Contract Data

The Employer is

Name	**Transnet Limited Trading as Transnet Freight Rail**
Adress	**Infrastructure Building, 227 Mark street, Vryheid, 3100**
Telephone	**(034) 989 9446** **Fax No. (034) 989 9433**
E-mail	**Naomi.Ungerer@Transnet.net**

The works is	**REPLACEMENT OF OLD / OBSOLETE SWITCHGEAR AT DUBULA AND HLUNGWANA 11KV DISTRIBUTION SUBSTATIONS UNDER THE CONTROL DEPOT ENGINEER VRYHEID.**
The site is	**DUBULA AND HLUNGWANA 11KV 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	…… weeks
The delay damages are	…… per day
The assessment day is the	…… of each month
The retention is	…… %
Does the United Kingdom Housing Grants, Construction and Regeneration Act (1996) apply?	**No**

The Adjudicator is

Name	**……**
Adress	**……**
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

Insurance Transnet Principal Control Insurance

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.

1.3 The Contractor shall comply with all applicable legislation and Transnet safety requirements adopted from time to time and instructed by the Project Manager / Technical Officer. Such compliance shall be entirely at his own cost, and shall be deemed to have been allowed for in the rates and prices in the contract.

1.4 The Contractor shall, in particular, comply with the following Acts and Transnet Specifications:-

1.4.1 The Compensation for Occupational Injuries and Diseases Act, No. 130 of 1993. The Contractor shall produce proof of his registration and good standing with the Compensation Commissioner in terms of the Act.

1.4.2 The Occupational Health and Safety Act (Act 85 of 1993).

1.4.3 The explosive Act No. 26 of 1956 (as amended). The Contractor shall, when applicable, furnish the Project Manager / Technical Officer with copies of the permits authorising him or his employees, to establish an explosives magazine on or near the site and to undertake blasting operations in compliance with the Act.

1.4.4 The Contractor shall comply with the current Transnet Specification E.4E, Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act, Act 85 of 1993 and Regulations and shall before commencement with the execution of the contract, which shall include site establishment and delivery of plant, equipment or materials, submit to the Project Manager / Technical Officer.

1.4.5 The Contractor shall comply with the current Specifiaction for Works On, Over, Under or Adjacent to Railway Lines and near High Voltage Equipment – E7/1, if applicable, and shall take particular care of the safety of his employees on or in close proximity to a railway line during track occupations as well as under normal operational conditions.

1.5 The Contractor's Health and Safety Programme shall be subject to agreement by the Project Manager / Technical Officer, who may, in consultation with the Contractor, order supplementary and/or additional safety arrangements and/or different safe working methods to ensure full compliance by the Contractor with his obligations as an employer in terms of the Act.

1.6 In addition to compliance with clause 1.4 hereof, the Contractor shall report all incidents in writing to the Project Manager / Technical Officer. Any incident resulting in the death of or injury to any person on the works shall be reported within 24 hours of its occurrence and any other incident shall be reported within 48 hours of its occurrence.

1.7 The Contractor shall make necessary arrangements for sanitation, water and electricity at these relevant sites during the installation of the equipments.

1.8 A penalty charge of 0.07% per day of the total contract value will be levied for late completion.

1.9 10% retention money will be retained and will be released 12 months after the completion date of the contract.

1.10 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.

1.11 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.

1.12 Both books mentioned in 1.10 and 1.11 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.

1.13 All processes or the manufacture and assembly of the product components must be subjected to a quality assurance system.

1.14 The Contractor will assume full responsibility for assuring that the products purchased meet the requirements of Transnet Freight Rail for function, performance, and reliability, including purchased products from 3rd part suppliers/Manufacturers.

1.15 The Contractor shall prove to Transnet Freight Rail that his equipment or those supplied from 3rd party suppliers/manufacturers confirms to Transnet freight rail specifications.

1.16 The Contractor will remain liable for contractual delivery dates irrespective of deficiencies discovered during workshop inspections.

Contract Data

The *Contractor*'s Offer

The Contractor is

Name .....

Adress .....

.....

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 .....

Contract Data
Price List

Item	Description	Unit	Quantity	Rate	Price

Appendix 1:

Bill of Quantities.

Appendix 2:

Unit rate for the alternative panel and total price.

3.0 DESCRIPTION OF WORK

3.1 This Specification covers Transnet Freight Rail requirements for the design, supply, installation, testing and commissioning of 11kV switchgears at Dubula and Hlungwana 88kV / 11kV distribution substations at Vryheid Infrastructure Depot.

3.2 Dismantle and removal of the existing switchgears from site and transport them to Vryheid Infrastructure Depot.

4.0 EQUIPMENT

4.1 The Contractor shall supply all equipment necessary to perform the work.

5.0 CONSTRUCTION

5.1 The equipment layout design within the substations shall take into account the space constraints and position of fixed equipment within substations to ensure compliance with applicable regulations and operating clearances.

6.0 MATERIALS

6.1 Only materials which are approved by Transnet Freight Rail shall be used.

6.2 The material shall be as per applicable drawings, standard, generic and particular specifications.

6.3 Where equipment offered does not comply with standards or publications referred to in the specification, Contractors shall state which standards apply and submit a copy in English or certified translation.

6.4 The contractor shall submit descriptive literature consisting of detailed technical specifications, general constructional details and principal dimensions, together with clear illustrations of the equipment offered.

6.4 For the duration of the contract, the successful Contractor will be required to inform The Project Manager/Supervisor of changes to equipment offered and submit detailed information on replacement equipment for approval prior to it being used on this contract.

6.6 Any material that does not conform to the requirements given shall be submitted to Transnet Freight Rail for approval before an order is placed.

6.7 Contractors shall submit equipment type test certificates as specified on the contract. These shall be in English or certified translation.
specifications.

7.0 SWITCHGEAR

7.1 The indoor, medium voltage metal enclosed switchgear shall be in accordance with Specification No. BBB4182.

7.2 All circuit breakers/switchgear shall be rated 11 kV, 3phase, 50Hz.

7.3 The rated continuous current shall not be less than 630A.

7.4 The rated short circuit breaking current shall not be less than 20kA

7.5 The short time withstand current rating for the medium voltage equipment supplied Shall not be less than 20kA for 3s.

7.6 A minimum clearance of 800 mm shall be maintained at the rear of the newly installed panels. The front shall have sufficient space for the breakers to be racked out and withdrawn with ease.

8.0 SWITCHING DEVICES

8.1 Switching devices shall be in compliance with Clause 9.0 of Specification No. BBB4182.

8.2 The circuit breaker and its control panel shall be supplied from the same supplier/manufacturer.

9.0 PROTECTION REQUIREMENTS (FUNCTION / RELAYS)

9.1 Protection system and relays shall be in compliance with Clause 11.0 of Specification No. BBB4182.

9.2 The protection required per panel shall be as specified below and must comply with the requirements of Specification no. BBB 4182 Appendix 1:

9.2.1 Incomer:

Frame Leakage Protection (refer to clause 9.2.5 for where a bus-sectionaliser is installed).

Earth Fault Protection.

Over current Protection.

9.2.2 Transformer:

Buchholz Protection (For transformers ≥500kVA and/or where specified in Appendix1).

Oil Over-Temperature Protection (For transformers ≥500kVA and/or where specified in Appendix1).

Primary Over current and Earth Fault Protection.

9.2.3 HV Cable

(a)Supply and Ring Main:

Over current Protectio

Earth Fault Protection

Differential Pilot Wire Protection (Where specified in The Bill of Quantities).

(b) Radial:

Earth Fault Protection.

Over current Protection.

9.2.4 HV Transmission Line:

Over current Protection.

Earth Fault Protection.

Sensitive Earth Fault Protection.

Auto-reclosing.

9.2.5 Busbars (With Bus sectionalizer):

Frame Leakage (Zone) Protection.

Frame Leakage Protection, with current transformer ratio of100/5, shall be provided in all substations, as per clause 9.2 or as indicated in the "Other Protection Requirements" column of the Bill of Quantities.

9.3 The Contractor shall provide intertripping, reverse power and phase failure protection/monitoring where specified in the Bill of Quantities.

10.0 INDICATING INSTRUMENTS

10.1 Indicating instruments shall be in compliance with Clause 12.0 of SpecificationNo.BBB4182 Version 2.

10.2 Ammeters shall be installed in all panels, excluding bus sectionaliser panel. The current in all three phases shall be readable by use of a selector switch.

10.3 Voltmeters shall be installed where indicated in the Bill of Quantities, and must be labelled whether it indicates cable or busbar voltage.

10.4 Maximum demand ammeters shall be installed on all transformer panels.

11.0 ENERGY METERS

11.1 Energy meters shall be in compliance with Clause 13.0 of Specification No. BBB4182 Version 2.

11.2 Energy meters (kWh meters) shall be installed where indicated in the Bill of Quantities.

11.3 Metering test blocks shall be provided where energy meters are installed.

12.0 CURRENT AND VOLTAGE TRANSFORMERS

12.1 Current and voltage transformers shall be in compliance with Clauses 14.0 and 15.0 of Specification No. BBB4182 Version 2.

12.2 The current transformers shall be supplied with ratios as indicated in the Bill of Quantities.

12.3 The CT ratio's given in the Bill of Quantities were recorded from the existing old equipment at the distribution substations. It is the contractor's responsibility to verify that the CT ratios and other ratings are suitable for the protection requirements at each substation.

12.4 Current transformers for 'Differential Protection' shall be of class X, and for other protection be of accuracy class 10P and accuracy limit factor 10.

12.5 The Contractor shall provide a 10 A rated test winding on CT's.

12.6 It is preferred that voltage transformers be installed on the cable side.

12.7 All incomer panels shall be provided with a voltmeter. Where there is no specific incomer (or through-feed) a VT shall be installed on the busbar side and a voltmeter in one of the panels. In instances where a bus-section is installed, the VT's shall be on cable side of incoming breakers.

12.8 Dual ratio voltage transformers 6.6/11kV are required for 6.6 kV substations. VT's shall have a secondary output of 110V.

12.9 A VT selection relay shall be provided where more than one VT is installed in a substation.

13.0 CABLING AND WIRING

13.1 All cabling and wiring shall be in accordance with specification BBC0198 Version 1 and SANS 10142-1.

13.2 The Contractor shall replace the transformer (MV/ LV) supply cables, from the medium voltage switchgear, with new cables at all sites.

13.3 Tenderers shall quote for a XLPE cable for all sites, with an approximate length given in the Bill of Quantities. The cables shall be rated for 11kV with the current rating based on the current/present application (6.6 or 11kV).

13.4 The quotation for the transformer cable shall include the necessary termination on both sides.

13.5 In case where circuit breaker (incoming) cables need replacement, Transnet Freight Rail Supervisor shall communicate the instruction to the Contractor.

13.6 No joining of new cables for transformers will be allowed. The Contractor shall provide cables that are long enough for the application.

13.7 All cables shall terminate in compression type glands. These glands shall be fitted with neoprene shrouds.

13.8 All dissimilar metal connections (Cu to Al) shall be made using bi-metallic clamps that are specifically designed and manufactured to make that particular connection (ad hoc fabricated clamps are not acceptable).

13.9 All copper connections to steel (galvanized) shall be tinned.

14.0 EARTHING

14.1 Earthing of the substation shall be done in accordance with drawing no. CEE-PA-23. A 95 mm² Cu cable shall however be used instead of a 10 mm² as indicated on the drawing.

14.2 A new water meter box and earth spike shall be installed at all substations.

14.3 The earth resistance reading of the earthing shall be less than 5 ohm. Tenderers shall make provision in their offers for installing trench earthing to achieve the required earth reading, where required, if the readings are not attained with earth spike used.

15.0 TRAINING

15.1 The Contractor's team of supervisors could be required to attend a Transnet Freight Rail electrical safety course and be authorised to supervise the Contractor's staff whilst working in the substations on this contract. Transnet Freight Rail will organise the course and details will be communicated to the successful tenderer.

15.2 The Tenderer shall submit details with the tender of the training courses, which will be conducted by the supplier/Contractor for the training of Transnet Freight Rail maintenance staff in the operation and maintenance of the equipment supplied. The courses shall include theoretical as well as practical tuition. The cost of the training shall be quoted for separately.

15.3 This training shall be offered for each Depot area in which equipment will be installed.

15.4 Training for relay setting/operation may be conducted centrally.

16.0 TESTING AND COMMISSIONING

16.1 The contractor shall perform all pre-commissioning tests. Transnet Freight Rail reserves the right to witness these tests. The test results shall be recorded and submitted to Transnet Freight Rail.

16.2 The equipment shall be inspected/tested and approved by Transnet Freight Rail Quality Assurance at the Contractor's supplier's workshop/factory prior to it being taken to site. Only once the approval has been granted can the equipment be taken to site for installation.

16.3 The Contractor shall supply all test equipment and instruments.

16.4 Functional on-site tests shall be conducted on all items of equipment and circuitry to prove the proper functioning and installation thereof.

16.5 The Contractor shall submit a detailed list of on-site tests for the approval of the Project Manager or Supervisor.

16.6 At the completion of the on-site tests, the Project Manager or Supervisor 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.

16.7 Transnet Freight Rail shall be notified at least 14 days prior to performing these tests.

16.8 Transnet Freight Rail shall perform final commissioning tests prior to the equipment being energised on site.

16.9 Acceptance by the Transnet Freight Rail Supervisor 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.

16.10 On completion of commissioning, the Contractor will hand the equipment over to the Project Manager or Supervisor in terms of relevant instruction.

17.0 Specifications

17.1 South African National Standards:

17.1.1 SANS 1091	National colour standard.
17.1.2 SANS 763	Hot dip galvanised zinc coating.
17.1.3 SANS 121	Hot Dip Galvanised Coating for Fabricated Iron or Steel Article.
17.1.4 SANS 8528	Reciprocating internal combustion engine driven alternating current generating set.
17.1.5 SANS 10142	Wiring Code.
17.1.6 Transnet Freight Rail:	
17.1.7 BBB4182 Version 2	Indoor, Medium Voltage Metal Enclosed Switchgear and Control Gear in accordance with IEC 62271-200.
17.1.8 BBC0198 Version 1	Requirements for the Supply of Electric Cables
17.1.9 CEE.0045.2002	Painting of Steel Components of Electrical Equipment.
17.1.10 CEE.0224.2002	Drawings, Catalogues, Instruction Manuals and Spares Lists for Electrical Equipment Supplied Under Contract.
17.1.11 CEE.0023.90	Installation of Cables.
17.1.12 CEE.0085.90	Self Contained Battery and Charger Units for Electric Light and Power
17.1.13 CEE.0045	Painting of Steel Components of Electrical Equipment
17.1.14 CEE-PA-23	Earthing Drawing

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

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

18.0 Constraints on how the Contractor Provides the Works

18.1 The constrains shall be as specified in the specifications of the particular equipment.

19.0 Requirements for the programme

19.1 Programme of work	:	To be submitted by successful Contractor
19.2 CIDB rating	:	3 EE or above
19.3 Format	:	Gantt chart
19.4 Information	:	How work is going to be executed and commissioned

19.5 Submission : 2 weeks after the award of contract

19.6 Site diary : Successful Contractor to supply in triplicate carbon copies

19.7 Site instruction book : Successful Contractor to supply in triplicate carbon Copies

20.0 Services and other things provided by the *Employer*

20.1 Transnet Freight Rail shall inspect the support steel structure on the Premises of the manufacturer.

20.2 Transnet Freight Rail shall inspect all equipment before the equipment can be dispathed to site

20.3 Transnet Freight Rail shall have an electrician available for isolation and the erection of barriers to live electrical equipment and issuing of work permits.

20.4 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.

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Contract Data

Site Information

The works shall be performed at the **DUBULA AND HLUNGWANA 11KV AC DISTRIBUTION SUBSTATIONS.**