Eskom	SCOPE REQUIREMENT FOR ELECTRICAL AND AIRCONDITIONING, UPS AND GENERATOR MAINTENANCE SERVICE	SCOPE

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1. Introduction

The Distribution Gauteng Cluster Properties has installed Electrical, Airconditioning, and Diesel generator and UPS equipment that need to be repaired, maintained/ service to ensure their full operation and compliance with Safety requirement and Standards.

The Scope of Work (SoW) defines the requirements for the provision of Electrical, Airconditioning, and Diesel Generator, UPS Maintenance Service, and supply of diesel within Distribution Gauteng Cluster Properties, as and when required basis, for a five-year duration.

1.1. Purpose

The purpose of the document is to record the scope requirements of maintenance service of electrical, air-conditioning, and diesel generator, UPS, and supply of diesel within the Distribution Gauteng Cluster Properties.

1.2. Applicability

This document is applicable to the provision of maintenance service for Properties within the Distribution Gauteng Cluster.

2. Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.1. Normative

[1] ISO 9001 Quality Management Systems

[2] Construction Regulations, 2014

[3] 32-727 – Eskom Safety, Health, Environment and Quality (SHEQ) Policy

[4] Occupational Health and Safety Act No. 85 of 1993,

3. Abbreviations

Abbreviation	Explanation
ISO	International Standards Organization
COC	Certificate of Compliance
SANS	South African National Standards
SHE	Safety Health and Environment
SoW	Scope Of Work
PPE	Personal Protective Equipment.
UPS	Uninterruptible Power Supply
GC	Gauteng Cluster
VRV	Variable refrigerant Volume

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4. The Scope of Work

- The scope requirement includes the provision of maintenance service of electrical, air-conditioning; UPS, generators, and supply of diesel to Eskom properties/ buildings within Distribution Gauteng Cluster, as and when required basis.
- Conduct electrical assessment of the Eskom property/building and develop “as is/ built” electrical wiring drawing and compliance certification, as and when required basis.
- Execution of planned, unplanned and emergency maintenance to electrical, air-conditioning equipment/ systems, diesel generator, UPS, and supply diesel within Gauteng Cluster, as and when required basis
- Provision of Service, Maintenance and Inspection Records for plant and equipment, as and when required.
- Provision of all consumables and materials for the maintenance, as and when require basis.
- Execution of all legislated statutory maintenance requirement, as and when required basis
- Execution of the maintenance scope/service must be conducted in compliance with engineering standards and Health and Safety requirements.
- The maintenance service must be conducted in accordance with the original equipment manufacturer requirement of the system.

4.1. The Electrical Maintenance

Scope includes the following but limited to:

- Replace defective light bulbs, fluorescent tubes and other lamps.
- Maintain light fittings and diffusors in clean condition, free of dust and any other sort of dirt.
- Replace light fitting shades and diffusors.
- Maintain, repair, and replace defective light fittings, plug points, lights switch, other outlets, three phase socket outlets and wiring.
- Replace, install and repair defective socket outlets and other power outlets like power skirting, power docks, power distribution units, etc.
- Maintain electrical wiring in good working condition according to OHS Act, 1993 (Act No 85 of 1993), Electrical Installation Regulations, SANS10142
- Maintain, repair and replace defective parts of switchgear and distribution boards and associated equipment
- As and when required basis, carry out preventative maintenance at the Employer Supervisor’s request and instruction by
    a. Perform Earth Leakage Tests by checking correct polarity, correct tripping earth fault current, operation of test button, and maintain and or replace faulty earth leakage units as and when required on a quarterly basis.
    b. Maintaining good and healthy earth connection and bonding to all installations in the building by physically testing continuity and checking for and repairing lose connections.
    c. Cleaning by means of vacuum cleaner all Distribution Boards including all switchgear in the Board.

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d. Checking for loose connections and tightening all connections in all the Distribution Board

e. Performing inspection for excessive heat in Distribution Boards by means of Infra-red or Thermographic camera and repairing where necessary as may be requested by Facilities Department

f. Manually test circuit breakers for proper operation and to check and update the legend in each distribution board.

- Provide record of all the inspections carried out as per request and instruction by Site Supervisor.
- Attend to and maintain High Mast Lights upon failure and malfunctions, as and when required.
- Attend to and maintain Outside Lighting upon failures and malfunctions as and when required basis.
- Maintain Distribution boards and Supply Cables from mini substations to buildings.
- Do new installations of lights, socket outlets, water heaters, and replacement of water heater (Geysers, Hydro-boils, Boilers, etc) elements.
- Provision certificate of compliance (COC) as and when required as per OHS Act, 1993 (Act No 85 of 1993), Electrical Installation Rules
- Installation of conduits, wires, wire ways, pull boxes, switchboards, and switches as needed to improve or modify electrical installations
- Install, maintain, and replace electric watt-hour meters.
- Performs underground electric cable identification
- Participate in Energy Efficiency Initiatives
- Provide advice with regards Energy Efficiency solutions.
- Provision of Electrical Material
- Perform Scheduled Planned Maintenance as per plan provided by the Employer.
- Do regular inspections of all electrical installations including emergency lights, normal lighting, socket outlets and effect repairs where necessary on request.
- Repairs and maintenance of portable household kitchen stoves by replacing stove plates, switches, elements and rewiring of stoves and stove supply circuits.
- Develop a database of all the respective lights and luminaires used throughout our sites.
- Dispose globes and luminaires as and when required basis and issue a certificate of disposal, as per the *Employer's* procedure.
- Issue a certificate of compliance and test report, by a registered person for an electrical installation in accordance with SANS 10142-1 for the respective earth leakage and sockets outlets.

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4.2. The Airconditioning Requirements

AIR-CONDITIONING VRV'S

EXTERNAL UNITS - Equipment Service for external units, as and when required basis.

- Check operation of each unit
- Wash down coils on all exterior condensing units
- Fill out report and hand copies to the Employer's Representative.
- Visually inspect units for any defects and/or damage.
- Inspect all wiring and check all electrical connections.
- Check all refrigerant pressures and record readings.
- Check compressor to ensure that it is suspended freely, that all bushes are in good condition that the compressor is operating correctly and that it does not overheat in normal operating conditions of the insulation.

INTERNAL UNITS - Equipment Service of internal Units as and when required:

- 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, and check condition of insulation.
- 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.
- Check condition of evaporator coil and clean. Straighten fins with a fin comb where necessary.
- Check condensate drip trays and treat them 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, not out of alignment and are free of corrosion, chips, dents, etc.
- 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 and 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 them to name plate readings.
- Clean outside of unit, particularly return air grill and discharge vanes.
- Rust proof where necessary.

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- 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

AIR-CONDITIONING: PACKAGE UNITS

EXTERNAL UNITS

- Service of external units as per the manufacturer's specifications.
- Visually inspect all units for 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 operation of each unit
- Fill out report and hand copy to the Employer's Representative
- Check condition of condenser coil and clean. Straighten fins with a fin comb where necessary.

DIFFUSERS
Service as per manufacturer's specifications

- Fill out report and hand copy to the Employer's Representative
- Check condition of condenser coil and clean. Straighten fins with a fin comb where necessary.
- Inspect and Test All Diffuser Equipment to be in a good condition and to be Functioning Correctly
- Static controls to be calibrated
- Floor pneumatic thermostats to be calibrated

PLANT WATER TANKS
Bi-annual Service chilled water tanks

- Visual inspection of tanks and piping
- Check condition of Insulation
- Check for leaks
- Operate valves
- Check pressures are within limits

FEED AND EXPANSION TANK
Bi-annual Service

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- Check level in tank
- Check float valve operation
- Check for excessive overflow/rectify if necessary
- Clean out tank
- Check and report on condition of tank

COOLING TOWERS
Bi-annual Service

- Clean general operation
- Water treatment
- Drain tower, clean out sump, clean strainer and refill
- Check operation of B\ball valve and water level (float approx. 13 mm below overflow
- Check Out Sump Strainer
- Check water does not overflow on shut-down.
- Clean spray nozzles
- Check bleed valve is clean (setting to be adjusted by water treatment Contractor in Chiller Plant Room)
- Check fan bearings for unusual noise, vibration and temperature.
- Check fan belts/realign drives (If Adjustment is Required)
- Grease fan and motor bearing
- Clean eliminators
- Clean Mountings
- Check Impeller fan blades
- Check water entering and exiting conditions in cooling tower and record
- Lubricate motor base slides and adjusting screws
- Check that air intake screens are lean and secure
- Inspect protective finish and report condition
- Check for unnecessary water carry over
- Check sand filter installation. Clean out filter

PLANT DISTRIBUTION BOARDS AND CONTROL EQUIPMENT
Bi-annual 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.
- The distribution boards will include the following:
    - The Main Air-conditioning Distribution Board in the Main LT Switch Room in the basement

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- All distribution boards within the site

FANS

RETURN AIR FANS
Bi-annual Service

- 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

EXHAUST FANS & TOILET EXTRACTION FANS
Bi-annual Service

- Check fan in operation
- Check motor bearings
- Clean air screen
- Check motor and terminal connections
- Check for excessive vibration
- Clean these fans as they normally get very dirty

SUPPLY AIR FANS
Bi-annual Service

- Check fan in operation
- Check motor bearings
- Clean air screen
- Clean filters
- Check motor and terminal connections
- Ensure impeller bolt is secured

GAUGES & THEMOMETERS
Bi-annual service

- Check for accuracy
- Check for leaks.

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GENERIC CHECKLIST

Oil

- Check for oil leaks
- Check oil level / Top up / Replace oil

Cooling system

- Check all fan belts;
- Check for water leaks;
- Check / top up coolant level;
- Check engine preheat;
- Check radiator and coolant/core

Air intake system

- Check air cleaner /clean.
- Check inlet/outlet obstruction

REFRIGERATION EQUIPMENT

Monthly Service

- Check operation of unit
- Clean condenser coil
- Checking system gas charge
- Leak test refrigerant system
- Check compressor oil levels
- Check operating pressures. Record discharge and suction
- Check safety cut-outs. Record discharge, and suction
- Record time delay of oil pressure safety switch
- Check for signs of oil leaks
- Check for signs of vibrations
- Clean condenser coils (hose)

BLOWER COILS

Quarterly Service

- Check operation of unit
- Check for any vibration in fans
- Check for restrictions at the coil inlets (Food Crates, etc.)
- Check operation of solenoid valves
- Ensure expansion valve bulb is secure

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- Clean out the condensate tray and drain
- Record room temperature (5 off)
- (Freezer) check operation of coil and tray heaters
- (Freezer) Check operation of drain heater tape
- (Freezer) Check operation of door heater
- Check thermostat operation of drain heater tape
- Check thermostat set points (located in roof space)

VENTILATION FANS:
2 x of Axial
Quarterly Service

- Check fan in operation
- Check motor bearings
- Clean air intake screen

Quarterly Service

- Record operating temperatures, pressures and amperages.
- Check the operation of all safety controls.
- Check the operation of the microprocessor
- Check the condenser and evaporator tubes for fouling. (Performance checks only, no visual inspection).
- Check oil and refrigerant charge.
- Check for refrigerant leaks.
- Check all gauges to function properly and correctly.
- Check the operation of loading/unloading system.
- Check control panel and starter parts for wear.
- Check all flanges and tighten where necessary.
- Tighten all starters and control terminations.
- Carry out insulation resistance test on motor windings and record readings.
- Report all detected system deficiencies in writing.
- Check and discuss the operating log with the Employer's Representative.

4.3. The Generator and UPS Requirements

Diesel Generator & Storage Tanks - Inspection and minor service

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- Check fan belt condition and tension
- Check that radiator passages are clean and fit for operation
- Check that radiator hoses and clamps for wear and tear
- Add water conditioner
- Drain radiator/system and refill
- Drain oil and refill
- Change fuel filters
- Change oil filters
- Change water conditioner filters
- Change air filters
- Check seal faces of elements, air cleaner, hoses and clamps for dust ingress
- Check thermos heater operation and temperature
- Check all guards in position and secure
- Check battery charger
- Check batteries, lugs, clean and tighten
- Battery test:
    a. Check hydrometer
    b. Check casing condition
    c. Check terminals
    d. Note Volts
    e. Note Amps
    f. Compile battery report
- Start engine
- Check for any leaks
- Check charge alternator operation
- Take oil pressure gauge reading
- Take engine temperature gauge reading
- Check low radiator level
- Check low fuel level
- When engine has stopped, top up with oil
- Check alternator coupling
- Check air vents on alternator
- Check fuel system
- Drain water trap
- Check all pipes and fittings

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- Check exhaust, manifold, silencer and pipes
- Check base and anti-vibration mounts
- Run plant on load
- Clean plant and equipment

Annual service – Diesel Generator

- The annual service includes all the items listed above for the bi-annual inspection and service in addition to the following items:
- Drain radiator
- Refill with new water conditioner
- Drain oil
- Supply and fit new oil filters
- Refill with new oil
- Remove and replace fuel filters
- Remove and replace air filter
- Run the set up to temperature and top up all levels afterwards
- Check entire panel operation
- Fuel system
- Air intake system
- DC electrical system
- Engine
- Lubrication service
- Cooling system service
- Air intake service
- Servicing and testing Starting batteries
- Cleaning batteries
- Checking specific gravity
- Checking electrolyte level
- Checking dampers bi-annually

DIESEL STORAGE

Annual Service Pressure tank

- Pressure test of diesel tank.
- Test for loss and leaks including a written report

Service Diesel tank & Diesel fuel testing

- Visual inspection of the fuel system.

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- Checking the filters, tanks, fillers and site tubes.

Bi-annual Service Bioscience test

- Bioscience Fuel-stat test and written report.

Annual Service Filtration & Additives

- The diesel in both tanks will be filtered and polished if no filtration system is installed including additives added.
- The “Fuel Right” method to be utilized

Service Fuel supply

- Supply of 50ppm diesel to fill up tank.
- Proof of purchase to be submitted. Mark-up % to be added to cost of fuel

Service Hot water storage tank

- Hot water storage tank shall be thoroughly inspected and monitored during the summer period
- for any signs of leaks.
- Repairs and/or recoating of the hot water storage tank shall be carried out during summer period.

Electrical and UPS System
Service

- The checking of the mechanical soundness of all parts.
- The checking of the semi-conductor power devices, transformers, filter elements and the like
- The checking and, if necessary, adjusting of the voltage of the DC circuitry.
- The checking and, if necessary, adjusting of the output voltage of the AC circuitry.
- The checking and adjusting of all electronic regulating circuits.
- The cleaning of the UPS system
- The checking of the DC caps.
- The checking of the AC filters caps.
- The checking of all Fan operations.
- Visual checking for Hot Spots (Hot Spots are discolouring of power wires and main bus bars)
- The checking of batteries for loose connections, hot spots and terminal corrosion.
- The checking of load currents and voltages.
- The checking of environmental temperature and ensuring that it is within the UPS operational specifications.
- The checking and recording on a log sheet of the voltage of each battery block.
- The cleaning of the batteries.
- Conduct a battery discharge test using the s existing load connected to the Equipment to determine the capacity of the battery.
- The checking of sufficient lighting.
- Should the Technician find any problem during the inspection

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- Submit the detailed service report will be handed to site personnel directly after completion of the service
- Where after arrangements to correct these faults can be made

Main and Sub Electrical Distribution Boards All Blocks
Service

- The Contractor shall be responsible for the cleaning, service, maintenance and repairs to all Main and Sub Electrical Distribution Boards and Control Equipment.

Switches, Change-Overs, etc.
Service

- Main incoming supply, main switches, change-over systems, bus bars and the supply up's to each of the local isolators for each individual piece of equipment.

Charger and Batteries
Battery Tripping Unit
Service

- Clean off any acid from battery terminals
- Check water levels on all cells
- Check all connections
- Check load circuits on battery
- Check supply voltage
- Check battery voltage
- Test all single cell internal battery resistance (Test conducted per battery)
- Test all single cell battery voltage (Test conducted per battery)
- Check all indication functional
- Compile test report according to Charger specifications

Battery Testing
Service

- Check hydrometer
- Check casing condition
- Check the water
- Check terminals
- Note Volts
- Note Amps
- Compile battery report
- Checking of input and output terminations
- Installation of batteries in battery cabinets or onto stands.

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- Checking of battery connections
- Complete mechanical check of the UPS system.
- Electrical and calibration check of the UPS system
- Testing of all UPS alarm functions including Remote Alarm Panel (RAP) if supplied
- Mains failure test, using existing load, to prove correct operation of UPS system
- Explanation of UPS operation and alarms to customer
- Hand-over acceptances.

Certificate of Compliance
Service

- Issue the certificate of compliance as an electrical regulation.

Earthing and Bonding
Service

- Must be done as per earthing and bonding regulation.

4.4. OTHERS

Other elements of Electrical, Air-conditioning, UPS, Generators, and supply of diesel service not detailed in the scope that may be required shall be included, as and when required basis.

5. Resources

The contractor shall provide adequate resources to execute the work.

6. Revisions

Date	Rev.	Compiler	Remarks
28/10/2025	1	Karabo Modupi	First draft
03/11/2025	2	Karabo Modupi	Included UPS & Generator Maintenance

7. Development Team

The following people participated in the development of this document:

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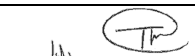
Tebogo Mojela	Senior Technical Supervisor	
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