 <b>Eskom</b>	<b>Specification</b>	<b>Kusile Power Station</b>
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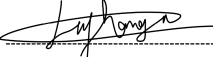



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## **Content**

### **Page**

1. Introduction.....	3
2. Supporting Clauses .....	3
2.1 Scope.....	3
2.1.1 Purpose.....	3
2.1.2 Applicability .....	3
2.1.3 Effective date.....	4
2.2 Normative/Informative References .....	4
2.2.1 Normative.....	4
2.2.2 Informative.....	4
2.3 Definitions .....	4
2.4 Abbreviations .....	4
2.5 Roles and Responsibilities .....	5
2.5.1 Supplier .....	5
2.5.2 Employer: Technical Support & Engineering.....	5
2.5.3 Employer: Materials Management .....	6
2.5.4 Employer: Procurement Department.....	6
2.5.5 Employer: EMD & PTM.....	6
2.5.6 Management and Reporting .....	7
2.5.7 Communication and Correspondence.....	7
2.5.8 Quality and Documentation Control .....	7
2.6 Process for Monitoring.....	8
2.7 Related/Supporting Documents.....	8
3. Essential System Scope of Work.....	8
3.1 Plant Description .....	8
3.2 Description of the works .....	8
3.3 Documentation .....	10
3.4 Acceptance of Spares .....	11
4. Acceptance.....	14
5. Revisions.....	14
6. Development Team .....	14
7. Acknowledgements .....	14
Appendix A – Kusile Essential Systems Spares BOQ .....	15

### **CONTROLLED DISCLOSURE**

## **1. Introduction**

The Essential Power Supplies Plant provides critical supply to the protection equipment and other plant essentials to ensure plant supply availability, reliability, integrity and personnel safety. AC and DC Essential power supplies are required to be always available. AC backup is provided by Uninterruptible Power Supplies while DC backup is provided by batteries through battery Chargers and/or AC/DC converters supplied from the UPS. Batteries connected to the UPS and Chargers are designed to provide power storage for the required back-up period. The Essential Power supply design allows for power supply redundancy, supply failure backup, automatic changeover of AC Supplies as well as local and remote indication of alarms.

If normal power supply is lost, the supplies must be designed to allow safe shutdown of the plant, maintain communication, plant control and instrumentation, and protection systems. Provide emergency lighting and keep the plant in a suitable state of readiness for a period in accordance with the Generation standard 240-56176852. Furthermore, the essential supplies prevent critical instrumentation from tripping for short breaks or voltage dips in normal power supplies.

For the plant to operate effectively and efficiently, maintenance must be performed at intervals specified as per plant maintenance strategies. Correct plant spares must be available. The identification of which specific components to be kept as spares as well as the quantities has been done according to the information available at the time of the compilation of this document.

The required information for spares holding has not been adequately detailed enough to enable the full cataloguing of the identified spares into the SAP computer data base. This creates challenges to the current and future procurement processes and may lead to costly delivery of wrongly specified equipment. The works information processes outlined in this document are intended to eliminate or minimize the risk of such occurrences.

## **2. Supporting Clauses**

### **2.1 Scope**

The SOW technically specifies the required spares be supplied by the *Supplier* and conditions for acceptance. The scope included here does not substitute procurement procedures that will be followed during the procurement process.

#### **2.1.1 Purpose**

The purpose of this document is to formally request DCF's information from the original equipment manufacturer or supplier to ensure that all maintenance spares which are being procured by Kusile Power Station are correct and correctly specified. In addition to the spares supply, technical support services will be provided by the supplier which will ensure that skills is transferred to Eskom personnel and the plant is kept in good operating condition. This process is only applicable during the initial spares procurement.

#### **2.1.2 Applicability**

This scope is only applicable to the spares procurement, Data Capturing Forms, and technical support services for the Essential Systems at Kusile Power Station.

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### **2.1.3 Effective date**

This document will be effective from the date of its authorisation.

## **2.2 Normative/Informative References**

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

### **2.2.1 Normative**

- [1] 240 -103492950 Kusile Power Station Essential System Spares Strategy
- [2] 240 -127798133 Essential Spares Preservation Work Instruction
- [3] 240-105658000 Supplier Quality Management Specification (QM-58)
- [4] 240-76960420 Guideline for Spares Procurement Technical Evaluation and Quality Inspection

### **2.2.2 Informative**

- [5] ISO 9000 Quality Management System – Fundamentals and Vocabulary
- [6] 32-727 Safety, Health, Environment, and Quality (SHEQ) Policy
- [7] Generation Plant Engineering Life Cycle Planning/Strategic Report for Direct Current Systems 2014: 474-10053

## **2.3 Definitions**

- 2.3.1** Contractor: Supplier contracted to provide a specific spares & documentation to Kusile Power Station
- 2.3.2** Employer: Eskom, Kusile Power Station
- 2.3.3** Employer Representative: Any person appointed in writing by Employer as the delegated Employer representative in terms of the provisions.
- 2.3.4** Plant: Any structure, machinery, apparatus, or equipment which does not fall within the scope of the operating regulations for high voltage systems, and excludes, mobile, portable lifting equipment, domestic circuits' appliances, and tools.

## **2.4 Abbreviations**

<b>Abbreviation</b>	<b>Explanation</b>
UPS	Uninterruptable Power Supply
BOQ	Bill of Quantities
DCF	Data Capturing Form
ITP	Item Test Plan

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Abbreviation	Explanation
SAP	Systems, Applications and Programmes Software
PCM	Process Control Manual
QC	Quality Control
SOW	Scope of Work
QCP	Quality Control Plan

## **2.5 Roles and Responsibilities**

### **2.5.1 Supplier**

- a. Provide a quotation for each listed item in Appendix A as part of tender deliverable
- b. Supply procured spares as requested by the Employer
- c. Provide technical support services as requested by the Employer
- d. Confirm correctness of the supplied spares information
- e. Provide spares technical information in accordance with this SOW
- f. Timeously inform the Employer of any delays or when outstanding or additional information from the Employer is required
- g. Responsible to ensure that a quality product is delivered
- h. Responsible to ensure that the correct spare is supplied
- i. Responsible to ensure that every effort is made to keep to the agreed program and plan
- j. Provide all required technical datasheets and/or product brochures
- k. Provide Materials Management with populated DCFs for cataloguing of spares and record keeping
- l. Conform to all the other requirements stipulated in this document
- m. Supply all the necessary test sheets/results, where applicable
- n. Invite the Employer or representative thereof three (3) working days in advance for witness/hold points, if applicable, as agreed
- o. All Supplier employees entering site shall comply with Eskom's policies and site regulations, adherence to Eskom's Life Saving Rules, adherence to Generation Occurrence Management Procedure, Smoking Policy, zero tolerance on alcohol usage, etc. These requirements will be detailed during the induction training process.
- p. Ensure that all staff brought onto site in connection with this SOW should be able to fluently speak, understand and write in English language.
- q. The Contractor ensures that all staff brought to Kusile PS site have a valid fitness certificate based on the specified plant man-job specification.

### **2.5.2 Employer: Technical Support & Engineering**

- a. Compile and submit scope of work with technical specifications.

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- b. Performs Quality Control of all spares on delivery at the Employer premises.
- c. Liaise with all relevant stakeholders for any input
- d. Ensure that the Works Information is in accordance with Eskom policies and procedures
- e. Provide all necessary information to assist in spares and technical support services procurement
- f. Participate in technical evaluation of the tender documents
- g. Assist with the preparation of all the reports to different tender committees, where applicable
- h. Provide technical assistance to Maintenance, Materials Management and Procurement Departments during the execution of this Works Information
- i. Perform Quality Checks on procured spares and accompanying documentation
- j. Verification and acceptance of all supplied documentation including DCFs
- k. Responsible for QC at delivery of procured spares
- l. Provide Materials Management with populated DCFs for cataloguing of spares and record keeping

#### **2.5.3 Employer: Materials Management**

- a. Catalogue the spares after completion of DCFs
- b. Confirm that the information supplied by the engineer is enough for cataloguing
- c. Perform QC on all submitted DCFs
- d. Make provision for storage of procured spares
- e. Work together with engineering and maintenance when accepting spares into stores

#### **2.5.4 Employer: Procurement Department**

- a. Perform all procurement processes outlined in this Works Information
- b. Issue invitation to tender to the *Supplier*
- c. Supply engineering with *Supplier* information for sole source justifications, where applicable.
- d. Set up clarification meetings between *Supplier* and *Employer*
- e. Act as communication link between *Supplier* and *Employer*
- f. Ensure all necessary payments are effected timeously and keep record thereof.
- g. Arrange technical evaluation sessions.
- h. Compile and present mandate to negotiate and arrange negotiation meetings if and when required and give feedback to relevant tender committee.
- i. Keep record of all tender documentation

#### **2.5.5 Employer: EMD & PTM**

- a. Perform inspections and QC on spares upon delivery

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- b. Ensure spare items are stored properly by Materials Management as per relevant storage recommendations by the respective manufacturers
- c. Ensure Spares are used sparingly and appropriately for the duration of the contract.

#### **2.5.6 Management and Reporting**

- a. The Contractor to be represented at any ad-hoc meetings that may arise to address any scope and safety related matters
- b. Liaison meetings shall be held with the Employer's Representative or his/her delegate on as and when required basis to discuss any technical details, or concerns.

#### **2.5.7 Communication and Correspondence**

- a. All correspondence includes but not limited to:
  - i. Kusile Power Station
  - ii. Employer's Contract number
  - iii. Contract description
  - iv. Correspondence subject matter
  - v. Employer's name and contact details
  - vi. Contractor contact details
  - vii. Date
- b. Where appropriate the correspondence includes the Employer's reference and is delivered as a single package or as per the agreed contract terms.
- c. All communications from the Contractor are numbered sequentially with a prefix as advised by the Employer. The Employer responds in like manner. The prefix and numbering system is decided upon at the Inaugural meeting.

#### **2.5.8 Quality and Documentation Control**

- a. During the tender process a quality criterion will be defined that the Contractor must comply to.
- b. The Contractor shall ensure that any witness, hold, and inspection points are strictly adhered to.
- c. All Quality References and Standards as stipulated in this document will be adhered to.
- d. The Contractor to comply with the Employer's quality documentation management system and processes.

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## **2.6 Process for Monitoring**

This document will be a once-off document to state the scope of work for a spares supply and delivery contract.

## **2.7 Related/Supporting Documents**

N/A

## **3. Essential System Scope of Work**

### **3.1 Plant Description**

Kusile Power Station is a 4 800MW rated power station with each of the six (6) units rated at 800MW. The DC charger & UPS systems are installed to provide power rectification (AC/DC) to a specified quality as well as supply back-up for a certain period with the use of batteries under AC mains failure. The chargers are required to float, boost, equalise and initial charge a battery and power uploads. The system also monitors rectification of the battery and load distribution for example the voltage, current, temperature and operating status.

Most UPS, battery chargers and distribution boards are redundant system designs where a loss of a single UPS, battery charger or DB will not cause a loss of power supply and/or cause a unit trip or shutdown of outside plant equipment/systems.

### **3.2 Description of the works**

The works entails the supply and delivery of spares with technical specifications detailed in a spares list (BOQ) that is included herein and attached as Appendix A: Kusile Essential System Spares BOQ. The list includes the following systems:

- Uninterruptable Power Supply (UPS) Spares
- Battery Chargers Spares

The following are the *Supplier's* requirements:

- a. The *Supplier* will ensure that the correct spare is supplied and will replace or be liable for damage at his/her cost if the incorrect or defective spare/s is supplied. The costs may include, but not limited to, repairs and/or replacement of a defective or incorrect spare.
- b. The *Employer's* (i.e., Eskom Holdings SOC) acceptance of delivered spare/s does not absolve the *Supplier* of the liability to supply the correct and/or defect free spare.
- c. The *Supplier* may, at the *Employer's* discretion, be given access to the plant to verify the information of the installed spare.
- d. The spare must be the same (e.g., same Part Number) as specified on this works information and the part number will also be used to perform quality control checks.
- e. If *Supplier* is not the OEM, the *Supplier* must be certified by OEM to supply spares to ESKOM.

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- f. The *Employer* may at his/her discretion make the *Employer's* Engineer or employees or *others* made available to the *Supplier* for the purpose of soliciting additional information or verifying information as the need arises.
- g. The *Supplier* will supply any additional information such as brochure, general arrangement drawing, test certificates, detailed specification, etc.
- h. The *Supplier* shall supply preservation and storage procedure(s) as part of the tender deliverables.
- i. "Estimated Spare Quantities to be Procured over Three Year Period", indicated by the *Employer* in the Appendix A as one of the table subheadings, is the estimated number the *Employer* may require the *Supplier* to supply over the contract period. The *Supplier* may only supply the quantity as specified by the *Employer* in the specific order instruction.
- j. If deemed necessary, the *Employer* may subject the *Supplier* to a quality assurance assessment at the *Supplier's* or *sub-Supplier's* premises as part of the technical evaluation or before the contract placement or at any time during the contract period.
- k. Complete price breakdown must be supplied with the quotation and must include the cost of transport to Medupi Power Station. The quotation will be based on items listed in Appendix A and there should be a similar one compiled for populating the items' individual DCF's. Methodology use to quote for transportation of procured items should be defined and quantified.
- l. Spares will be opened for inspection, counting and quality control check at the *Employer's* stores.
- m. The *Employer* has provided the Bill of Material table and copies of individual spares DCF's to assist the *Supplier* to meet the requirements of the Work to be performed by the *Supplier*.
- n. Where the DCF has already been fully or partially populated by the *Employer*, the *Supplier* shall verify the correctness of the information and complete partially populated DCF's.
- o. The *Employer* may make clarification sessions available to either prospective *Supplier(s)* to further assist the prospective *Supplier/s* to meet the requirements of the Work to be performed by the *Supplier*.

Where the *Employer* has entered into a National Framework agreement for the supply of any listed items in Appendix A before this contract is in place, those items shall not form part of the contract. The following items will be required as tender deliverables and the *Supplier* shall be evaluated on them:

- a. Use Appendix A to compile a quotation for the tendered items/components. A similar table shall be developed by the *Supplier* to supply quotation for populating individual DCF's. The quotation should include transportation costs as stipulated above.
- b. Confirmation that the *Supplier* is the original manufacturer or approved distributor of the items tendered for. Confirmation should be provided in written correspondence or certification of approval as a distributor.
- c. Confirmation that the items to be supplied will be the same as the items listed in Appendix A. Items different from the required spares will only be accepted where the item is approved similar. The *Supplier* must inform the *Employer* in writing as part of the tender deliverables to indicate proposed alternative spares. The *Employer* to be provided with all technical information on the proposed alternative spare to approve the alternative spare as acceptable. Similar spares to be interchangeable with original spares and any modifications required when installing the alternative spare to be indicated to the *Employer*.

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- d. Confirmation that the *Supplier* will populate all DCF's for the tendered items. In instances where not all fields of the DCF can be populated, the *Supplier* shall request the *Employer* for approval to submit an incomplete DCF. The *Employer* reserves the right to reject any populated DCF if the information is not deemed sufficient. More details required with the DCF's are outlined in section 4.2 below.
- e. The *Supplier* shall supply the preservation procedures for all the items tendered for. These shall include handling, storage and transportation procedures. Group preservation of similar items is acceptable. The procedures may be supplied after order placement. However, confirmation must be provided as a tender deliverable.
- f. The *Supplier's* proven track record in supplying listed items or similar items shall be sourced to ensure that the *Supplier* can supply the items. It is also required that there be technical expertise on the said components to ensure proper diagnosis of any faults that may be experienced on the tendered components.
- g. *Supplier* to notify the *Employer* about the warranty periods for all tendered components/items and the time it will take to deliver the items from the date of order placement.
- h. *Supplier* to provide data sheets for all tendered spares as part of the tender documentation. The data sheets to be comprehensive enough to give all relevant information that describe a product.

The *Supplier* shall provide shelf-life duration for all tendered items

### **3.3 Documentation**

The following are the *Supplier's* requirements:

- a) The *Supplier* will ensure that Electronic cards, CANO, CANIF, CUX, CANDIS, DFVU and INCA electronic boards are programmed with specific settings for each Uninterruptable Power Supply (UPS). INBB and INCA 2 cards must always be supplied together as a pair.
- b) The *Supplier* must provide references of the companies that they have supplied similar spares to, and include the respective supply order/contract value, the contact's name, physical address, and telephone number.
- c) The spare must be to the exact same specification as installed in the Kusile plant and specified on this scope of work document. *Notwithstanding the stipulated condition that the Supplier is responsible for verifying the correctness of the spare's information provided by the Employer in relation to the existing installed spare. This may include the Supplier consulting the original equipment manufacturer or supplier of the equipment/spare to ensure correctness of information provided by the Employer.*
- d) The *Supplier* to provide the *Employer* with signed letter from the OEM, to confirm that the *Supplier* is the local distributor of the OEM spares.
- e) The *Supplier* will supply any additional information such as brochure, general arrangement drawing, certificates, detailed specification, data sheet, Settings Document for programmable electronic cards etc.
- f) The *Supplier* provides the *Employer* with additional spares information and verifies information required in the attached data capturing forms (DCF).
- g) The *Supplier* shall supply preservation and storage procedure/s, where applicable.
- h) The *Employer* may make clarification sessions available to either prospective *Supplier/s* in order to further assist the prospective *Supplier's* to meet the requirements of the work to be performed by the *Supplier*.

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- i) The *Supplier* must ensure that all components supplied must be individually packed in such a way as to protect the parts during transport and storage. The packaging must also include the necessary labels to identify the items.

### **3.4 Acceptance of Spares**

#### **3.4.1 Spares Identification**

Appendix A herein and attached to this document is a list all the spares to be procured under this SOW. This list corresponds to the provided electronic copy of the DCF's or SAP Specification Printout that contain more information about the required spares.

Each spare is identifiable by means of a Eskom SAP Material number (as is used in the Power Station), part description, OEM and/or OEM part number.

#### **3.4.2 Obsolescence**

- a. The Supplier shall inform the Employer immediately where spares are found to be obsolete before the alternative spares is supplied,
- b. The Supplier shall indicate this to the Employer and indicate viable alternatives thereof.
- c. The Employer will review the alternatives and advice on the acceptance/rejection of the alternative thereof prior to the spares being delivered onsite.

#### **3.4.3 Spares Quantities**

- a. The estimated spares quantities to be provided as stipulated in APPENDIX A

#### **3.4.4 Design, Manufacturing and Testing**

Unless an alternative spare is proposed the required spares shall be the same, in all respects, as the original components. The spares shall also conform to the same specifications as the original components. This includes all aspects such as design, materials and material specifications, manufacturing and manufacturing processes, testing, and operating and storage specifications.

#### **3.4.5 Replacement Parts Upgraded/modified**

Where equipment or spares, including the whole assembly, have been upgraded/ modified the *Supplier* shall indicate this to the *Employer* as part of the tender. The *Employer* shall be made aware immediately where the upgrade/modification to the component is only identified subsequent to the tender being issued. The detailed compatibility to the existing component shall be indicated including changes required to fit the upgraded/modified spare. This includes hardware, firmware and software upgrade/modification. Approved alternative components shall be accepted provided they comply to all technical & commercial requirements.

If the components to be supplied will be obsolete, or envisaged to be obsolete, in the 3 years after tender being issued, the *Supplier* shall indicate this to the *Employer* and indicate viable alternatives thereof

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### **3.4.6 Packaging**

- i. All supplied spares shall be packaged in such a manner that they will be transported and stored without damage. This includes preventing damage due to moisture ingress, dust, and foreign objects. The Kusile Power Station Essential System Spares Preservation [2] shall be used in addition to the Contractor Transportation and Storage procedures.
- ii. Different spare types shall be packaged separately such that each spare type can be stored separately. Packaging shall be such that the spare can be identified without opening the packaging. Packaging shall be of material that will not be damaged, to an extent possible, by harsh weather conditions during transportation. If that is not possible, then the packaging shall be protected against such conditions.
- iii. Where possible, packaging to be such that procured spares can be positively identified through the packaging. Where this is not possible, the packaging to be such that it allows opening and closing of packaging and still maintain the packaging integrity thereafter.
- iv. Delivery packaging shall include as a minimum the following details:
  - a) Purchase Order Number
  - b) Part Description
  - c) Part number
  - d) Eskom SAP Material number
  - e) Drawing number, where applicable
  - f) Physical address of Kusile Power Station and the *Supplier*
  - g) Contact details of the *Supplier*
  - h) Delivery note number

### **3.4.7 Transportation**

Transportation of all spares shall be conducted with due regard of the sensitivity of the units and in such a manner that spares are suitably protected. All possible care must be taken to ensure that the components are not subjected to undue rough handling, vibration, humidity, excessive temperatures or abuse. When courier service is used for transportation, the courier services service provider shall be alerted to the nature of the content of the packages and instructed to handle with care. Labels shall be used to indicate the fragile nature of the items.

### **3.4.8 Quality Control of Spares**

- a) No incorrect, damaged, or faulty spares will be accepted.
- b) All the spares will be inspected before payment can be processed.
- c) Eskom template Data capturing forms information must be supplied and must meet an acceptable level. (All Mandatory Fields must be completed in full)
- d) Where applicable; test certificates, material certificate, manuals, data sheet, electronic cards programmed certificates and signature shall be provided.

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### **3.4.9 Information to be provided to the Supplier**

The *Supplier* may be provided with either complete, partially complete, or uncompleted electronic Data Capture Form (DCF) for each spare required. The *Supplier* is required to ensure that the correct information is captured on the DCF's by either reviewing the information, completing the missing information and completing a new DCF depending on action required. The DCF's are required by the Purchaser's Material Management System to be able to book the item in the store. the information should also be sufficient to procure the correct spares in future. Most of the DCF's have been populated by the *Purchaser* where information was available. This information may not be correct and needs to be reviewed and verified/corrected as part of the *Services*.

The DCF's may be provided in Microsoft Word format. The *Supplier* needs to ensure the 'Track Changes' function is selected 'on' so that any changes to the existing information as well as inserted information can easily be identified and tracked. The following information needs to be to be provided as detailed as possible on the DCF's.

- a) Verify the existing information that is already populated on the DCF's and make changes where required. Ensure the 'track changes' function is on.
- b) Populate/verify all mandatory fields on the DCF's.
- c) Supply additional information in the field "Free Format Text" or "Purchase order text" on the DCF's. This includes:
  - The standards or specification that the product must conform to.
  - Add any spares information which has been omitted, which is deemed relevant for spares identification, packaging and protection requirements during transportation and storage.
  - The Quality Control requirements for manufacturing and testing of the product to ensure that the spares conform to the correct specifications or standards, including certificates and test results, that is required with delivery of the goods.
- d) Supply any other additional information that has not been specified on the DCF's but necessary for storage, preservation, installation, and utilisation of spares where applicable. Such information includes brochures, technical data, etc. These DCF's with the added information needs to be made available electronically to the employer.
- e) Supply any other additional information that has not been specified on the DCF's but necessary for storage, preservation, installation, and utilisation of spares where applicable. Such information includes brochures, technical data, etc.

### **3.4.10 Guarantee of delivered spares**

All delivered spares shall come with an at least 12-months guarantee period starting from the *delivery date*.

### **3.4.11 Insurance of the Goods**

Insurance to be the responsibility of the *Supplier* until *delivery*.

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#### **4. Acceptance**

This document has been seen and accepted by:

<b>Name</b>	<b>Designation</b>
Colin Lepee	Snr Technologist Electrical
Patricia Modiba	Project Manager: Spares Acquisition
Bongekile Makini	Electrical Maintenance Manager
Alfred Phatlha	Protection, testing and Metering Manager
Mohapi Mphirime	Electrical Engineering Line Manager

#### **5. Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
January 2022	1	F. Nelufhangani	New Document

#### **6. Development Team**

The following people were involved in the development of this document:

- Collin Lepee

#### **7. Acknowledgements**

N/A

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## **Appendix A – Kusile Essential Systems Spares BOQ**

### **A.1 Document Hierarchy**

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