

	Specification	Kusile Power Station
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Title: **Kusile Power Station C&I Cables Installation & Commissioning Scope of Work**

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Alternative Reference Number

Area of Applicability: **Kusile Power Station**

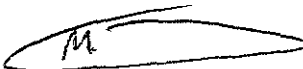



Functional Area: **C&I Maintenance Department**

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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 ..	3
2.2 Normative/Informative References ..	3
2.2.1 Normative ..	3
2.2.2 Informative ..	4
2.3 Definitions ..	4
2.3.1 Availability: Period when a system is operating satisfactory when used under specified conditions ..	4
2.3.2 Contractor: Service provider contracted to provide a specific service to Eskom, Kusile Power Station ..	4
2.3.3 Employer: Eskom, or Eskom Kusile Power Station or representative. ..	4
2.4 Abbreviations ..	4
2.5 Roles and Responsibilities ..	5
2.6 Process for Monitoring. ..	6
2.7 Related/Supporting Documents ..	7
3. Document Content. ..	7
4 Revisions ..	9
5 Development Team ..	9
6 Acknowledgements ..	9
Appendix A ..	10

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1. Introduction

Kusile Power Station management intends to establish a partnership with a suitably qualified, experienced and well established *Contractor* for the installation and commissioning of C&I cables in operating units and associated BOP. This document describes the details of the requirements, standards, scope of work and the terms and conditions of the maintenance partnership.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to define the scope of work specified for the installation and commission of C&I cables activities requirements for Kusile Power Station

The specified cables maintenance must support the requirement of the station to perform at maximum output

It is therefore imperative that the successful and suitably qualified partner aligns their organisation fully to these specified scope activities and processes laid down in this document

2.1.2 Applicability

This document is applicable to Kusile Power Station Generation

2.1.3 Effective date

This document is effective from the date of authorisation (last signature) until its succeeding document has been authorised.

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] 414 - 32 Rev 0 Kusile Maintenance User Requirement Specification
- [2] GGR 0992. Plant Safety Regulations
- [3] 240-56355731: Environmental Conditions for Process Control Equipment at Power Stations
- [4] 240 – 56227443 : Requirements for Control and Power cable for Power Stations Standard
- [5] 240-56355754 Field Equipment Installation Standard
- [6] 240-56355815 Control & Instrumentation Field Enclosures and Cable Termination Standard

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- [7] 240-132042241 Power Plant Controls & Instrumentation; Control Systems; Distributed Control Systems (DCS); Part 1. General Standard
- [8] 240-105658000 Supplier Quality Management. Specification

2.2.2 Informative

- [1] ISO 9001 : Quality Management Systems
- [2] ISO 14001: Environmental management System
- [3] Act No 73 of 1989: The Environment Conservation Act No 107 of 1998 National
- [4] Act No 107 of 1998. National Environmental Management Act, 1998
- [5] Act No 14 of 2009 The National Environmental Act, 1989
- [6] Act No 102 of 1980: National Key Points Act, 1980
- [7] Act No 85 of 1993. Occupational Health and Safety Act & Regulations, 1993

2.3 Definitions

2.3.1 Availability: Period when a system is operating satisfactory when used under specified conditions.

2.3.2 Contractor: Service provider contracted to provide a specific service to Eskom, Kusile Power Station.

2.3.3 Employer: Eskom, or Eskom Kusile Power Station or representative.

2.4 Abbreviations

Abbreviation	Explanation
AP:	Appointed Person
C&I:	Control & Instrumentation
CM	Corrective Maintenance
NEC:	New Engineering Contract
OEM:	Original Equipment Manufacturer
OHS Act:	Occupational Health and Safety Act
PCLF:	Planned Capability Loss Factor
PPE:	Personal Protective Equipment

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Abbreviation	Explanation
PM:	Plant Maintenance
PSR:	Plant Safety Regulations
PTW:	Permit to Work
QC:	Quality Control
QCP:	Quality Control Plan
QMP:	Quality Management Programme
RP:	Responsible Person
SP	Skilled Person
SAP PM:	SAP Plant Maintenance
SAP:	Systems, Applications, Products (Plant Maintenance, Procurement, Finance and Materials Management) integrated maintenance management system
SHE:	Safety, Health, Environment
SOW:	Scope of Work
UCF:	Unit Capability Factor
UCLF:	Unplanned Capability Loss Factor
URS:	User Requirement Specification

2.5 Roles and Responsibilities

All parties concerned in this SOW "shall act as stated in this contract and in a spirit of mutual trust and cooperation"

2.5.1 Employer

- The employer shall provide induction and ensure compliance before commencement of work
- The employer shall provide a conducive workplace for the *Contractor* during the period of work.
- The employer shall provide required spares for the issued task order
- The employer shall always determine the cable way and ensure provision of scaffolding where required
- Provide sectional Managing Supervisors for all *Contractor* employees to supervise and monitor adherence to SOW

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- f) The employer shall provide PSR RP for each activity

2.5.2 Contractor

- a) All *Contractor* employees 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. This document will be used in conjunction with the Kusile Maintenance URS
- b) The successful *Contractor* shall utilise/provide skilled and suitably qualified staff (in line with Eskom Job specifications) with current experience in the Eskom power plants
- c) All staff brought onto site in connection with this SOW should be able to fluently speak, understand and write in English.
- d) Proof of qualification is to be supplied on request by the Employer
- e) The *Contractor* ensures that all staff being brought to Kusile Power Station site has a valid fitness certificate based on the specified plant man-job specification.
- f) The *Contractor* shall employ in and about the execution of the works only such persons that are careful, competent and efficient in their several trades and callings and the Employer shall be at liberty to object to and require the *Contractor* to remove from the works forthwith any person employed by the *Contractor* in or about the execution of the works who, in the opinion of the Employer, misconduct's himself/herself or is incompetent or negligent in the proper performance of his/her duties and such person shall not be again employed for the works without the written permission of the Employer
- g) Provide daily supervision of all related plant through trained and competent personnel to ensure that inspections & work activities are conducted daily
- h) The *Contractor* must also provide knowledge on other plant falling within his field of expertise.
- i) The *Contractor* must ensure daily housekeeping, adherence to safety requirements and that any deviation is reported to the Employer on a required basis.
- j) Ensure logging and marking of all *Contractor* assets used during the contract period
- k) The *Contractor* shall be held responsible or held liable for any defects arising from poor workmanship performed by their staff or use of inferior spare parts. The guarantee periods shall be:
 - i. Poor workmanship within 24 hours period from the time which the equipment is put in to operation
 - ii Inferior spares within a period of 01 month from time the equipment is put in service

2.6 Process for Monitoring

This specification will be reviewed every year period from date of initial authorisation or when necessary to conduct assessment on the following:

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- a) Understanding processes and/or C&I maintenance as per Employer's instructions, systems (e.g. field instruments, cable, earthing, actuators & any C&I equipment)
- b) Ability to use test equipment e.g. Multimeter, Field Calibrator.
- c) Ability to read cable diagrams, loop drawings

2.7 Related/Supporting Documents

Not applicable

3. Document Content

3.1 Works information

The services of this SOW are installation and repairs of all C&I cables and racks at Kusile Power Station in accordance to Eskom Cable Standard 240-56227443, 240-56355815 Control & Instrumentation Field Enclosures and Cable Termination Standard

The cables associated with C&I are marshalling single-core cable, field multi-core control cables, fibre optic cables, communication or network cable. It shall be required that a suitable service provider is familiar with all types of these cables installation and termination suitable for various plant conditions.

The works shall be but not limited to removing old cables and racks, pulling new cable and racks, termination, marking, splicing, crimping

3.2 Installation and Commissioning of C&I Cables

- a) The works is the installation and commissioning of C&I cables on an "as and when required" basis at all plants that are related to Kusile Power Station Gx-C&I Maintenance and its boundaries.
- b) Install cable racks, new cabling, test and repair, complete earthing and perform termination as and when required.
- c) All cable connections at junction boxes, field instruments and marshalling cabinets shall be made using tension clamp terminals and Cables to be terminated in a crimped bootlace ferrule i.e. preventing numbers from slipping off the cable ends
- d) When cables are replaced or new cables installed in any DCS Cubicle, the damaged entry hole will be fire sealed with Micon FLAMSAYF 325 Fire Retardant Mastic from cable entry and inside cubicle.
- e) Labelling of cables: Cable number tags to identify cable as per requirements and colour coding
- f) On completion of the work the relevant equipment shall be properly re-commissioned prior to the clearance of the Permit to Work.

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3.3 Work Preparation and Work Management

- a) Adhere to work management system SAP PM
- b) Adhere to Eskom plant safety regulations (PSR)
- c) Risk assessment shall be done and documented/filed for each task
- d) Safe work procedures or temporary work procedures shall be available and used for each job.
- e) Job observation shall be done on agreed frequencies
- f) All documentation required to complete work shall be referenced and filed for future reference (Test results, reports, drawings etc.) All documentation to be completed and filed (test sheets, test results, technical reports, drawings etc.)
- g) Ensure compliance to PSR before any work commence
- h) All workers must be on RPs workers register and skilled person must keep and reported to the Employer on a required basis
- i) Attend various departmental meetings. (Safety, Maintenance, Commissioning etc)
- j) The *Contractor* must identify all potential hazardous tasks in the Works Information and prepare safe working procedures to issue to his staff before any work will start
- k) The *Contractor* must provide proof that toolbox talks have been held.
- l) Perform toolbox talks, discuss and fill risk assessment, ensure you're in possession of the correct drawings, correct check sheet, correct work procedure, correct QCP's and you're at the correct plant

3.4 Contractor Provisions

- a) The *Contractor* shall provide cable drum jacks
- b) The *Contractor* shall provide manual mobile lifting equipment where necessary
- c) The *Contractor* shall provide stepladders and all relevant cabling tools
- d) The *Contractor* shall continuously provide all relevant PPE (Arc flash, Safety Harness, etc)
- e) The *Contractor* shall provide as and when required a fire retardant whole sealant in cubicles
- f) The *Contractor* shall provide calibrated measuring and test equipment

3.5 Management and Reporting

- a) The *Contractor* shall be responsible or held liable for any defects arising from maintenance/operational faults within twenty four hours (24 hrs) after an intervention, provided that the equipment has been placed into service.
- b) The type of reports, level of detail and frequency of reporting will be mutually agreed by the Employer and the *Contractor* These may change from time to time on request by the Employer

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- c) The *Contractor* to be represented at any ad-hoc meetings that may arise in order to address any production or safety related matters
- d) Liaison meetings shall be held between the Employer's representative or his/her delegate and the *Contractor's* representative or his/her delegate on a monthly basis or when necessary to discuss any technical details, or concerns.
- e) All old cables removed belong to Eskom and will not be removed off-site by the *Contractor*.

3.6 Quality and Documentation Control

- a) The *Contractor* shall ensure that all measuring and test equipment provided is calibrated at all times & proof thereof must be readily available.
- b) The *Contractor* shall adhere to all 'Quality References' and 'Standards' applicable to this SOW.
- c) The *Contractor* shall utilise the Employer's quality documentation management system and processes
- d) The *Contractor* shall comply with QM58, 240-105658000 Supplier Quality Management: Specification Rev 2.
 - Refer to o Appendix A for Category 2, 240 – 12248652 Supplier Quality Management List of Tender Returnable Documents Rev 2Acceptance

This document has been seen and accepted by:

Name	Designation
Thabang Tholo	Acting C&I Senior Technical Supervisor
Mvuselelo Shobede	C&I Senior Technical Supervisor
Mauritz van der Bank	C&I Engineering Manager

4. Revisions

Date	Rev.	Compiler	Remarks
January 2021	01	M Mhlongo	First issue

5. Development Team

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

6. Acknowledgements

Kusile Power Station C&I Engineering and Maintenance department

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Appendix A

240 – 12248652 Supplier Quality Management List of Tender Returnable Documents Rev 2

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 Eskom	Supplier Quality Management: List of Tender Returnables Documents	Unique Identifier	240-12248652	
		Revision	2	
		Effective Date	2018/10/26	
		Specification	QM 58	
Category 2- Quality Requirements		Deliverables to be evaluated indicator = 1	Weights	
SECTION A - Quality Management System Requirements ISO 9001 (Option 1) Valid certification of Quality Management System by an ISO accredited body				
		Apply (Yes=1)	25%	
A 1 Product / Service Scoping on ISO 9001 certificate is defined and relevant		1		
A 2 Certificate by Approved and Authorized certification authority		1		
A 3 Certification Authority has Recognized international Accreditation		1		
A 4 Validity (expiry date) of certificate		1		
Section A Score		4		
SECTION A - Quality Management System Requirements ISO 9001 (Option 2) Objective evidence of documented QMS that is not certified but complies with ISO 9001				
		Apply (Yes=1)		25%
A 1 QMS Manual or a document that defines and describes the QMS and its scope or Quality Method statement based on scope		1		
A 2 Quality Policy Approved by top management		1		
A 3 Quality Objectives Approved by top management		1		
A 4 Records required by ISO 9001 standard (List of Records)		1		
A 5 Control of documented information		1		
A 6 Documented information for Control of nonconforming outputs		1		
A 7 Documented information for Nonconformity and Corrective action		1		
A 8 Documented information for Internal audit		1		
Sub-Section A Score Option 2		8		
SECTION B - Evidence of QMS in operation (Tender Quality Requirements -Ref QM-58 /240-105658000)				
		Apply (Yes=1)	25%	
B 1 Documented information for defined roles, responsibilities and authorities		1		
B 2 Documented information for Control of Externally Provided Processes, Products and Services		1		
B 3 Latest copy of an internal management system audit report (with Nonconformity, Correction and/ or		1		
Section B Score		3		
SECTION C: Contract Quality Plan Requirements (Ref QM-58 and 240-109253698). Draft Contract Quality Plan specific to the scope of work as described in the tender documents (Ref ISO 10005)				
NB! Draft Contract/Project Quality Plan has important QA deliverables		Apply (Yes=1)	20%	
Section C Score		1		
SECTION D- Quality Control Plan Requirements (Ref QM-58 or 240-109253302) QCP /Checklist/ ITP (Quality Control Plans) as per Scope of Works (Ref ISO 10005 & QM 58)				
NB! Example of an Inspection and Test Plan (ITP) or Quality Control Plan (QCP) on similar and/ or previous work done		Apply (Yes=1)	20%	
		1		
Section D Score		1		
SECTION E: User defined additional Requirements & miscellaneous (Ref QM-58) Customer specific requirements & other standards and required can be listed and evaluated here				
		Apply (Yes=1)	10%	
E 1 Form A is completed and signed		1		
E 2 Add other requirements (if applicable) as per the scope of work and/ or specification		1		
Section E Score		2		