



NEC3 Term Service Contract (TSC3)

Between **ESKOM HOLDINGS SOC Ltd**
(Reg No. 2002/015527/30)

and

for Replacement of Lethabo Power Station copper Earthing with anti-theft earthing i.e., aluminium earthing inclusive of conducting periodic earth mat survey for a period of 5 years

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CONTRACT No.

PART C1: AGREEMENTS & CONTRACT DATA

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C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Replacement of Stolen Earthing Copper Bars with Aluminium Conductor

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options A	The offered total of the Prices exclusive of VAT is	
	Value Added Tax @ 15% is	
	The offered total of the amount due inclusive of VAT is ¹	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s)

Name(s)

Capacity

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number:

¹ This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Service Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed and signed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)

Name(s)

Capacity

for the
Employer

ESKOM HOLDINGS SOC LIMITED (REG NO:2002/015527/30)
LETHABO POWER STATION

(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
	N/A	N/A

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

**ESKOM HOLDINGS SOC LIMITED (REG
NO:2002/015527/30)
LETHABO POWER STATION**

Name &
signature
of witness

Date

C1.2 TSC3 Contract Data

Part one - Data provided by the *Employer*

Completion of this data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option:	
		A: Priced contract with price list
	dispute resolution Option	W1: Dispute resolution procedure
	and secondary Options	
		X2 Changes in the law
		X17: Low service damages
		X18: Limitation of Liability
		X19: Task Order
		Z: Additional conditions of contract
	of the NEC3 Term Service Contract April 2013 ² (TSC3)	
10.1	The <i>Employer</i> is (name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state-owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
	Tel No.	
	Fax No.	
10.1	The <i>Service Manager</i> is (name):	Thabiso Dlamini
	Address	Lethabo Power Station
	Tel	(016) 457 5035
	Fax	
	e-mail	dlamint@eskom.co.za
11.2(2)	The Affected Property is	Lethabo Power Station
11.2(13)	The <i>service</i> is	Replacement of Earthing Copper Bars with

² Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

Aluminium Conductor

11.2(14)	The following matters will be included in the Risk Register	
11.2(15)	The Service Information is in	Part 3: Scope of Work and all documents and drawings to which it makes reference.
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	24 Hour's
2	The Contractor's main responsibilities	Data required by this section of the core clauses is also provided by the <i>Contractor</i> in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data
21.1	The <i>Contractor</i> submits a first plan for acceptance within	1 week of the Contract Date
3	Time	
30.1	The <i>starting date</i> is.	
30.1	The <i>service period</i> is	12 months
4	Testing and defects	One week after completion of task – correction period
5	Payment	
50.1	The <i>assessment interval</i> is	After completion of each task order.
51.1	The <i>currency of this contract</i> is the	South African Rand
51.2	The period within which payments are made is	30 days from the date of the receipt of the invoice.
51.4	The <i>interest rate</i> is	<p>the publicly quoted prime rate of interest (calculated on a 365 day year) charged by from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and</p> <p>(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the 6 month London Interbank Offered Rate quoted under the caption "Money Rates" in The Wall Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in</p>

		question, adjusted <i>mutatis mutandis</i> every 6 months thereafter (and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.
6	Compensation events	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data
7	Use of Equipment Plant and Materials	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. [•] 2. [•] 3. [•]
9	Termination	Poor performance of work will lead to terminate contract. Performance Criteria will be measured as Follows: <ul style="list-style-type: none"> • Check sheets will be used • Number and Repetition of NCR • NEC Term Service termination clauses will be used.
10	Data for main Option clause	
A	Priced contract with price list	
20.5	The <i>Contractor</i> prepares forecasts of the final total of the Prices for the whole of the service at intervals no longer than	1 week after <i>works</i> is complete.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i>	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
	Address	[•]
	Tel No.	[•]
	Fax No.	[•]
	e-mail	[•]

W1.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the Institution of Civil Engineers (London) (see www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	arbitration
W1.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	South Africa
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	the Chairman for the time being or his nominee
	- if the arbitration procedure does not state who selects an arbitrator, is	of the Association of Arbitrators (Southern Africa) or its successor body.
12	Data for secondary Option clauses	
X2	Changes in the law	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
X17	Low service damages	
X17.1	The <i>service level table</i> is	<ul style="list-style-type: none"> ▪ Late delivery of Spares with more than one day - 2% on the payment invoice. ▪ 2 days delay on completion of project - 5% on the payment invoice.
X18	Limitation of liability	
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to	R0.0 (zero Rand)
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to	the amount of the deductibles relevant to the event
X18.3	The <i>Contractor's</i> liability for Defects due to his design of an item of Equipment is limited to	<p>The greater of</p> <ul style="list-style-type: none"> • the total of the Prices at the Contract Date and • the amounts excluded and unrecoverable from the <i>Employer's</i> insurance (other than the resulting physical damage to the <i>Employer's</i> property which is not excluded) plus the applicable deductibles
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> , for all matters arising under or in connection with this contract, other than the excluded matters, is limited to	<p>the total of the Prices other than for the additional excluded matters.</p> <p>The <i>Contractor's</i> total liability for the additional excluded matters is not limited.</p>

		<p>The additional excluded matters are amounts for which the Contractor is liable under this contract for</p> <ul style="list-style-type: none"> • Defects due to his design, plan and specification, • Defects due to manufacture and fabrication outside the Affected Property, • loss of or damage to property (other than the <i>Employer's</i> property, Plant and Materials), • death of or injury to a person and • infringement of an intellectual property right.
X18.5	The <i>end of liability date</i> is	End of the <i>service period</i>.
X19	Task Order	
X19.5	The <i>Contractor</i> submits a Task Order programme to the <i>Service Manager</i> within	5 days of receiving the Task Order
Z	The <i>additional conditions of contract</i> are	Z1 to Z14 always apply.

Z1 Cession delegation and assignment

- Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*.
- Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

- Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.
- Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Service Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.
- Z2.3 The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

- Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor's* B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.
- Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary

supporting documentation confirming the change in his B-BBEE status to the *Service Manager* within thirty days of the notification or as otherwise instructed by the *Service Manager*.

Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Service.

Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P4 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.

Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Service Manager*.

Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.

Z4.4 The taking of images (whether photographs, video footage or otherwise) of the Affected Property or any portion thereof, in the course of Providing the Service and after the end of the *service period*, requires the prior written consent of the *Service Manager*. All rights in and to all such images vests exclusively in the *Employer*.

Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to core clause 12.3:

Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Service Manager* or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

RISKS	RISK LEVEL	TREATMENT PLAN
Cost: Cost increase during execution due to delays.	Low	Payments will only be done after work has been completed and proof provided. Work will be planned and executed in sections (per Unit) to minimize station risk
Scope: Scope creep	Low	Before the work starts for the Lethabo Power

		Station Earthing Replacement, the scope will be discussed in detailed with the successful tenderer to ensure that they understand the exact scope, the boundaries, and limitations. NEC provisions will also be implemented to control and manager the scope.
People: Poor workmanship due to incompetence of personnel on site	Low	<ul style="list-style-type: none"> The successful bidder shall submit CVs of all personnel to work on site. The successful bidder will be compelled to deploy the Earthing Replacement team as per the tender documents and any deviation shall be addressed in accordance with the contract provisions.
Suppliers: Unsuccessful work execution due to lack of expertise from the supplier	Low	<ul style="list-style-type: none"> The supplier will be extensively evaluated based on their technical capabilities. Only suppliers with a minimum qualifying criterion of 80% on the technical evaluation will be considered. The technical team deployed on site will be closely monitored to ensure that only the right people with the right skills are deployed. The contractor's management team would be on site on monthly basis to minimise prolonged unresolved issues, this team is in addition to the full-time on-site management or supervision team.
Time: Projects delays due to the following: <ul style="list-style-type: none"> Contractor not adhering to agreed milestones. Unforeseen plant conditions which could allow work not to continue before they are resolved. 	low	<ul style="list-style-type: none"> Early warning will be issued as per the conditions of the contract The technical risk assessment will be done by the contractor in conjunction with the relevant stakeholders of the Employer
Safety: Non- compliance to all legal requirements.	High	<p>SHE returnable shall be verified by SRM (Safety Risk Management) at Lethabo Power Station by the successful bidder (Contractor) for approval prior submission of the complete health and safety file.</p> <p>Hazard Identification and Risk Assessments submitted to the Client must be in alignment with the Risk Assessment issued by the Client during the tendering phase.</p> <p>The contractor shall be expected to comply with the SHE Specification (240-73416879) which is going to be issued by the client</p> <p>The contractor will be notified of the risk</p>

		<p>associated with the works. The contractor must comply with Construction Regulations 2014. Job will be stopped, and the offenders will be taken out of the Station and the contractor will be issued NCR.</p> <p>The contractor will further be required to do on site pre-job brief and risk assessment before the start of any task.</p> <p>Ensure use of personal protective equipment</p> <p>Overall compliance to LBS00067PC - Health, Safety and Environmental Specification for Contractors, Contractor Health and Safety Requirements 32-136, Strict compliance to Occupational Health and Safety Act No 85 of 1993 and, Regulations (As Amended) including Eskom Lethabo Power Station Safety Procedures (LBA 00030, LBS 00067, LBA 00155, 32-345 Eskom Vehicle Specification, 32-95 Incident Management) would be implemented. Non-conformance to the stipulated procedures by the service provider will lead to Non-Conformance report issued by the Client. Corporate Health and safety specifications: 32-1188. SHEQ policy: 32-727 Standard 32-136: Standard Contractor Health and Safety Requirements. Procedure 32-296: Integrated SHE organisation roles responsibilities and statutory requirements Standard 240-62196227</p>
<p>Environmental – what is the influence on the environment, and will we need an EIA or has it been done, any servitude, buying of land, water issues?</p>	Medium	<p>Contractor shall report all incidents or risks whilst on the job to the Eskom Project leader who will inform the environmental department.</p> <p>All waste generated during execution of work must be disposed through proper pathways.</p> <p>Contractor shall comply to all environmental procedures on site, including the following</p> <ul style="list-style-type: none"> • LBE23003 Environmental non-conformance; investigation and reporting • LBE22005 Environmental spill management procedure • LBE22004 Environmental waste management procedure • No EIA needed, however, to ensure compliance to environmental requirements ISO14001, the following Lethabo environmental procedures will be provided with tender documents. LBE21001; LBE21002; LBE22001; LBE22002; LBE22004; LBE2205; LBE23001; LBE23003; LBE23004
<p>Quality: Poor workmanship</p>	Low	<ul style="list-style-type: none"> • Service Provider shall compile and submit quality control plans (QCP's) as per scope of work for approval prior to execution of work. All QCP's will be signed off by the system engineer and

		<p>quality Inspector on agreed hold points.</p> <ul style="list-style-type: none"> Service Provider shall perform all works as per specified scope of work for each task order
Lack of Quality Control and Documentation	Low	<ul style="list-style-type: none"> All inspections to be conducted as per approved QCP's intervention points. First line inspection must be done by the Service Provider QC, Eskom QC personnel to conduct sampling inspection as per QCP's intervention points and Eskom system engineer to conduct final inspection for assurance. Eskom QA Practitioner to conduct audit inspection of scope of work during execution. All inspections report and sign off QCP's must be part of data book that will be by service provider after work is completed.
Lack of Quality Management system	Low	<ul style="list-style-type: none"> Service Provider to comply with the following standards and Procedure ISO 9001:2015 requirements QM 58- Supplier Contract Requirements Specifications
Method Statement		<ul style="list-style-type: none"> The service provider to submit a detailed construction method statements for each activity of his work, together with activity duration, to the client for review and acceptance prior to starting any work.
Documentation Control		<ul style="list-style-type: none"> All documents and records management should be performed according to technical documents and records management work instruction (240-76992014). Project manager to ensure that the service provider is provided with the latest revision.

Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *service*. Without limitation the *Contractor*:

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Affected Property;
- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of the *service*; and

- undertakes, in and about the execution of the *service*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6.2 The *Contractor*, in and about the execution of the *service*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

- Z7.1 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 in accordance with the *Employer's* procedures stated in the Service Information, showing the amount due for payment equal to that stated in the payment certificate.
- Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.
- Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

- Z8.1 Delete the last paragraph of core clause 61.3 and replace with:

If the *Contractor* does not notify a compensation event within eight weeks of becoming aware of the event, he is not entitled to a change in the Prices.

Z9 Employer's limitation of liability

- Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)
- Z9.2 The *Contractor's* entitlement under the indemnity in 82.1 is provided for in 60.1(12) and the *Employer's* liability under the indemnity is limited to compensation as provided for in core clause 63 and X19.11 if Option X19 Task Order applies to this contract.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

- Z10.1 or had a business rescue order granted against it.

Z11 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party means, as the context requires, any party, irrespective of whether it is the *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's

employees, or any one or more of all of these parties' relatives or friends,

Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractors or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

Z11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.

Z11.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor's* obligation to Provide the Services for this reason.

Z11.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.

Z11.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

Z12 Insurance

Z 12 .1 Replace core clause 83 with the following:

Insurance cover 83

- 83.1 When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.
- 83.2 The *Contractor* provides the insurances stated in the Insurance Table A from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage caused by the <i>Contractor</i> to the <i>Employer's</i> property	The replacement cost where not covered by the <i>Employer's</i> insurance. The <i>Employer's</i> policy deductible as at Contract Date, where covered by the <i>Employer's</i> insurance.
Loss of or damage to Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insurance. The <i>Employer's</i> policy deductible as at Contract Date, where covered by the <i>Employer's</i> insurance.
Loss of or damage to Equipment	The replacement cost where not covered by the <i>Employer's</i> insurance. The <i>Employer's</i> policy deductible as at Contract Date, where covered by the <i>Employer's</i> insurance.
The <i>Contractor's</i> liability for loss of or damage to property (except the <i>Employer's</i> property, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) arising from or in connection with the <i>Contractor's</i> Providing the Service	<u>Loss of or damage to property</u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by the applicable law.
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 12.2 Replace core clause 86 with the following:

Insurance by the Employer

86

86.1 The *Employer* provides the insurances stated in the Insurance Table B

INSURANCE TABLE B

Insurance against or name of policy	Minimum amount of cover or minimum limit of indemnity
-------------------------------------	-------------------------------------------------------

Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document
Nuclear Material Damage Terrorism	Per the insurance policy document

Z13 Nuclear Liability

- Z13.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
- Z13.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z13.3 Subject to clause Z13.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z13.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.
- Z13.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z14 Asbestos

For the purposes of this Z-clause, the following definitions apply:

- AAIA** means approved asbestos inspection authority.
- ACM** means asbestos containing materials.
- AL** means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
- Ambient Air** means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose

inlet.

Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's</i> Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

- Z14.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.
- Z14.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z14.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.
- Z14.3 The *Employer* manages asbestos and ACM according to the Standard.
- Z14.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.
- Z14.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.
- Z14.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.

- Z14.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

SDL&I Undertakings

Tenderers who complete and submit the undertaking as required, but who do not meet Eskom's targets, will not be disqualified. SD&L undertakings do not form part of scoring but commitments will form part of contractual obligations

Note: The undertakings shall be sourced from previously disadvantaged Communities around Sedibeng and Fezile Dabi District Municipalities.

3.1. B-BBEE Requirements

Tenderers will be required to maintain or improve their B-BBEE Recognition Level for the duration of the contract.

3.2. Local Procurement Content

Tenderers will stipulate local procurement content for the works.

Local Procurement Content" refers to value added in South Africa by South African resources. Where a single contract involves a combination of local and imported goods and/or services, the tender response must be separated into its components as per the Price Schedule included with the tender documents. Local procurement content is total spend minus the imported component.

Local Procurement Content	Eskom Target	Tenderer Proposal
	100%	100%

3.3 Enterprise Development

Are there specific ED requirements that are not achievable through Sub-contracting?

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

If Yes, the main contractor is required propose development in the following areas or against the following Eskom's targets:

Eskom's Target	Tenderer Proposal
The bidder to identify and incubate a Small Measured Entity from the above-mentioned District Municipalities. Assistance could be in the form of business support/equipment/finance .	Business Support

A detailed ED plan that shows impact to the beneficiary should be submitted to the employer for approval prior to contract award. The ED implementation plan should include the following:

- ☐ Clear objective.
- ☐ Priority interventions
- ☐ Key performance indicators; and
- ☐ A concise implementation plan with clearly articulated milestones

In addition, they will expected to draft an ED proposal within eight weeks of contract award stage. ED agreement must be signed with the beneficiary and sent to Eskom for review and acceptance. Progress will be monitored throughout the duration of the contract.

3.4. Job Opportunities

Tenderer to indicate number of Jobs to be created and/or retained from this contract;

Number of Jobs to be created	Number of Jobs to be retained
0	0

Local pool criteria:

Type of jobs	Target set (local-to-site)	Suppliers Proposal
General workers	100%	100%
Semi-skilled	70%	70%
Skilled	30%	30%

C1.2 Contract Data

Part two - Data provided by the Contractor

[Instructions to the contract compiler: (delete this notes before issue to tenderers with an enquiry)

Whenever a cell is shaded in the left hand column it denotes this data is optional and would be required in relation to the option selected. In the event that the option is not required select and delete the whole row.]

Notes to a tendering contractor:

1. Please read both the both the NEC3 Term Service Contract April 2013 and the relevant parts of its Guidance Notes (TSC3-GN)³ in order to understand the implications of this Data which the tenderer is required to complete.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data.
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is The <i>subcontracted fee percentage</i> is	15% 0%
11.2(14)	The following matters will be included in the Risk Register	
11.2(15)	The Service Information for the <i>Contractor's</i> plan is in:	-
21.1	The plan identified in the Contract Data is contained in:	-
24.1	The key people are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name:	

³ Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 5391902 or www.ecs.co.za

Job
Responsibilities:
Qualifications:
Experience:

CV's (and further key person's data including
CVs) are in .

A	Priced contract with price list
11.2(12)	The <i>price list</i> is in C2.2
11.2(19)	The tendered total of the Prices is

C1.3 Forms of Securities

Pro formas for Bonds & Guarantees

For use with the NEC3 Term Service Contract (TSC3)

[Note to contract compiler:

Once it has been decided which securities are required for this contract delete from this file the ones not required, revise the notes below accordingly and delete this note.]

The *conditions of contract* stated in the Contract Data Part 1 include the following Secondary Options:

Option X4: Parent company guarantee

Option X13: Performance Bond

Each of these secondary Options requires a bond or guarantee “in the form set out in the Service Information”. Pro forma documents for these bonds and guarantees are provided here for convenience but are to be treated as part of the Service Information.

The *Contractor* shall guarantee his ASGI-SA Obligations by providing the *Employer* with an ASGI-SA Guarantee in the form provided here.

[Note to contract compiler: If there are no ASGI-SA Obligations in this contract, delete the above statement and the ASGI_SA bond]

The organisation providing the bond / guarantee does so by copying the pro forma document onto his letterhead without any change to the text or format and completing the required details. The completed document is then given to the *Employer* within the time stated in the contract.

PART 2: PRICING DATA

TSC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	2
C2.2	The <i>price list</i>	[•]

C2.1 Pricing assumptions: Option A

1. How work is priced and assessed for payment

Clause 11 in NEC3 Term Service Contract (TSC3) core clauses and Option A states:

Identified and defined terms	11	
	11.2	(12) The Price List is the <i>price list</i> unless later changed in accordance with this contract.
		(17) The Price for Services Provided to Date is the total of <ul style="list-style-type: none"> the Price for each lump sum item in the Price List which the <i>Contractor</i> has completed and where a quantity is stated for an item in the Price List, an amount calculated by multiplying the quantity which the <i>Contractor</i> has completed by the rate.
		(19) The Prices are the amounts stated in the Price column of the Price List. Where a quantity is stated for an item in the Price List, the Price is calculated by multiplying the quantity by the rate.

This confirms that Option A is a priced contract where the Prices are derived from a list of items of service which can be priced as lump sums or as expected quantities of service multiplied by a rate or a mix of both.

2. Function of the Price List

Clause 54.1 in Option A states: "Information in the Price List is not Service Information". This confirms that instructions to do work or how it is to be done are not included in the Price List but in the Service Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Service in accordance with the Service Information". Hence the *Contractor* does **not** Provide the Service in accordance with the Price List. The Price List is only a pricing document.

3. Link to the *Contractor's* plan

Clause 21.4 states "The *Contractor* provides information which shows how each item description on the Price List relates to the operations on each plan which he submits for acceptance". Hence when compiling the *price list*, the tendering contractor needs to develop his first clause 21.2 plan in such a way that operations shown on it can be priced in the *price list* and result in a satisfactory cash flow in terms of clause 11.2(17).

4. Preparing the *price list*

Before preparing the *price list*, both the *Employer* and tendering contractors should read the TSC3 Guidance Notes pages 14 and 15. In an Option A contract, either Party may have entered items into the *price list* either as a process of offer and acceptance (tendering) or by negotiation depending on the nature of the service to be provided. Alternatively the *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Contractor* to include in the *price list* to be prepared and priced by him.

It is assumed that in preparing or finalising the *price list* the *Contractor*:

- Has taken account of the guidance given in the TSC3 Guidance Notes relevant to Option A;
- Understands the function of the Price List and how work is priced and paid for;
- Is aware of the need to link operations shown in his plan to items shown in the Price List;
- Has listed and priced items in the *price list* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Service Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate item within the Prices or rates of other listed items in order to fulfil the obligation to complete the *service* for the tendered total of the Prices.
- Understands there is no adjustment to items priced as lump sums if the amount, or quantity, of work within that item later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the (lump sum) Prices is as a result of a compensation event.

4.1. Format of the *price list*

(From the example given in an Appendix within the TSC3 Guidance Notes)

Entries in the first four columns in the *price list* in section C2.2 are made either by the *Employer* or the tendering contractor.

If the *Contractor* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tendering contractor enters the amount in the Price column only, the Unit, Expected Quantity and Rate columns being left blank.

If the *Contractor* is to be paid an amount for an item of work which is the rate for the work multiplied by the quantity completed, the tendering contractor enters the rate which is then multiplied by the Expected Quantity to produce the Price, which is also entered.

If the *Contractor* is to be paid a Price for an item proportional to the length of time for which a service is provided, a unit of time is stated in the Unit column and the expected length of time (as a quantity of the stated units of time) is stated in the Expected Quantity column.

C2.2 the *price list*

Item	Description/Functional Area	Unit	Quantity	Rate	Amount
1.0	PRELIMINARY AND GENERAL:				R
1.1	Preliminaries	sum	1	R	R
2	CONTRACT LABOUR RESOURCES				R
2.1	Core Team (Normal Working Days)				
2.1.1	Site Contract Supervisor	hours	11000	R	R
2.1.2	Qualified Electrician (2x with Red Seal Trade Test)	hours	22000	R	R
2.1.3	Semi-Skilled (8)	hours	88000	R	R
2.1.4	Safety Officer	hours	11000	R	R
2.1.4	Site Store Personnel	hours	11000	R	R
2.2	Overtime Cost Estimates for Saturdays				
2.2.1	Site Contract Supervisor	hours	1200	R	R
2.2.2	Qualified Electrician (2x with Red Seal Trade Test)	hours	2400	R	R
2.2.3	Semi-Skilled (8)	hours	9600	R	R
2.2.4	Safety Officer	hours	1200	R	R
2.2.5	Site Store Personnel	hours	1200	R	R
2.3	Overtime Cost Estimates for Sunday Including Public Holidays				
2.3.1	Site Contract Supervisor	hours	1200	R	R
2.3.2	Qualified Electrician (2x with Red Seal Trade Test)	hours	2400	R	R
2.3.3	Semi-Skilled (8)	hours	9600	R	R
2.3.4	Safety Officer	hours	1200	R	R
2.3.5	Site Store Personnel	hours	1200	R	R


3	STATION EARTHING REPLACEMENT				
3.1	Aluminium Earthing Material				
3.1.1	150mm ² single - core aluminium conductor	metres	10000	R	R
3.1.2	300mm ² single - core aluminium conductor	metres	5000	R	R
3.1.3	95mm ² single - core aluminium conductor	metres	3000	R	R
3.1.4	80 X 6 mm aluminium bar (6m length)	metres	3000	R	R
3.2	Consumables				
3.2.1	300mm T ferrules	each	1200	R	R
3.2.2	150mm T ferrules	each	1200	R	R
3.2.3	95mm T ferrules	each	1200	R	R
3.2.4	300mm ferrules	each	1200	R	R
3.2.5	150mm ferrules	each	1200	R	R
3.2.6	95mm ferrules	each	1200	R	R
3.2.7	300 X 8mm crimping lugs	each	1200	R	R
3.2.8	300 X 10mm crimping lugs	each	1200	R	R
3.2.9	300 X 12mm crimping lugs	each	1200	R	R
3.2.10	150 X 8 crimping lugs	each	1200	R	R
3.2.11	150 X 10mm crimping lugs	each	1200	R	R
3.2.12	150 X 12mm crimping lugs	each	1200	R	R
3.2.13	95 X 8mm crimping lugs	each	1200	R	R
3.2.14	95 X 10mm crimping lugs	each	1200	R	R
3.2.15	95 X 12mm crimping lugs	each	1200	R	R
3.2.16	300 X 8mm bi-metal lugs	each	1200	R	R
3.2.17	300 X 10mm bi-metal lugs	each	1200	R	R
3.2.18	300 X 12mm bi-metal lugs	each	1200	R	R
3.2.19	150 X 8mm bi-metal lugs	each	1200	R	R
3.2.20	150 X 10mm bi-metal lugs	each	1200	R	R
3.2.21	150 X 12mm bi-metal lugs	each	1200	R	R
3.2.22	95 X 8mm bi-metal lugs	each	1200	R	R
3.2.23	95 X 10mm bi-metal lugs	each	1200	R	R
3.2.24	95 X 12mm bi-metal lugs	each	1200	R	R

3.2.25	Cable ties stainless steel 200 X 7.9mm	each	1500	R	R
3.2.26	Spacer bar saddles 20mm	each	10000	R	R
3.2.27	6 X 55mm nail in anchors	each	10000	R	R
	ESTIMATED FINAL COSTS EXCL.VAT				R

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	<i>Employer's Service Information</i>	
C3.2	<i>Contractor's Service Information</i>	
	Total number of pages	

C3.1: EMPLOYER’S SERVICE INFORMATION

	<div>Scope of Work</div>	<div>Lethabo Power Station</div>
-----------------------------------------------------------------------------------	--------------------------	----------------------------------

Title: **Lethabo Power Station Aluminum Installation Earthing Scope of Work**

Unique Identifier: **N/A**

Alternative Reference Number: **N/A**

Area of Applicability: **Engineering**

Documentation Type: **Scope of Work**

Revision: **0**

Total Pages: **13**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED DISCLOSURE**

Compiled by

Accepted by

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Date:

Date:

1. PROCESS DESCRIPTION

The primary goal of earthing the systems is to ensure the safety of personnel and to prevent damage to installations. The secondary goal (in systems with sensitive equipment) is to serve as a common voltage reference and to contribute to the mitigation of disturbances.

The problems associated with earthing and lightning protection are complex, there will always be problems associated with it throughout the power station operating life, and it is therefore of utmost importance to put measures in place to take care of them to ensure that the plant is protected at all times.

2. PROBLEM STATEMENT

The annual earthing continuity test performed December 2021 has revealed that some of the plant areas are not connected to the Station Earth Mat. This poses personnel safety and plant damage risks. Thus all the defects must be addressed.

3. METHOD

The method to establish the scope of work is based on the following:

- Annual routine earth mat continuity test.
- Plant inspections to verify the test results.
- The submitted earth mat continuity test report.

3.1 FINDINGS

3.1.1 As design vs as build conditions.

The findings below are as per the Earth Mat Continuity Test report.

- Readings above 10 milliohms
- There is no connection between the station earth and the equipment tested.
- Equipment are not installed or partially removed.
- The Earth Strap is present but not tightened.
- There is no visible earth present and connected to the equipment tested.
- The earth strap is present but not connected to the equipment tested.

3.2 OPERATING TECHNICAL SPECIFICATION

The Earth Mat Continuity Test readings must be below 10 milliohms

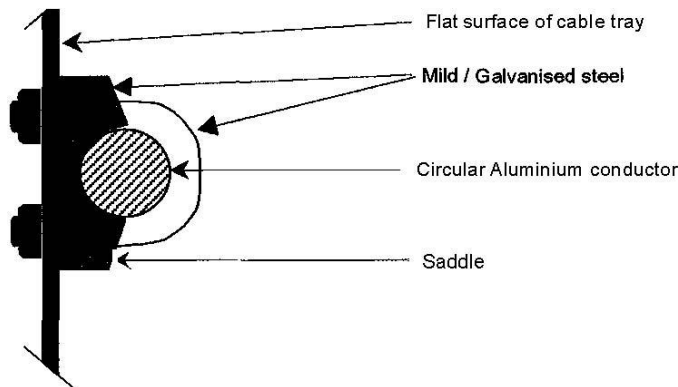
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4. SCOPE OF WORK

Contractor is required to perform the following scope:

- Replace the entire Station earthing system with aluminum conductors.
- Copper earthing network are to be replaced with aluminum conductors. All new conductors are to be supplied by the contractor
- Where there is no continuity to earth mat due to broken/stolen conductors, new aluminum conductors must be installed.
- Standard copper earthing size at Lethabo is 3 x 50mm and 3 x 25mm. Earthing must be replaced with equivalent aluminum conductors as per Table 2, unless where specific sizes are specified by Lethabo. Aluminum bars can also be used where applicable but must be used at switchgear and panels.
- Bi-metal lugs or washers needs to be used where copper to aluminum connections are made
- To ensure a proper low impedance bond in the case of a circular aluminum conductor that must be bonded to the flat surface of a cable tray, an aluminum saddle must be used as indicated in the figure below.



- Aluminum conductors are not to be installed directly in the ground. Alternative methods must be proposed by the contractor where applicable
- Where practical, isothermic welding must be used for connections
- Each area must be tested by the Contractor upon completion before being accepted. Only readings below 10 milliohm will be accepted.
- Upon completion, the Contractor is to provide a detailed data book. The data book must contain the following as a minimum; photos before and after installation per area, actual installed distances, specifications of conductor used, bonding method, test results, test equipment, etc.
- On the 380V Switchgear back of the panels the copper strap is 50mmx5mm (250mm²). Therefore an aluminum bar with an area of 400s mm² is required. The aluminum bar size that can be used is 40x10 mm².
- Connect all the earth wires at the back of the 380V Switchgear panels to the aluminum bar and use Bi-metal lugs and washers.
- All installed conductors to be tagged/engraved appropriately as per applicable earthing continuity diagram drawings which shall be supplied by Eskom.

CONTROLLED DISCLOSURE

Plant Area	Plant Description	Action
Unit 1 Ground Floor	Unit 1-3 TRFR 5&6 Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 Ground Floor	BFPT Ejector PMP B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 Ground Floor	Main Turbine Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 LV Room	Unit LV switchgear room	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 LV Room	20KVA Bypass isolator transformer	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 LV Room	20KVA Unit 3 isolator A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 LV Room	UPS battery Cabin B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 1 LV Room	20KVA Unit 3 UPS B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 LV Room	UPS battery Cabin A	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 1 LV Room	Unit 1 and 2 synchronize power panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 MV Room	Gen TRFR Yard Communication Kiosk	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 MV Room	Panel 01MY01	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 MV Room	Alarm panel No.1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 MV Room	Welding Socket	Remove existing copper conductors and replace with aluminum conductors and provide continuity

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		test to earth mat
Unit 1 MV Room	Measurement Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 1 Milling Plant	Mill E	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Ground Floor	CCP 1-3 TRFR 3&4	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Ground Floor	BFPT Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Ground Floor	BFPT Ejector PMP B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 2 Ground Floor	Main Turbine Ejector PMP A	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 2 Ground Floor	Main Turbine Ejector PMP B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 2 Ground Floor	Main Turbine Ejector PMP C	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 2 Ground Floor	Main Turbine Ejector PMP D	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 2 Milling Plant	Mill A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Milling Plant	Mill B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Milling Plant	Mill C	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 2 Equipment Room	U1&2 CP Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 Ground Floor	Unit 1-3 TRFR 5&6 Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity

CONTROLLED DISCLOSURE

		test to earth mat
Unit 3 LV Room	Boiler feed pump barring gear	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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Unit 3 LV Room	20KVA bypass isolator transformer	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 3 LV Room	20KVA Unit 3 UPS A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 LV Room	UPS battery Cabin B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 LV Room	20KVA Unit 3 UPS B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 LV Room	UPS battery Cabin A	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 3 MV Room	Gen TRFR Yard Communication Kiosk	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 MV Room	Welding socket	Verify the earthing and reinstate
Unit 3 MV Room	3.3kV Service board 3A & 3B bus zone	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 MV Room	3MY01 Cubicle	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 MV Room	Alarm panel 1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 Equipment Room	20kV ACB Comp C&D Control PLC	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 Equipment Room	Panel 04HH101 (AVR)	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 Ground Floor	BFPT Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 Ground Floor	BFPT Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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Unit 4 Ground Floor	Main Turbine Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 Ground Floor	Main Turbine Ejector PMP B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 Ground Floor	Main Turbine Ejector PMP C	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 Ground Floor	Main Turbine Ejector PMP D	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 LV Room	20KVA bypass isolator transformer	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 LV Room	20KVA Unit UPS A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 LV Room	Battery Cabin B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 4 LV Room	20KVA Unit UPS B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 LV Room	UPS isolator distribution board	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 4 LV Room	Battery Cabin A	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 3 MV Room	Gen TRFR Yard Communication Kiosk	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 MV Room	Welding socket	Verify the earthing and reinstate
Unit 5 Ground Floor	BFPT Ejector PMP A	Perform earth mat continuity test
Unit 5 LV Room	20KVA bypass isolator transformer	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 5 LV Room	20KVA Unit UPS A	Remove existing copper conductors and replace with aluminum conductors and provide continuity

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		test to earth mat
Unit 5 LV Room	Battery Cabin B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 5 LV Room	Battery Cabin A	Install earthing aluminum conductor and provide continuity test to earth mat

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Unit 5 MV Room	3.3kV service board 5C and 5D bus zone	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 MV Room	Gen transformer yard coms kiosk	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 MV Room	Measurement panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 MV Room	3.3kV service board 5A & 5B bus zone	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 MV Room	05HR20	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 Equipment Room	Unit 6 Main Protection Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Ground Floor	BFPT Ejector PMP A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 LV Room	Boiler Feed pump barring gear	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 LV Room	20KVA bypass isolator transformer	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 LV Room	20KVA Unit UPS A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 LV Room	Battery Cabin B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 6 LV Room	Battery Cabin A	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 6 MV Room	3.3kV service board 6C and 6D bus zone	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 MV Room	Measurement panel	Remove existing copper conductors and replace with aluminum

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		conductors and provide continuity test to earth mat
Unit 6 MV Room	06MY01	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 MV Room	Alarm Panel 1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 MV Room	Alarm Panel 2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Milling Plant	Mill B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	Zoom Monitoring Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	Panel 06JL01 – 06JL09	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	06HG01	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	06HG02	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	06HG03	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	06HG04	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	Sergi Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	06HI001	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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Unit 6 Equipment Room	Soot Blower	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 6 Equipment Room	Hydrastep	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Fire Pump House	Portable Water Pump 1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Fire Pump House	Portable Water Pump 2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Fire Pump House	ENS pump house, earth	Install earthing aluminum conductor and provide continuity test to earth mat
CW Pump House East	CW pump 6B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
CW Pump House East	Plug Socket	Connect the earthing conductor
CW Pump House East	CW pump 5B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
CW Pump House East	CW pump 4B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
CW Pump House East	CW pump 4A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
CW Pump House East	CW pump 6A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
CW East Switchgear	DP Unit feeding 04 CJ/K	Install earthing aluminum conductor and provide continuity test to earth mat
CW East Switchgear	DP Unit feeding 06 CJ/K	Install earthing aluminum conductor and provide continuity test to earth mat
CW East Switchgear	DP Unit feeding 20GA/B	Re-connect the earthing conductor

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Substation East	20MWQ1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Bulk oil plant west 10HFQ2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	4 way power supply	Install earthing aluminum conductor and provide continuity test to earth mat
FOP West Substation	220V DC battery trip	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 1 fuel oil transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 2 fuel oil transformer A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 3 fuel oil transformer A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 1 fuel oil transformer A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 2 fuel oil transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 3 fuel oil transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	11/0.4kV fuel oil com plant transformer A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	11/0.4kV fuel oil com plant transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP West Substation	Unit 1 380V fuel oil plant BD A	Provide earth continuity test to earth mat
FOP West Substation	Unit 2 380V fuel oil plant BD A	Provide earth continuity test to earth mat
FOP West Substation	Unit 3 380V fuel oil plant BD A	Provide earth continuity test to earth mat

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FOP West Substation	Unit 1 380V fuel oil plant BD B	Provide earth continuity test to earth mat
FOP West Substation	Unit 2 380V fuel oil plant BD B	Provide earth continuity test to earth mat
FOP West Substation	Unit 3 380V fuel oil plant BD B	Provide earth continuity test to earth mat
FOP West Substation	380V fuel oil plant common BD A	Provide earth continuity test to earth mat
FOP West Substation	380V fuel oil plant common BD B	Provide earth continuity test to earth mat
FOP East Substation	11/0.4kV coal plant east transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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FOP East Substation	Unit 4 fuel oil transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP East Substation	Unit 5 fuel oil transformer A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP East Substation	Unit 6 fuel oil transformer B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
FOP East Substation	Unit 4 380V fuel oil plant BD A	Provide earth continuity test to earth mat
FOP East Substation	Unit 5 380V fuel oil plant BD A	Provide earth continuity test to earth mat
FOP East Substation	Unit 6 380V fuel oil plant BD A	Provide earth continuity test to earth mat
FOP East Substation	Unit 4 380V fuel oil plant BD B	Provide earth continuity test to earth mat
FOP East Substation	Unit 5 380V fuel oil plant BD B	Provide earth continuity test to earth mat
FOP East Substation	Unit 6 380V fuel oil plant BD B	Provide earth continuity test to earth mat
Coal Ash Substation	Telemetry	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Compressor House	Lighting Board	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Compressor House	Compressor dust cooling panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Compressor House	Local control panel 2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
RAW Wtr Switchgear	380V Raw Water Pumphouse Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
RAW Wtr Switchgear	Booster pump 4	Install earthing aluminum conductor and provide continuity test to earth mat
RAW Wtr Switchgear	A6T control	Remove existing copper conductors and replace with aluminum conductors and provide continuity

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		test to earth mat
RAW Wtr Switchgear	CCW control	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
WTP West Switchgear	380V 10kVA water UPS B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
WTP West Switchgear	380V 10kVA water UPS A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Water Treatment Plant	380V Water Treatment Plant Board 1A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Water Treatment Plant	380V Water Treatment Plant Board 2A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Water Treatment Plant	Demin Blower Motor 1	Re-connect the earthing conductor
Water Treatment Plant	Demin Blower Motor 3	Re-connect the earthing conductor
Water Treatment Plant	CP Regen/Dilution Pump 6	Re-connect the earthing conductor
Effluent Concentration Plant	380V Effluent Concentration Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
LP Service Building	Compressor 1	Perform earth mat continuity test
LP Service Building	LCP control 1	Perform earth mat continuity test
LP Service Building	LCP control 2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
LP Service Building	LCP control 3	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
LP Service Building	Diesel 1 and 2 control	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
LP Service Building	Air heater washing panel	Install earthing aluminum conductor and provide continuity test to earth mat
LP Service Building	HP pot water pump 1	Re-connect the earthing conductor
LP Service Building	Boiler feed water make up LP demin	Remove existing copper conductors and replace with aluminum conductors and provide continuity

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		test to earth mat
LP Service Building	00USQ01WQQ1	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
LP Service Building	Close CCT cooling pump 1	Install earthing aluminum conductor and provide continuity test to earth mat
H2 Plant	H2 plant zone 2	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
H2 Plant	Tanks X3	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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Fuel Oil Plant East	Pressure Pump 5B	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Fuel Oil Plant West	Pressure Pump 3A	Re-connect the earthing conductor
Fuel Oil Plant West	Pressure Pump 3B	Re-connect the earthing conductor
Fuel Oil Plant West	Pressure Pump 2A	Install earthing aluminum conductor and provide continuity test to earth mat
Fuel Oil Plant West	Pressure Pump 1A	Re-connect the earthing conductor
Fuel Oil Plant West	Pressure Pump 1B	Re-connect the earthing conductor
U1 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Provide earth continuity test to earth mat
	380V Ash Bunker Board A	Provide earth continuity test to earth mat
	380 V Dust Handling Board A	Provide earth continuity test to earth mat
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U1 Precipitators Sub B	Alarm Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Replace Earthing bar with aluminum across the board

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	380V Ash Bunker Board B	Replace Earthing bar with aluminum across the board
	380 V Dust Handling Board B	Replace Earthing bar with aluminum across the board
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U2 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Replace Earthing bar with aluminum across the board
	380V Ash Bunker Board A	Replace Earthing bar with aluminum across the board
	380 V Dust Handling Board A	Replace Earthing bar with aluminum across the board
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U2 Precipitators Sub B	Alarm Panel	Remove existing copper conductors

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		and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Replace Earthing bar with aluminum across the board
	380V Ash Bunker Board B	Replace Earthing bar with aluminum across the board
	380 V Dust Handling Board B	Replace Earthing bar with aluminum across the board
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U3 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Replace Earthing bar with aluminum across the board
	380V Ash Bunker Board A	Provide earth continuity test to earth mat
	380 V Dust Handling Board A	Provide earth continuity test to earth mat
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof

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		and weld to earth bar on the vertical portion of the rack
U3 Precipitators Sub B	Alarm Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Provide earth continuity test to earth mat
	380V Ash Bunker Board B	Provide earth continuity test to earth mat
	380 V Dust Handling Board B	Provide earth continuity test to earth mat
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U4 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Provide earth continuity test to earth mat
	380V Ash Bunker Board A	Provide earth continuity test to earth mat
	380 V Dust Handling Board A	Replace board Earthing bar with bar aluminum across the board
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U4 Precipitators Sub B	Alarm Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Provide earth continuity test to earth mat
	380V Ash Bunker Board B	Provide earth continuity test to earth mat
	380 V Dust Handling Board B	Provide earth continuity test to earth mat
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U5 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Provide earth continuity test to earth mat
	380V Ash Bunker Board A	Provide earth continuity test to earth mat
	380 V Dust Handling Board A	Provide earth continuity test to earth

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		mat
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U5 Precipitators Sub B	Alarm Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Provide earth continuity test to earth mat
	380V Ash Bunker Board B	Provide earth continuity test to earth mat
	380 V Dust Handling Board B	Provide earth continuity test to earth mat
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack

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U6 Precipitators Sub A	220V battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board A	Provide earth continuity test to earth mat
	380V Ash Bunker Board A	Provide earth continuity test to earth mat
	380 V Dust Handling Board A	Provide earth continuity test to earth mat
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Replace Earthing bar with aluminum across the board
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)
	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
U6 Precipitators Sub B	Alarm Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	380V Precip Board B	Provide earth continuity test to earth mat
	380V Ash Bunker Board B	Provide earth continuity test to earth mat
	380 V Dust Handling Board B	Provide earth continuity test to earth mat
	380V Dust Handling Distribution Board	Provide earth continuity test to earth mat
	Battery Tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	Alarm panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
	ESP rapper motors	Replace All rapper motor earthing conductor with aluminum (x 40 motors i.e. Wirer and Plate rappers)

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	Support Insulator Heater junction box	Replace earthing conductor with aluminum (x 28 per Casing) i.e. 2 Casings
	Earthing on ESP Cable Rack on the ESP Roof	Install earthing aluminum conductor and provide continuity test to earth mat on cable rack on the ESP roof and weld to earth bar on the vertical portion of the rack
Unit 1 & 2 Zone 22	Hydraulic drive T7B	Install earthing aluminum conductor and provide continuity test to earth mat
Unit 1 & 2 Zone 22	Hydraulic drive T7A	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 & 4 Zone 22	Hydraulic drive T7D	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 3 & 4 Zone 22	Hydraulic drive T7C	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Unit 5 & 6 Zone 22	Hydraulic drive T7E	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat

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Station Dam Pumphouse	380V Station Dam Pumphouse	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Ash Dump House	380V board A and B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Ash Dump House	Battery tripping Unit	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Ash Dump House	24V DC panel	Install earthing aluminum conductor and provide continuity test to earth mat
Ash Sub 1	380V Ash Substation 1 Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Ash Sub 2	380V Ash Substation 2 Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Ash Sub 5	380V Ash Substation 5 Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
Ash Sub 6	Conveyor tensioner motor WA26D005	Install earthing aluminum conductor and provide continuity test to earth mat
Ash Sub 6	Substation earth strap	Install earthing aluminum conductor and provide continuity test to earth mat
11/88KV Station Trfr	SERGI Panel	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
11/88KV Station Trfr	TRFR Meter and JB	Remove existing copper conductors and replace with aluminum conductors and provide continuity test to earth mat
Coal Plant	T1 A and B motor	Install earthing aluminum conductor and provide continuity test to earth mat
Units	U1-6 Seal Air Fan Motor	Install earthing aluminum conductor and provide continuity test to earth mat
Units	U1-6 Aircon Plant Rooms	Install earthing aluminum conductor and provide continuity test to earth mat
Units	LV room cable tunnel	Install earthing aluminum conductor and provide continuity test to earth

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		mat
Units	U1-6 MT/BFPT Water Ejector Pumps	Install earthing aluminum conductor and provide continuity test to earth mat
Units	Equipment rooms cable tunnels	Install earthing aluminum conductor and provide continuity test to earth mat
Units	Plate rappers U1-6	Install earthing aluminum conductor and provide continuity test to earth mat
Units	U1,3,4 and 6 Precipitator Substation	Install earthing aluminum conductor and provide continuity test to earth mat
Units	U1-6 Boiler 73ML	Install earthing aluminum conductor and provide continuity test to earth mat
Essential Plant	East and West Fuel Plant Boards	Install earthing aluminum conductor and provide continuity test to earth mat
Essential Plant	Fuel Oil Common Plant Board	Install earthing aluminum conductor and provide continuity test to earth mat
Essential Plant	Effluent Pump House	Install earthing aluminum conductor and provide continuity test to earth mat
Essential Plant	WC 18 & 28 conveyor structures	Install earthing aluminum conductor and provide continuity test to earth mat
CW Pumphouse East	380V CW Pumphouse East Board A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat
CW Pumphouse West	380V CW Pumphouse West A&B	Remove existing copper bar and replace with aluminum bar and provide continuity test to earth mat

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Table 2 Typical Equivalent Aluminum Substitute Networks for a 3mm x 50mm Copper Network

No of Conductors	Conductor Name	Equivalent Copper Area (mm ²)	Aluminum Area (mm ²)	Conductor Diameter (mm)	% Over-design
1 x	BEAR	161,3	264,4	23,45	8
2x	LEOPARD	80,65	131,37	15,81	8
2x	CYOTE	80,65	131,37	15,89	8
2x	TIGER	80,65	131,23	16,52	8
2x	WOLF	96,77	158,06	18,13	29
3x	HARE	64,52	104,98	14,16	29
3x	DOG	64,52	104,69	14,15	29
3x	HYENA	64,52	105,95	14,57	29
3x	OTTER	51,65	83,92	12,66	3

The following should be noted:

- Installing 2 or 3 conductors will take longer than installing a single conductor and may therefore be more costly.
- Depending on the availability of off-cuts of the conductors mentioned these may be used to save in cost, when applied for short / small earthing networks.
- Aluminum Conductors Steel Reinforced (ACSR) conductors contain steel in the centre which makes difficult to introduce sharp, 90° bends.

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5. APPENDIX A: DRAWINGS

Earthing System PDF drawings will be forwarded via the email.

- | | | |
|------|-------------------------------------------------------------|---------------------------------------------------------------------|
| 1. | Work to be performed by the <i>Contractor</i> | |
| 11.1 | The <i>works</i> are | |
| 11.2 | The following matters will be included in the Risk Register | Replacement of Earthing Copper Bars with Aluminium Conductor |
| 11.3 | The <i>boundaries of the site</i> are | Lethabo Power station |

C4: Site Information

1.1 HEALTH AND SAFETY REQUIREMENTS

The *Contractor* and his sub-*Contractors* ensure at all times compliance with safety regulations imposed by any Act of Parliament, ordinance or any regulation or by-law of any local or statutory authority.

- 1.1.1 The *Contractor* acts in accordance with the health and safety requirements stated in the Works Information.
- 1.1.2 In carrying out its obligations to the *Employer* in terms of this contract; in providing the Works; in using Plant, Materials and Equipment; and while at the Site for any reason, the *Contractor* complies and procures and ensures the compliance by its employees, agents, Sub-*contractors* and mandatories with:
 - the provisions of the Occupational Health and Safety Act 85 of 1993 (as amended) and all regulations in force from time to time in terms of that Act (“the OHSA”); and
 - the Eskom “Health, Safety and Environmental specifications for Contractors” document attached to the Works Information (as amended from time to time) and such other Eskom Safety Regulations as are applicable to the Works and are provided in writing to the *Contractor* (collectively “the Eskom Regulations”). The Eskom Regulations may be amended from time to time by the *Employer* and all amendments will be provided in writing to the *Contractor*. The *Contractor* complies with the provisions of the latest written version of the Eskom Regulations with which it has been provided; and
 - the health and safety plan prepared by the *Contractor* in accordance with the SHEQ Requirements

(The OHSA and the Eskom Regulations are collectively referred to as the "SHEQ Requirements".)

- 1.1.3 The *Contractor*, at all times, considers itself to be the "*Employer*" for the purposes of the OHSA and shall not consider itself under the supervision or management of the *Employer* with regard to compliance with the SHEQ Requirements, the *Contractor* shall furthermore not consider itself to be a subordinate or under the supervision of the *Employer* in respect of these matters. The *Contractor* is at all times responsible for the supervision of its employees, agents, *Subcontractors* and mandatories and takes full responsibility and accountability for ensuring they are competent, aware of the SHEQ Requirements and execute the Works in accordance with the SHEQ Requirements.
- 1.1.4 The *Contractor* acknowledges that it is fully aware of the requirements of all the above and undertakes to employ only people who have been duly authorized in terms thereof and who have received sufficient training to ensure that they can comply therewith.
- 1.1.5 The *Contractor* ensures that all statutory appointments and appointments required by any Eskom Regulations are made and that all appointees fully understand their responsibilities and are trained and competent to execute their duties. The *Contractor* supervises the execution of their duties by all such appointees.
- 1.1.6 The *Contractor* shall appoint a person who will liaise with the Eskom Safety Officer responsible for the premises relevant to this contract. The person so appointed shall, on request:
 - supply the Eskom Safety Officer with copies of minutes of all Health And Safety Committee meetings, whenever he is required to do so;
 - supply the Eskom Safety Officer with copies of all appointments in respect of employees employed on this contract, in terms of the Act and Regulations and shall advise the Eskom Safety Officer of any changes thereto.
- 1.1.7 The *Employer*, or any person appointed by the *Employer*, may, at any stage during the duration of this contract:
 - conduct health and safety audits regarding all aspects of compliance with the SHEQ Requirements, at any off-site place of work, or the site establishment of the *Contractor*;
 - refuse any employee, *Subcontractor* or agent of the *Contractor* access to the premises if such person has been found to commit an unsafe act or any unsafe working practice or is found not to be qualified or authorised in terms of the SHEQ Requirements;
 - issue the *Contractor* with a stop order should the *Employer* become aware of any unsafe working procedure or condition or any non-compliance with any provision of the SHEQ Requirements.
- 1.1.8 The *Contractor* immediately reports any disabling injury as well as any threat to health or safety of which it becomes aware at the Works or on the Site to the Employer's Representative.
- 1.1.9 The *Contractor* undertakes not to do, or not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.
- 1.1.10 The *Contractor* appoints a person, qualified in accordance with the SHEQ Requirements, as the liaison with the Eskom Safety Officer for all matters related to health and safety, this person shall be reachable 24 hours a day.
- 1.1.11 The *Contractor* confirms that it has been provided with sufficient written information regarding the health and safety arrangements and procedures applicable to the Works to ensure compliance by it and all employees, agents, *Subcontractors* or mandatories with the SHEQ Requirements while providing the Works in terms of this contract. As such, the *Contractor* confirms that this contract and the relevant Eskom Regulations referred to in this contract constitute written arrangements and procedures between the *Contractor* and the *Employer* regarding health and safety for the purposes of section 37(2) of the OHSA.

- 1.1.12 The *Contractor* agrees that the *Employer* is relieved of any and all of its responsibilities and liabilities in terms of Section 37(1) of OHSA in respect of any acts or omissions of the *Contractor*, and the *Contractor's* employees, agents or Sub-*Contractors*, to the extent permitted by the OHSA.
- 1.1.13 The *Contractor* hereby indemnifies the *Employer* and holds the *Employer* harmless in respect of any and all loss, costs, claims, demands, liabilities, damage, penalties or expense that may be made against the *Employer* and/or suffered or incurred by the *Employer* (as the case may be) as a result of, any failure of the *Contractor*, its employees, agents, Sub*contractors* and/or mandatories to comply with their obligations in terms of clause 16, and/or the failure of the *Employer* to procure the compliance by the *Contractor* , its employees, agents, Sub*contractors* and/or mandatories with their responsibilities and/or obligations in terms of or arising from the OHSA.
- 1.1.14 In carrying out his obligation as the mandatory to the Employer for this contract in terms of the National Environmental Management Act No.107 of 1998, the Contractor ensures that he complies with the Act when Providing the Services or using plant, materials or equipment.

1.2 Permit to Work System

- NO work shall be carried out without a "PERMIT TO WORK"
- The Contractor's Responsible Person must satisfy himself that all sources of possible danger are isolated. Details of the Permit to Work system can be found in the Plant Safety Regulations for Lethabo Power Station, Eskom OPR 3305.
- A Master Permit to Work is used on declared major outages, details can be found in local procedure LBA 00085. Permit changes are made during the dead time, if it is required by the Contractor that a certain supply be made available or plant tested than this can be applied for at the Outage Management Meeting at least 1 day in advance.
- Plant with a prohibitive sign attached may only be operated by appointed Eskom personnel. Any Contractor employee found tampering with such plant will be permanently removed from Site.

1.3 Safety Induction Course

- All the employees of the Contractor must attend a safety induction course before they will be allowed to work on the Site. It is the responsibility of the Contractor to ensure that all employees have attended the safety induction.
- A list of employees requiring safety induction must be submitted at least 2 days in advance of arrival on site with the date and time of arrival so that the safety induction can be arranged.

1.3.1 IBI Awareness Techniques

- "To prevent incidents and ensure continuous improvement of Lethabo Power Stations business performance in all areas affecting safety, reliability and production, it is expected of all CONTRACTORS service personnel. This is to ensure familiarisation and use of error-prevention tools/techniques inclusive of, Pre and Post-job briefs, Risk Assessments, Self-checks(STAR principle), Job observations, Effective communications e.g.3- way, Questioning attitude, Procedural adherence, Hand overs and other related topics.

1.3.2 Transportation of passengers: open LDV's:

No Eskom employee or Contractor would be allowed to transport passengers on the back of open light delivery vehicles (LDV's).
It is a legal requirement to provide safe transportation of Contractor employees – therefore the following will be enforced:

- All passengers must be transported in a closed vehicle with proper and adequate seating, fitted with safety belt for the number of passengers to be transported. NO passengers may be transported on the back of a light delivery vehicle (LDV) whether open or closed.
- Tools and equipment must be properly secured.
- Only authorised drivers may transport passengers.
- Proof must be submitted on request in terms of valid roadworthiness of the vehicle/s.
- The above must apply to on site and off site transportation of passengers.

1.3.3 Eskom Life saving Rules:

Five Cardinal Rules have been developed that will apply to all Eskom employees, agents, consultants and contractors.

- Rule 1: Open, Isolate, Test, Earth, Bond, And/or Insulate before touch - that is any Plant operating above 1 000 V.
 - Rule 2: Hook up at heights - no person may work at height where there is a risk of falling.
 - Rule 3: Buckle up – no person may drive any vehicle on Eskom business and/or on Eskom premises: unless the driver and all passengers are wearing seat belts.
 - Rule 4: Be sober (no person is allowed to work under the influence of drugs and Alcohol.
 - Rule 5: Use a permit to work – where an authorization limitations exists, no person shall work without the required permit to work.
- The *Contractor* adheres to all local procedures. A list of local procedures are available on request from the *Employer*

1.4 INCIDENTS / ACCIDENTS

- Incidents and accidents must be reported and investigated as detailed in LBA 00030. All incidents must also be reported to the *Employer* within 24 hours.
- First aid must be made available either by the *Contractor* or use can be made of the Lethabo medical centre at a fee. The availability of the *Contractor's* own first aid does not relieve the *Contractor* of his obligation to report and investigate the incident in accordance with Lethabo Procedure.

1.5 FIRE PREVENTION

- Fire prevention and protection requirements to which *Contractors* must comply are detailed in LBA 00030.

1.6 PROTECTIVE EQUIPMENT AND CLOTHING

- The *Contractor* supplies his own personal protective equipment necessary to carry out the *works* and the *Contractor* shall ensure that all overalls for his staff have clearly identifying **company LOGO's**.
- The *Contractor* is also responsible to inspect and maintain such equipment as required in terms of the OHS Act and local procedures.

1.7 INSPECTION OF EQUIPMENT

- The *Contractor's* equipment is inspected by an authorised Eskom employee on arrival at the site.

- The following documentation is required to accompany the equipment where applicable: copies of all test certificates and maintenance records.
- Lifting equipment and electrical equipment must be marked with a unique number, code or colour code for identification. If the equipment is found to be in an unsatisfactory condition or if insufficient maintenance has been carried out on the equipment then it will not be approved for use on Site. A list of all lifting equipment and electrical equipment must be submitted to the *Employer* at least 2 days prior to the occupation date. This list must indicate the unique number and description of the equipment.
- Training of operators must comply with the Works Information and statutory requirements.

1.8 DOCUMENTATION

The *Contractor* is responsible to have the following documentation available on site in accordance with LBA 00030:

- A copy of the OHS Act.
- Copies of all site accident report forms as required by the OHS Act.
- Copies of minutes of health and safety meetings held on site.
- Copies of inspection reports produced by the accident prevention officer.

1.9 ENVIRONMENTAL POLICY AND WASTE HANDLING

Lethabo Environmental Policy LBPS010 must be adhered to.

1.9.1 DISPOSAL OF WASTE

Waste shall be removed promptly to the designated disposal area. No stockpiling will be permitted.

- Domestic waste to the white waste bins
- Production waste in the marked bins i.e. coal and ash only
- Paper and cans to their respective recycling bins
- Contact Civil Engineering for the disposal of building rubble
- Scrap metal, Wood & Rubber, Redundant Valves, Pipes, and Equipment etc. to be placed in the marked bins in the new Salvage Yard. Solvents and cloths used to the Cleaning Bay.

Services and other things provided by the *Employer*

Electrical Equipment / Appliances, Lighting and Power

- Any electrical equipment or appliances used by the *Contractor* must comply with all relevant safety regulations and requirements as detailed in LBA 00030, and be maintained in safe and proper working condition.
- The *Employer* has the right to stop the *Contractor's* use of any electrical equipment or appliance, which in the *Employer's* opinion does not conform to the foregoing.
- The *Contractor* provides at his own expense any temporary local lighting, and ensures that it is in accordance with the requirements of the Factories Inspector.
- The *Contractor* provides at his own expense, all temporary wiring and cabling to route power from the point of supply to the various points where it is required, maintain same and

remove on completion.

19. Water

- The *Contractor* provides at his own cost, all connection fittings, pipe-work, temporary plumbing, and pumps necessary to lead the water from the point of supply to the various points where it is required, maintain same and remove on completion.
- Such fittings must be compatible with the *Employer's* fittings so that galvanic corrosion of pipe-work is prevented.
- Water wastage due to un-maintained pipe work or fittings provided by the *Contractor* will be calculated and will be for the cost of the *Contractor*.

20. Compressed Air

- The *Contractor* provides at his own cost, all connection fittings and pipe-work necessary to lead the compressed air from the point of supply to the various points where it is required, maintain same and remove on completion.
Such fittings must be compatible with the *Employer's* fittings so that galvanic corrosion of pipe-work is prevented.
- Compressed air wastage due to un-maintained pipe work or fittings provided by the *Contractor* will be calculated and will be for the cost of the *Contractor*.

21. Ventilation

- The *Contractor* is responsible for adequate ventilation of the works.

22. Roads and Vehicles

- All vehicles used on site, by the *Contractor* will be road worthy and fitted with fire extinguishers as required.
- All road signs and traffic laws / regulations on site will be adhered to. Employees of the *Contractor* failing to comply will be removed from site and denied any further access.

23. Security

- The *Contractor* is responsible for all security on *site*, viz. fencing off, night watch and access control in order to secure all plant, materials and the *works* itself. All these measures must be in accordance with any relevant regulations and standards and subject to the *Employer's* approval.
- It is also the *Contractors* responsibility to ensure the security of all completed portions of the *works* prior to Completion.

24. Accommodation of Employees

- The *Contractor* is responsible for the provision of accommodation or meals of his own personnel, and the cost thereof to be included in his *Price*.

- The *Contractor* is responsible for the provision of transportation for all Personnel to site, from site and on Site. The cost thereof to be indicated in the Price List.

25. Offices, Workshops and Stores

- The *Contractor* shall provide, erect and maintain for his own use, any additional office accommodation and stores he requires, together with drainage, lighting, heating, and hot and cold-water services as required.
- The *Contractor's* site establishment price includes all treatment of the site that he considers necessary for his entire operation throughout his period of occupation and under all weather conditions.
- The *Contractor* also includes for all security and access arrangements that he considers necessary.

26. Sanitary Facilities

- The *Contractor* shall provide service, maintain and remove on completion any additional facilities required and allow for it in his *Price*.
- The *Contractor's* employees who work with asbestos are not allowed to use the *Employer's* ablution or messing facilities at the workplace during and after stripping of lagging materials, for fibres that may be attached to workers clothing, or to any other article.

27. Contract change management

- In an event of compensation event, the *Contractor* shall completed event register and submitted it to the *Employer*.
- The *Contractor* shall request this form from the *Employer*.

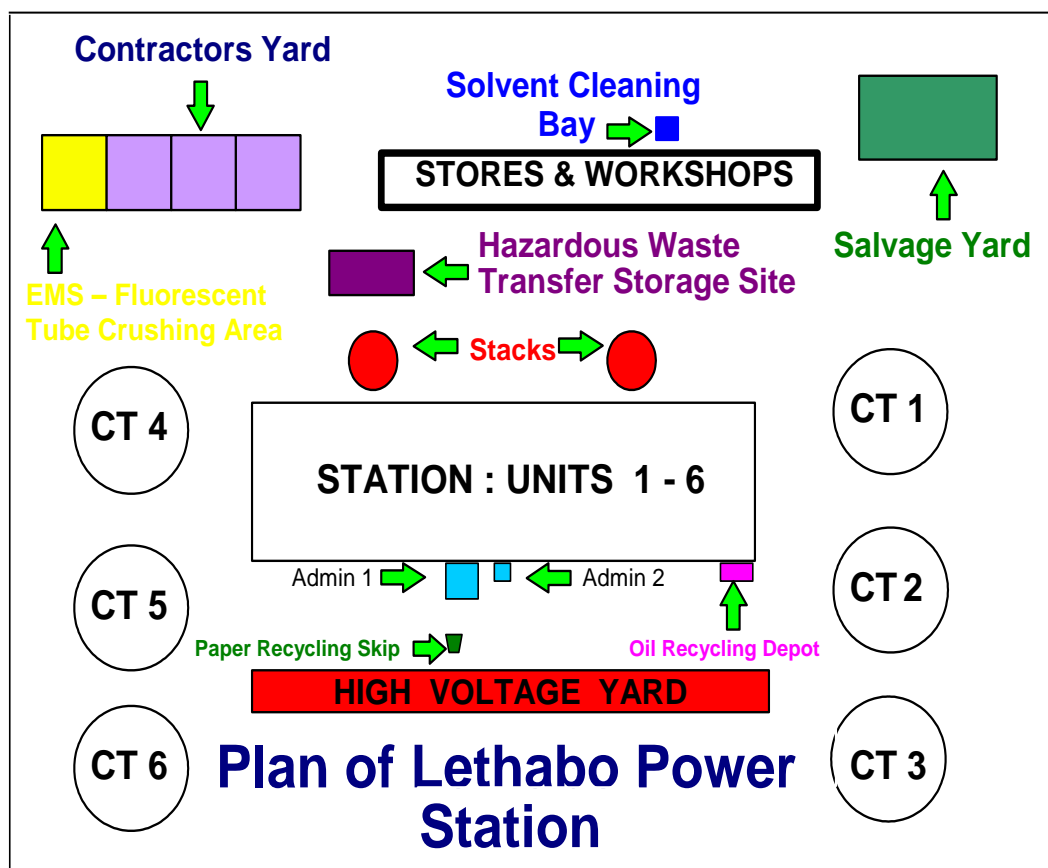
28. Training workshops and technology transfer

- The *Contractor* shall provide training for both Maintenance and Protective Services personnel at dates as agreed upon by the *Contractor* and the *Employer*.

STANDARDS APPLICABLE TO CONTRACT

DOCUMENT No.	REV.	TITLE	Applicable YES/NO
LBA 00030	2	Safety with which contractors are to conform at Lethabo Power Station	Y
LBA 00040	0	Lethabo Environmental Procedure	Y
LBA 00049	0	Procedure for Commissioning of New/Modified Plant	N
LBA 00054	1	Hazardous waste storage and removal procedure	Y
LBA 00067	0	Health, Safety and Environmental Specification for Contractors	Y
LBA 00085	1	Master Permit to Work for declared major outages	Y
LBA 00108	0	Contractor's site administration	N

LBT 00015	0	New or Modifications to Electrical Plant Requirements	N
LBT 00017	0	Limited Access Register Procedure	Y
GGR0992		Plant Safety Regulations for Lethabo Power Station	Y
LBA0060		Change Management Procedure	N
ESKASAAU7	0	Quality Requirements for the Procurement of Assets, Goods and Services	Y
LBA00135	0	Control & Prevention of asbestos exposure at Lethabo	N
PS053	1	Intellectual Property	N
LBA00172		The use and control of solvents and degreasers	Y



HAZARDOUS WASTE DISPOSAL AND HANDLING

- Hazardous / toxic waste includes all waste which contains elements or compounds listed as hazardous substances in terms of the Hazardous Substances Act No. 15 of 1973.
- Any *Contractor* who produces hazardous waste on site will be responsible for the safe removal of such waste to a registered Class I site by a waste removal and disposal body.
- The *Contractor* is required to produce a certificate of safe disposal in accordance with LBA 00054.
- The *Contractor* must ensure that persons handling hazardous waste have undergone suitable training and are acquainted with cleaning methods in case of a spillage.

- The *Contractor* is also responsible for the safe removal of their hazardous waste to Lethabo's Hazardous Waste Store. Other requirements for hazardous waste are detailed in LBA 00030.
- In order to ensure effective hazardous waste management, a copy of the *Contractors'* hazardous waste inventory must be supplied to the *Employer* at least 2 days prior to the occupation date.

1.9.2 ABBREVIATED LIST OF HAZARDOUS MATERIALS

Acids and alkalis	Hydrocarbons	Pesticides & insecticides
Antimony and its compounds	Inorganic cyanides	Pharmaceuticals
Arsenic compounds	Inorganic compounds containing halogens	Phosphorus and its compounds
Asbestos	Inorganic compounds containing sulphur	Selenium and its compounds
Barium compounds	Laboratory chemicals	Silver compounds
Beryllium compounds	Lead compounds	Tarry & petroleum products
Biocides & phytopharmaceutics	Medical wastes	Tellurium and its compounds
Boron compounds	Mercury compounds	Thallium and its compounds
Cadmium and its compounds	Nickel and its compounds	Vanadium compounds
Chromium compounds	Organic halogen compounds	Zinc compounds
Copper compounds	Paints and paint sludges	Waste with flash point < 60°C
Heterocyclic organic compounds	Peroxides, chlorates	

1.10 PLANT & MATERIALS

- The *Employer* may at his own discretion, supply any Plant and Materials as may be required by the *Contractor* to Provide the Works.
- The *Contractor* is to notify the *Employer* in writing, 48 hrs in advance, of such Plant and Materials required.

1.11 Access to and Departure from the Site

- The Site is at Lethabo Power Station situated \pm 18 km South of Vereeniging on the Viljoensdrift - Deneyville Road, Free State. Access to the site will be via the main security gate only. The *Employer* informs the *Contractor* of the access procedures, and it should be expected that such procedures may change depending on the prevailing security situation.
- The *Contractor* allows in his price and program for delays at the security gate.
- The *Employer* reserves the right for its Security personnel to search persons or vehicles entering or leaving the premises. This includes, but is not limited to briefcases and toolboxes.

1.12 Temporary Gate Permits

- The *Contractor* provides the *Employer* with the personal details of their staff at least two days prior to the occupation date. All names and details to be submitted to the *Employer* who arranges for all gate permits.

1.13 Equipment or Material Access and Removal

1.13.1 Access

- The *Contractor* ensures that all equipment and materials brought through the security gate is signed in at the main security gate on an OV18 form.

1.13.2 Removal

- The *Contractor* is not allowed to remove any equipment or materials from site without producing the relevant OV18 forms or the equipment lists.
 - If the equipment or material is to be removed the same day, on which they were brought on to site, then the OV18 form will need to be produced at the gate when leaving the site.
 - If the equipment or material is removed after this time then a Non Returnable Gate Release will be provided by the *Employer's Representative*, on receipt of the original OV18, with which the *Contractor* brought the equipment on site.

1.14 Site or Area Establishment and Evacuation

1.14.1 Application for Site Establishment:

- The *Contractor* is entitled to apply for a site on the relevant form as detailed in LBA 00030. This application must be submitted with the tender documents.
- Sites are allocated according to availability, the period for which the *Contractor* is going to be on site, or if special circumstances warrant the allocation of a site. Documentation to support this application can be submitted
- The location of the site or area is indicated during the site or area take-over inspection.

1.14.2 Site Establishment:

- The *Contractor* does not occupy any site or area other than that allocated to him.
- The *Contractor* does not occupy the site or area prior to the take-over inspection.
- The *Contractor* maintains the site or area provided to him to the satisfaction of the *Employer*.
- The *Employer* subjects the *Contractor's* site or area to periodic inspection.

1.14.3 Site Evacuation:

- The *Contractor* advises the *Employer* in writing, five (5) days in advance of evacuation in accordance with LBA 00030. Immediately prior to evacuation the necessary take-over inspection must take place.

