

PART 3: SCOPE OF WORK

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C3.1: EMPLOYER'S SERVICE INFORMATION

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REPAIRS AND MAINTENANCE OF MAJUBA POWER STATION ENERGIZED ELECTRIC FENCE

1. Description of the Service

1.1. Executive Overview

In South Africa the Electric Machinery Regulations (Government Notice No. R250 (Government Gazette 34154) of 25 March 2011, published in terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHS Act), which is administered by the Chief Inspector of Occupational Health and Safety of the Department of Labour, requires that all electric fence installations (nonlethal), temporary or permanent, comply with the requirements of SANS 10222-3. The aim of this specification is to prescribe the maintenance requirements for a non-lethal electric fence installed at Majuba Power Station.

1.2. Employer's objectives and purpose of the works

The purpose of the electrically energised fence maintenance contract for Majuba Power Station is to ensure compliance to the relevant NKP I GSR protection/security requirements at all times. The security level at the Power Station will be improved resulting in the minimization of security related incidents at the Power Station. It will create a safe working environment for employees, contractors and visitors. The implementation of the baseline security design provides for an Integrated Security. It should be noted that maintenance of the security fence will enhance safety but will not completely eradicate criminality, it is therefore recommended that as a minimum to the system, additional patrols by current security personnel be continued, the change in the security focus towards the safeguarding of the primary plant operations area, implementation of the Integrated Access control; and the dedicated monitoring of all security related detection and surveillance equipment if fitted be supplemented.

1.3. *Employer's Service Requirements (Works information)*

The works are for the provision of Electrical Maintenance and Repairs of the electrical energised fence at Majuba Power Station. This service includes but is not limited to conducting the fence walks/inspections, replacement of damaged insulators, posts, tensioners, wires (including re-wiring where required) and configuration of the computer, sliding gates, fixing of energisers, fixing the screen, commissioning and testing of the system, programming of the electric fence into 20 zones, conducting investigations for continuous failures, compilation of the monthly report. Upon completion of repair works the contractor shall issue the electric fence system certificate of compliance.

1.4. Quality Control and Assurance

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The following are minimum requirements for Quality Control and Quality Assurance programs:

- I. The *Repairer* shall have a QA program/strategy that, as a minimum, meets the requirements of ISO 9001-2008 or *Employer* approved QA Program. Any sub-contractors completing any portions of the electric fence repair and reconditioning work shall meet this requirement. The *Employer* shall accept the QA program before the start of any electric fence refurbishment or repair work.
- II. If new and/or replacement parts are procured, the *Repairer* has the right to inspect these parts. Technical documentation shall be made available to the *Employer* for review and acceptance. The documentation shall include but is not limited to the following, where applicable:
 - New computer data,
 - Technical data sheets of original and replacement equipment
 - Manufacturer's technical data for new wires, insulators, tensioners etc.,
 - Details of original and replacement transformers,
 - Testing and Inspection reports
- III. The *Employer* has the right to impose witness and hold points, Witness and hold points can only be waived by the *Employer's* Quality Assurance or designated representative in writing. The *Repairer* shall provide appropriate notice of an impending witness or hold point at least 48-hours prior to the event.
- IV. At any phase of the Works, the *Employer* or its authorized representative reserves the right to inspect the works and equipment replaced. By entering into a contract with the *Employer*, the *Service Provider* therefore, consents the *Employer* or its authorized representative to unlimited access to the *Service Provider's*, including Sub-Contractor's, premises at all reasonable times to the extent necessary to assess compliance with the provisions of this and such other documents as may apply to the maintenance of the energiser fence. Such inspections shall not relieve the *Service Provider* of its obligation or responsibilities under the contract.

1.5. Emergency repairs

The requirements of the normal repair procedure are applicable to emergency repairs, the difference being the duration for the requirements to be fulfilled. The *Employer* will classify situations that require emergency repairs e.g. nuisance alarms, and no indication at the control desk. Breakdown maintenance will be carried out on an "As and when required" basis to return the system to 100% functionality.

REPAIRS AND MAINTENANCE OF MAJUBA POWER STATION ENERGIZED ELECTRIC FENCE

2. SYSTEM COMPONENTS

The Non-lethal Energized Perimeter Detection System (NLEPDS) has a twofold function which is firstly to deter any unauthorised intruders from entering and secondly to detect and alarm any unauthorised attempt to enter by cutting the fence wires. The maintenance of the NLEPDS shall include but is not limited to the following components / sub-systems:

- Electric fence
- Energizers
- Mimic and PC with configurations/front end software
- Communications
- Power supplies
- HT transformers
- Batteries

2.1. ENERGIZER INPUT/OUTPUT REQUIREMENTS

The specification of the energizer will be in accordance with IEC 60335-2-76

- a) Peak value of voltage must be above 7.5kV, but not exceeding 10kV with the energizer not connected to the load (fence).
- b) Maximum energy delivered to a load of 500ohm must not be less than 7, 5 J but not exceeding 8 J with the energizer not connected to the load (fence).
- c) The required energy on each live conductor wire on the structure must not be less than 5 J, with a minimum Difference Potential of 7 kV.
- d) Minimum interval between pulses should not be less than 1, 0 Hz.
- e) Impulse duration shall not exceed 10ms.

These values will be used to assess the performance of the fence and to determine the effectiveness of the maintenance being conducted by the contractor.

2.2. TYPES OF FAULTS ON THE ELECTRIC FENCE

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- Short Circuit – The system has detected that a live wire is touching a ground wire. This can also be due to any other object touching a live wire. The system will indicate in what specific zone the fault is occurring.
- Open Circuit – The system has detected that a live wire has been cut, resulting in an open circuit.
- No Communication – The system has detected that there is no communication between the Fence control PC and the energizers. This can be as a result of an energizer being switched off or out of order as well as a damaged comms cable.
- Mains Failure – This indicates that the energizers are running from the battery backup for a limited period of time.
- Battery Low – The battery voltage is down to a critically low level, the system will switch off in the next few hours.
- HT Voltage Low Alarm – This indicates that one or more of the energizers are faulty as the HT voltage is low.

2.3. GENERAL MAINTENANCE

In order to successfully maintain the fence in a satisfactory condition, the following tasks shall be completed on the fence:

1. VISUAL INSPECTIONS

Visual inspections are carried out every week on all structural components of the system and a report must be produced which details the state and findings. The inspections shall include but is not limited to the following actions:

- a) Walk along the length of the electric fence and inspect all components of the fence for faults. (i.e. a clicking sound is audible where arcing occurs).
- b) Fix all faults reported prior to inspection, tighten all loose wires, replace and repair all faulty fence components.
- c) Inspect the electric fence energiser installation and ensure compliance.
- d) Inspect the energiser and electric fence earthing system. Tighten loose connection wires, replace worn-out clamps and corroded components.

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- e) Inspect fence insulators and ensure that they are in satisfactory condition. Broken and deformed fence insulators shall be replaced.
- f) Look for electric fence wires touching any other component not forming part of the electric fence installation and rectify to ensure compliance herewith.
- g) Check the fence for tautness and tighten faulty wires
- h) Inspect all joints and replace broken or rusted clamps (or both).
- i) Ensure that soldered joints are still electrically sound.
- j) The Contractor will carry out repairs within their scope
- k) Repairs will be carried out during the Contractor's normal working hours, unless an emergency has occurred or the plant is urgently required for operation.
- l) Perform visual inspections and routine inspections and identify obvious faults / defects and risks.

2. ROUTINE MAINTENANCE

The monthly routine maintenance will entail:

The OEM maintenance procedure/instruction is to be followed at all times. All faults found during maintenance will be corrected immediately.

- a) Conducting fault finding utilizing test equipment, drawings / diagrams and manufacturer's specifications. Identify problematic / faulty components / equipment.
- b) Verifying the correct operation and display of all alarms.
- c) Repairing/ replacing faulty equipment as instructed.
- d) Reporting to supervisor any recurring defects.
- e) Checking battery operation by switching off the AC supply to the energisers and monitoring responses of the system.
- f) Initiating appropriate actions to rectify any unsafe activities / or plant conditions.
- g) Maintenance on the computer software program.

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- h) Recording full details, technical and cost related history of work carried out on notifications / defects and scheduled work / planned maintenance documents prior to submission to the supervisor with special reference to material used, repairs carried out and equipment used.
- i) Conducting job observations and peer checks according to procedure.
- j) Verifying correct operating voltages of electrical fence wires at beginning, middle and end of the fence. (Typically zones 1, 10 and 20) as per Section 3 (a), (b) and (c) above
- k) Checking the fence structure and report any abnormalities.
- l) Verification of correct operation and maintenance on the energisers.
- m) Tensioning of electric wires.
- n) Conducting on job training for trainees/artisans.
- o) Inspecting the electric fence installation for faults at gates
- p) Conducting risk assessments on live plant and mitigate risks.
- q) Attend Ad hoc meetings.

Any other defects found to be non-compliant shall be addressed as part of this contract.

3. TESTS AND MEASUREMENTS

Calibration of each zone for correct fault indication shall be done quarterly. The tests and measurements shall be done and shall be in accordance with the IEC 60335-2-76 specification, documented and made available to the Eskom Head of Security and the System Engineer.

4. FENCE

- a) Perform spot checks by applying a short to the fence (functional zoning checks) to confirm system zoning and fault identification.
- b) Using an energy/HT meter to test the performance of the fence at various points.

5. ENERGISERS AND EQUIPMENT ROOM

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- a) Take measurements on the electrifier battery terminals with the charging circuit on ($\pm 12V$ should be measured).
- b) Disconnect batteries from the charging circuit and measure the voltage on the battery. This reading should not be less than 10V, should it be the battery has to be changed.
- c) Switch off the power supply and confirm that the system does operate with battery power for 1 hour (Actual backup time is 5 hours).
- d) Do tightness checks on all electrical connections on the electrifier boxes and line taps on the fence.

All measurements taken shall be documented and compared to previous measurements to see if the fence integrity is still intact.

2.4. FREQUENCIES

Above mentioned inspections and tests shall be conducted in the following frequencies:

- a) Visual Inspections: Shall be conducted week
- b) Tests and measurements: Shall be conducted once every 4weeks.

2.5. INCLUDED IN CONTRACT

Contractor shall be on standby at all times, in case of a failure on the fence the contractor will come to site to rectify the issue within 24hours.

Labelling : All labels/signage/warning signs that are required by law to be attached on the fence.

Spares: All spares like energisers, insulators, computer equipment, batteries and battery chargers, transformers, wires and insulators are to be provided by the contractor.

2.6. EXCLUDED FROM CONTRACT

The contractor shall not be responsible for Vegetation removal in and around the fence and the control of soil erosion shall also be excluded from this contract.

Force majeure: Any natural disasters like flooding, falling of trees over the fence or any other accidents which is not maintenance related like vehicles driving through the fence etc.

Barrier/Perimeter fences: Any maintenance works on the inner- and outer barrier fences.

2.7. SPARES

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This section will contain all the recommended spares that will have to be kept on site. Any spare needed by the contractor shall be sourced by the contractor to make any repairs and keep the fence in running condition.

The required spares should include but is not limited to the following:

- BS120 Energizer
- BS120 Battery Charger
- Battery 12V 7.5A/H
- BS120 Compact HT Transformer
- 1.6mm Aluminium Wire
- Combi Tensioners Heavy Duty
- 4mm Aluminium Ferrules
- Intermediate Insulators
- Safety and warning Signs
- 4mm Aluminium Ferrules
- Rs485 to Rs232 converter modules

These spares shall not be kept on site but at the contractor's facilities. Critical spares that have long lead times or are not available off the shelf shall be purchased by the contractor upfront and kept at their facilities. This eliminates any down time caused by unavailability of spares.

3. GENERAL CONDITIONS OF CONTRACT

A turnkey solution is required from the Contractor. This includes but is not limited to consumables, labour, heavy machinery and their authorised operators, testing equipment along with their valid calibration certificates.

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3.1. SAFETY**1. Plant Safety Regulations and HV regulations**

The *Employer* shall, on request from the *Contractor*, isolate required plant from all sources of danger as described in the Plant Safety Regulations or HV regulations.

The *Employer* shall, on request, make available a copy of the latest revision of the Plant Safety Regulations or HV regulations to the *Contractor*.

The *Contractor* shall conform to all rules and regulations applicable to Plant Safety and HV Regs. and shall complete the Worker's Register prior to working on the plant.

The *Contractor* shall provide at least two people at all times for the execution of this task as per the eleven points plan.

2. Attend to equipment care and personal safety

1. Inspect equipment and repair defects and problems.
2. Adhere to SHE requirements.
3. Use the correct personal protective equipment to perform the task.
4. Report unsafe conditions of equipment and in the work area to the supervisor.
5. Clean all equipment and work area daily, after usage.
6. The Contractor will complete PMs and CMs in relation to maintenance and defects.
7. The Contractor will at all times wear a communication device (i.e. cell phone) and respond to calls directed to their attendance to plant defects
8. The Contractor will service all relevant plant at weekly intervals according to the agreed upon frequency.
9. The Contractor will immediately attend to any plant defect and will only resume routine maintenance after the defect is cleared or if so asked by the *Employer*.
10. The Contractor will accompany the *Service Manager* on a monthly inspection of the relevant plants.

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3.2. CONTRACTOR'S REGULAR WORKING HOURS

The Employer's working hours:

Mondays to Fridays 07:30 to 16:45
Fridays 07:30 to 12:30
Excluded are Public Holidays.

The Contractor must be available during these hours.

3.3. CALLOUTS – OVERTIME

- The *Contractor* shall provide a callout service to respond to certain faults or malfunctions that might be deemed as critical to the proper functioning of the NKP's security. The contractor will provide a 24 hour standby service, with a response time of within four (4) hours.
- Callout service, not limited to, shall consist of emergency adjustments, fault finding, joining of cables/wires where appropriate, replacement of parts, fixing of wires, swopping of parts etc. to restore an inoperative or faulty unit to safe and satisfactory service.
- In the case of any major breakdown, a repair plan of action must be submitted to the *Employer* within 12 hours.
- Repair work to commence on the exact time agreed between the *Employer* and the *Contractor* on this plan of action. No additional cost to the *Employer* for this service will be acceptable.

4. REFERENCES

The Contractor will inform and adhere to all relevant Eskom and SABS/SANS standards and procedures which are relevant to the works. If there is any ambiguity between Eskom and the other regulations or standards the better of the latter will be chosen.

4.1. STANDARDS & REGULATIONS

- [1] ESKOM 240-78980848 Specification for non-lethal energised perimeter detection system (NLEPDS) for protection of Eskom installations and its subsidiaries
- [2] ESKOM ENG/ELEC/22 Station electrified perimeter fence – maintenance plan
- [3] ESKOM 240-55714363 Coal Fired Power Stations Lighting and Small Power Installation
- [4] ESKOM 204-56227443 Requirements for Control and Power Cables for Power Stations
- [5] ESKOM 240-86973501 Engineering Drawing Standard – Common Requirements
- [6] ESKOM 240-64636794 Standard for Wiring and Cable Marking in Substations
- [7] ENG/GEN/04 Standard Coding/Labelling for Majuba

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- [8] SANS 10222-3:2012 Electrical security installations. Part 3: Electric fences (non-lethal)
- [9] SANS 10142-1:2012 The wiring of premises. Part 1: Low-voltage Installations
- [10] OHS Act 1993 Occupational Health and Safety Act of 1993
- [11] ESKOM 240-56356396 Earthing and Lightning Protection Standard

11.2 DRAWINGS

- [12] 0.66/5921 Sheet 1 & 2 Station security fence lighting layout sheet 1 & 2
- [13] 0.66/2590 Sheet 4 General Labels & Nameplate Details Arrangement Diagram

4.2. Interpretation and Terminology

The following abbreviations are used in this Service Information:

Abbreviation	Meaning given to the abbreviation
CDSS	Contractor Document Submission Schedule (CDSS)
ENG	Engineering
EMS	Environmental Management System
GEN	Generation
IEC	International Electro technical Commission
LV	Low Voltage
OHRVS	Operating Regulations for High Voltage Systems
ISO	International Standard Organisation
KPIs	Key Performance Indicators
MS	Microsoft
MV	Medium Voltage
NLEPDS	Non-Lethal Energised Perimeter Detection System
NEC	New Engineering Contract
NEC	New Engineering Contract
NKP	National Key Point

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OHS	Occupational Health And Safety
O&M	Operating and Maintenance
OEM	Original Equipment Manufacturer
OHSA	Occupational Health and Safety Act
ORHVS	Operating Regulations for High Voltage System
SANS	South African National Standards
SANS	South African National Standards
SAQA	South African Qualification Authority
SOW	Scope of Work
VAT	Value Added Tax

REPAIRS AND MAINTENANCE OF MAJUBA POWER STATION ENERGIZED ELECTRIC FENCE

5. Management Strategy and Start Up

5.1. The *Contractor's* Plan for the *Service*

In the case of a breakdown that lasts longer than 5 working days the contractor shall provide a plan to correct any defects needed to get the system running.

This plan includes:

- a) Description of defect
- b) Reasons for lengthy repairs
- c) Date plant will be back in service

5.2. Management meetings

Regular meetings of a general nature may be convened and chaired by the *Supply Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Kick off meeting and scope clarification.	Within 1 week after start date	Majuba Power Station, Specific conference room TBA	<i>Services Manager</i> , <i>Contractor</i> and Supervisors
Assessment Meetings	As and when required	Service Manager's office	System Engineer, EMD Manager and Relevant Business Partners

- a) Meetings of a specialist nature may be convened at times and locations to suit the Parties. Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting.
- b) All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for confirming actions or instructions under the contract as these shall be done separately by the person identified in the conditions of contract to carry out such actions or instructions.

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5.3. Contractor's Management, Supervision and Key People

The Key Persons

Roles and responsibilities requirements for the contractor's key people required to render the service:

Designation	Supervisor/Foreman	Technicians/tradespersons'
Number of	x 1	Determined by the contractor depending on the works
Special requirement	On an Ad-Hoc basis will be requested to come to site for field work/Advise	Determined by the contractor Will be works dependant
Qualifications	Experienced and Competent Technician/Engineer	ElecDiploma/ Equivalent
Experience	Minimum of 3 years of Related Experience**	Minimum of 1 year of Related Experience
Name:		
Tel		
Name		
Tel:		

A competent technician/tradesperson will for the purpose of this contract mean a person who-

- I. Has either completed a learnership or an apprenticeship in the trade of ;fitting in turning , millwright or electrical
 - II. Has completed an electrical trade qualification and has had at least three years post qualification general practical experience.
- b) The Contractor's Site Supervisor ensures that only competent persons be allowed to work on plant. The Employer's Service Manager is entitled to verify the qualifications of the Contractor.
- c) Site engineers over and above the key persons mentioned above might also be required on an ad-hoc basis.

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- d) The Contractor's supervisor/ Foreman must be knowledgeable about the conditions and scope of work contained in this contract and capable of executing the scope of work.
- e) The Services Manager may, having stated reasons, instruct the Contractor to remove a key person. The Contractor then arranges that, after one day, the key person has no further connection with the work included in this contract.
- f) The Contractor may not replace any of the key persons, without prior written request and approval thereof from the Services *Manager*.
- g) The above qualifications and experience requirements are a minimum
- h) The contractor must provide hourly rates for each of the above key persons in the price list.

5.4. Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* is to be provided by the *Contractor*, is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Service Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer's* right to termination stated in this contract.

6. Site Establishment

Not Applicable

6.1. Documentation Control

Document management control will be handled as per the employer's document and records management procedure 32-6, 32-1 and 32-21 which is obtainable from the *Service Manager*. All communication will be in writing.

All NEC standard forms should be used, e.g. Task orders, Early Warnings, Defect certificates and Assessments.

6.2. Procedures, Records and Reports

The *Contractor* implements the following procedures or paperwork over the first month of this Contract:

- a) Business Organisation Chart

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b) Safety procedures

The following policies, procedures and specifications will be compiled by the contractor at all times:

- a) Site Regulations – Majuba site Regulations
- c) BIA/RM/STD/01 – Safety, health and environmental requirements to be met by Contractors (available on request)
- d) Eskom Majuba Site transport requirements
- e) Construction Regulations
- f) Occupational, health and Safety Act
- g) Eskom Life Serving Rules
- h) BIA/QA/STD/01 – Quality requirements for engineering and construction works (available on request)
- i) All Relevant Majuba Power Station standards, policies and procedures

6.3. Sub-contracting

Only sub-Contractors authorized by the *Employer* will carry out work on the equipment in terms of this contract.

6.4. Possession, Control of Equipment

The *Contractor* will not assume possession or control of any part of the equipment all of which shall remain exclusively the property of the *Employer*.

6.5. Invoicing and Payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager's* payment certificate.

The Contractor shall address the tax invoice to:

Accounts Payable Services
Eskom Holdings Ltd
Majuba Power Station
Private Bag X9001
Volkstrust
2470

The following information will be included on each invoice:

- Name and address of the *Contractor* and the *Service Manager*;
- The contract number and title;

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- Contractor's VAT registration number;
- The Employer's VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

All invoices are to be submitted to the Majuba Accounts Payable Services Department.

Payment will be made electronically 30 days after assessment and receipt of a valid invoice. Cost Price Adjustment implementation (CPA)

If CPA is applicable, the contract manager and the contractor must confirm the increase/decrease with the QS (Quantity Survey) department BEFORE the revised prices are stated on the Invoice. The QS and Contract Manager must confirm the escalation with the Financial Department before it may be implemented.

6.6. Invoice price versus order price

It is important that the value stated on the Invoice must be the same as the value stated on the Order. If the Invoice value is different from the Order value payment of the invoice will be delayed. It is strongly recommended that if there are any discrepancies on the Invoice, it be rectified with the Buyer BEFORE it is submitted for payment.

6.7. Labour

All labour laws must be adhered to.

6.8. Records of Defined Cost

In order to substantiate the Defined Cost of compensation events, the *Employer* may require the *Contractor* to keep records of amounts paid by him for people employed by the *Contractor*, Plant and Materials, work subcontracted by the *Contractor* and Equipment. [See clause 11.2(5) and 63.2].

The *Contractors* Site Manager will complete the site daily log and this will be submitted to the *Employers Representatives* for his signature before 12am of the following morning barring weekends. The Friday and weekend logs will be submitted before 12am Mondays. The log will include but not be limited to the following:

- Date and day.
- Weather.
- Site Conditions.
- Work Done.
- Labour on site.

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- Any incidents during that period.
- Any communication that took place.

6.9. Things provided at the end of the *Service Period* for the *Employer's* use**6.10. Equipment**

None

6.11. Information and other things

None

6.12. Management of work done by Task Order

A task order will be issued for tasks at hand as per descriptions from the Service Manager who will be managing this contract on the employer's behalf.

6.13. Contractor to note and comply with the following

- The Employer reserves the right to have any of the Contractor's personnel removed off site without any compensation to the Contractor in the event of the Contractor's personnel being in contravention with the OHS Act or any of the Employer's Life-saving rules, regulations and procedures.
- The Employer reserves the right to request disciplinary/corrective action if, and when, required.
- The Contractor will operate under the direction and instructions of Employer.
- The Contractor will provide all safety apparel, safety equipment and cleaning materials to comply with the construction regulatio

7. Health and safety, the environment and quality assurance

7.1. Health and Safety Risk Management

General

The *Contractor* must ensure that all his personnel attend a Health and Safety Induction Course prior to starting with their work. The Induction Course can, on request, be provided by the *Employer* and will be valid for the duration of the *services*.

Safety Risk Management has the right and authority to visit and inspect the *Contractor's* workplace or site establishment to ensure that tools, machinery and equipment comply with the minimum safety requirements.

The *Service Manager* shall be entitled to instruct the *Contractor* to stop work, without penalty to the *Employer*, where the *Contractor's* personnel fail to conform to safety standards or contravene health and safety regulations. The *Service Manager* is entitled to cause the *Contractor* to discipline his employees and to conduct a disciplinary action, and submit a report to *the Service Manager*. The *Contractor* shall implement additional health and safety precautions where necessary.

The *Contractor* will provide all his personnel with the required personal protective equipment.

Risk Assessments, Pre-Job Briefs, Post – Job Briefs & Job Observations will be conducted for all jobs.

All Construction Regulation - safety requirements should also be adhered to.

- Safety Plan
- Fall Protection Plan (repairing / replacing of conveying lines using scaffolding)
- 16.1 and 16.2 appointments

7.2. Fire Precautions

Any tampering with the *Employer's* fire equipment is strictly forbidden.

All exit doors, fire escape routes, walkways, stairways, stair landings and access to electrical distribution boards must be kept free of obstruction, and not be used for work or storage at any time. Firefighting equipment must remain accessible at all times.

In case of a fire, report the location and extent of the fire to the Electrical Operating Desk at extension 3803.

Take the necessary action to safe guard the area to prevent injury and spreading of the fire.

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7.3. Reporting of Accidents/Near Misses

The *Employer* follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to fully co-operate to achieve this objective. The Service Manager must be informed immediately of any incidents and any damage to property or equipment must be reported to the Service Manager within 24 hours.

NOTE! This report does not relieve the *Contractor* of his legal obligation to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

7.4. Barricading and screens

The *Contractor* will provide and install barricades and warning devices to ensure that equipment and persons are not exposed to danger or to prevent access to dangerous areas.

All welding, flame cutting and grinding work shall be properly screened to protect persons from any injury.

All gratings shall be covered with adequate protective screening when welding or flame cutting in the vicinity.

7.5. Speed Limit

All vehicles must be driven with due consideration for personnel and property. A maximum speed limit of 40 kilometres per hour will be adhered to on the premises at all times.

7.6. Safety

- a) The *Contractor* complies with the Occupational Health and Safety Act, 1993, (the Act) and all Safety procedures issued by the *Employer*. The *Contractor* must furthermore comply with the *Employer's* Safety, health and Environmental requirements for *Contractors*, BIA/RM/STD/01, which is available from the Majuba Documentation Centre.
- b) The *Contractor* will carry out work according to Procedure GGR 0992 (Plant Safety Regulations). The *Contractor* will qualify his supervisors to take out permits on the *Employer's* permit to work system in order to always have one authorised person available to take out permits per shift.
- c) The *Contractor* will conform to all rules and regulations applicable to Plant Safety and shall complete a proper risk assessment and Worker's Register prior to working on the plant.
- d) The *Contractor* will ensure that his representatives are duly authorised in terms of the Plant Safety Regulations as a responsible person upon commencement of work.

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- e) The *Employer* shall on request from the *Contractor* isolate required plant from all sources of danger as described in the Plant Safety Regulations.
- f) The *Employer* will provide the Plant Safety Regulation training to the *Contractor*.
- g) The *Employer* shall make a copy of the Plant Safety Regulations available to the *Contractor*.
- h) The *Contractor* will attend monthly safety meetings, and conduct monthly safety meetings with staff.
- i) The *Contractor* provides all personal safety equipment, including safety belts and harnesses
- j) The *Contractor* will adhere to the Eskom cardinal rules.
- k) The *Contractor* will not be allowed to transport any of its workers in open vehicles to and from site as prescribed in the Eskom safety policy.

7.7. Lighting

The *Contractor* shall comply with the requirements of the Occupational Health and Safety Act and ensure that adequate lighting is provided to work areas at all times.

8. CONSTRUCTION**8.1. Compressed Air**

- a) Facilities for water and compressed air are indicated with Eskom colour coding.

8.2. Supply of Electricity

Employer will make available to the *Contractor* 220/230-volt electrical supply free of charge from the closest existing point of supply. Cabling and other accessories from the supply point will be the contractor's responsibility

The *Contractor* is to make provision for the necessary extensions and plug points.

8.3. Telephones and Telecommunications

Should the *Contractor* require a telephone service he shall make his own arrangements with the *Employers Representative*.

8.4. Accommodation

The *Employer* will not provide any accommodation for the *Contractor*

8.5. Welding on site

No welding will be allowed on site unless permission is granted in writing by the *Employers Representative*.

9. ENVIRONMENTAL CONSTRAINTS AND MANAGEMENT

The *Contractor* should adhere to the Majuba Power Station Environmental Management System that must meet the requirements of ISO 14001:2004.

The EMS requirements are detailed in the latest revision of the following documents, which are available from the Majuba Power Station Documentation Centre or Internal Web site, and include:

- | | |
|--|-------------------|
| a) Environmental Management Policy | BIA/ENV/04 |
| b) Environmental Management System Manual | BIA/ENV/03 |
| c) Waste Management at Majuba | BIA/ENV/01 |
| d) Oil Spill Management at Majuba | BIA/ENV/02 |
| e) Environmental Legal Register (List of Environmental Legislation applicable to Majuba) | ENG/ENV/01 |

The *Contractor* will be responsible for complying with any new environmental requirements, relevant to the Works Information that may come into effect as part of Majuba Power Station's EMS for the duration of this contract.

If there is uncertainty around any environmental issues, the Environmental Department at Majuba Power Station may be contacted.

All work complies with the relevant environmental regulations. The works may include the use of some toxic or hazardous substances during normal and routine maintenance activities. In this case the *Contractor* uses such hazardous substances in accordance with the applicable regulations and procedures and is disposed of by the *Contractor* in accordance with the applicable law.

10. QUALITY ASSURANCE REQUIREMENTS

Quality Requirements

The Contractor guarantees to utilize the OEM approved parts, components and lubricants.

The *Employer* may, by arrangement, inspect completed work. If, in opinion of the *Employer*, the work does not comply with the quality requirements expected from the *Contractor*, the *Employer* shall instruct the *Contractor* to rectify the faults. The *Contractor* will comply with the instructions.

The Contractor will comply with the Employer's Quality Requirements as specified in procedure BIA/QA/STD/01 latest revision, which is available from the Documentation Centre or the internal Majuba Web site.

All Quality Control documentation must be submitted to the Employer's Representative for acceptance prior to any work commencing.

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Contractor Document Submission Schedule (CDSS)

Refer to section named "Low service damages" below.

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11. Procurement

11.1. People

11.1.1. Minimum requirements of people employed

- a) All Semi-skilled personnel are in possession of valid school senior certificate.
- b) All Artisans are both qualified and in possession of a valid trade test certificate or in possession of a competency certificate issued by the OEM. 3 years minimum experience required.
- c) All Supervisors are qualified and in possession of a valid diploma, and must have undergone supervisory training from a reputable institution. 10 years minimum experience required.
- d) All project managers, site managers and project leaders must have undergone training in contracts management (e.g. NEC3), any technical discipline (e.g. construction, civil, mechanical, electrical, C&I), and managerial course (e.g. project management, etc.) from reputable institutions. 5 years minimum experience required.
- e) The Contractor will provide trained personnel for the implementation of all work.
- f) The Contractor remunerates his employees at not less than the proclaimed statutory wage (Minimum Wages Act). Failure in this regard will result in non-performance and therefore immediate termination of the contract.

In order to fully evaluate a tender, the Contractor is to submit an organogram, which is to include the relevant skills levels.

According to the SKILLS DEVELOPMENT ACT 97 OF 1998, the following definition for artisans and trades are emphasised:

- **Artisan** means a person that has been certified as competent to perform a listed trade in accordance with this Act. (Definition of “artisan” inserted by section 1(a) of Act 37 of 2008)
- **Trade** means an occupation for which an artisan qualification is required in terms of section 26B. (section 1(i) of Act 37 of 2008)

Section 26C section 2 (a) states the following – “No person, whether employed or self-employed, may hold themselves out to be qualified as an artisan in a listed trade unless that person is registered as an artisan in terms of subsection (1)”

With reference to the Act, all personnel are adequately qualified for the task to be performed.

Qualifications of all staff to be submitted to the Service Manger two weeks prior to commencement of work and approval of qualifications of staff to be granted within one week of receipt of qualifications.

The Contractor submits requests to change any pre-approved staff together with proof of qualifications for approval prior to changing the staff.

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11.1.2. Plant and Materials**Specifications**

None

Correction of defects

None

11.1.3. Contractor's procurement of Plant and Materials

Employer's purchasing process will be followed.

The Employer provides some of the "Free Issue" materials as listed in section named "Exclusions" above.

11.1.4. Plant & Materials provided "free issue" by the Employer

Plant and materials provided by the Employer are detailed as per section **Error! Reference source not found.** "Exclusions".

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12. Working on the Affected Property

12.1. Employer's site entry and security control, permits, and site regulations

The entry to site is only approved once the following are adhered to:

- a) The Contractor's safety file is approved by the Employer's Safety department.
- b) All personnel have undergone screening for criminal records and outstanding arrest warrants.
- c) All personnel have attended site-specific safety induction training.
- d) Complied with the requirements as stated in the General Works information.

Contractor is required to undergo departmental safety induction programme for every department where service will be rendered.

12.2. Site Services and Facilities

12.2.1. Provided by the *Employer*

- a) Access to all affected areas
- b) Sanitation (drinking water and toilets).
- c) Medical Centre (The Employer will recover all costs)
- d) Electricity connection/disconnection: The *Contractor* to provide all necessary cabling, Certificate of Compliance (COC) etc. Electricity will be made available for construction purposes free of charge from power points, which will be indicated by the *Employers Representative*. The *Contractor* will be made responsible for the provision of the reticulation system from the point of supply. Both 220 (AC) Volt and 380 Volt (AC) are available on request. The *Contractor's* requirements are to be stated in his tender. Eskom does not guarantee the quality of supply of the power and the *Contractor* shall make his own arrangements for alternative supplies where required. Any breakdown or reduction in the power supply will not be grounds for claims for additional time or compensation.
- e) Water connection/disconnection: Water will be made available on request free of charge from water points on site, where available. The *Contractor* will supply at his own cost all the necessary connections, fittings, piping etc. for this facility. Eskom does not guarantee continuity of supply and quality of the water and the *Contractor* shall make his own arrangements for alternative supplies where required. Any breakdown or reduction in the water supply will not be grounds for claims for additional time or compensation. Should the *Contractor* have any particular requirements with respect to water quality or supply, these requirements must be stated in his/her tender.
- f) Compressed Air/Service Air, where available
- g) The *Contractor* provides everything else necessary for providing the service.

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12.2.2. Provided by the Contractor

Contractor shall provide everything else necessary for providing the Service.

- a) Tools, equipment and consumables else necessary for providing the required service/s.
- b) Accommodation offsite
- c) Transport
- d) Meals: The *Contractor* or any of his employees or subcontractors may purchase take-away meals from the fast food outlet onsite, if available.
- e) Telecommunications.
- f) Everything else necessary for providing the required service/s.

12.2.3. Low Service Damages

No.	Description	<i>Employer's Requirement</i>	Damages payable by <i>Contractor</i>
1	Approval of safety plan	Approval ASAP after contract award or within 1 (one) week of contract start date. Safety plan must contain all current and relevant information and needs to be reapproved when documents change or at least on each contract anniversary.	R500.00 per day without an approved safety file.
2	Approval of Quality Management System	Within 2 (two) weeks of contract start date.	R500.00 per day without an approved quality management system in place.
3	Non-availability of staff to provide service	Service has to be given on a continuous basis on the commencement of a contract	5% of the total repair cost per occurrence.
4	Contract (NCR) given 3 times in 6 weeks	<i>Contractor</i> to deliver the service as per the contract scope	R1 000.00 per occurrence.
5	QCP's	One week after receipt of Task Order	
6	Contractor's Safety file	Two weeks before start of work	R2 000.00
7	Inspection report	24 hours after activity	

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No.	Description	<i>Employer's Requirement</i>	Damages payable by Contractor
8	Daily progress report	After Every Shift	
9	Technical report and data pack	Within 7 days of completion of the services	R1000.00 per occurrence
10	Safety file Audit	Every 30 days after approval of initial file until work for specific outage is complete.	

13. Specifications

The following standards contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication the editions indicated were valid. All standards are subject to revision and parties involved in refurbishment processes based on this specification are encouraged to apply the most recent revisions of the standards listed below. Information on currently valid national and international standards may be obtained from the Information Centre at Megawatt Park or alternatively via the Electrical System Engineer at Majuba Power Station. Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

- [1] ISO 9001, *Quality Management Systems*.
- [2] BS EN 50209:1999, *Test of insulation of bars and coils of high-voltage machines*.
- [3] ESKOM 240-78980848 Specification for non-lethal energised perimeter detection system (NLEPDS) for protection of Eskom installations and its subsidiaries
- [2] ESKOM ENG/ELEC/22 Station electrified perimeter fence – maintenance plan
- [3] ESKOM 240-55714363 Coal Fired Power Stations Lighting and Small Power Installation
- [4] ESKOM 204-56227443 Requirements for Control and Power Cables for Power Stations
- [5] ESKOM 240-86973501 Engineering Drawing Standard – Common Requirements
- [6] ESKOM 240-64636794 Standard for Wiring and Cable Marking in Substations
- [7] ENG/GEN/04 Standard Coding/Labelling for Majuba
- [8] SANS 10222-3:2012 Electrical security installations. Part 3: Electric fences (non-lethal)
- [9] SANS 10142-1:2012 The wiring of premises. Part 1: Low-voltage Installations
- [10] OHS Act 1993 Occupational Health and Safety Act of 1993
- [11] ESKOM 240-56356396 Earthing and Lightning Protection Standard

11.2 DRAWINGS

- [12] 0.66/5921 Sheet 1 & 2 Station security fence lighting layout sheet 1 & 2
- [13] 0.66/2590 Sheet 4 General Labels & Nameplate Details Arrangement Diagram

14. List of drawings

14.1. Drawings issued by the *Employer*

All relevant drawings are available on request from the Majuba Document Centre.