



**THE ELECTRICITY SUPPLY CORPORATION OF MALAWI (ESCOM)
LIMITED**

Name of Contract: *Supply and Delivery of Distribution Transformers*

Project Name: Malawi Emergency Power Restoration Project

Project ID: P178914

Contract No: MW-ESCOM-318980-GO-RFQ

between

Electricity Supply Corporation of Malawi (ESCOM) Limited

And

Cullin Africa CC

February, 2023

CULLIN AFRICA
Reg No: 1998 041754/23
P.O BOX 78
NOORDWYK, 1687
TEL: 011 848 1400
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Contract Agreement

THIS AGREEMENT made the 7th day of February, 2023.

BETWEEN

- (1) *Electricity Supply Corporation of Malawi (ESCOM) Limited*, a corporation incorporated under the laws of Malawi and having its principal place of business at ESCOM House, Annexe Building, 9 Haile Selassie Street, P.O. Box 2047, Blantyre, Malawi (hereinafter called "the Purchaser"), of the one part,
- and
- (2) *Cullin Africa cc*, a corporation incorporated under the laws of The Republic of South Africa and having its principal place of business at 81 Roan Crescent, Sage Corporate Park, North Midrand 1665, P.O. Box 78 Noordwyk 1687, South Africa (hereinafter called "the Supplier"), of the other part:

WHEREAS the Purchaser invited quotations for certain Goods and ancillary services, Vis Supply and Delivery of Distribution Transformers and has accepted a quotation by the Supplier for the supply of those Goods and Services

The Purchaser and the Supplier agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) the Letter of acceptance
 - (b) the Supplier's offer including specifications and prices
 - (c) Conditions of Contract
 - (d) the Purchaser's Requirements (including Schedule of Requirements and Technical Specifications)
 - (e) the completed Schedules (including Price Schedules)
 - (f) any other document listed as forming part of the Contract
3. In consideration of the payments to be made by the Purchaser to the Supplier as specified in this Agreement, the Supplier hereby covenants with the Purchaser to provide the Goods and Related Services if applicable and to remedy defects therein in conformity in all respects with the provisions of the Contract.

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4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Related Services if applicable and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Malawi on the day, month and year indicated above.


For and on behalf of the Purchaser:

Signed:
KAMKWAMBA KUMWENDA

in the capacity of *Chief Executive Officer*

in the presence of **YAMI KAMBULA**

For and on behalf of the Supplier:

Signed:
KRISH CHETTY

in the capacity of *General Manager*

in the presence of **RAYNO DE KLERK**

Conditions of Contract

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| Definitions | <p>The following words and expressions shall have the meanings hereby assigned to them:</p> <ul style="list-style-type: none"> (a) "Bank" means the World Bank and refers to the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA). (b) "CC" means the Conditions of Contract. (c) "Contract" means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein. (d) "Contract Documents" means the documents listed in the Contract Agreement, including any amendments thereto. (e) "Contract Price" means the price payable to the Supplier as specified in CC 8.1, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract. (f) "Day" means calendar day. (g) "Completion" means the fulfillment of the Related Services, as applicable, by the Supplier in accordance with the terms and conditions set forth in the Contract. (h) "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract. (i) "Party" means the Purchaser or the Contractor, as the context requires, and "Parties" means both of them. (j) "Purchaser" means the entity purchasing the Goods and Related Services as applicable, as specified in CC 2. (k) "Purchaser's Country" is the country specified in the CC 2. (l) "Related Services" means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract, as applicable. (m) "Subcontractor" means any person, private or government entity, or a combination of the above, to whom any part of |
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| | <p>the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.</p> <p>(n) "Supplier" means the person, private or government entity, or a combination of the above, whose Quotation to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.</p> <p>(o) "The Project Site," where applicable, means the place named CC 2.</p> |
| Purchaser, Purchaser's Country, Project Site/Final Destination | <p>The Purchaser is: <i>Electricity Supply Corporation of Malawi Limited</i></p> <p>The Purchaser's Country is: <i>Malawi</i></p> <p>The Project Site(s)/Final Destination(s) is: <i>Chichiri Power Station</i></p> |
| Incoterms | The edition of Incoterms that shall apply is: <i>2020</i> |
| Notices and Addresses for notices | <p>Any notice given by one Party to the other pursuant to the Contract shall be in writing to the address hereafter using the quickest available method such as electronic mail with proof of receipt.</p> <p><u>Address for notices to the Purchaser:</u></p> <p><i>Mr. Jack Thabwa</i></p> <p><i>Project Procurement Specialist</i></p> <p><i>Electricity Supply Corporation of Malawi Limited</i></p> <p><i>Umoyo House, 3rd Floor,</i></p> <p><i>Blantyre Malawi</i></p> <p><i>jthabwa@escom.mw</i></p> <p><u>Address for notices to the Supplier:</u></p> <p><i>Krish Chetty</i></p> <p><i>General Manager</i></p> <p><i>Cullin Africa cc</i></p> <p><i>81 Roan Crescent, Sage Corporate Park,</i></p> <p><i>North Midrand 1665,</i></p> <p><i>P.O. Box 78 Noordwyk 1687,</i></p> <p><i>South Africa</i></p> <p><i>Email: sales@cullin.co.za</i></p> |



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| Governing Law | <p>The Contract shall be governed by and interpreted in accordance with the laws of <i>Malawi</i></p> <p>Throughout the execution of the Contract, the Supplier shall comply with the import of goods and services prohibitions in the Purchaser's Country when:</p> <ul style="list-style-type: none"> (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country. |
| Settlement of Disputes | <p>(a) Contract with foreign Supplier:</p> <p>All disputes arising out of or in connection with the present contract shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules.</p> |
| Shipping and other documents to be provided | <p>The Delivery of the Goods and Completion of the Related Services as applicable shall be in accordance with the Delivery and Completion Schedule specified in the Schedule of Requirements.</p> <p>Details of Shipping and other Documents to be furnished by the Supplier are:</p> <ul style="list-style-type: none"> i. <i>a negotiable bill of lading,</i> ii. <i>a non-negotiable sea way bill,</i> iii. <i>insurance certificate,</i> iv. <i>Manufacturer's Authorization</i> v. <i>Supplier's warranty certificate,</i> vi. <i>Supplier's factory shipping details</i> <p>The above documents shall be received by the Purchaser:</p> <ul style="list-style-type: none"> (i) before arrival of the Goods, if the mode of payment is through letter of credit if so specified in CC 9. If the documents are not received before arrival of the Goods, the Supplier will be responsible for any consequent expenses; or otherwise; |
| Contract Price | The Contract Price is specified in Price Schedule 4. |

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| | Subject to CC 31 and 32, the prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier and accepted by the Purchaser. |
| Terms of payment | <p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:</p> <p>(i) Advance Payment: Thirty (30) percent of the Contract Price shall be paid, within ten (10) days of signing of the Contract and upon submission of a claim for the amount and up on provision of equivalent Advance Payment Guarantee and Invoice;</p> <p>(ii) On Shipment: Fifty (50) percent of the Contract Price of the Goods shipped shall be paid, within 15 days after submission of documents specified in CC 7.</p> <p>(iii) On Acceptance: Twenty (20) percent of the Contract Price of Goods received shall be paid within fifteen (15) days of receipt of the Goods upon submission of claim supported by the acceptance certificate issued by the Purchaser.</p> |
| Taxes and Duties | <p>For Goods manufactured outside the Purchaser's Country, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser's Country.</p> <p>For Goods Manufactured within the Purchaser's Country, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.</p> <p>If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in the Purchaser's Country, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.</p> |
| Performance Security | Performance Security: The Performance Security shall be USD <u>64,074.00</u> |
| Subcontractors | The Supplier shall notify the Purchaser in writing of all subcontracts awarded under the Contract if not already specified in the Quotation. Such notification, in the original Quotation or later |

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| | shall not relieve the Supplier from any of its obligations, duties, responsibilities, or liability under the Contract. |
| Specifications and Standards | The Goods and Related Services if applicable supplied under this Contract shall conform to the technical specifications and standards mentioned in the Technical Specifications and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the Goods' country of origin. |
| Packing, marking and documentation | <p>The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.</p> <p>The packing, marking and documentation within and outside the packages shall be: <i>Refer to the Technical Specifications</i>.</p> |
| Insurance cover | The insurance coverage shall be as specified in the Incoterms. |
| Transportation | Responsibility for transportations shall be as follows: The Supplier is required under the Contract to transport the Goods to a specified place of final destination within the Purchaser's Country, defined as the Project Site. Transport to such place of destination in the Purchaser's Country, including insurance and storage, as shall be specified in the Contract, shall be arranged by the Supplier, and related costs shall be included in the Contract Price" |
| Inspections and Tests | <p>The Supplier shall at its own expense and at no cost to the Purchaser carry out the tests and/or inspections of the Goods and Related Services as are specified in the Technical Specifications.</p> <p>The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor, at point of delivery, and/or at the Goods' final destination, or in any other location, as specified in the Related Services Schedule. Subject to CC 17.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.</p> <p>The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in CC 17.2, provided that the Purchaser bear all of its own costs and expenses incurred in</p> |

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| | <p>connection with such attendance including, but not limited to, all traveling and board and lodging expenses.</p> <p>Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.</p> <p>In accordance with CC 31, the Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract.</p> <p>The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.</p> <p>The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to CC 17.5.</p> <p>The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to CC 17.7, shall release the Supplier from any warranties or other obligations under the Contract.</p> |
| Delivery Date and Completion Date | The Delivery Date of the Goods shall be: 31 March 2023 |
| Liquidated damages and bonuses | <p>The liquidated damage shall be 1 % of the price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance.</p> <p>The maximum amount of liquidated damages shall be 5% of the Contract Price. Once the maximum is reached, the Purchaser may terminate the Contract pursuant to CC 26.</p> |
| Warranty | The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. |

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| | <p>The Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.</p> <p>The warranty shall remain valid for 24 months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination.</p> <p>The period for repair or replacement after being notified of the defect by the Purchaser shall be 14 days.</p> <p>If having been notified, the Supplier fails to remedy the defect within the period specified in CC 20.4, the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.</p> <p>For purposes of the warranty, the place(s) of final destination(s) shall be: <i>Chichiri Power Station, End of Johnston Road, Off Queen Elizabeth Central Hospital Round About, Blantyre, Malawi</i></p> |
| Copyright | <p>The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.</p> |
| Fraud and Corruption | <p>The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework, as set forth in Attachment A to the Conditions of Contract.</p> <p>The Purchaser requires the Supplier to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the request for quotations or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.</p> |
| Inspections and Audit by the Bank | <p>Pursuant to paragraph 2.2 e. of the attachment to the Conditions of Contract, the Supplier shall permit and shall cause its agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the request for quotations process and/or execution of Contract. The Supplier's</p> |



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| | <p>and its subcontractors attention is drawn to CC 22.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).</p> |
| Limitation of Liability | <p>Except in cases of criminal negligence or willful misconduct,</p> <ul style="list-style-type: none"> (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser and (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the supplier to indemnify the Purchaser with respect to patent infringement. |
| Force Majeure | <p>The Supplier shall not be liable for forfeiture of its Performance Security (if required), liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <p>For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, and freight embargoes.</p> <p>If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</p> <p>If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the</p> |

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| | <p>currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other Party.</p> |
| Termination | <p>Termination for Default</p> <p>The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:</p> <ul style="list-style-type: none"> (i) if the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Purchaser; (ii) if the Supplier fails to perform any other obligation under the Contract; or (iii) if the Supplier, in the judgment of the Purchaser has engaged in Fraud and Corruption, in competing for or in executing the Contract. <p>In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services if applicable similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services if applicable. However, the Supplier shall continue performance of the Contract to the extent not terminated.</p> <p>Termination for Convenience</p> <ul style="list-style-type: none"> (a) The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective. (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect: <ul style="list-style-type: none"> (i) to have any portion completed and delivered at the Contract terms and prices; and/or (ii) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and |



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| | Related Services if applicable and for materials and parts previously procured by the Supplier. |
| Forced Labor | <p>The Supplier, including its Subcontractors, shall not employ or engage forced labor or persons subject to trafficking, as described in CC 27.2 and CC 27.3.</p> <p>Forced labor consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.</p> <p>Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.</p> |
| Child Labor | <p>The Supplier, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).</p> <p>The Supplier, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.</p> <p>Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:</p> <ul style="list-style-type: none"> (a) with exposure to physical, psychological or sexual abuse; (b) underground, underwater, working at heights or in confined spaces; (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads; (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or (e) under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer. |

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| Health and safety obligations | The Supplier shall comply, and shall require its Subcontractors if any to comply, with all applicable health and safety regulations, laws, guidelines, and any other requirement stated in the Technical Specifications. |
| Patent Indemnity | <p>The Supplier shall, subject to the Purchaser's compliance with CC 30.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:</p> <ul style="list-style-type: none"> a) the installation of the Goods by the Supplier or the use of the Goods in the country where the Site is located; and b) the sale in any country of the products produced by the Goods. <p>Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract.</p> <p>If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in CC 30.1, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.</p> <p>If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.</p> <p>The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.</p> <p>The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands,</p> |



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| | <p>losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser.</p> |
| <p>Change Orders and Contract Amendments</p> | <p>The Purchaser may at any time order the Supplier through notice in accordance CC 4.1, to make changes within the general scope of the Contract in any one or more of the following:</p> <ul style="list-style-type: none"> (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser; (b) the method of shipment or packing; (c) changes in quantities of Goods to be supplied within the range specified herewith. <ul style="list-style-type: none"> (i) <i>The maximum percentage by which:</i> <i>quantities may be increased is: 25%</i> <i>percentage by which quantities may be decreased is: 25%</i> (d) the place of delivery; (e) any test and/or inspection not required by the Contract but deemed necessary, pursuant to CC 17.5; and (f) the Related Services to be provided by the Supplier. <p>If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery/Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this Clause must be asserted within twenty-eight (28) days from the date of the Supplier's receipt of the Purchaser's change order.</p> <p>Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.</p> |



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| | Subject to the above, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties. |
| Change in Laws and Regulations | Unless otherwise specified in the Contract, if after the date of submission of Quotation, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in the place of the Purchaser's Country where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract. |

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Attachment A to the Conditions of Contract

Fraud and Corruption

(Text in this Appendix shall not be modified)

1. Purpose

- 1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

2. Requirements

- 2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:

- i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
- iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- v. "obstructive practice" is:

- (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
- (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.

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- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti- Corruption Guidelines and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;¹ (ii) to be a nominated² sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect³ all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

¹ For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

² A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

³ Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.



Advance Payment Security Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Insert name and Address of Purchaser]*

Date: *[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of contract and brief description of Goods and related Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum *[insert amount in figures]* 0 *[insert amount in words]* is to be made against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (_____) *[insert amount in words]*¹ upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant has used the advance payment for purposes other than toward delivery of Goods.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant's bank]*.

The maximum amount of this guarantee shall be progressively reduced in proportion to the value of the Goods shipped (for Goods supplied from abroad) and/or the value of the Goods delivered

¹ The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Purchaser.



at the named place of destination (for Goods supplied from within the Purchaser's country), as evidenced by copy(ies) of [].⁴

This Guarantee shall expire upon our receipt of copy(ies) of the above referenced documents, evidencing that at least ninety (90) percent of the Contract Price of the Goods has been delivered or on the [insert day] day of [insert month], [insert year]⁵, whichever is earlier.

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

⁴ Insert shipping/other applicable documents establishing "delivery" of the Goods in accordance with the applicable Incoterm to the Contract.

⁵ Insert the Delivery date specified in the Contract Delivery Schedule. The Purchaser should note that in the event of an extension of the time to perform the Contract, the Purchaser would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Purchaser might consider adding the following text to the form, at the end of the penultimate paragraph: "We agree to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Purchaser's written request for such extension; such request to be presented to us before the expiry of the guarantee."

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Sample Letter of Award of Contract

[use letterhead paper of the Purchaser.]

[date]

To: *Cullin Africa cc*

81 Roan Crescent, Sage Corporate Park,
North Midrand 1665,
P.O. Box 78 Noordwyk 1687,
South Africa

Subject: *Notification of Award of Contract No. MW-ESCOM-318980-GO-RFQ*

In reference to the RFQ MW-ESCOM-318980-GO-RFQ dated 17th October, 2022, your Quotation dated 31st October, 2022 has been accepted.

Please find enclosed herewith the Contract. You are requested to sign the contract within four (4) business days.

Authorized Signature: _____

Name and Title of Signatory: **Kamkwamba Kumwenda - Chief Executive Officer**

Name of Agency: **Electricity Supply Corporation of Malawi (ESCOM) Limited**

Attachment: **Contract**

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Quotation for Goods: Price Schedule 1

For Goods to be supplied from outside the Purchaser's country

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------------|------------------------------|-------------------|---------------------------------------|----------------------------|---|--|---|---------------------------------------|
| Line Item No | Description of Goods | Country of Origin | Delivery Date as defined by Incoterms | Quantity and physical unit | Unit price CIP (insert place of destination) [as applicable, FCA (named place)] | CIP (or FCA, as applicable) Price per line item (Col. 5x6) | [FOR CIP, IF REQUIRED] Price per line item for inland transportation and other services required in the Purchaser's Country to convey the Goods to their final destination specified in RPO | Total Price per Line Item: (Col. 7+8) |
| 1 | Transformer 100KV, 33/0.04KV | China | 6-8 Weeks | 20 | \$4,385.00 | \$87,700.00 | INCLUDED | \$87,700.00 |
| 2 | Transformer 200KV, 33/0.04KV | China | 6-8 Weeks | 40 | \$5,808.00 | \$232,320.00 | INCLUDED | \$232,320.00 |
| 3 | Transformer 315KV, 33/0.04KV | China | 6-8 Weeks | 40 | \$7,643.00 | \$305,720.00 | INCLUDED | \$305,720.00 |
| Quotation Price | | | | | | | | \$625,740.00 |

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Quotation for Related Services: Price Schedule 3

| 1 Item No. | 2 Item description | 3 Description of Services (excludes inland transportation and other services required in the Purchaser's Country to convey the goods to their final destination) | 4 Country of Origin | 5 Completion Period at place of final destination | 6 Quantity and physical unit | 7 Unit price | 8 Total Price per Service (Col. 5*6 or estimate) |
|-----------------|-----------------------|--|---------------------------|--|---------------------------------|-----------------|--|
| 1 | FAT | FAT | China | 6 Days | 3 (Persons) | \$5,000.00 | \$15,000.00 |
| | | | | | | | |
| | | | | | | | |
| Quotation Price | | | | | | | \$15,000.00 |

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Total Quotation: Price Schedule 4

The total price for the supply and delivery of the Goods, and related Services is as follows:

| Price Schedule | Amount |
|------------------------------------|---------------------|
| Goods: Price Schedule 1 | \$625,740.00 |
| Goods: Price Schedule 2 | Not Applicable |
| Related Services: Price Schedule 3 | \$15,000.00 |
| Total Quotation | \$640,740.00 |

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Purchaser's Requirements

List of Goods and Delivery Period

| Line Item N° | Description of Goods | Quantity required | Physical unit | Named Place of Destination (CIP) | Place of Final Destination (Project Site) | Applicable Incoterms (e.g. CIP, EXW, FCA etc.) | Delivery Period from Date of contract signature |
|--------------|---|-------------------|---------------|--|---|--|---|
| 1 | Transformer three phase ,oil filled 100kVA 33/0.4kV | 20 | Each | Chichiri Power Station, Blantyre, Malawi | N/A | CIP | 8 Weeks |
| 2 | Transformer three phase ,oil filled 200kVA 33/0.4kV | 40 | Each | Chichiri Power Station, Blantyre, Malawi | N/A | CIP | 8 Weeks |
| 3 | Transformer three phase ,oil filled 315kVA 33/0.4kV | 40 | Each | Chichiri Power Station, Blantyre, Malawi | N/A | CIP | 8 Weeks |

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Technical Specifications

1.3.2 Detailed Technical Specifications and Standards

1. SCOPE OF SUPPLY

This Specification covers requirement of ESCOM in respect of design, manufacture, test, supply, delivery to site, performance requirements, erection and commissioning of three phase 33/0,4kV oil immersed outdoor type distribution transformers. The transformer shall be of conservator type. The transformer shall be installed in parallel with an existing transformer in all Peri Urban in Malawi. The bidder/manufacture shall have to visit and check the existing substation equipment before quoting for the comparable equipment.

1.1 Code and Standards

The transformer shall be designed, manufactured and tested in accordance with the applicable requirements of the below standards.

Transformer

| | |
|--------------|---|
| IEC 60076 | Power transformers |
| IEC 60076-4 | Guide for the lightning impulse and switching impulse testing of power transformer and reactors |
| IEC 60529 | Degrees of protection provided by enclosures |
| IEC 60616 | Terminal and tapping, marking for power transformers |
| IEC 60606 | Application guide for power transformers |
| IEC 60076-10 | Determination of transformer and reactor sound level |
| IEC 60354 | Loading guide for oil-immersed power transformers |

Electrical Insulating Oils

| | |
|-----------|--|
| ASTM 3487 | Standard specification for mineral insulating oil used in electrical apparatus |
| IEC 60296 | Specification for unused mineral insulating oils for transformers and switchgear |

Magnetic Materials

ASTM A345 Standard specification for flat-rolled electrical steels for magnetic applications. IEC 60404 Magnetic materials

Bare and Insulated Conductors – General

| | |
|-----------|---|
| IEC 60317 | Specification for particular types of winding wires |
| DIN 40500 | Copper for electrical engineering |

Transformer Bushings

| | |
|-----------|---|
| IEC 60137 | Insulated bushings for alternative voltage above 1000 V |
|-----------|---|

Transformers and Accessories

| | |
|-----------|--|
| DIN 42566 | Buchholz relay for transformers; characteristics and tests |
|-----------|--|

Current Transformers

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IEC 60044-1 Current transformers ; specification and tests

Painting

SIS or equivalent Surface preparation

Materials ASTM, DIN

1.2 Service Ambient Condition

The transformer will be installed outdoor in service ambient conditions as follows:

| | | | |
|---|------------------------------|---|------------|
| ➤ | Maximum temperature | - | 40°C |
| ➤ | Annual average temperature | - | 22°C |
| ➤ | Minimum temperature | - | 10°C |
| ➤ | Maximum wind velocity (gust) | - | 58km/h |
| ➤ | Relative humidity | - | 60 to 96 % |
| ➤ | Isokeraunic Level | - | Tropical |
| ➤ | Altitude | - | 1800 m |
| ➤ | Prevailing wind direction | - | SW and NW |
| ➤ | Type of atmosphere | - | Tropical |

Environmentally, the region where the work will take place is a coastal area, subject to an overall medium relative humidity, which can give rise to condensation. Onshore winds are frequently salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators.

Therefore, outdoor material and equipment shall be designed and protected for use in exposed, polluted, salt, corrosive, humidity, coastal atmosphere.

Indoor material and equipment shall be designed and protected for use in buildings, which occasionally may be wet and damp.

1.3 System Condition

The equipment shall be suitable for installation in supply systems of the following characteristics:

| | | | |
|---|--|----------|-------|
| • | Frequency | 50Hz | |
| • | Nominal system voltages | 33kV | |
| | | 400/230v | |
| • | Maximum system voltages: | 33kV | 36kV |
| • | Maximum LV voltage | 440/253v | |
| • | Minimum LV voltage | 374/215v | |
| • | Nominal short circuit levels: | 33kV | 25kA |
| • | Insulation levels: | | |
| | 1.2/50µs impulse | | |
| | (Positive and negative polarity): | 33kV | 170kV |
| | Power frequency (one minute withstand, wet): | 33kV | 70kV |
| | | LV | 3kV |

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Neutral earthing arrangements:

33kV effectively
earthed
LV effectively
earthed
30mm/kV

Creepage distance

(of maximum system voltage)

2.0 TESTING AND INSPECTIONS

2.1 General

Transformers will be inspected at the manufacturer's factory by a reputable inspection agent appointed by one representative of the Project Manager and two (2) representatives of the Employer.

The inspection and tests listed hereinafter shall be carried out in accordance with the provisions in the relevant IEC 60076 and IEC 60137 recommendations. The transformers shall be subjected to test as specified below:

2.1.1 Type Tests

The following shall be regarded as type tests:

- Test of temperature rise. This test shall be carried out on the tap having maximum losses.
- Dielectric type test according to IEC 60076-3.
- Determination of sound level according to IEC 60551.

2.1.2 Routine Tests

The following shall be regarded as routine tests and shall be carried out on each transformer conforming to IEC standards:

- Dielectric tests,
- Measurement of winding resistance.
- Voltage ratio measurement and check of vector group
- Measurement of impedance voltage.
- Measurement of the load losses
- Measurement of no-load losses and no-load current, including measurement of harmonics.

3.0 TECHNICAL REQUIREMENTS

3.1 General

Distribution Transformers shall be 3 phase transformers, 2 windings, three phase, oil-immersed, 50 Hz and shall have off-circuit tapings mounted in the primary winding. The type of cooling will be oil natural air natural (ONAN).

3.1.2 Rated Capacity

The continuous rating of the three phase Distribution Transformers shall be 100, 200 and 315 for outdoor type, designed for pole mounted substations.

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Each transformer shall be capable of supplying its rated capacity continuously for all tap positions with rated voltage on the secondary winding and continuous, steady load, a maximum temperature gradient of 21 °C and maximum winding hot spot of 98 °C. The transformers shall also be capable of delivering rated current at an applied voltage equal to 110 % of the rated voltage.

Each transformer shall also be capable of supplying its rated capacity continuously under ambient temperature conditions without the temperature rise of the top oil exceeding 50°C and without the temperature rise of the windings as measured by resistance exceeding 55 °C.

3.1.3 Overload Capacity

After thermal equilibrium has been reached at 75% of rated load, the transformers shall be capable of sustaining the overload conditions listed in *table below*, without the transformer winding hot spot temperature exceeding 140 °C.

| <i>Transformer Overload Capacities</i> | | |
|--|------------------------------|---------------------------|
| Load Percentage of rated load | Minimum durations in minutes | |
| | Ambient Temperature: 30°C | Ambient Temperature: 40°C |
| 133% | 240 | 115 |
| 150% | 98 | 65 |

The Contractor shall include calculations demonstrating that these requirements are met. These calculations shall disregard the effect of winding thermal capacity.

Importance is attached to overload capacity and transformers incapable of meeting the performance specified shall not be considered.

3.1.4 Tap Changers

The high voltages windings shall be provided with off-load tap changer for voltage adjustment.

Tap changing shall be carried out with the transformer off circuit. An externally operated self positioning tapping switch shall be provided. Switch position No.1 shall correspond to the primary voltage that gives the highest voltage ratio.

Provision shall be made for locking of the tapping switch handle, with a 6mm standard diameter hasp lock to be provided by the Employer.

Tap change switches shall be fitted with gasketed covers in order to make the sealing of the transformer independent of the switch shaft gland under normal conditions.

The transformer shall be fitted with an off load, 5 position tap changer: 95%-97.5%-100%-102.5%105%.



3.1.5 Windings

MV and LV Windings shall be in high conductivity copper and the vector group shall be Dyn11. The windings shall be fully insulated and the neutral point shall be insulated. For the transformer windings, thermally stabilized insulation paper shall be used.

3.1.6 Impedance Voltage

The impedance on the principal tap (tap 3) shall be:

- 4% for transformers with capacity up to 100kVA
- 4.5% for transformers with capacity more than 100 kVA and up to 200 kVA
- 4.5% for transformers with capacity more than 200 kVA

The impedance voltage shall be subject to the tolerance specified in IEC 60076. Transformers shall have equivalent impedance per tap characteristics such that transformers of the same rating can be operated in parallel.

3.1.7 Short Circuit Performance

The transformer shall be capable of sustaining a three-phase symmetrical short circuit on the low voltage side with power maintained on the high voltage side without damage or distress for 3 seconds.

According to IEC 60076-5, all transformers shall have:

- Thermal withstanding to short circuit of 2s duration.
- Mechanical withstanding to short circuit of 0.5s duration with $I = I_{\text{rated}} \times 100 / U_k\%$ where $U_k\%$ is the impedance voltage.

3.1.8 Regulation

The Contractor shall guarantee the regulation of each transformer from no load to continuous rated output at 1.0 power factor and at 0.85 lagging power factor and shall be as stated in the technical data schedules.

3.1.9 Over fluxing

The transformer shall be capable of operating continuously with rated current and with system maximum voltage applied to the primary winding at a frequency of 96% of rated frequency without exceeding the specified value of temperature rise.

For all transformers, the limit of flux density at any point in the magnetic circuit shall be subject to the requirements for losses, harmonics and noise suppression.

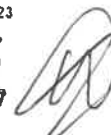
3.1.10. Noise Level

The transformer shall maintain not more than the maximum allowable noise level at 0.3 meter measured in accordance with IEC 60551.

3.2 Materials and Construction

3.2.1. Transformer Tank

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Transformer shall be of hermetically sealed type according the requirement of IEC 60076-1 paragraph 8.2.

Sealed-tank system with gas cushion, in which a volume of gas above the oil surface in a stiff tank accommodates the oil expansion under variable pressure.

Sealed, completely filled system in which the expansion of the oil is taken up by elastic movement of the permanently sealed, usually corrugated tank.

The transformer tank shall be designed in such a manner that the completed transformer can be lifted and transported without permanent deformation or oil leakage.

The tank and cover shall be designed in such a manner to prevent external pockets in which water can lodge.

All pipes, radiators, fins or corrugation shall be external welded to the tank wall.

The transformer tank shall be sealed by means of suitable gasket or by welding. The tank shall be fitted with a thermometer and earth terminals.

Each transformer shall be provided with a minimum of two closed lifting lugs. The minimum diameter of the hole or width of the slot shall be 25 mm. The two lifting lugs shall be located such that there will be a minimum of 50 mm between the lifting chain and the nearest part of the bushings.

A satisfactory lid sealing gasket shall be provided on each transformer to maintain the seal for extreme operating temperatures. A cold oil level mark shall be provided inside each transformer marked C.O.L.

3.2.2. Core and Coils

The core and coil assembly shall have the core and coils rigidly connected to the tank and suitably closed lugs shall be provided for removing the core and coil assembly from the tank.


The cores shall be constructed of high quality low loss grain oriented electrical steel laminations. The design shall ensure no hot sections due to over fluxing or circulating currents. The flux density at any point shall not exceed 1.65 tesla.

3.2.3. Surface Treatment

The transformer tank and accessories shall be adequately protected against aggressive corrosion and the bid shall include a statement on the method of protection proposed. The transformer tank and its steel attachments shall be painted. Sufficient pre-treatment of the tank surface should be carried out as necessary in order to guarantee long life adhesion. The weatherproof ability of the paint used should be proven and documented.

The inside of the tank shall be painted with an approved oil resisting varnish or be treated with other suitable process.

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The outside of the tank shall be painted in color to be advised by the Employer.

3.2.4. Primary Bushings for Outdoor Type Transformers

All winding leads shall be brought out through bushings. All bushings shall be so designed that there will be no excessive stressing of any parts due to temperature changes and adequate means shall be provided to accommodate conductor expansion.

The insulation levels for bushing shall be at least equal to those specified for the windings. The creepage distances for the bushings and the insulators shall not be less than 31mm/kV.

The porcelain shall be tested according to IEC Publication 60233 or equivalent DIN standard respectively. The glaze shall be brown and shall cover all exposed parts of the insulator.

Between the porcelain and surrounding metal, gaskets or cement are to be interposed. All porcelain clamping surfaces in contact with gaskets shall be accurately grounded and free from glaze.

Each porcelain bushing shall be marked with manufacturer's identification mark, indicating the date of manufacturing and other marks necessary for the tests. The marking shall be clearly legible and visible after assembly of the fittings.

Connections from the windings to the bushings shall have the necessary flexibility. Clamps and similar accessories made of steel or malleable iron shall be galvanized.

The fittings (lugs and rods) shall be made of copper or bronze. External terminals shall comply with the requirements of High Voltage Terminals. Copper or copper alloy terminals shall be tinned to a thickness of minimum 50 µm. Copper alloys shall not be easily prone to cracking.

The bushings shall be installed so that they are easy to check and remove without removing the tank cover.

For bolted transformer covers, provision for good electrical connection between the top cover and the transformer tank shall be made in the form of a removable jumper. The jumper shall be sufficiently rated to carry the fault currents without damage.

3.2.5. Secondary Bushings for Outdoor Type Transformers

Distribution transformer shall be supplied with porcelain bushings on LV side. Secondary bushings will include porcelain insulator and copper terminal. Each terminal shall be suitable for receiving bimetallic

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aluminium/copper lugs for aluminium cables, according to the rated capacity of the transformer. The terminal lugs shall be of pre-insulated compression type suitable for aluminium cable.

3.2.6. Terminal Markings

The terminal markings shall be clearly and permanently displayed. Painted markings are not acceptable. The distribution transformers shall be labelled as follows:

- Primary voltage: R, Y, B
- Secondary voltage: r, y, b and n

3.2.7. Label and Rating Plates

Labels, plates, markings and instructions shall be clear and indelible and in the English language. Case-in or molded-in words which are not English words shall be covered with permanently fixed non-ferrous labels inscribed in English.

A weatherproof rating plate shall be provided in accordance with IEC 60076.

3.2.8. Transformer Oil

All transformers shall be filled to the required level with new, unused, clean, standard mineral oil in compliance with IEC60296 and shall be free from all traces of polychlorinated biphenyl (PCB) compounds.

The oil shall be PCB free; the Employer will refuse the delivery of the transformers that are not proved to comply with this requirement.

Oil Contractors coordinates, oil type, reference and detailed characteristics will be provided in the offer.

3.2.9. Protection

Transformer Medium Voltage side protection shall be achieved by the use of Drop out Fuses. The fuse rating shall be re-calculated on all transformers sizes to achieve better MV fuses calibration. Transformer Low Voltage Circuit Protection shall be achieved through the use of Low Voltage Circuit Breakers which shall be housed in the Low Voltage Distribution Panel to be mounted on the transformer support structure.

3.2.10 Transformer Losses

According to standards of distribution transformers maximum values of losses at 33kV accepted shall be as follows:

| Transformer Capacity | No Load (W) | Load Losses (W) |
|----------------------|-------------|-----------------|
| 100kVA | 350 | 2500 |
| 200kVA | 570 | 3300 |
| 315kVA | 800 | 4600 |

Acceptable Maximum Losses Values at 75°C

(a) **Functional Guarantees of the facilities**

If the actual losses (measured during testing) exceed the stated guaranteed losses, in the technical data sheets, but within the acceptable losses values in the 3.1 above, the Contractor has to pay penalty to the Employer. The following amount will be deducted from the contract price:

a= cost/kW of no-load losses

a=8.600 USD/kW (Eight Thousand Six Hundred) for distribution transformers b=

cost/kW of load losses

b=4.500 USD/kW (Four Thousand Five Hundred for distribution transformers

It is thereby understood that the values of 0,5 kW and above will be rounded up to the next full kW.

The Purchaser shall have the right to reject any transformer if the actual values measured during FAT are in excess of the guaranteed values by more than the margins specified hereunder (including the tolerances in table 3.2 below):

| | |
|------------------------------|-------------|
| No-load losses | + 10% |
| Load losses (forced cooling) | + 10% |
| Total losses | + 10% |
| Noise level | + 3 dB(A) |
| Temperature rise limit | + 1.0 K |
| Short Circuit Impedance | -5 % / +10% |

Table 3.2. Acceptable Tolerances

For all of the other values the margins stated in IEC standards are applicable, unless specified otherwise elsewhere in these Specifications.

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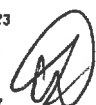


Table A1 - Test Certificates Schedule

On this schedule a list of the test certificates included with the bid shall be provided.

This list should include type test certificates and sample routine test reports. Each certificate listed shall be referred to the relevant specification clause and item of equipment to which the test applies.

| Clause No | Type Test Certificate or Routine Test Report |
|-----------|--|
| | |

4.1 INSTALLATION

General guidelines for the installation work involved in this contract are given in specification:
Chapter A: General Technical Requirements of 33/0,4kV distribution substations.

5.1 DATA SCHEDULE FOR TRANSFORMERS

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DISTRIBUTION TRANSFORMERS THREE PHASE OIL FILLED 16, 25, 50, 100, 200, 315, 500, 800, 1000, 1500, 2000kVA 33/0.4kV

SHORT DESCRIPTION: Transformer three phase, oil filled 16, 25, 50, 100, 200, 315, 500, 800, 1000, 1500, 2000kVA 33/0.4kV

CLASS CODE

DRAWING NO:

Indent No: **Tenderer s:**

Name: **Date:**

Note: Schedule A – ESCOM's requirements

Schedule B – ESCOM's mandatory or not mandatory requirements

Schedule C – To be filled by tenderer

REFERENCE SPECIFICATIONS: PIESA 1006, SABS 780, IEC 60815, IEC 60076, IEC 61109

| Feature | Technical specifications of items required | | Mandatory/ Not Mandatory (M/Not) |
|--|--|--------------|---|
| | A | | B |
| System and Environmental Parameters | System nominal voltage | 33kV | M |
| | Systems highest voltage | 36kV | M |
| | System frequency | 50Hz ± 2.5% | M |
| | Ambient temperature range | -5°C to 45°C | M |
| | Altitude: meters above sea level | 1800 | M |
| | Relative humidity | 95% | M |
| Voltage | Rated primary voltage phase-phase | 33kV | M |
| | Rated secondary voltage phase to phase | 400V | M |
| | Voltage ratio | 33/0.4kV | M |
| Insulation Levels | Primary voltage : Basic insulation level | 200kV | M |
| | Power frequency voltage withstand | 70kV | M |
| | Secondary voltage : Basic insulation level | 30kV | M |
| | Power frequency voltage withstand | 3kV | M |

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| | | | |
|-------------------|---|--------------------------------|---|
| Winding Material | HV | copper | M |
| | LV | copper | M |
| Core construction | Type of core construction | Stacked core | M |
| Tap-changer | Tap changer | Offload \pm 5% steps of 2.5% | M |
| Power rating | Rating | 100, 200, 315, kVA | M |
| Impedance | Impedance on normal tap | 4%/5%/6% | M |
| Overload | Maximum overload capability %h | supplier to specify | M |
| Vector Group | Vector group | Dyn11 | M |
| Oil | Oil type | PCB free oil | M |
| Cooling | Cooling type | ONAN | M |
| Bushings | Bushing manufactured to SABS 780 | Comply | M |
| | Bushing profile characteristic to IEC 60815 | Comply | M |
| | Creepage | 31mm/kV | M |
| Mounting | Accessories suitable for single pole mounting | Comply | M |
| Tank finish | Final paint colour | Avocado or grey | M |
| | Paint thickness (minimum) | 125 μ m | M |
| Losses | No load losses (W) | supplier to specify | M |
| | Load losses (W) | supplier to specify | M |
| | Maximum dimensions of transformer 100kVA | | |
| | Length (mm) | 1100 | M |
| | Width (mm) | 720 | M |
| | Height (mm) | 1200 | M |
| | Maximum dimensions of transformer 200, 315kVA | | |

*4% for 100,200 & 315kVA

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| | | | |
|--------------------------------|--|---------------------------|---|
| Transformer Dimensions | Length (mm) | 1200 | M |
| | Width (mm) | 900 | M |
| | Height (mm) | 1200 | M |
| Fitting and accessories | Lifting lugs fitted on both ends of tank cover Yes/No | Yes | M |
| | Conservator tank fitted Yes/No | Yes (for 50kVA and above) | M |
| | Arcing horns required Yes/No | Yes | M |
| | Thermometer required Yes/No | No | M |
| | Surge Arrestors to be supplied Yes/No | Yes | M |
| | Arrestor bracket fitted on the tank Yes/No | Yes | M |
| | Provision for skid base or lockable wheels | Skid base | M |
| | Drain plug or drain valve required Yes/No | No | M |
| | Tank cover bolted Yes/No | Yes | M |
| | Tank earthing boss fitted Yes/No | Yes, M12 X 25mm | M |
| | Oil filling boss required | No | M |
| | Offload tap changer Yes/No | Yes | M |
| | Rating plate clearly indicating Manufacture name and logo Year of Manufacture Serial number Specification Terminal arrangement Voltage rating HV kV Voltage rating LV V Power rating kVA Number of phases | Required | M |

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| | | | |
|--------------------------|---|------------------|---|
| | Cooling Frequency Hz Current rating HV A Current rating LV A Vector group Impedance voltage % Tapping arrangement Winding material Cu/Cu Statement "Oil contains no PCB" Total weight Kg Core and winding weight Kg Oil quantity Litres Oil weight Kg Oil specification Indent /Order number Maximum installation altitude (meters above sea level) | | |
| Cable termination | Primary: Outdoor bushing or cable box | Outdoor bushings | M |
| | Secondary: Outdoor bushing or cable box | Outdoor bushings | M |
| Tank markings | Primary and secondary terminal markings | | M |
| | Primary voltage, secondary voltage and transformer rating marked Clearly visible from the ground character shall not be less than 50mm | | M |
| Tests | Type test certificate in English to be submitted with tender | | |
| | Temperature rise test to IEC 60076-1 | | M |
| | Dielectric type test to IEC 60076-3 | | M |
| | Tank stiffness test to SANS 780 | | M |

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| | | | |
|-------------------------------------|--|----------|---|
| | Corrugated tank fatigue test to IEC 60076-5 | | M |
| | Short circuit withstand test to IEC 60076-5 | | M |
| | Pollution test (for composite bushings) to IEC 61109 | | M |
| | Routine Test certificate in English | | |
| | Winding resistance test to IEC 60076-1 | | M |
| | Voltage ratio and phase displacement test to IEC 60076-1 | | M |
| | Short circuit impedance and load loss test to IEC 60076-1 | | M |
| | No load loss and current test to IEC 60076-1 | | M |
| | Paint thickness test to SANS 780 | | M |
| | Effectiveness of sealing test to SANS 780 | | M |
| Drawings | Outlining dimensions, including the surge arrestors | | M |
| | Outlining transformer mounting hole arrangement | | M |
| | Outlining terminal arrangement and labeling | | M |
| | Outlining position of tapping switch | | M |
| | Outlining rating and diagram plates | | M |
| Manufacture's Authorizations | Provide 'manufactures Authorization Letter' if supplier manufacture. | | M |
| Production | Production quality assurance certification Yes/No | Yes | M |
| Country of Origin | Current Transformer country of origin | required | M |

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