Eskom National Transmission Company South Africa ™	**Specification**	**NTCSA**

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1. INTRODUCTION

This is a Heating, ventilation and Air conditioning (HVAC) maintenance service, goods and material supply contract and will render a service to the Transmission Real Estate property portfolio which includes the Eastern Grid (consisting of 21 substations, 1 regional office and 4 Customer Load Network (CLN), as well as Transmission Telecoms (consisting of 2 telecoms offices) within the Kwa-Zulu Natal Province for a period of 60 months on an as and when required basis.

This will include provision of labour, supervision and management, staff uniform/PPE, equipment and its maintenance, transport and services during the critical operation of NTCSA. This document outlines the roles and responsibilities, what the scope of work will entail as well as the technical evaluation criteria to be used during tender evaluations.

1.1. Roles and Responsibilities

The Contractor shall ensure that:

Inspection, testing and maintenance measures are to be performed by competent persons only. The Air conditioning technician competent persons are to ensure that they fully comply with the following requirements as per the different classifications of activities undertaken on the HVAC Systems:

Inspection Personnel and Services

✓ a) These are the individuals who conduct visual examinations on a system or portion thereof to verify whether it is in good operating condition, in the proper location, and is free of physical damage or conditions that may impair the operation.

✓ b) The inspections shall be performed by inspection personnel who have developed competence through training and experience of the HVAC system.

✓ The inspection personnel shall have attended and certified as competent with regards to SANS standards.

- Its employees shall comply with Eskom's policies and site regulations.
- Workmanship shall, at all times, be of a grade accepted as the best practice of the particular trade involved and as stipulated in written standards of recognised organisations or institutions of the respective trades, except as exceeded or qualified by the specifications. The Service Manager shall determine the acceptability of workmanship.
- The *Contractor* shall provide a complete Quality Assurance plan in accordance with the requirements of ISO 9001: 2015 to the *Employer* for approval. This plan must ensure an integrated quality service as part of the contract. Execution of all quality related activities, including inspection and test plans compilation and execution, spares material quality inspections and all quality related record keeping is part of the *Contractor's* scope of work.

Testing Personnel and Services

✓ The testing personnel shall have attended and certified as competent with regards to the SANS standards

✓ The testing shall be performed by testing personnel who have developed competence through training and experience of the Air conditioning system

Testing Activities without Tools (Maintenance personnel)

✓ These are individuals who perform procedures used to determine the status of the systems as intended, by conducting periodic physical tests and checks on the systems.

Testing Activities with Tools (Maintenance personnel)

✓ These are individuals who perform procedures with dedicated and certified tools for the purpose of testing, which are used to determine the status of the systems as intended, by conducting periodic physical tests and checks on the systems.

Maintenance Personnel and Services

✓ The maintenance activities shall be performed by the maintenance personnel who have developed maintenance competence through training and experience of the HVAC Systems and other systems.

✓ The maintenance personnel shall be declared competent on the Plant Safety Regulations.

Maintenance Activities

The individuals who perform those procedures, adjustments, replacement of components and maintenance activities as described in the OEM O&M manuals and Eskom Work Instructions, that can affect any aspect of the performance of the HVAC systems.

✓ The maintenance personnel shall be qualified in the maintenance and servicing of the HVAC systems.

✓ The maintenance personnel shall have OEM certified training and declared competent on the specific type and brand of HVAC system being serviced at the maintenance support levels.

1.2. Provision Of Staff Uniform/PPE And Other

The Contractor shall:

- Supply staff protective wear uniforms/gear that is SABS approved i.e., headgear, goggles, reflective vest safety boots and gloves, dust mask (appropriate to their tasks and functions) as according to the risk exposure identified in the Risk Assessment whilst on duty.
- Ensure uniforms are of good quality and labelled with a company name.
- Ensure that all staff members whilst on duty are neatly dressed, presentable and hygienic.

1.3. Provision Of Transport

Contractor is responsible for providing own transport for its employees in line with Eskom Vehicle safety specifications (32-345)

- The transport is required for movement of equipment and staff around sites.

2. DOCUMENT CONTENT

2.1. Requirements

Adherence to Eskom and NTCSA generic policies.

The Employees of the service provider shall comply with NTCSA and Eskom's policies and site regulations.

All Contractor Employees shall comply with the non-use of cell phones in restricted areas, adherence to NTCSA's life-saving rules, Eskom's no smoking policy and other procedures. These documents will be made available during tendering stage.

2.2. Provision of Manpower

The successful Contractor/s shall utilise / provide skilled and suitably qualified staff as governed by Eskom Maintenance Contracts User Specification Requirements and should conform to:

- Quality Management Control and Assurance as per ISO Standards.
- Occupational Health and Safety Act 85/1993 and (SHE) Standards.
- Have valid medical fitness certificate.
- All staff will be available on as and when required basis only for purpose of this contract works.
- Contractor to develop a fatigue management plan that will be approved by the *Employer* (as and when requested).
- Contractor is also to provide necessary training of all the staff appointed to ensure conformity with the scope of work.

2.3. LABOUR REQUIREMENTS

- Conduct criminal and site clearance checks of its employees (before offer of employment).
- Conduct training, testing and verifying key personnel qualifications and competence including certification for operation of machinery and equipment in relation to OSHACT.

2.4. Contractor's Management, Meetings and Key People

- The Contractor shall be required to do safety induction prior to start any work on site.
- The Contractor's safety file must be approved before any work commence on site and should always be kept with employees working on site and should be updated regularly when new risks are identified.
- Other contract related meetings shall be communicated to the Contractor on arrival to site.

2.5. Equipment

- The Contractor shall provide all tools and equipment required for the project/work/task.

2.6. Management Reporting and Process for Monitoring

- The Employer will establish sound contract management principles.

2.7. General Requirements

- The Contractor immediately reports all injuries as well as any threat to health or safety of which it becomes aware of on the site of the Employer.
- The Contractor shall provide in writing a works programme with achievable times lines to the Site Supervisor before commencement of the project (if required).
- The Contractor shall provide to the Site Supervisor a daily progress report that speaks to the works programme, all delays shall be explained to the Contract Manager/Supervisor (Site).
- The Contractor's performance evaluation shall be done during ad hoc meetings between the Contractor and the Contract Manager/Supervisor during the project period.
- The *Contractor* shall carry out tasks as described in the scope of work and will only report to the *Employers/Contract Manager/Site Supervisor* appointed for this project.

3. PLANT AND MATERIAL

The Contractor shall be responsible for:

- Provision of all spares and materials required for repairing, maintaining, replacing and new fitting.
- Repair of any damage caused by the Contractor (including all parties appointed by the contractor) at his/her own cost prior to take over.

- Purchasing, replenishing, safe storage, distribution and control of material, to agreed inventory levels, of consumables and some non-consumables (i.e., equipment's) required by the staff in the provision of the maintenance services.
- Requesting approval from Service Manager before purchasing of material and equipment.
- Maintaining records of receipts and issues which should be reconciled and report submitted to the Service Manager on a monthly basis;
- Ensure any non-compliant equipment is not used by any person whatsoever in the provision of the maintenance services; all equipment provided by the supplier should comply with SABS Standard.
- Ensure that equipment used is safe and does not endanger the operator/s or member of the public in the surrounding areas where the equipment is being used.

4. SCOPE OF WORK

4.1. The scope of work includes but is not limited to the below listed activities:

- Diagnostics of defects,
- Minor adjustments of controls and minor repairs,
- Major repairs such as dismantling of components, opening up of systems, the evaluation and re-charging of same etc.

Item	Description	Frequency
4.1.	Inspection of air conditioning filters and filter frames • Remove all filters from one air handling unit at a time. • Inspect filters for defects. • Inspect and clean filter frame properly before re-installing filters	As and when required
4.2.	Replacement of air-conditioning filters • All the air-conditioning filters shall be supplied and replaced by the Contractor on request. • Remove existing old filter (as and when required). • Inspect all framework and clips for damage, rust and fair wear and tear. • Clean framework.	As and when required
4.3.	Fit new filter in position • The Contractor shall remove all the redundant filters from the Site and dispose of these redundant filters only at a	As and when required

	registered dump site. It is the responsibility of the Contractor to obtain written proof from the registered dump site that the waste was disposed of in a safe manner. A copy of this document shall be placed on record in the Contractor's Health, Safety & Environmental File.	
4.4.	Filter cleaning	As and when required
4.5.	Service of air Handling units • Check Fan in Operation • Check Fan and Motor Bearings • Lubricate Fan Bearings • Check Condition of Fan Belts. Realign Drives if Adjustment is Required. Check Condition of Pulleys • Check Base Mounting Springs • Inspect Flexible Duct Collar • Ensure Coupling Guard is Secure • Check Motor and Terminal Connections • Check for Excessive Vibration • Cleaning Humidifier bottles and check operation	As and when required
4.6.	Service of exhaust Fans and Extraction Fans (toilets, battery rooms) • Check Fan in Operation • Check Motor Bearings • Clean Air Screen • Check Motor and Terminal Connections • Check for Excessive Vibration • Check and clean speed drives	As and when required
4.7.	Servicing of split Air-Conditioning Units • Check Operation of Unit • Clean Air Filters • Check Condenser Fan Motor Bearings • Clean Cooling Coil Surfaces(Brush)	As and when required

	• Check System Gas Charge (If and when required) • Check Operating Pressures and Record Suction & Discharge Pressure • Leak Test Refrigeration System • Check and Tighten All Terminal Connections • Check Operation of Reverse Cycle • Check unit Voltage and Amperages • Check Operation of Heaters • Ensure that Condensing Unit Coils are Clean • Check drain is not blocked • Clean unit Fill out report and hand copy to the Employer's Representative	
4.8.	Air-Conditioning VRV's <u>Service of external units</u> • Check operation of each unit • Wash down coils on all exterior condensing units • Fill out report and hand copy to the Employer's Representative • Visually inspect units for any defects and/or damage. • Inspect all wiring and check all electrical connections. • Check all filters and clean as required or replace. • Check all refrigerant pressures and record readings. • Check compressor to ensure that it is suspended freely, that all bushes are in good condition that, that the compressor is operating correctly and that it does not overheat in normal operating conditions <u>Service of internal Units</u> • Check condensate drains and clear if necessary to prevent internal water leaks. • Clean equipment generally and observe its operation in all its functions. • Check amperage readings on cooling, heating and fan only operation and compare to name plate ratings. • Check air filters and clean where necessary. Should the filter be damaged or torn it will be necessary to provide a new filter at the client's cost.	As and when required

	• Check condition of evaporator coil and clean. Straighten fins with a fin comb where necessary. • Check condensate drip trays and treat for corrosion if necessary. Ensure unobstructed gravity flow. • Check condensate drains and clear if necessary to prevent internal water leaks. • Check fans to ensure that they are secured to fan shafts. • Check fan motor(s) to ensure that it (they) is (are) running freely and true and that the bearings show no sign of wear. Oil where applicable. Ensure that the baffle plates are secured between in and outlet air. • Check thermostats, switches, contactors, and the wiring thereof to ensure that all electrical connections are secure and clean. • Check refrigerant system for leaks and repair where necessary. • Ensure that all copper tubing is clear of other components. • Clean equipment generally and observe its operation in all its functions. • Check amperage readings on cooling, heating and fan only operation and compare to name plate readings. • Clean outside of unit, particularly return air grill and discharge vanes. • Rust proof where necessary. • Check and tighten where necessary all refrigerant pipe fittings. • Check head and suction pressures to ensure that these are in accordance with specifications. If not adjust gas volume to required head. • Where conditions change due to excavations, construction, dusty areas or any kind of extraordinary exercises, the cycle of service may be adjusted to maintain healthy performance co-efficient • Check operation of BS selector box	
4.9.	Servicing of Diffusers • Clean diffusers • Clean return air grills	Bi annual
4.10.	Plant Distribution Boards and Control Equipment (service) • The Contractor shall be responsible for the cleaning, service, maintenance and repairs to all Air-conditioning related Plant Electrical Distribution Boards and Control Equipment.	Bi-annual

	• The distribution boards will include the following: o The Main Air-conditioning Distribution Board o All distribution boards within the site that relates to HVAC	
4.11.	Gauges and Thermometers (service) • Check for accuracy. • Check for leaks.	Bi-annual
4.12.	Refrigeration Equipment (including bar fridges) (service) • Check Operation of Unit • Clean Condenser Coil • Check System Gas Charge • Leak Test Refrigerant System • Check Compressor Oil Levels • Check Operating Pressures. Record Discharge and Suction • Check Safety Cut-Outs. Record Discharge, Suction & O/P/S • Record Time Delay of Oil Pressure Safety Switch • Check for Signs of Oil Leaks • Check for Signs of Vibrations • Clean Condenser Coils (Hose) • Clean water strainer	As and when required
4.13.	Heat Pump **Service** • Heat pump base: • Clean base outside and inside. • Ensure drainage holes are clear. • Check for rust and treat as required **Electronics** • Look for signs of corrosion on PCB controller. • Ensure all electrics are dry and clean • Ensure all connections are good. **Piping** • Check all piping and fittings for leaks. • Check lagging. • Clean the inline strainer.	As and when required

	• Check circulation pump. **Heat Exchanger** • Reverse water flush system under pressure for =- three minutes.	

4.2. Access, working platforms and scaffolding

- No scaffolding and platforms will be used without it having been safety cleared and the required documentation completed as per SANS 10085-1:2004 or recent version.
- Scaffolding should be done by trained personnel and certified as safe thereafter
- All working at heights apparel should be certified and inspected daily

4.3. Access for and interface with other Contractor

- During the progress of the work the Contractor shall provide reasonable access to other Contractors to execute work carried out by other Contractors
- The Contractor will ensure that any damages made during the execution of their activities will be repaired (Contractor's cost) to the satisfaction of the Employer and that the Employer will not suffer adverse inconvenience in utilising parts of the complex during the project execution.

4.4. Area of applicability

This scope shall be applicable to all sites listed below:

CLN	**Site Name**	**Address**	**Purpose**
Empangeni	Empangeni Depot	2 Bronze Street, Empangeni	Depo
Empangeni	Impala Substation Armed NKP	-28 45.952 31 56.803	Sub Station
Empangeni	Athene Substation Armed NKP	-28 45.483 31 55.633	Sub Station
Empangeni	Invubu Substation	-28 41.304 32 2.19	Sub Station
Empangeni	Rabbit substation		Sub Station
Ladysmith	Danskraal Depot	-28 33.917 29 50.083	Depo
Ladysmith	Bloukrans Substation	-28 45.6 29 51.1	Sub Station
Ladysmith	Danskraal Substation	-28 33.917 29 50.083	Sub Station
Ladysmith	Tugela Substation	-28 34.8 29 19.3	Sub Station
Ladysmith	Venus Substation	-28 56.28 29 50.744	Sub Station

Ladysmith	Ingula Substation	-	Sub Station
Ladysmith	Drakensberg		Sub Station
Pinetown	Pinetown Depot		Depo
Pinetown	Georgedale Substation	-29 46.967 30 36.833	Sub Station
Pinetown	Mersey Substation	-29 23.583 30 28.667	Sub Station
Pinetown	Ariadne Substation	-29 43.741 30 23.422	Sub Station
Pinetown	Eros Substation	-30 36.358 29 54.282	Sub Station
Pinetown	Avon Substation	-29 25.039 31 9.662	Sub Station
Pinetown	Illovo Substation	-30 4.5 30 50	Sub Station
Pinetown	Hector Substation	-29 46.711 30 39.66	Sub Station
Pinetown	Westville Area Office	1 Langford road, Westville	Offices
Newcastle	Newcastle Depot		Depo
Newcastle	Incandu Substation	-27 43.167 29 58.733	Sub Station
Newcastle	Chivelston Substation	-27 50.25 29 59.368	Sub Station
Newcastle	Ingangane Substation	-27 50.716 29 59.098	Sub Station
Newcastle	Umfolozi Substation	-28 12.923 31 11.222	Sub Station
Newcastle	Bloedrivier Substation	-27 53.667 30 34.583	Sub Station
Newcastle	Peguses Substation NKP ARMED		Sub Station