

# PART C3: SCOPE OF WORKS

## PART C3

### SCOPE OF WORKS

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## PART C3

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### Section 1

#### DESCRIPTION OF THE WORKS

##### 1.1 Employer's Objective

1.1.1 To replace the old type of Circuit Breakers (which makes use of the Asbestos Arc Chute, 713/723) with the new type (BB) Secheron for the Ermelo Depot and EMC for the Durban Depot).

##### 1.2 Overview of the Works

- 1.2.1 Disconnection and removal of the existing 3kV High Speed Circuit Breaker (HSCB) from the truck.
- 1.2.2 Modification, cleaning and painting of the existing breaker truck
- 1.2.3 Cleaning and painting of the breaker cell.
- 1.2.4 The supply or modification of busbars.
- 1.2.5 The supply, installation and connection of the new HSCB onto the refurbished breaker truck).
- 1.2.6 The supply and installation of new control and indication equipment.
- 1.2.7 Testing of newly installed equipment.

##### 1.3 Extent of the works

1.3.1 The Contractor shall execute the work as detailed in the particular specification BBC9042.

##### 1.4 Location of the works

1.4.1 The substations per depot where breakers are to be replaced are listed in the tables below and located as per map CEE-TVD-2.

<b>Durban</b>	<b>Ermelo</b>
Bolton	Blinkpan
Georgedale	Krompklip
Kelso	Saaiwater
South Port	Minnaar
Turton	Blackhill
Wentworth	Vandyksdrif
	Ogies
	Nooitgedacht
	Rietvleirus
	Hamelfontein
	Davel
	Aberdeen
	Webbsrus

### 1.5 Temporary Work

Not Applicable

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**PART C3****Section 2****ENGINEERING****2.1 Design services and activity matrix**

Design and related documentation

Activity	Responsibility
Update drawing (CEE- TCQ- 76) to show modification of breaker truck	Contractor

**2.2 Employer's Design**

None

**2.3 Design Brief**

Designs to be as per guidelines in the particular specifications, referred to standard and generic specifications.

**2.4 Drawings**

CEE-TBP-35 - Connection Diagram: HSCB Electronic Control Relay.

CEE-TBP-39 - Schematic Diagram: HSCB Electronic Control Relay.

CEE-TBP-40 - Connection Diagram for "B.B.T." HSCB: Modular Type Breaker Cell.

CEE-TBP-41- Truck Wiring Diagram "B.B.T." HSCB.

CEE-TBP-42 Sheet 1 - Connection Diagram for HSCB: Modular Type Breaker Cell.

CEE-TBP-42 Sheet 2 - Connection Diagram for "B.B.T." HSCB: Modular Type Breaker Cell.

CEE-TBP-42 Sheet 3 - Connection Diagram for "Ansaldo IR6003" HSCB: Modular Type Breaker Cell.

CEE-TBP-44 - Connection Diagram for "Ansaldo IR6003" HSCB: Old Type Breaker Cell.

CEE-TBP-45 - Test Circuit to Adjust Breaker Auxiliary Contacts for "B.B.T." HSCB.

CEE-TCQ-76 Sht 1&2- HSCB Truck Assembly.

CEE-TCQ-442 Sht 1-3 - Busbars for "B.B.T." HSCB:

CEE-TVD-2 Sht 1-2 - Republic of South Africa Substations & Tie Station Layout.

**2.5 Design Procedures**

2.5.1 The Contractor shall supply the following drawings:

2.5.1.1 Two prints of the updated drawings for the modification of the breaker trucks.

2.5.1.2 One copy of each of these must be available at the commissioning and handing over of equipment.

2.5.2 The term "approved" as used in the various specifications, means that the items so specified, or a fully detailed specification thereof, shall be submitted to the Transnet Freight Rail's Contract Supervisor for his approval before such items are ordered or installed.

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## PROCUREMENT

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### Section 3

## PROCUREMENT

### 3.1 Subcontracting

- 3.1.1 Contractors are required to provide a list of work, which they intend carrying out on a subcontract basis, and that which they intend carrying out with own permanent employees.
- 3.1.2 Contractors shall outline their policy with regard to the employment of local “previously marginalized” subcontractors, and the estimated proportion of the work in the various trades that will be sublet to such subcontractors.
- 3.1.3 The Contractor will be responsible for the supervision and quality control of the work undertaken by the subcontractors.
- 3.1.4 The Contractor shall not take advantage of the lack of pricing skills of emerging subcontractors, and obvious errors in pricing shall be pointed out and rectified to reflect the reasonable prices for the work.
- 3.1.5 Any subcontractors in which the main Contractor considers using shall be submitted to Transnet Freight Rail for approval.

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### Section 4

#### GENERAL CONSTRUCTION ASPECTS

4.1	<b>Works Specifications</b>	
4.1.1	<b>Particular Specification:</b>	
	Specification BBC 9042 VER 1: Replacement of High Speed Circuit Breakers at Various Traction Substations Countrywide	
4.1.2	<b>Generic Specifications:</b>	
CEE.0045.2002	Painting of Steel Components of Electrical Equipment.	
CEE.0099.2002	Specification for 3 Kilovolt DC High Speed Circuit Breaker for Traction Substations.	
CEE.0224.2002	Drawings, Catalogues, Instruction Manuals and Spares Lists for Electrical Equipment Supplied Under Contract.	
CEE.0227.95	The Manufacture of 3 kV DC Breaker Cells and Trucks.	
E4E (August 2006)	Safety arrangements and procedural compliance with the Occupational Health and Safety Act, Act 85 of 1993 and regulations.	
E7/1(July 1998)	Specification for works on, over, under or adjacent to railway lines and near high voltage equipment.	
4.2	<b>Plant and Material</b>	
4.2.1	All material and components used shall be Transnet Freight Rail approved.	

4.2.2 The Contractor shall provide in writing, certification of compliance with the specification, of materials supplied by him.

4.2.3 The Contractor shall be responsible for securing equipment, plant and material, up to the period where the works is handed over to Transnet Freight Rail.

#### **4.3 Construction Equipment**

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

#### **4.4 Existing Services**

4.4.1 Any damage caused by the Contractor to Transnet property and services shall be rectified by the Contractor at his own costs and to the full satisfaction of the Supervisor.

4.4.2 Permission to connect to any existing Transnet Freight Rail service, on a temporary basis, must be obtained from the Transnet Freight Rail Contract Supervisor.

#### **4.5 Site Establishment**

4.5.1 Provision has been made in the Bill of Quantities for a predetermined lump sum establishment charge which shall be deemed to provide for the costs of establishing the Contractor, his staff, office accommodation, equipment and materials on the site of the works and for the cost of establishing and maintaining living accommodation and sanitary facilities and services for his staff and labourers in accordance with the requirements of the conditions of contract.

4.5.2 The payment of the establishment charge will be made as follows:

4.5.2.1 Thirty percent (30%) of the lump sum will be paid to the Contractor when the Transnet Freight Rail Contract Supervisor is satisfied that the Contractor has provided adequate office accommodation, equipment, staff and materials on the site to proceed with the work in terms of the approved works programme and has provided such living accommodation, sanitary facilities and services as are required in terms of the conditions of contract.

4.5.2.2 For the provision of such extra facilities as may be required during the duration of the contract and for the maintenance of all accommodation, sanitary facilities and services in terms of the contract conditions the Contractor shall be paid the balance of the lump sum as follows:-

- i. A monthly amount shall be calculated by dividing the balance of the establishment charge by the number of full months from the date of payment under sub clause 4.5.2.1 hereof to the due date of completion of the contract as awarded.
- ii. This amount shall be paid monthly up to the original completion date provided that all accommodation, sanitary facilities and services have been satisfactorily maintained in terms of the contract conditions during the month concerned and the Transnet Freight Rail Contract Supervisor has issued a certificate to that effect.
- iii. In the event that accommodation, sanitary facilities and services have not been maintained satisfactorily in terms of the contract conditions during any of the months referred to in sub clause ii above, the calculated monthly amount in respect of that particular month shall not be paid and the total contract value shall be reduced accordingly.

4.5.2.3 Any establishment charge claimed by Contractors shall form part of the Contractor's fixed or insolated cost in the price adjustment formula. The establishment charges will be taken into consideration when the financial evaluation is undertaken prior to acceptance of the tender.

#### **4.6 Site Usage**

4.6.1 The establishment of a site is the responsibility of the successful tenderer and this must be provided for in the quotation.

4.6.2 Housing of Contractor's staff on any Transnet property will not be permitted.

4.6.3 The Contractor shall supply portable toilets for the use of his workmen.

4.6.4 The Contractor is to make his own arrangements for the distribution of electrical power for his own use on the site. Transnet Freight Rail will not be responsible for any claims whatsoever brought about by any disruption or fluctuations in the supply of any such electrical power to the Contractor.

- 4.6.5 The Contractor shall lay his own temporary water reticulation and make the necessary connection to an existing water main and metering device, if available.
- 4.6.6 The Contractor is to apply to a service provider for a telephone if required.
- 4.6.7 Cost for water, electricity and telephone will be to the account of the Contractor.

#### 4.7 Contractor's own and supervised site store

- 4.7.1 The Contractor must provide adequate storage, at his own expense to the satisfaction of the Transnet Freight Rail Contract Supervisor. All material must, in addition, be stored or stacked in position that will not interfere with other work in progress in the area.
- 4.7.2 Sites for storage facilities on property of Transnet Freight Rail, if available, must be arranged in conjunction with the parties concerned. Where no sites are available, the Contractor must make his own arrangements at his expense.
- 4.7.3 The Transnet Freight Rail Contract Supervisor shall be advised as early as possible where storage sites will be located.
- 4.7.4 The cost of this store shall be shown separately as an item in the quotation for installation.
- 4.7.5 On completion of the contract, the Contractor shall dismantle and remove the store entirely from the property of Transnet Freight Rail.

#### 4.8 Off-loading, storage and distribution

- 4.8.1 The Contractor shall be responsible for off-loading all material, the storage and safe custody thereof and for the distribution on the Works.
- 4.8.2 The Contractor shall maintain records, to the satisfaction of the Transnet Freight Rail Contract Supervisor, concerning the receipt and issue of all material.
- 4.8.3 All material must be stored or stacked in positions that will not interfere with other work in progress in the area.
- 4.8.4 The Contractor shall, on completion of the Works, clear the site of all leftover items of material, such as empty cable drums, cable off-cuts, empty tins, etc., to the satisfaction of the Transnet Freight Rail Contract Supervisor. Off-cuts of all material of a valuable nature, which is the property of Transnet, such as copper or aluminium wire or cable, shall be returned to a site to be directed by Transnet Freight Rail Contract Supervisor.

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### Section 5

## **MANAGEMENT OF THE WORKS**

### **5.1 Particular/generic specification**

5.1.1 Refer to Section 4.1.2

### **5.2 Planning and programming**

5.2.1 The tenderer shall submit with his tender, a detailed programme of works, including all stages and clearly indicating milestones and how he intends to complete the work within the given completion period. Anticipated deliveries of batches of material shall be included.

5.2.2 The programme shall be based on normal working hours, it shall exclude on site work on weekends.

### **5.3 Sequence of the works**

5.3.1 Spare trucks will be provided for modification and mounting of the new breaker. Withdrawal of the old HSCB will only take place on provision of the replacement.

### **5.4 Quality Control Plan**

5.4.1 The Contractor shall submit with his tender his proposed QC plan and procedures. This plan shall indicate how the necessary quality assurance and control will be carried out in order to meet the specified requirements.

5.4.2 The plan shall consist of checklists and measurements sheets to be completed by the Contractor, it shall clearly indicate 'Hold and Witness' points where the Employer will be required to sign off in order to substantiate that the complete work conforms to the specifications with respect to material, quantity, dimensions, methods and other requirements.

5.4.3 The Contractor shall have his Quality Control plan approved by Supervisor prior to the start of any work or ordering of material.

5.4.4 The Contractor shall notify the Supervisor of all inspections at least 14 working days in advance of such inspections. The Contractor shall have the relevant quality control check sheets available at inspections and tests.

5.4.5 Transnet Freight Rail reserves the right to inspect the equipment in this Contract at any stage during manufacture and to be represented at any tests.

5.4.6 If as a result of an inspection, examination or test, the Transnet Freight Rail Contract Supervisor decides that the equipment is defective or not in accordance with the requirements, he shall notify the Contractor accordingly stating in writing his objections and reasons thereof. The Contractor shall timeously make good the defect to ensure that the equipment complies with the requirements.

5.4.7 Thereafter, if required by the Transnet Freight Rail Contract Supervisor, the tests shall be repeated under the same terms and conditions save that all reasonable expenses to which Transnet Freight Rail may be put by the repetition of these tests will be deducted from the contract sum.

5.4.8 Unless the Transnet Freight Rail Contract Supervisor otherwise directs, no equipment or materials are to be delivered to site until the Transnet Freight Rail Contract Supervisor issues an inspection certificate in respect of such equipment or material. The Contractor shall be responsible for the reception of all equipment and material delivered to site for the purpose of the contract.

5.4.9 Where the contract provides for tests on the premises of the Contractor or of his subcontractor or on site, the Contractor shall provide assistance such as labour, materials, electricity, fuel, stores, apparatus and instruments as may be a requisite and as may be reasonably demanded to carry out such tests efficiently.

- 5.4.10 Transnet Freight Rail reserves the right to conduct a quality assurance audit on the Contractor's quality control system at regular intervals.
- 5.4.11 If at any stage during manufacture, installation or commissioning of equipment or material it becomes evident that the requirements of applicable specifications are not being adhered to, Transnet Freight Rail reserves the right to halt such manufacture, installation or commissioning until such time as the Contractor or his subcontractor conforms to the requirements of this specification.
- 5.4.12 Details of any additional tests or inspections proposed by the Tenderer shall be attached and submitted with his tender.

## **5.5 Environment**

- 5.5.1 Refer to section 6

## **5.6 Accommodation of traffic on public roads occupied by the Contractor**

- 5.6.1 Not Applicable

## **5.7 Other Contractors on Site**

- 5.7.1 Should a Contractor be obstructed in anyway by other Contractors' activities, he shall notify the Project Manager or Supervisor within twenty-four hours, failing which he may be held responsible for any delays resulting there from.

## **5.8 Testing, Completion, Commissioning and Correction of Defects**

- 5.8.1 When, in the opinion of the Supervisor, any part of the work done or any items of material used is not in accordance with the requirements of the Contract, whether or not payment for such work or material has been made, he may order the Contractor in writing to remove any objectionable part, item or component thereof, to replace it with an acceptable part, item or component and to rectify or reconstruct the Works without cost to Transnet.
- 5.8.2 The Works will not be accepted by Transnet as complete until all defects of every kind have been made good to the satisfaction of the Supervisor.
- 5.8.3 Within a reasonable time after receipt of written instructions from the Project Manager/Supervisor, the Contractor shall make good to the satisfaction of the Supervisor all the defective material and workmanship which are not in accordance with the contract and which may appear within a period of 12 months, or such other period as stipulated in the Contract Data, after the date stated in the CERTIFICATE OF COMPLETION, and shall repair all damage caused thereby.
- 5.8.4 Should the Contractor fail to comply with the above provisions, Transnet may cause the required work to be carried out at the expense of the Contractor and may recover the cost thereof from the Contractor.
- 5.8.5 Testing and commissioning shall be done in accordance with applicable standards, generic and particular specifications.

## **5.9 Recording of Weather**

- 5.9.1 The requirements are covered in the contract data.

## **5.10 Format of Communication**

- 5.10.1 All important communication shall be in writing.
- 5.10.2 Site Books requirements are covered in the Tender Data.

## **5.11 Key Personnel**

- 5.11.1 The Contractor shall provide an organigram of his key personnel on site, including all relevant contact details within two weeks from the date of contract award.

**5.12 Management meeting**

- 5.12.1 Risk reduction meetings: These meetings can form part of the regular site meetings or be held as separate meetings. At these meetings the following issues will be discussed:
- 5.12.1.1 Compensation Events
  - 5.12.1.2 Early Warnings
  - 5.12.1.3 Contractual Claims
  - 5.12.1.4 Risk Register
- 5.12.2 The Contractor shall attend site meetings when convened by the Transnet Freight Rail Contract Supervisor (normally once a month). Such meetings will be for the purpose of discussing progress, delays, materials, conditions and the co-ordination of site activities. The meetings will be chaired by the Project Manager or his deputy and the proceedings shall be minuted and circulated by the Transnet Freight Rail Contract Supervisor.
- 5.12.3 The Contractor shall attend ad hoc site meetings when convened by the Transnet Freight Rail Contract Supervisor. Such meetings will be for the purpose of discussing specific issues or problems relating to specifications and adherence thereto, quality and contractual matters.
- 5.12.4 Contractor's representatives at these meetings shall have the necessary delegated authority in respect of aspects such as planning, change management, health and safety.

**5.13 Bonds and guarantees**

- 5.13.1 Security in the amount equal to either ten percent or five percent of the contract price, as elected by the Contractor, shall be provided by the Contractor for the due and faithful performance by him in terms of the Contract. Such security shall be in the form of -
- 5.13.1.1 Government or approved Municipal stocks in negotiable form, or
  - 5.13.1.2 A deed of suretyship furnished by an approved bank, insurance or guarantee corporation in such form as may be prescribed by Transnet, provided however that the Project Manager may, upon written application by the Contractor, return to the Contractor the whole or part of such security held by Transnet when the retention money has reached an amount which the Project Manager in his sole discretion considers sufficient for the protection of Transnet. Transnet is entitled to hold all or portion of the security until the completion of the contract and expiry of the defects liability and maintenance period.
- 5.13.2 Either five or ten percent of the value of the work completed, as reflected by the nett monthly amounts certified for payment, will be retained by Transnet for the due and proper fulfilment of the contract, until such retention money is sufficient, in the opinion of Project Manager, for the protection of Transnet. Transnet is entitled to hold all or portion of the retention money until the completion of the contract and the expiry of the maintenance period.
- 5.13.3 Retention money shall be 5 percent when the security referred to hereof is 10 percent, and 10 percent when the said security is 5 percent.

**5.14 Payment Certificates**

- 5.14.1 On or after the assessment date, the Supervisor and the Contractor will together assess the quantities of the progress on each item in the Bill of Quantities and complete the Progress Assessment Detail form, where after the Progress Assessment Certificate will be issued.
- 5.14.2 The Contractor shall then submit a VAT invoice and attach the Progress Certificate mentioned in clause 5.13.1.2 of this section for payment by the Employer.
- 5.14.3 Contractor shall provide the Employer with the necessary details and documentation as required in order to enable the Employer to make electronic payments.

**5.15 Permits**

- 5.15.1 The Contractor shall keep records (Names, ID numbers and addresses) of all his personnel on site.
- 5.15.2 The Supervisor shall issue the Contractor with a Site Access Certificate valid for the duration of the contract. The Contractor shall have this certificate while on the site.

**5.16 Insurance provided by the Employer**

5.16.1 Details of these are covered in the Contract Data.

**5.17 Health and Safety Requirements and Procedures**

5.17.1 Health and safety requirements are covered in Transnet Specifications E4E (August 2006).

5.17.2 The requirements for work adjacent to railway lines are covered in the Transnet E7/1 (July 1998) Specification.

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### Section 6

## ENVIRONMENTAL REQUIREMENTS

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### Section 6

#### 6.1 ENVIRONMENTAL REQUIREMENTS.

- 6.1.1 All work to be carried out in line with the Environmental Specification BBB2007 (Environmental Guidelines and Specifications for Electrical Construction Work).

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