
8.9	Install 26AH battery and 10A charger	Each	1		
8.10	Install Substation earthing complete	SUM	LOT		
8.11	Install Telecontrol complete	Each	1		
8.12	Install LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
8.13	Install 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
8.14	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
8.15	Install Security Lighting	Each	4		
8.16	Install Double door	Each	2		
8.17	Install Single door	Each	2		
8.18	Install Control cables complete	SUM	LOT		
8.19	Install Chequer plates	SUM	LOT		
8.20	Install of fire extinguisher	Each	2		

8.21	Install a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
TOTAL (J) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

<p>SCHEDULE OF QUANTITIES AND RATES / DUNSWART 6,6KV Distribution SUBSTATION</p> <p>BILL OF QUANTITIES</p> <p>ELECTRICAL AND CIVIL WORKS</p> <p>A bidder shall refer to the Project specification for detailed information per item</p>					
Item	Description	Unit	Quantity	Rate	Amount
1.0	Outdoor equipment				
1.1	Supply 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	100		
1.2	Supply 95mm ² XLPE Cu cable 0.6/1kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	200		
1.3	Supply Control Cables Complete	Sum	LOT		
1.4	Supply Link Switches	Each	3		

1.5	Removal of weeds and treatment of soil (entire substation yard)	Sum	LOT		
1.6	Supply Crusher Stone 25mm	M ³	100		
2	Indoor equipment				
2.1	Supply 12kV MV On load Isolator (transformer)	Each	2		
2.2	Supply 12kV MV switchgear (Cable)	Each	3		
2.3	Supply 100KVA 6.6/0.4KV Distribution Transformer	Each	1		
2.4	Supply 50KVA 6.6/0.4KV Distribution Transformer	Each	1		
2.5	Supply 26AH battery and 10A charger	Each	1		
2.6	Supply Substation earthing complete	SUM	LOT		
2.7	Supply Telecontrol complete	Each	1		
2.7	Supply LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
2.8	Supply 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
3	Substation Building				
3.1	Demolish all building on site and remove all rubble and dispose of it to dumping site	SUM	LOT		
3.2	Supply substation designs	SUM	LOT		
3.3	Rebuild Substation Building complete	SUM	LOT		
3.4	Supply Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
3.5	Supply Security Lighting	Each	4		

3.6	Supply Double door	Each	2		
37	Supply Single door	Each	2		
3.8	Supply Control cables complete	SUM	LOT		
3.9	Supply Chequer plates	SUM	LOT		
4	Fire Extinguishers				
4.1	Supply of fire extinguisher	Each	1		
5	Testing and commissioning				
5.1	Supply As built drawings	SUM	LOT		
5.2	Test and commission all supplied and installed equipment distribution substation	SUM	LOT		
6.0	WARNING NOTICES AND SIGNS				
6.1	Supply a complete set of warning notices and signs as per the specifications, including substation name, ratings and substation Equipment labelling.	sum	LOT		
7.0	DECOMISSIONING				
7.1	P's and G's	sum	LOT		
7,2	Decommissioning of existing equipment. The rate to including transportation to a storage facility at Driehoek stores including non- ferrous metals (i.e. cable conductors, etc.)	sum	LOT		
8.0	Section 8 (Installation)				
8.1	Install 185mm ² 3 core XLPE Cu cable 6.6/11kV (including termination kits, lugs and all other accessories) (including trenching and backfilling)	m	100		
8.2	Install 95mm ² XLPE Cu cable 0.6/1kV (including termination kits,	m	200		

	lugs and all other accessories) (including trenching and backfilling)				
8.3	Install Control Cables Complete	Sum	LOT		
8.4	Install Link Switches	Each	3		
8.5	Install Crusher Stone 25mm	M ³	100		
8.6	Install 12kV MV on load isolator (transformer)	Each	2		
8.7	Install 12kV MV Switchgear (cable)	Ea.	3		
8.8	Install 100KVA 6.6/0.4KV Distribution Transformer	Each	1		
8.9	Install 26AH battery and 10A charger	Each	1		
8.10	Install Substation earthing complete	SUM	LOT		
8.11	Install Telecontrol complete	Each	1		
8.12	Install LT panel (800A Three phase) (2x400A) (60A eath leakage with overload) (4x100A) (4x10A) (2x20A)	Each	1		
8.13	Install 50KVA, 400V/400V isolation transformer and all the associated works.	Each	1		
8.14	Install Indoor Power and Lighting (including emergency lighting as per clause 45 of BBB5452)	SUM	LOT		
8.15	Install Security Lighting	Each	4		
8.16	Install Double door	Each	2		
8.17	Install Single door	Each	2		
8.18	Install Control cables complete	SUM	LOT		
8.19	Install Chequer plates	SUM	LOT		
8.20	Install of fire extinguisher	Each	2		
8.21	Install a complete set of warning notices and signs as per the specifications, including substation	sum	LOT		

	name, ratings and substation Equipment labelling.				
TOTAL(K) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

SCHEDULE OF QUANTITIES AND RATES / Joburg-Daveyton POLE MOUNTED TRANSFORMERS.					
	BILL OF QUANTITIES				
	ELECTRICAL AND CIVIL WORKS				
A bidder shall refer to the Project specification for detailed information per item					
Item	Description	Unit	Quantity	Rate	Amount
	Section 1				
1.0	Supply Outdoor equipment (Supply and install)	Sum	1		
1.1.	Supply 35mm ² 6.6/11kv ABC (incl. the H frame) complete with terminations, lugs, etc.	m	5000		
1.2.	Supply 70mm ² 600/1000V ABC complete with terminations	m	5000		
1.3.	Supply 50KVA 11KV/ 400V pole mounted transformer	Each	20		
TOTAL (L) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES					

SPARES				
Item	Unit	Quantity	Rate	Total rate
Supply HSCB 2600A	Ea.	2		

Supply HSCB 4000A	Ea.	2		
Supply ECR (incl. boxes)	Ea.	10		
Supply ABC 11kV 35mm ²	/m	300m		
Supply ABC LT 70mm ²	/m	300m		
Supply Drop out Fuses (160A)	Ea.	24		
Supply ABC Joint kits 11kV	Ea.	6		
TOTAL (M) FOR BILL OF QUANTITIES CARRIED TO THE SUMMARY OF PRICES				

SUMMARY OF PRICES		
Item	Description	Amount
1	Brought forward from – ALLIANCE TRACTION SUBSTATION	
2	Brought forward from – BOKSBURG EAST TRACTION SUBSTATION	
3	Brought forward from – ANGELO TRACTION SUBSTATION	
4	Brought forward from – VAN RYN TIE-STATION	
5	Brought forward from – DUNSWART TIE-STATION	
6	Brought forward from – BOKSBURG EAST INTAKE 6,6KV	
7	Brought forward from – BOKSBURG EAST 6,6KV	
8	Brought forward from – DAVEYTON 6,6KV	
9	Brought forward from – DUNSWART 6,6KV	
10	Brought forward from – ALLIANCE INTAKE 6,6KV	
11	Brought forward from – ALLIANCE DISTRIBUTION 6,6KV	
12	Brought forward from – JOBURG-DAVEYTON POLE MOUNTED TRANSFORMERS	

13	Brought forward from – SPARES	
14	Brought forward from – TELECOMMUNICATION SYSTEMS	
15	Sub Total	
	15% VAT	
	Grand Total of Tender (Including VAT) Carried Forward.	