

Contract Data

The Employer is

Name Transnet Limited Trading as Transnet Freight Rail
Address Nzasm Building, Room 210, Corner of Paul Kruger and Minnaar street, Pretoria
Telephone (012) 315 2059 **Fax No.** 012 315 2138
E-mail Yvonne.Scannell@Transnet.net

The works is TRANSFORMER REFURBISHMENT AT VARIOUS SUBSTATIONS UNDER THE CONTROL OF THE DEPOT ENGINEER, WITBANK AND KOEDOESPOORT.

The site is WITBANK (BELFAST-, STERKLOOP-, HANMIEN- AND BRONKHORSTPRUIT SUBSTATIONS)
 KOEDOESPOORT (THABAZIMBI-, PENDORING-, ARTHURSVIEW-, VAN DER MERWE-, ONTGIN- AND DOORNPOORT SUBSTATIONS)

The starting date is
 The completion date is
 The reply period is weeks
 The defects date is weeks after completion
 The defect correction period is **1 (one)** weeks
 The delay damages are per day
 The assessment day is the **15th (fifth teen)** of each month
 The retention is **10 (ten)** %

Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply? **No**

The Adjudicator is

Name To be advised if disputes arise.....
Address
Telephone **Fax No.**
E-mail

Contract Data

The interest rate on late payment is % per complete week of delay.

The *Contractor* is not liable to the *Employer* for loss of or damage to the *Employer's* property in excess of for any one event.

The *Employer* provides this

.....

The minimum amount of cover for the third insurance stated in the

Insurance Table is

The minimum amount of cover for the fourth insurance stated in the

Insurance Table is

The adjudicator nominating
body is

The tribunal is

If the tribunal is arbitration,
the arbitration procedure is

The *conditions of contract* are the NEC3 Engineering and Construction Short Contract (June 2005) and the following additional conditions:

1.0 CONTRACTUAL OBLIGATIONS

- 1.1 The Contractor shall not make use of any sub-Contractor to perform the works or parts thereof without prior permission from the Project Manager.
- 1.2 The Contractor shall ensure that a safety representative is at site at all times. All safety measures prescribed by Transnet Freight Rail – Electrical Safety Instructions and the “Occupational Health and Safety Act 1993 (Act 85 of 1993)” associated with working on an project of this nature shall be adhered to.
- 1.3 The Contractor shall supply a **site diary** (with triplicate pages). This book shall be used to record any unusual events during the period of the work. Any delays to the work shall also be recorded such as delays caused by poor weather conditions, delays caused by permits being cancelled etc. The appointed Project Manager or Technical Officer must countersign such delays. Other delays such as non-availability of equipment from 3rd party suppliers must be communicated to the Project Manager or Technical Officer in writing.
- 1.4 The Contractor shall supply a **site instruction book** (with triplicate pages). This book shall be used to record any instructions to the Contractor regarding problems encountered on site – for example the quality of work or the placement of equipment. This book shall be filled in by the Project Manager or Technical Officer and must be countersigned by the Contractor
- 1.5 Both books mentioned in 1.3 and 1.4 shall be the property of Transnet Freight Rail and shall be handed over to the Project Manager or Technical Officer on the day of energising or handing over.
- 1.6 A penalty charge of **0.15 %** per day will be levied for late completion.
- 1.7 **10% retention money** will be retained and will be released 12 months after the completion date of the contract.
- 1.8 The successful Contractor shall provide a Gantt or a similar chart showing when the works will be done and energised. A final chart should be submitted to the Project Manager or Supervisor within 14 days after the award has been made to the successful Contractor.
- 1.9 All processes of the manufacture and assembly of the product components must be subjected to a quality assurance system.
- 1.10 The Contractor will assume full responsibility for assuring that the products purchased meet the requirement of Transnet Freight Rail for function, performance, and reliability including purchased products from 3rd part suppliers.
- 1.11 The onus is on the repairer to prove the effectiveness of their system to Transnet Freight Rail during the production of the prototype.
- 1.12 ISO. 9000 to 9004 inclusive (SABS 0157 parts 1 to 4) must be regarded as a guideline, where applicable.
- 1.13 The Contractor will remain liable for contractual delivery dates irrespective of deficiencies discovered during workshop inspections.

2.0 SITE ESTABLISHMENT

- 2.1 The Contractor shall be responsible to transport material to site, off-loading, handling, storage and security of all material required for the construction/execution of the works.

- 2.2 Transportation insurance must be arranged by successful contractor to ensure their handling responsibility while material are in transit to site and during off loading as agreed upon.
- 2.3 The Contractor shall be responsible for all necessary (as decided by the Transnet Freight Rail Project Manager or Technical Officer) connections between the equipment as found before site establishment and other components in the substation including connections to the earth-mat.

3.0 TRANSFORMER REFURBISHMENT

- 3.1 Oil sampling shall be taken by the contractor prior and after the transformer has been refurbished.
 - 3.1.1 The following oil sampling and testing shall be conducted:
 - Dielectric Strength
 - Acidity
 - Dissolved Gas Analysis
 - PCB (Optional test if unavailable and out dated)
- 3.2 It is required for the contractor to present PCB certificate to Transnet Freight Rail for his/her oil circulating plant, tanker to be used for the project.
- 3.3 Oil samples report shall be submitted to Project Manager for analysis prior and after work execution.
- 3.4 Proper precaution should be exercised to ensure control of loose material/equipment during repairs e.g. (Falling spanners, nuts and bolts into the transformer)
- 3.5 Contractor is liable to protect the transformer during rainy and moist weather condition.
- 3.6 It is recommended by Transnet Freight Rail that transformers should be re-gasketed making use of nebar material. Type material (gasket) sample should be presented to Project Manager prior project commencement.
- 3.7 Transformer shall be topped up with virgin oil.
- 3.8 Transformer oil shall be filtered making use of proper calibrated and PCB-free tested plant to meet Transnet recommended transformer oil regenerated standards.
- 3.9 Soil contamination due to oil spillages shall be rehabilitated to ensure oil free environment.
- 3.10 Contractor shall be liable to re-torque re-gasketed areas after 3 month from work completion during maintenance period without any additional costs.
- 3.11 Supply and install GOB bushings complete in accordance with SANS 60137. The Contractor shall make provision for any adaptors, modifications required to install the bushings on the existing transformer. All the gaskets that have been opened shall be replaced.
- 3.12 Pack the existing bushings in suitable crates and transport them to the respective Depot.

4.0 SITE TESTS

- 4.1 The Contractor shall be responsible for carrying out of transformer on-site tests before commissioning in terms of this specification and the contractual agreement.

- 4.2 Functional on-site tests shall be conducted on all items of equipment and circuitry to prove the proper functioning of transformer protection thereof.
- 4.3 The Contractor shall submit a detailed list of on-site tests for the approval of the Project Manager or Technical Officer.
- 4.4 The Contractor shall arrange for the Technical Officer or his representative to be present to witness the on-site tests.
- 4.5 The on-site tests and subsequent commissioning **will not commence until ALL CONSTRUCTION** work has been completed. Construction staff, material and equipment shall be removed from site prior to the commencement of testing. Testing and commissioning of the substation equipment will not be allowed to take place in a construction site environment.
- 4.6 The on-site tests shall include the following:
- 5.6.1 Trip tests of buchholz relay.
 - 5.6.2 Temperature gauge functionality test
 - 5.6.3 Transformer earth leakage protection test.
- 4.7 At the completion of the on-site tests, the Project Manager or Technical Officer or his representative shall either sign the tests sheets (supplied by the Contractor) as having witnessed the satisfactory completion thereof, or hand to the Contractor a list of defects requiring rectification.
- 4.8 Upon rectification of defects, the Contractor shall arrange for the Project Manager or Technical Officer or his representative to certify satisfactory completion of on-site tests.
- 4.9 Acceptance by the Project Manager or Technical Officer of satisfactory completion of on-site tests in no way relieves the Contractor of his obligation to rectify defects which may have been overlooked or become evident at a later stage.

5.0 COMMISSIONING OF EQUIPMENT

- 5.1 Commissioning will only take place after all defects have been rectified to the satisfaction of the Project Manager or Technical Officer.
- 5.2 Commissioning will include energising of equipment from the primary isolator to the track feeder circuits. The Contractor must prove the satisfactory operation of all equipment under live conditions.
- 5.3 On completion of commissioning, the Contractor will hand the equipment over to the Project Manager or Technical Officer in terms of the relevant instruction.
- 5.4 The commissioning of protection equipment by Transnet Freight Rail will in no way absolve the Contractor from any of his responsibilities during the guarantee period. It is the Contractor's responsibility to satisfy himself or herself that the commissioning of the protection equipment has been carried out in a satisfactory manner, and in no way compromises the proper operation of the equipment supplied in terms of the contract.
- 5.5 The Contractor shall be present during the testing and setting of the protection to rectify any faults found.

6.0 GUARANTEE AND DEFECTS

- 6.1 The Contractor shall guarantee the satisfactory operation of the complete electrical installation supplied and erected by him and accept liability for maker's defects that may appear in design, materials and workmanship.

- 6.2** The Contractor shall be issued with a completion certificate with the list of all defects to be repaired within 14 working days after commissioning.
- 6.3** The guarantee period for these substations shall expire after:
A period of 12 months commencing on the date of completion of the contract / sub-order or the date the substation is handed over to Transnet Freight Rail whichever is the earliest.
- 6.4** Any defects that may become apparent during the guarantee period shall be rectified to the satisfaction of Transnet Freight Rail, and to the account of the Contractor.
- 6.5** The Contractor shall undertake work on the rectification of any defects that may arise during the guarantee period within 7-days of his being notified by Transnet Freight Rail of such defects.
- 6.6** Should the Contractor fail to comply with the requirements stipulated above, Transnet Freight Rail shall be entitled to undertake the necessary repair work or effect replacement of defective apparatus or materials, and the Contractor shall reimburse Transnet Freight Rail the total cost of such repair or replacements, including the labour costs incurred in replacing defective material.
- 6.7** Any specific type of fault occurring three times within the guarantee period and which cannot be proven to be due to other faulty equipment not forming part of this contract e.g., faulty locomotive or overhead track equipment, etc., shall automatically be deemed an inherent defect. Such inherent defect shall be fully rectified to the satisfaction of the Project Manager or Technical Officer and at the cost of the Contractor.
- 6.8** If urgent repairs have to be carried out by Transnet Freight Rail staff to maintain supply during the guarantee period, the Contractor shall inspect such repairs to ensure that the guarantee period is not affected and should they be covered by the guarantee, reimburse Transnet Freight Rail the cost of material and labour.

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Contract Data

The *Contractor's* Offer

The Contractor is

Name

Address

Telephone Fax No.

E-mail

The percentage for overheads and profit added to the Defined Cost for people is.....%.

The percentage for overheads and profit added to other Defined Cost is..... %.

The *Contractor* offers to Provide the Works in accordance with the *conditions of contract* for an amount to be determined in accordance with the *conditions of contract*.

The offered total of the
Prices is

Signed on behalf of the Contractor

Name

Position

Signature Date

The *Employer's* Acceptance

The *Employer* accepts the *Contractor's* Offer to Provide the Works

Signed on behalf of the *Employer*

Name

Position

Signature Date

7.0 PRICING INSTRUCTIONS

1. The agreement is based on the NEC Engineering and Construction Short Contract 3. The contract specific variables are as stated in the contract data. Only the headings and clause numbers for which allowance must be made in the Price list are recited.
2. Preliminary and General Requirements are based on part 1 of SANS 1921, 'Construction and Management Requirements for Works Contracts'. The additions, deletions and alterations to SANS 1921 as well as the contract specific variables are as stated in the contract data. Only the headings and clause numbers for which allowance must be made in the Price list are recited.
3. It will be assumed that prices included in the Price list are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders.
4. Reference to any particular trademark, name, patent, design, type, specific origin or producer is purely to establish a standard for requirements. Products or articles of an equivalent standard may be substituted.
5. The Price list is not intended for the ordering of materials. Any ordering of materials, based only on the Price list, is at the Contractor's risk.
6. The amount of the Preliminaries to be included in each monthly payment certificate 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 excluding any contingency sum, the amount of the Preliminaries and any amount in respect of contract price adjustment provided for in the contract.
7. The amount or items of the Preliminaries shall be adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments shall be based on adjustments in the following categories as recorded in the Price list:
 - a) an amount which is not to be varied, namely Fixed (F).
 - b) an amount which is to be varied in proportion to the contract value, namely Value Related (V).
 - c) an amount which is to be varied in proportion to the contract period as compared to the initial construction period, excluding revisions to the construction period for which no adjustment the contractor is entitled to in terms of the contract, namely Time Related (T).
8. The following abbreviations are used in the Price list:

Hr	=	Hour
Ea	=	Each
OCB	=	Oil Circuit Breaker
GCB	=	Gas Circuit Breaker
PCB	=	Polychlorinated Biphenyl
Quant.	=	Quantity
9. The prices and rates in these Price list are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the scope of work and shall cover liabilities and obligations set forth or implied in the Contract data, as well as profit.
10. Where the scope of work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered for such items.
11. Where no quantity has been provided against an item in the Price list, the Contractor shall use their discretion and provide the quantity.

- 12 The quantities set out in these Price list are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in these Price list.
- 13 The short descriptions of the items of payment given in these Price list are only for purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.
- 14 Tenderers shall ensure that provision (financial as well as time) for excavations in a range of soil types is made for in their tenders.
- 15 For each item in the Price list, including Preliminaries, the Contractor shall provide in the appropriate column the portion of the tendered sum (inclusive of labour and material) which has been sourced locally (Republic of South Africa).
- 16 The Contractor shall also arrange forward cover within two weeks after contract award on all imported items.
- 17 The Contractor shall provide information related to imported content, i.e. equipment to be imported, value and applicable exchange rates. This information shall be provided as an Annexure to the Price list.
- 18 The total in the Price list shall be exclusive of VAT.

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Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
Belfast Substation					
A1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
A2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
A3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A		R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

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Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Sterkloop Substation				
B1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
B2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
B3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A	Total Price for Sterkloop =	R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

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Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Hanmien Substation				
C1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
C2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
C3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A	Total Price for Hanmien =	R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

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Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Bronkhorstspuit Substation				
D1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
D2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
D3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A	Total Price for Bronkhorstspuit =	R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

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Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Thabazimbi 25 kV AC Substation				
E1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
E2	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		
A	Total Price for Thabazimbi =			R	
B	VAT (14 % of A) =			R	
C	10% Contingency=			R	
D	Gross Total (A + B) =			R	

Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Pendoring 25 kV AC Substation				
F1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
F2	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		
A	Total Price for Pendoring = Total Price for Arthursview =		R		
B	VAT (14 % of A) =		R		
C	10% Contingency=		R		
D	Gross Total (A + B) =		R		

Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
Arthursview 25 kV AC Substation					
G1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat , paint main transformer tank and radiators grey and conservator tank white	sum	1		
G2	Plinth , surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		
A	Total Price for Arthursview =			R	
B	VAT (14 % of A) =			R	
C	10% Contingency=			R	
D	Gross Total (A + B) =			R	

Contract Data

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Item	Description	Unit	Qty	Rate	Price
	Vandermerwe 3 kV DC Substation				
H1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
H2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
H3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A	Total Price for Vandermerwe =	R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

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Item	Description	Unit	Qty	Rate	Price
	Ontging 25 kV AC Substation				
I1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
I2	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		
A	Total Price for Ontging =			R	
B	VAT (14 % of A) =			R	
C	10% Contingency =			R	
D	Gross Total (A + B) =			R	

Contract Data

Price List

Item	Description	Unit	Qty	Rate	Price
	Doornpoort Substation				
J1	Main Transformer	sum	1		
1	Oil sampling	sum	1		
2	Flush and clean transformer	sum	1		
3	Re-gasket top cover, primary, secondary and tertiary bushings	sum	1		
4	Re-gasket main transformer tap-switch, inspection covers and buccholz relay	sum	1		
5	Re-gasket and repair temperature probe pocket	sum	1		
6	Supply & install temperature gauges	ea	2		
7	Supply & install breather complete with silica gel crystals	sum	1		
8	Re-gasket radiator fins	sum	1		
9	Supply and install flexible leads	sum	1		
10	Re-gasket conservator tank	ea	1		
11	Replace conservator sight glass	ea	1		
12	Re-gasket conservator & main tank pipe	sum	1		
13	Re-gasket breather pipe	sum	1		
14	Oil purification and oil sampling	sum	1		
15	Clean, treat, paint main transformer tank and radiators grey and conservator tank white	sum	1		
J2	Auxiliary Transformer				
16	Oil sampling, flush clean transformer	sum	1		
17	Re-gasket transformer complete	sum	1		
18	Replace Breather complete with crystals	sum	1		
19	Oil sampling, paint, treat tank & conservator	sum	1		
J3	Plinth, surface area & commission				
20	Soil & Stones oil treatment and level surface area	sum	1		
21	Ps & G's	sum	1		
22	Commissioning	sum	1		

A	Total Price for Doornpoort =	R
B	VAT (14 % of A) =	R
C	10% Contingency=	R
D	Gross Total (A + B) =	R

SUMMARY OF ALL SUBSTATIONS

A	Total Price for Belfast =	R
B	Total Price for Sterkloop =	R
C	Total Price for Hanmien =	R
D	Total Price for Bronkhorstspuit =	R
E	Total Price for Thabazimbi =	R
F	Total Price for Arthursview =	R
G	Total Price for Arthursview =	R
H	Total Price for Vandermerwe =	R
I	Total Price for Ontging =	R
J	Total Price for Doornpoort =	R
	VAT (14 % of All) =	R
	10% Contingency (on all above) =	R
	Gross Total =	R

Contract Data

Works Information

8.0 DESCRIPTION OF WORK

The contractor shall perform the following:

8.1 Belfast 3kV Substation

Main Transformer

- 8.1.1 Re-gasket main transformer completely.
- 8.1.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.1.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.1.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.1.5 Clean and treat oil polluted ballast and plinth
- 8.1.6 Remove oil contaminated soil (500mm deep) and replace it with the new soil

Auxiliary Transformer

- 8.1.7 Re-gasket auxiliary transformer completely.
- 8.1.8 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.1.9 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.1.10 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.1.11 Clean and treat oil polluted ballast and plinth.

8.2 Sterkloop 3kV Substation

Main Transformer

- 8.2.1 Re-gasket main transformer completely.
- 8.2.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.2.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.2.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.2.5 Clean and treat oil polluted ballast and plinth
- 8.2.6 Remove oil contaminated soil (500mm deep) and replace it with the new soil

Auxiliary Transformer

- 8.2.7 Re-gasket auxiliary transformer completely.
- 8.2.8 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.2.9 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.2.10 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.2.11 Clean and treat oil polluted ballast and plinth.

8.3 Hanmien 3kV Substation

Main Transformer

- 8.3.1 Re-gasket main transformer completely.
- 8.3.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.3.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.3.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.3.5 Clean and treat oil polluted ballast and plinth
- 8.3.6 Remove oil contaminated soil (500mm deep) and replace it with the new soil

Auxiliary Transformer

- 8.3.7 Re-gasket auxiliary transformer completely.
- 8.3.8 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.3.9 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.3.10 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.3.11 Clean and treat oil polluted ballast and plinth.

8.4 Bronkhorstspuit 3kV Substation

Main Transformer

- 8.4.1 Re-gasket main transformer completely.
- 8.4.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.4.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.4.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.4.5 Clean and treat oil polluted ballast and plinth
- 8.4.6 Remove oil contaminated soil (500mm deep) and replace it with the new soil

Auxiliary Transformer

- 8.4.7 Re-gasket auxiliary transformer completely.
- 8.4.8 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.4.9 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.4.10 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.4.11 Clean and treat oil polluted ballast and plinth.

8.5 Thabazimbi 25 kV AC Substation

Main Transformer

- 8.5.1 Re-gasket main transformer completely.
- 8.5.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.5.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.5.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.5.5 Clean and treat oil polluted ballast and plinth.

8.6 Pendoring 25 kV AC Substation

Main Transformer

- 8.6.1 Re-gasket main transformer completely.
- 8.6.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.6.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.6.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.6.5 Clean and treat oil polluted ballast and plinth.

8.7 Arthursview 25 kV AC Substation

Main Transformer

- 8.7.1 Re-gasket main transformer completely.
- 8.7.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.7.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.7.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.7.5 Clean and treat oil polluted ballast and plinth.

8.8 Vandermerwe 25 kV AC Substation

Main Transformer

- 8.8.1 Re-gasket main transformer completely.
- 8.8.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.8.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.8.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.8.5 Clean and treat oil polluted ballast and plinth

Auxiliary Transformer

- 8.8.6 Re-gasket auxiliary transformer completely.
- 8.8.7 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.8.8 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.8.9 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.8.10 Clean and treat oil polluted ballast and plinth.

8.9 Ontging 25 kV AC Substation

Main Transformer

- 8.9.1 Re-gasket main transformer completely.
- 8.9.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.9.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.9.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.9.5 Clean and treat oil polluted ballast and plinth.

8.10 Doornpoort 3kV Substation

Main Transformer

- 8.10.1 Re-gasket main transformer completely.
- 8.10.2 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.10.3 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.10.4 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.10.5 Clean and treat oil polluted ballast and plinth

Auxiliary Transformer

- 8.10.6 Re-gasket auxiliary transformer completely.
- 8.10.7 Remove, store, purify, vacuum and test the oil as specified in Spoornet's specification CEE. 0229.95.
- 8.10.8 Top up transformer with virgin oil which complies with the requirements specified in SABS 555. 1995;
- 8.10.9 Paint and treat corrosion in accordance with the practice recommended in SABS 064. 1979 and as specified in Spoornet's specification CEE.0045.90.
Paint colours are as follows: -
 - transformers grey;
 - conservator tank white, and
 - plinth red;
- 8.10.10 Clean and treat oil polluted ballast and plinth.

8.11 DRAWINGS AND MANUALS

- 8.11.1 Supply three sets of A3 schematic wiring diagrams in hard copy format and electronic format for approval.

8.11.2 The Contractor shall present Transnet Freight Rail with the drawings for approval before manufacturing starts.

8.11.3 The Contractor shall be responsible for as built drawings on completion of the work.

8.11.4 The Contractor shall be responsible to submit a single line power circuit drawing showing all the equipment from the 132 kV line connections up to the over head track equipment. This includes cable lengths and cable trench depth measurements.

8.12 QUALITY AND INSPECTION

8.12.1 The Contractor shall apply 14 days in advance for the date of energizing.

8.12.2 The Contractor shall be responsible to issue a compliance certificate in terms of SANS 0142 for each site before energizing of the equipment shall take place.

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Contract Data

Works Information

8.13 DRAWINGS

8.13.1 CEE-TBD-0007 – Earthing arrangement for traction substations.

8.14 SPECIFICATIONS

8.14.1 South African National Standards:

8.14.1.1	SANS 1091	National colour standard.
8.14.1.2	SANS 763	Hot dip galvanised zinc coating.
8.14.1.3	SANS 121	Hot Dip Galvanised Coating for Fabricated Iron or Steel Article.
8.14.1.4	SANS 0555. 2007	Unused and reclaimed mineral insulating oil for transformer and switchgear.
8.14.1.5	SANS 8528	Reciprocating internal combustion engine driven alternating current generating set.
8.14.1.6	SANS 10064. 2005	Code of Practice for the preparation of steel surfaces for coating.
8.14.1.7	BSS 171. 1987	Power Transformers.
8.14.1.8	SANS 10142	Wiring Code.
8.18.1.9	SANS 60137	Insulated bushings for alternating voltages above 1 000 V.

8.14.2 Transnet Freight Rail:

- | | | |
|----------|--------------------|---|
| 8.14.2.1 | BBB 5452 version 4 | Transnet freight rail requirements for installation of electrical equipment for 3 kV DC substations. |
| 8.14.2.2 | CEE. 0229.95 | Dry-out and Regeneration of insulating oil and Reclaiming and de-sludging of transformers. |
| 8.14.2.3 | CEE.0045.2002/1 | Painting of steel Components of Electrical equipment. |
| 8.14.2.4 | CEE.0224.2002 | Drawings, catalogues, instruction manuals and spares list for electrical equipment supplied under contract. |

NOTE: Any other specifications referenced in the above mentioned specification, will be for information purposes and may be provided on request.

8.15 Occupational Health and Safety Act No. 85 of 1993 (Available at depot for referral)

8.16 Constraints on how the Contractor Provides the Works

- 8.16.1 The constraints shall be as specified in the specifications of the particular equipment.

8.17 Requirements for the programme

- | | | |
|--------|-----------------------|---|
| 8.17.1 | Programme of work | : To be submitted by successful Contractor |
| 8.17.2 | Format | : Gantt chart |
| 8.17.3 | Information | : How work is going to be executed and commissioned |
| 8.17.4 | Submission | : 3 weeks after the award of contract |
| 8.17.5 | Site diary | : Successful Contractor to supply in triplecate carbon copies |
| 8.17.6 | Site instruction book | : Successful Contractor to supply in triplecate carbon copies |

8.18 Services and other things provided by the *Employer*

- 8.18.1 Transnet Freight Rail shall inspect all equipment before dispatching the equipment to site.
- 8.18.2 Transnet Freight Rail shall have an electrician available for isolation and the erection of barriers to live electrical equipment and issuing of work permits.
- 8.18.3 Upon successful completion of the works to the satisfaction of Transnet Freight Rail, Transnet Freight Rail shall perform necessary protection tests and commission the equipment.
- 8.18.4 The Contractor shall make necessary arrangements for sanitation, water and electricity at these relevant sites during the installation of the equipments.
- 8.18.5 Transnet Freight Rail will arrange for the reconnecting of telecontrol equipment in the substation and no final energising shall take place without this.

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Contract Data

Site Information

The works shall be performed at Belfast-, Sterkloop-, Hanmien-, Bronkhorstpruit-, Thabazimbi-, Pendorring-, Arthursview-, Vandermerwe-, Ontging- and Doornpoort substations

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