Eskom	Scope of Work	Engineering

Title **Electrical Power and Control Cabling Contract**

Document Identifier	***1037965**
Alternative Reference Number	
Area of Applicability	**Kendal Power Station**
Functional Area	**Engineering, Outage, Project, Electrical, C&I Maintenance Department**
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Compiled by	Functional Responsibility	Authorized by
Nathi Mkhize	**Remember Sigawuke**	**Nonhlanhla Khumalo**
Electrical Engineer	**Electrical Engineering Manager**	**Acting Engineering Manager**
Date 24/05/2022	Date 2022/05/25	Date 27/05/2022

Content

1. Introduction

Kendal Power Station is one of Eskom's largest coal fired power stations in the coal fleet The station is made up of six units, to generate approximately 4116 MW to the Eskom national grid The station has been in operation since 1988 The ability of the station to generate electricity is made possible by the electrical reticulation network within the station

The contract is for the Supply, Delivery, Installation, Testing, Tracing and Commissioning of Power, Control and Telecommunications Cables, Electrical Components, Earthing Systems, and Emergency Breakdown Repair Services of all cables at Kendal Power Station

2. Supporting Clauses

2.1 Scope

This document provides the scope of work for the cabling contract at Kendal Power Station

2.1.1 Purpose

The purpose of this report is to formally capture all the relevant information pertaining to the cabling contract

2.1.2 Applicability

This document is applicable to the following departments at Kendal Power Station **ONLY**

- Electrical Engineering Department
- Outage Department
- Project Department
- Maintenance Department
    - EMD Units
    - EMD Outside Plant
    - C&I Units
    - C&I Outside Plant

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] ISO 9001 Quality Management Systems

[2] Occupational Health and Safety Act and Regulations (85 of 1993)

[3] ISO 14001 Safety Management Systems

[4] 240-56356396 Earthing and Lightning Protection Standard

[5] 240-56355815 Field Instrument Installation Standard Junction Boxes and Cable Termination

[6] NRS 028 1991 Cable lugs and ferrules for copper and aluminium conductors

[7] 85-A-001 Functional Location KKS Coding and Labelling Standard

[8] SANS 1091 National Colours Standard

[9] SANS 10142-1 The wiring of premises, Part 1 Low-voltage installations

[10] SANS 62305 Protection against lightning

2.2.2 Informative

[11] 36-681 Generation Plant Safety Regulations

[12] 240-52844017 Eskom System Reliability, Availability and Maintainability Analysis Guideline

[13] ISO 10007 Guidelines for Configuration Management

[14] 240-105658000 Supplier Quality Management Specification

[15] 240-56227443 Requirements for Control and Power Cables for Power Station Standard

[16] SANS 1520 Part 1 – cables with operating voltages of 640V/1 1kV and 1 9/3 3kV
[17] SANS 1520 Part 2 – cables with operating voltages of 3 8/6 6kV to 19/33kV
[18] SANS 1520 Part 3 – cables with operating voltages of 1 5kV d c
[19] *1036668 Kendal configuration management plan

[20] SANS 10142-1 Edition 3 Electrical Installation Regulations

2.3 Definitions

No	Definition	Description
1	**Common plant**	The services that is common to all Units and any other plant which is not applicable to one Unit operation only
2	**Controlled disclosure**	Controlled disclosure to external parties (either enforced by law, or discretionary)
3	**Low voltage switchgear**	Switchgear with a nominal voltage level lower than or equal 1000V
4	**Low voltage**	Voltage that does not exceed 1000V a c or 1500V d c, including Extra Low

2.4 Abbreviations

Abbreviation	Description
ISO	International Organization for Standardization
Gx	Generation
IEC	International Electro-technical Commission
kV	Kilo volt
DC	Direct Current
MW	Megawatt
LV	Low Voltage
OHS Act	Occupational Health and Safety Act
SANS	South African National Standards
DB	Distribution board

2.5 Roles and Responsibilities

This document shall be managed and maintained by Electrical Engineering, Project, Outage and Electrical Maintenance Kendal Power Station

- The ***Contractor*** is responsible for Supply, Delivery, Installation, Testing, Tracing and Commissioning of Power, Control and Telecommunications Cables, Electrical Components, Earthing Systems, and Emergency Breakdown Repair Services of all cables at Kendal Power Station according to the scope of work issued
- ***Plant Engineer*** is responsible for doing QC and making sure work is done according to the scope of work issued
- ***Outage, Project, Electrical and C&I Maintenance Departments*** are responsible for making sure that the contract is managed properly

2.6 Process for monitoring

- The ***Contract Service Manager*** must ensure that the contractor follows all Eskom procedures and process
- The ***Contractor*** is to ensure the use of Inspections and quality to monitor progress and quality of the work

2.7 Related/Supporting Documents

None

3. Employers Works Information

3.1 Executive Overview

The contract is for the Supply, Delivery, Installation, Testing, Tracing and Commissioning of Power, Control and Telecommunications Cables, Electrical Components, Earthing Systems, and Emergency Breakdown Repair Services of all cables at Kendal Power Station

3.2 Work to be performed by the Contractor for the works

- The works is for the supply, delivery, installation, testing, tracing, commissioning and de-commissioning of power, control and telecommunications cables, cable accessories, cable joints, cable terminations, cable racks, cable trunkings, DIN-RAIL, conduits, trenching, cable route markers, earthing, welding sockets, circuit breakers, fuse isolators, distribution boxes, junction boxes, wiring of distribution boxes, junction boxes and it's auxiliary switchgear components, coating material for fire protection on an "as and when required basis" at Kendal Power Station

- This includes inspection and replacement of equipment on the 11kV and 22KV over headlines for the outside plant as per Eskom standard and procedures on an "as and when required basis" at Kendal Power Station

- This service shall include all projects, outage work, routine maintenance, repairs, structural repairs, inspections and cleaning, support services, emergency breakdown services, statutory inspections and defect correction during normal and abnormal condition or operation, to ensure the integrity of the installed cabling system and power circuits at Kendal Power Station

- All cables, cable accessories, cable joints, terminations and cable racks shall be supplied and installed in accordance with the Eskom Standard - 240-56227443 Requirements for Control and Power Cables for Power Stations Standard

- All power cables supplied and installed at Kendal Power Station must a low halogen cable (Blue Strip)

- The Contractor provides all services, tools, specialized tools and equipment, specialized personnel, and all associated maintenance services to accomplish and execute the requirements of the Service Information

- The Services are performed on existing, and new installations and complies with good engineering and maintenance practices and standards for Power Stations and conforms to legal, environmental and other Eskom specifications, procedures, standards and conditions prevailing at the site

- The Contractor is expected to be involved with any maintenance plan activities within the scope of this contract This includes identification of spares required

- The Contractor shall perform cable repairs on an "as and when required" basis at Kendal Power Station

- Any cable more than 10m long that is decommissioned by the Contractor must be communicated to the Supervisor or his delegate to obtain information about storage or disposal of that cable, according to Eskom Disposal Procedure

- Perform switchgear moves from one electrical board to another

- The Contractor shall maintain and issue all legal required certification to ensure compliance Example ***Certificate of Compliance***
- The contractor shall perform fault finding and testing of MV / LV cables
- The contractor shall participate in investigations as and when required
- During Investigation, the Contractor shall identify and report potential plant failures
- Recommend actions, modifications, and system process changes
- The contractor shall compile drawings where necessary and these shall be in accordance Eskom requirements Drawings shall be natively drawn and submitted in Micro-station Version 8 unless stated otherwise
- The contract shall provide assistance with shiftable and extendable conveying systems, e g Ash Plant belt shifts

3.2.1 Electrical Specification

The electrical *Works* to be provided by the *Contractor* shall be complete and fully functional The *Contractor* shall ensure that the electrical *Works* is executed as indicated in this section of the scope of works All *Works* pertaining to electrical and to be performed by a *Contractor* shall be according to the rules and regulations of the *Employer* at all times The *Employer* reserves the right to stop work if such rules and regulations have been breached to seek legal advice and further action

The *Contractor* shall dig trenching, supply and install cabling from point of supply to point of use Electrical installation to be aligned to SANS10142 (the Wiring of Premises) and in accordance with Occupational Health and Safety Act (OHASA), Electrical Installation regulations

The electrical equipment specification should be done according to SANS and Eskom standards Cabling and electrical components that will be supplied by the Contractor should be suitable to operate on 22kV, 11kV, 6,6kV, 3,3kV, 400VAC, three phase supply and 220 VAC single phase and 50 Hz power supply, as well 220VDC, 48VDC and 24VDC The termination from the source to the load is the responsibility of the *Contractor* and is subject to acceptance and approval by the *Employer*

3.2.1.1 Junction Box Requirements

The *Contractor* is to ensure that all junction boxes are to be rated at IP65 and IP67

The *Contractor* is to ensure that manufacturing, mounting, earthing and labelling of the Junction Boxes is according to the standard *240-56355815 Field Instrument Installation Standard Junction Boxes and Cable Termination*

The *Contractor* is to ensure that internals of the Junctions Boxes will have a Perspex cover to restrict access to the wiring by unauthorized persons

The Contractor is to ensure that all Junction Boxes are adequately corrosion protected as per the Eskom standard *240-75655504 Corrosion Protection Standard for new indoor and outdoor Eskom Equipment, Components, Materials and Structures manufactured from Steel Standard*

3.2.1.2 Earthing and Lightning Protection Requirements

The *Contractor* is to ensure that all cable earthing and equipment earthing complies with Eskom *standard 240-56227443 Requirements for Control and Power Cables for Power Stations standard*

The *Contractor* is to ensure that all equipment should have adequate lightning protection and is earthed as prescribed in the standard *240-56356396 Earthing and Lightning Protection standard*

The *Contractor* is to ensure that the lightning protection shall have steel lighting rods, aluminium earthing and copper spikes connected to Kendal Power Station's earth mat

The *Contractor* is to ensure that the instrumentation control system shall have a dedicated electronic earthing network and shall not be directly connected electrical or station earthing mat as indicated on Eskom earthing standard *240-56356396 Earthing and Lightning Protection standard*

3.2.1.3 Control and Power Cabling Requirements

The *Contractor* is to ensure electrical power and control cables are to be installed as per standard *240-56227443 Requirements for Control and Power cables for Power Stations standard*

The Contractor is to ensure that all cables will be sized to allow a volt-drop of no greater than 5% of the voltage at the switchgear end or, as otherwise prescribed, in the standard *240-56227443 Requirements for Control and Power cables for Power Stations standard*

The Contractor is to ensure that laying of cables underground cables is done in accordance with Eskom standard *240-56227443 Requirements for Control and Power cables for Power Stations standard*

3.2.1.4 Low Voltage Switchgear Requirements

The Contractor is to ensure that the Low Voltage (LV) Switchgear shall comply with Eskom *Standard Specification 240-56227516 Low-Voltage Switchgear and Control Gear Assemblies and Associated Equipment for Voltage up to and including 1000V and 1500V standard,* latest revision (arc compliance)

The *Contractor* is to ensure that all Miniature Circuit Breakers (MCB's) and earth leakage units are to be SANS approved

3.2.1.5 Medium Voltage Switchgear Requirements

The Contractor to ensure that Medium Voltage shall comply with *Hawker Siddeley Switchgear Manual*

3.3 Testing

The following tests and inspections, but not limited to, are required

- Test continuity of bonding conductors
- Test resistance of earth continuity conductor
- Test earth fault loop impedance at main switch
- Test continuity of ring circuit
- Test prospective short-circuit current (PSCC) at point of control
- Elevated voltage between incoming neutral and external earth (ground)
- Earth resistance in accordance to SANS 10199
- Insulation resistance test
- Voltage at main DB with no load test for each phase to neutral
- Voltage at main DB with load for each phase to neutral
- Voltage at available load for each phase to neutral

- Test operation of all earth leakage units on each DB
- Test operation of all earth leakage buttons on each DB
- Test polarity of all points of consumption
- Test phase rotation at all points of consumption for welding sockets
- Test all switching devices, make-and-break circuits
- Issue Certificate of Compliance

3.4 Contract Deliverables

The following deliverables are required as per the Configuration Management requirements, during the Contract period

- Inspection Schedules and Plans
- Electrical Installation databases
- Electrical distribution board layout drawings
- Distribution board wiring diagrams
- Load schedules
- Cable Manufacturing and Testing Certification

3.5 Plant Coding and Labelling

Coding of the plant shall be based on the latest revision of 240-93576498 KKS Coding Standard and the Employer shall undertake the coding in line with its standards The KKS coding shall be applied during the maintenance of the plant and cross referenced to all drawings, schematics, instructions and manuals The Contractor shall be required to install missing KKS in plant

The Employers KKS Standard shall be used to allocate codes to plant or system included in the Works Plant Coding shall be undertaken by the employer as well as the following documentation to code

Electrical

- Single line diagrams
- Electrical board general arrangements
- Cable schedule
- Cable block diagrams
- Logic diagrams

3.5.1 Plant Labelling

The Contractor shall also manufacture and install KKS labels to identified plant items as per list supplied by the Employer Labels shall be manufactured and installed according to the Employer's KKS Plant Labelling and Equipment Descriptions Standard The labelling standard shall be supplied as part of the enquiry documents

3.6 Tender Evaluation Strategy

3.6.1 Technical Evaluation Threshold

Mandatory Technical Evaluation Criteria (gatekeepers) are 'must meet' criteria These criteria shall not be weighted or point scored, but shall be assessed on a Yes/No basis as to whether or not the criteria are met unless set otherwise An assessment of 'No' against any criterion shall technically disqualify the tenderer and shall not be further evaluated against Qualitative Criteria

Qualitative Technical Evaluation Criteria are weighted evaluation criteria used to identify the highest technically ranked tenderer after determining that all the Mandatory Evaluation Criteria have been met The Qualitative Evaluation Criteria are weighted to reflect the relevant importance of each criterion The minimum weighted final score (threshold) required for a tender to be considered from a technical perspective is **80%**

Evaluation will be done according to **Tender Engineering Evaluation Procedure *240-48929482***

3.7 Contractor's Equipment

The *Contractor* to provide all equipment that is required to complete the *works with calibration certificates*

The *Contractor's* equipment, including testing equipment is validated and certified for use by the South African National Accreditation System

Any Equipment, or appliances, used by the Contractor conforms to the applicable OHS Act safety standards and is maintained in a safe and proper working condition The Contract Service Manager has the right to stop the Contractor's use of any Equipment which, in the opinion of Contract Service Manager, does not conform to the foregoing

All tools, special tools and accessories required for the normal operation and maintenance shall be included in this Contract

3.8 Contractor's Management, Supervision and Key People

- The Contractor must have at least two persons authorised as responsible persons in terms of Eskom's permit to work system and comply to Eskom's Plant Safety Regulations and the Operating Regulations of High Voltage Systems, at all times
- The Contractor is responsible to interface daily with all stakeholders
- The Contractor is to provide an organogram and changes to key personnel are to be communicated to the *Contracts Service Manager*
- A list of all employees and their qualifications is submitted to the Contracts Service Manager at the starting date
- The Contractor ensures that his site manager or his delegate is on site during office hours The Contractor's site manager or his delegate has full signing authority and is authorised to make binding decisions The Contractor, his site manager or his delegate is reachable per telephone, after hours for any emergencies

- The Contractor notifies the Contracts Service Manager of his contact telephone numbers by the starting date
- The Contractor notifies the Contracts Service Manager of a change of Contractor's telephone number as soon as it is practically possible
- The Contractor is registered with the Electrical Contractor Board and supplies the Contracts Service Manager with proof of this at the starting date
- The Contractor prices to ensure compliance to the Basic Conditions of Employment Act
- The *Contractor* issues a monthly report to the *Contracts Service Manager* as agreed between both parties This report shall include all work done to date, work in progress (including the status) and future work if an order is already in place during the preparation of the report and any other work that the *Contractor* is busy with The report also includes a copy of all the invoices issued during that month
- The Contractor fills in the cable information sheet for every cable task and submits it to the Engineer

Table 1 Cable Information Sheet

Information (Example)	
Cable number	01BFA1012
Cable origin Function Location Code	01BFA06AA001
Cable origin Description	380V UNIT BOARD A CIRCUIT 05
Cable destination Function Location Code	00EGD11AH001
Cable destination Description	BOOSTER PUMP 1
Termination Date	20/06/2022
Cable type	BVX3PCV(Refer to Eskom Standard Code for Power and Control Cables)
Joint information	20m from origin
Gland type	Specify
Cable Length	138m
Cable route	Specify
Tagged as per Eskom standard	Yes

- On notification of a defect/repair to be conducted the Contractor will submit the following documentation to the Contracts Service Manager for approval

- A detailed quotation for the works
- A detailed task order for the work to be done
- A program indicating the duration of the work
- A process quality plan
- A completion Certificate after the work is done

- In the event of a breakdown after hours and week-end the work needs to be approved by the most Senior Person on Shift, Standby Manager or Contract Service Manager The normal commercial process will be followed the next working day to submit the required documentation

- The Contracts Service Manager, his delegates (other departments using the Contract), and, if outside the Employer's working hours, the most Senior Person on Shift, Standby Manager or Contract Service Manager are identified as those authorised to call out the Contractor as required to perform the works

- On completion of the work the Contractor will submit
  - Handover Documentation with signed off PQP
  - Test records of the work performed
  - COC certification if required
  - Completion Certificate
  - Assessment

3.9 Working Hours

The official working hours at Kendal Power Station are as follow

- Monday to Thursday 07 15 - 16 30
- Friday 07 15 – 12 15

3.9.1 Normal Hours

- Any work, for which the Contractor has received more than 24 hour notice, this can be in office hours or outside of office hours

- Any activity for which the Contractor has to come to work to complete projects assigned to him This can be outside of office hours

- The Contractor shall adopt the working hours of the Employer during the contract period

3.9.2 Emergency Hours

- Any work for which the Contractor was given less than 24 hour notice, and has to come to site on the request of the Supervisor or his delegate The time would include his travelling time, and all travelling cost This does not apply during normal office hours

- If the Contractor is already on site for any other reason, and is requested to attend to other work, then emergency hours will not apply Unless the Contractor has to stay on longer and can prove that the Contractor had other commitments

- Where a unit start-up or outage or other work is being conducted outside normal office hours, the Contractor shall, in order to provide the works, be present at the event concerned at the Employer's request, provided such requests is provided at a notice period reasonable for the circumstances, by the Supervisor or his delegate

3.10 Notice Period

A reasonable notice period shall be deemed to be

- One day for general meetings,
- Seven days for a planned outage,
- One hour for a unit trip, as soon as possible but not longer than 2 hours and
- Three hours for a health or safety hazard or a plant emergency that could lead to a trip or other loss of generating capacity
- The Contractor reports to the power station or any other site for meetings, seminars, conferences, etc as notified by the Supervisor or his delegate

3.11 Defects Correction Period

- Due to the different nature of defects, and the different risks associated with trips, the defect correction period as specified in the Contract Data varies per defect, as indicated by the Employer
- Defects are categorized as such
    - Priority 1 – 24 hours – All modifications which may affect the operation of any Kendal plant
    - Priority 2 – 2 days – Investigations and feasibility studies
    - Priority 3 – 1 week – Repairs

3.12 Documentation Control

- Contracts Service Manager provides the necessary drawings, operating and maintenance procedures to perform the service in accordance with the Employer's requirements Where an Eskom procedure is not available, the contractor shall participate and contribute to develop such a procedure
- The Contracts Service Manager has the propriety rights to all the documentation applicable to Kendal Power Station
- All deviations from Eskom drawings, labelling and safety signs to be reported
- The Contractor complies with the standards and specification listed in Table 2

Table 2 Standards and specifications

Item	Title	Date of revision
1	36-681 Generation Plant Safety Regulation	Rev 2
2	32-846 Operating Regulations for High Voltage systems	Rev 0
3	ESKASAAU7 Quality Requirements for the Procurement of Assets, Goods and Services	Rev 1
4	240-55714363 Coal Fired Power Stations Lighting and Small Power Installation Standard	Rev 1
5	240-56355815 Field Instrument Installation Standard Junction Boxes and Cable Termination	Rev 1
6	240-75655504 Corrosion Protection Standard for new indoor and outdoor Eskom Equipment, Components, Materials and Structures manufactured from Steel Standard	Rev 1
7	240-56227443 Requirements for Control and Power Cables for Power Stations standard	Rev 1
8	240-56227516 LV Switchgear and Control Gear Assemblies and Associated Equipment for Voltage up to and Including 1000V AC and 1500V Standard	Rev 1
9	240-56356396 Earthing and Lightning Protection standard	Rev 1
10	*1017822 Functional Location (KKS) coding and labelling standard	Rev 1
11	QM58 Quality Requirements For Engineering And Construction Works In Generation	Rev

3.13 Access to Facilities and Systems

- The Employer arranges an access permit to Kendal site for the Contractor and his vehicle(s)
- The Employer makes available to the Contractor data, hardcopy or electronic, where such information is necessary to provide the works, where such data is not deemed to be confidential by the Employer
- While the Employer provides the accesses mentioned, the Contractor makes use of these facilities and systems within any and all procedures or other rules governing the similar use of these facilities by the Employer's employees These shall include inter alia, the Employer's safety, security, and ethics rules The onus rests with the Contractor to ensure compliance to the relevant rules

4. Safety Precautions

4.1 Health and Safety Plan (Construction Regulations)

Upon the award of the contract, successful *Contractor* must submit a Health and Safety Plan, filed in a Health and Safety File

The Safety Officer employed by Kendal Power Station will audit these Health and Safety Plan to ensure compliance with the provisions of the Act The approval of the health and safety plan can sometimes take 2 to 3 days to approve and ***NO WORK*** shall be conducted before the plan is approved The *Contractor* has to consider this for their health and file costing

a) The Contractor must work according to Kendal Power Station's site regulations and plant safety regulations

b) The Contractor's personnel must be authorized in terms of the Employer's Plant Safety Regulations and HV Regulations for the duration of the contract and will attend training and authorizing testing when required

c) The Contractor reports any unsafe conditions or practices to the Employer

d) The Health and Safety Requirements to be met by contractors will be complied with at all times

e) The **Life Saving Rules** will be applied to at all times

- **Rule 1: Open, Isolate, Test, Earth, Bond and/or Insulate before Touch**
- **Rule 2: Hook up at heights**
- **Rule 3: Buckle up**
- **Rule 4: Be Sober**
- **Rule 5: Ensure that you have a Permit to Work**

4.2 Protection of Persons and Plant

Due cognisance shall be taken of the need to provide adequate protection of persons and plant, from accidents arising or likely to arise from whatever source To this end, all units of plant, which may possibly be subject to damage or become a source of danger to human life either, in itself or by virtue of its operation shall be adequately protected as laid down in the Occupational Health and Safety Act No 85 of 1993

4.3 Appointment of Responsible Person

a) The Contractor shall cause all work to be carried out under the general supervision of a responsible person appointed by the Contractor in writing in accordance with the provisions of the Occupational Health and Safety Act No 85 of 1993

b) A copy of the letter of appointment and of the appointee's written acceptance thereof shall be lodged with the Contract Manager

c) Work on site shall not commence until the documents referred to in sub-clause (b) have been received by the Contract Manager

d) Due cognisance shall be taken by the Contractor of Regulation 5 "Work in Confined Spaces", of the O H S A Regulations and further to this no clearance certificates shall be given by this Department

e) The Contractor will be required to take out its own permits and shall make provision for this

Precautions shall be taken to avoid safety and health hazards to workers The Contractor shall be responsible for supplying protective clothing etc for use of the workers

5. Quality Assurance Requirements

The Contractor submits a quality control plans prior to commencing work The quality control plans should cover inspections and test proposals for items or activities to be supplied in the contract The quality control plan indicates the following

a) The identification of the activity/operation

b) A list of sequence of operations including inspections and tests

c) The identification of the specification, drawing or procedure for each operation

d) The acceptance criteria with reference to the appropriate technical specification set out by the Contractor

e) The inspections and test the Contractor has nominated for hold and witness points

f) Provision for inspections and tests nominated by the Employer, and /or his representative

g) Inspection and test records which are generated by the Contractor

The *Contractor* is also responsible for the following

a) The Contractor notifies the Employer of any changes to the quality system and obtains agreement prior to the implementation on the existing orders and contracts or sub orders and contracts

b) Identifies any additional documents which are to be submitted to the Employer

c) Indicates the interface with the Contractor's quality system and applicable documents such as procedures and work instructions

d) In case a Sub-Contractor is employed, the Contractor indicates how they will be monitored

The Contractor and/or Sub-Contractors give access to the Employer or his representative where appropriate to their premises and facilities at reasonable times to conduct quality assessments, audits, surveillances, and inspections to establish compliance with the contractual requirements

6. Environmental Requirements

Kendal Power Station is ISO 14001 compliant The Contractor must comply with the requirements of this procedure titled Environmental Management System Requirement for the Contractors number PG/240/008

Kendal also has an SHEQ Policy PS/270/0083, to which every Contractor and employees must adhere to It is therefore the responsibility of the Contractor to ensure that the Contractor obtains copies of Kendal

SHEQ Policy The Contractor must identify all Environmental aspects and impacts related to his/her activities The Contractor must have copy of the legal register related to the scope

Kendal procedures applicable to the Contractor's area of responsibility to assist the Contractor and his/her employees to prevent pollution and comply with legislative requirements, and to familiarize themselves on such procedures, within 30 days from the date of commencement of work at Kendal Copies of the above-mentioned documents shall be obtained from the Eskom Agent and/or Environmental Officer on the first day prior to commencement of work at Kendal

The Contractor shall submit a proof to the Environmental Officer of Kendal that he and his employees has done all the necessary training on procedures and Policies supplied to them and that they do understand the contents of the procedures, registers and policies and will adhere to them at all times

The non-adherence to the rules will result in a non-conformance, hence immediate termination of the contract

Rules are as following

a) Provide sufficient storage containers, labelled depicting general or hazardous waste and store in a designated storage area

b) Ensure that all hazardous waste is disposed of at a licensed site A copy of the hazardous waste disposal certificate must be submitted to the Employer Representative

c) Ensure that all other general waste is disposed of at the licensed landfill site

Ensure that your site does comply with the general good housekeeping practices

The contractor/Maintenance must comply with the following requirements

a) Environmental Management System (ISO 14001 2015)

b) National Environmental Management Act (Act 107 of 1998)

c) Environmental Management Procedure for Contractors (*1018332)

d) Waste Management Procedure (*1024102)

e) Non-conformance, Corrective and Preventative Action (*1017357)

6.1 Refuse Disposal

The Contractor is responsible to keep the work area clean of any rubble

All waste introduced and/or produced on the Employer's premises by the Contractor for this contract, is handled in accordance with the minimum requirements for the Handling and Disposal of Hazardous Waste in terms of Government Legislation as proclaimed by the latest National Environmental acts and regulations The removal of any waste and hazardous waste is the responsibility of the Contractor

7. Site Services and Facilities

7.1 Supply of Electricity

All points of supply requested by the *Contractor* are provided in terms of quantity and location at the discretion of the *Electrical Engineering Department*

There is no energy charge for electricity used for construction purposes

No connection is made to the permanent installation at the Power Station without the prior acceptance of the *Electrical Engineering Department*

No guarantees of power supply quality are given and power supply breaks of some duration may occur without warning Planned outages are also a possibility The *Contractor* makes arrangements at his own expense to improve continuity and quality of power supply where necessary for any reason and no claim of any nature relating to power failures is considered

7.2 Roads

Main access roads are surfaced and complete and may be used by the *Contractor* with the necessary care The *Employer* maintains the Site roads, described above, to a fair condition Any costs incurred by the *Contract Manager* from damage caused to underground services, structures, etc as a result of the *Contractor* not using the prescribed routes is recovered from the *Contractor*

7.3 Evacuation, First Aid and Fire Fighting

The *Contractor* must have a trained First Aid and Fire Fighter, in case of emergencies

7.4 Sanitary Facilities

The *Contractor* and personnel uses the *Employer's* sanitary facilities as directed by the *Contract Manager*

8. General

The Contractor shall ensure that there are at all times sufficient suitably qualified, experienced, and skilled staff available to carry out and supervise all the activities

This contract and all information associated with its management is confidential and may not be divulged beyond the provisions stated within the contract Should the Contractor violate this condition, the Employer may terminate this contract forthwith and nullifying any outstanding or further claims by the Contractor

Neither the Contractor nor the key persons may have any interest, pecuniary, material or otherwise in any work arising from, impacting, or influencing the Contractor's ability to impartially fulfil the Scope of this contract, be it of a service or supply nature The Contractor and the key persons are to declare any interest, pecuniary, material or otherwise, in any tender, offer or quotation to the Contracts Service Manager for any other work, supply or service, to the Employer's Agent at the time when such tender, offer

or quotation is submitted The Contracts Service Manager's interpretation of a situation shall apply where there is a conflict

9. Authorisation

This document has been seen and accepted by

Name & Surname	Designation
Sibongiseni Mazibuko	Kendal Programme Manager
Lomile Ngqendesha	Kendal Outage Manager
Zanele Maleka	Kendal Outage Executioner
Amanda Mbatha	Kendal Electrical Maintenance Manager (Units)
Fhatuwani Muhanelwa	Kendal Acting Electrical Maintenance Manager (Outside Plant)
Remember Sigawuke	Kendal Electrical Engineering Manager
Msingathi Tose	Kendal System Engineer
Nonhlanhla Khumalo	Kendal Acting Engineering Manager
Mooiman Phetla	Kendal System Engineer
Ayanda Mahlobo	Kendal System Engineer
Nokukhanya Khathi	Kendal System Engineer

10. Revisions

Date	Rev.	Compiler	Remarks
May 2022	0	Nathi Mkhize	Cabling Contract Works Information

11. Development team

The following people were involved in the development of this document

- Nathi Mkhize

12. Acknowledgement

13. Contract Pricing

Item	Description	Qty	Per month	TOTAL
1	Site Supervisor (Senior Technician – BTech or Degree in Electrical Engineering)	1	R	R
2	Qualified Electrical Technician – National Diploma (Authorised person)	1	R	R
	Qualified Electrical Technician – National Diploma (Authorised person) Note MIE registered Technician	1	R	R
3	Qualified Electrician – N6 with Trade Test Certificate	5	R	R
4	Semi-Skilled (Assistants) – Matric plus N3 Certificate	5	R	R
5	Secretary / Admin	1	R	R
6	Back Actor – for digging of trenches – hourly rate			R
7	Crane if needed – hourly rate			R
8	Transport Home/Work/Home			R
9	Safety & PPE			R
10	Site establishment			R
11	Site de-establishment			R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

***Contractor*:**

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13.1 Labour Rates

Labour Rates

Item	Description	Unit	Normal time	Overtime & Saturdays	Sundays & Public holidays
1	Site Supervisor (Senior Technician)	Hour	R	R	R
2	Qualified Electrical Technician (Authorised person)	Hour	R	R	R
3	Qualified Electrical Technician (Authorised person) – MIE Registered	Hour	R	R	R
4	Qualified Electrician	Hour	R	R	R
5	Semi-Skilled (Assistants)	Hour	R	R	R
6	Secretary / Admin	Hour	R	R	R

Labour rates for Compensation events ONLY!!

Item	Description	Unit	Normal time	Overtime & Saturdays	Sundays & Public holidays
1	Site Supervisor (Senior Technician)	Hour	R	R	R
2	Qualified Electrical Technician (Authorised person)	Hour	R	R	R
3	Qualified Electrical Technician (Authorised person) – MIE Registered	Hour	R	R	R
4	Qualified Electrician	Hour	R	R	R
5	Semi-Skilled (Assistants)	Hour	R	R	R
6	Secretary / Admin	Hour	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

ESKOM STANDARD CODE FOR POWER AND CONTROL CABLES

B V X 99 D C V

NUMBER OF CORES

CABLE VOLTAGE RATING , PHASE TO PHASE VOLTAGE		INSULATION		CONSTRUCTION AROUND THE CORES		INDIVIDUAL CORE AREA		CONDUCTOR MATERIAL		OUTER SHEATING OR PROTECTION	
A	300/500 V	A	ASBESTOS	A	ALUMINIUM SHEATH	A	0.5 mm	A	STRANDED ALUMINIUM	A	ASBESTOS TAPED
B	600/1000 V	B		B		B	0.75 mm	B	SOLID ALUMINIUM	B	BITUMINOUS PAINTED
C	3300 V	C	CAMBRIC	C	COPPER SHEATH	C	1.0 mm	C	STRANDED COPPER	C	BLACK CONDUIT
D	6600 V	D		D	SINGLE CORE LEADS	D	2.5 mm	D	SOLID COPPER	D	DUCTING
E	11000 V	E		E	INDIVIDUAL COPPER SCREEN TAPE PLUS SINGLE SINGLE STEEL WIRE ARMOURING	E	4 mm	E		E	FLEXIBLE CONDUIT
F	22000 V	F		F	FLAME RETARDENT PVC BEDDING	F	6 mm	F		F	FLAME RETARDENT PVC SHEATH
G	33000 V	G		G	INDIVIDUAL COPPER SCREEN TAPE	G	10 mm	G		G	GLASS-FIBRE WATERPROOFED
H	66000 V	H		H	INDIVIDUAL BRASS SCREEN TAPE	H	16 mm	H		H	HESSIAN WATERPROOFED
J	88000 V	J	HALOGEN FREE LOW SMOKE MATERIAL	J	HALOGEN FREE LOW SMOKE FLAME RETARDENT BEDDING	J		J		J	HALOGEN FREE LOW SMOKE FLAME RETARDENT SHEATHED
K	132000 V	K		K	INDIVIDUAL COPPER SCREEN TAPE PLUS DOUBLE STEEL WIRE ARMOURING	K	25 mm	K		K	
L	275000 V	L		L	LEAD COVERED	L	35 mm	L		L	GALVANISED CONDUIT
M		M	MINERAL	M	LOW HALOGEN PVC BEDDING	M	50 mm	M		M	LOW HALOGEN PVC SHEATHED
N		N	NEOPRENE	N		N	70 mm	N		N	NEOPRENE
P	330000 V	P	PAPER	P	SCREEN OVER ALL CORES AND SINGLE WIRE ARMOURED	P	95 mm	P		P	
Q	400000 V	Q	POLYETHYLENE	Q		Q	120 mm	Q		Q	POLYURETHANE SHEATH
R		R	RUBBER	R	RUBBER COVERED	R	150 mm	R		R	RUBBER SANDWICH
S		S	PAPER SCREENED	S	SCREEN OVER ALL CORES	S	185 mm	S		S	
T	REF DWG 0 00/1744 TELEPHONE	T		T	LEAD COVERED DOUBLE WIRE ARMOURED	T	240 mm	T		T	PVC TAPED
U	REF DWG 0 00/2713 CONTROL	U		U	DOUBLE STEEL TAPE ARMOUR	U	300 mm	U		U	
V	REF DWG 0 00/2713	V	GENERAL PVC	V	GENERAL PVC COVERED	V	400 mm	V		V	GENERAL PVC SHEATHED
W		W		W	LEAD COVERED SINGLE WIRE ARMOURED	W	500 mm	W		W	HEAT RESISTANT PVC SHEATHED
X		X	CROSSLINKED POLYETHYLENE (XLPE)	X	STEEL WIRE ARMOURED	X	630 mm	X		X	HIGH IMPACT PVC SHEATHED
Y		Y		Y		Y	800 mm	Y		Y	
Z	SPECIAL	Z	SPECIAL	Z	SPECIAL	Z	SPECIAL	Z	SPECIAL	Z	SPECIAL

13.2 Cabling

For the Supply, Delivery and Installation of Cables:

Item	Cable Description as per Eskom Cable Code Standard	Conductor area (mm^2)	Supply price per meter	Price for installation per meter	Total price for supply and installation	Supply and Installation Cable Joints	Supply and Installation Cable Terminations
11KV Cables- Armoured - General PVC Sheathed							
1	EXE01WCV	500	R	R	R	R	R
2	EXE03UCV	300	R	R	R	R	R
3	EXE03TCV	240	R	R	R	R	R
4	EXE03SCV	185	R	R	R	R	R
5	EXE03RCV	150	R	R	R	R	R
6	EXE03QCV	120	R	R	R	R	R
7	EXE03PCV	95	R	R	R	R	R
8	EXE03NCV	70	R	R	R	R	R
9	EXE03LCV	35	R	R	R	R	R
10	EXE03KCV	25	R	R	R	R	R
11	EVV04RCV	150	R	R	R	R	R
11KV Cables- Armoured - Low Halogen PVC Sheathed							
12	EXE01WCM	500	R	R	R	R	R
13	EXE03UCM	300	R	R	R	R	R
14	EXE03TCM	240	R	R	R	R	R
15	EXE03SCM	185	R	R	R	R	R
16	EXE03RCM	150	R	R	R	R	R

17	EXE03QCM	120	R	R	R	R	R
18	EXE03PCM	95	R	R	R	R	R
19	EXE03NCM	70	R	R	R	R	R
20	EXE03LCM	35	R	R	R	R	R
21	EXE03KCM	25	R	R	R	R	R
11KV Cables- Unarmoured - General PVC Sheathed							
22	EXG01WCV	500	R	R	R	R	R
23	EXG03UCV	300	R	R	R	R	R
24	EXG03TCV	240	R	R	R	R	R
25	EXG03SCV	185	R	R	R	R	R
26	EXG03RCV	150	R	R	R	R	R
27	EXG03QCV	120	R	R	R	R	R
28	EXG03PCV	95	R	R	R	R	R
29	EXG03NCV	70	R	R	R	R	R
30	EXG03LCV	35	R	R	R	R	R
31	EXG03KCV	25	R	R	R	R	R
11KV Cables- Unarmoured - Low Halogen PVC Sheathed							
32	EXE01WCM	500	R	R	R	R	R
33	EXE01UCM	300	R	R	R	R	R
34	EXE01TCM	240	R	R	R	R	R
35	EXE01SCM	185	R	R	R	R	R
36	EXE03RCM	150	R	R	R	R	R
37	EXG03QCM	120	R	R	R	R	R

38	EXG03PCM	95	R	R	R	R	R
39	EXE03NCM	70	R	R	R	R	R
40	EXE03LCM	35	R	R	R	R	R
41	EXE03KCM	25	R	R	R	R	R
6.6KV Cables- Armoured - General PVC Sheathed							
42	DXE01WCV	500	R	R	R	R	R
43	DXE03UCV	300	R	R	R	R	R
44	DXE03TCV	240	R	R	R	R	R
45	DXE03SCV	185	R	R	R	R	R
46	DXE03RCV	150	R	R	R	R	R
47	DXE03QCV	120	R	R	R	R	R
48	DXE03PCV	95	R	R	R	R	R
49	DXE03NCV	70	R	R	R	R	R
50	DXE03LCV	35	R	R	R	R	R
51	DXE03KCV	25	R	R	R	R	R
6.6KV Cables- Armoured - Low Halogen PVC Sheathed							
52	DXE01WCM	500	R	R	R	R	R
53	DXE03UCM	300	R	R	R	R	R
54	DXE03TCM	240	R	R	R	R	R
55	DXE03SCM	185	R	R	R	R	R
56	DXE03RCM	150	R	R	R	R	R
57	DXE03QCM	120	R	R	R	R	R
58	DXE03PCM	95	R	R	R	R	R

59	DXE03NCM	70	R	R	R	R	R
60	DXE03LCM	35	R	R	R	R	R
61	DXE03KCM	25	R	R	R	R	R
11KV Cables- Unarmoured - General PVC Sheathed							
62	DXG01WCV	500	R	R	R	R	R
63	DXG03UCV	300	R	R	R	R	R
64	DXG03TCV	240	R	R	R	R	R
65	DXG03SCV	185	R	R	R	R	R
66	DXG03RCV	150	R	R	R	R	R
67	DXG03QCV	120	R	R	R	R	R
68	DXG03PCV	95	R	R	R	R	R
69	DXG03NCV	70	R	R	R	R	R
70	DXG03LCV	35	R	R	R	R	R
71	DXG03KCV	25	R	R	R	R	R
6.6KV Cables- Unarmoured - Low Halogen PVC Sheathed							
72	DXG01WCM	500	R	R	R	R	R
73	DXG01UCM	300	R	R	R	R	R
74	DXG01TCM	240	R	R	R	R	R
75	DXG01SCM	185	R	R	R	R	R
76	DXG03RCM	150	R	R	R	R	R
77	DXG03QCM	120	R	R	R	R	R
78	DXG03PCM	95	R	R	R	R	R
79	DXG03NCM	70	R	R	R	R	R

80	DXG03LCM	35	R	R	R	R	R
81	DXG03KCM	25	R	R	R	R	R
LV Cables- Armoured - Low Halogen PVC Sheathed							
82	BVX01XCM	630	R	R	R	R	R
83	BVX02CCM	1 5	R	R	R	R	R
84	BVX02DCM	2 5	R	R	R	R	R
85	BVX02ECM	4	R	R	R	R	R
86	BVX02FCM	6	R	R	R	R	R
87	BVX02GCM	10	R	R	R	R	R
88	BVX02HCM	16	R	R	R	R	R
89	BVX02LCM	35	R	R	R	R	R
90	BVX02NCM	70	R	R	R	R	R
91	BVX02PCM	95	R	R	R	R	R
92	BVX3BCM	0 75	R	R	R	R	R
93	BVX3CCM	1 5	R	R	R	R	R
94	BVX3DCM	2 5	R	R	R	R	R
95	BVX3ECM	4	R	R	R	R	R
96	BVX3FCM	6	R	R	R	R	R
97	BVX3GCM	10	R	R	R	R	R
98	BVX3HCM	16	R	R	R	R	R
99	BVX3KCM	25	R	R	R	R	R
100	BVX3LCM	35	R	R	R	R	R
101	BVX3MCM	50	R	R	R	R	R

102	BVX3NCM	70	R	R	R	R	R
103	BVX3PCM	95	R	R	R	R	R
104	BVX3SCM	185	R	R	R	R	R
105	BVX4DCM	2 5	R	R	R	R	R
106	BVX4ECM	4	R	R	R	R	R
107	BVX4FCM	6	R	R	R	R	R
108	BVX4GCM	10	R	R	R	R	R
109	BVX4HCM	16	R	R	R	R	R
110	BVX4KCM	25	R	R	R	R	R
111	BVX4LCM	35	R	R	R	R	R
112	BVX4MCM	50	R	R	R	R	R
113	BVX4NCM	70	R	R	R	R	R
114	BVX4PCM	95	R	R	R	R	R
115	BVX4SCM	185	R	R	R	R	R
116	BVX5KCM	25	R	R	R	R	R
117	BVX5LCM	35	R	R	R	R	R
118	BVX7DCM	2 5	R	R	R	R	R
119	BVX7ECM	4	R	R	R	R	R
120	BVX12DCM	2 5	R	R	R	R	R
121	BVX19DCM	2 5	R	R	R	R	R
122	BVX37DCM	2 5	R	R	R	R	R
LV Cables - Unarmoured - Low Halogen PVC Sheathed							
123	BVV1PCM	95	R	R	R	R	R

124	BVV01XCM	630	R	R	R	R	R
125	BVV02ACM	0 5	R	R	R	R	R
126	BVV02CCM	1 5	R	R	R	R	R
127	BVV02DCM	2 5	R	R	R	R	R
128	BVV02ECM	4	R	R	R	R	R
129	BVV02FCM	6	R	R	R	R	R
130	BVV02GCM	10	R	R	R	R	R
131	BVV02HCM	16	R	R	R	R	R
132	BVV02LCM	35	R	R	R	R	R
133	BVV02NCM	70	R	R	R	R	R
134	BVV02PCM	95	R	R	R	R	R
135	BVV03ACM	0 5	R	R	R	R	R
136	BVV03BCM	0 75	R	R	R	R	R
137	BVV03CCM	1 5	R	R	R	R	R
138	BVV03DCM	2 5	R	R	R	R	R
139	BVV03ECM	4	R	R	R	R	R
140	BVV03FCM	6	R	R	R	R	R
141	BVV03GCM	10	R	R	R	R	R
142	BVV03HCM	16	R	R	R	R	R
143	BVV03KCM	25	R	R	R	R	R
144	BVV03LCM	35	R	R	R	R	R
145	BVV03MCM	50	R	R	R	R	R
146	BVV03NCM	70	R	R	R	R	R

147	BVV03PCM	95	R	R	R	R	R
148	BVV03QCM	120	R	R	R	R	R
149	BVV03RCM	150	R	R	R	R	R
150	BVV03SCM	185	R	R	R	R	R
151	BVV04ACM	0 5	R	R	R	R	R
152	BVV04BCM	0 75	R	R	R	R	R
153	BVV04CCM	1 5	R	R	R	R	R
154	BVV04DCM	2 5	R	R	R	R	R
155	BVV04ECM	4	R	R	R	R	R
156	BVV04FCM	6	R	R	R	R	R
157	BVV04GCM	10	R	R	R	R	R
158	BVV04HCM	16	R	R	R	R	R
159	BVV04KCM	25	R	R	R	R	R
160	BVV04LCM	35	R	R	R	R	R
161	BVV04MCM	50	R	R	R	R	R
162	BVV04NCM	70	R	R	R	R	R
163	BVV04PCM	95	R	R	R	R	R
164	BVV04QCM	120	R	R	R	R	R
165	BVV04RCM	150	R	R	R	R	R
166	BVV04SCM	185	R	R	R	R	R
167	BVV07BCM	0 75	R	R	R	R	R
168	BVV07CCM	1 5	R	R	R	R	R
169	BVV07DCM	2 5	R	R	R	R	R

170	BVV12DCM	2 5	R	R	R	R	R
171	BVV12ECM	4	R	R	R	R	R
172	BVV19DCM	2 5	R	R	R	R	R
173	BVV37DCM	2 5	R	R	R	R	R
			Earthing				
174	50 8x6 36MM FLAT ALUM BAR	323 088	R	R	R	R	R
175	25 4X6 25MM FLAT ALUMINIUM BAR	158 75	R	R	R	R	R
176	50X6MM FLAT COPPER BAR	300	R	R	R	R	R
177	50X3MM FLAT COPPER BAR	150	R	R	R	R	R
178	40X3MM FLAT COPPER BAR	120	R	R	R	R	R
179	25X3MM FLAT COPPER BAR	75	R	R	R	R	R
180	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	10	R	R	R	R	R
181	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	16	R	R	R	R	R
182	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	25	R	R	R	R	R
183	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	35	R	R	R	R	R
184	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	50	R	R	R	R	R
185	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	70	R	R	R	R	R
186	KWENA ANTI-THEFT CABLE UN-INSULATED BRAIDED	95	R	R	R	R	R

187	50,8x6,36MM COPPER/ALUMINIUM BIMETALLIC WASHERS (UTECTIC OR CUPRAL)	323 088	R	R	R	R	R
188	25 4X6 25MM COPPER/ALUMINIUM BIMETALLIC WASHERS (UTECTIC OR CUPRAL)	158 75	R	R	R	R	R
	Unarmoured Screened Instrumentation and Control Cable						
189	UVG02ACMV	0 5	R	R	R	R	R
190	UVG04ACMV	0 5	R	R	R	R	R
191	UVG08ACMV	0 5	R	R	R	R	R
192	UVG12ACMV	0 5	R	R	R	R	R
193	UVG16ACMV	0 5	R	R	R	R	R
194	UVG20ACMV	0 5	R	R	R	R	R
195							
196	UVG40ACMV	0 5	R	R	R	R	R
197	UVG50ACMV	0 5	R	R	R	R	R
	Fibre Optic and Ethernet Cables						
198	FIBRE OPTIC SINGLE MODE 24 CORE	24 Core					
199	FIBRE OPTIC MILTI MODE 24 CORE	24 Core					
200	ETHERNET CAT 5 LAN CABLE	N/A					
201	FLAME SCANNER CABLE COMPLETE 5 PIN MALE/FEMALE ADAPTER	N/A					

	ASSEMBLY WITH TEFLON PIG TAIL						
Testing and Certification Price							
Testing and Certification Cables							
202	CABLE FAULT LOCATIONS	N/A	N/A	N/A	**R**	N/A	N/A
203	MEGGER TESTING	N/A	N/A	N/A	**R**	N/A	N/A
204	PRESSURE TESTING (VLF)	N/A	N/A	N/A	**R**	N/A	N/A
205	CERTIFICATE OF COMPLIANCE	N/A	N/A	N/A	**R**	N/A	N/A

13.3 Cable Ladder

Supply, Delivery and Installation of Cable Ladders (Galvanised)

Item	Type	Size (mm)	Price for each	Price for installation for each	Total price for supply and installation
1	Galvanised	Cable Ladder 100X76	R	R	R
2	Galvanised	Cable Ladder 200X76	R	R	R
3	Galvanised	Cable Ladder 300X76	R	R	R
4	Galvanised	Cable Ladder 500X76	R	R	R
5	Galvanised	Cable Ladder 600X76	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

***Contractor*:**

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PRINT NAME SIGNATURE DATE

13.4 Cable Trays

Supply, Delivery and Installation of Cable Trays (Galvanised)

Item	Type	Size (mm)	Price for each	Price for installation for each	Total price for supply and installation
1	Light Duty	76X76	R	R	R
2	Light Duty	152X76	R	R	R
3	Light Duty	228X76	R	R	R
4	Light Duty	304X76	R	R	R
5	Light Duty	606X76	R	R	R
6	Medium Duty	76X76	R	R	R
7	Medium Duty	152X76	R	R	R
8	Medium Duty	228X76	R	R	R
9	Medium Duty	304X76	R	R	R
10	Medium Duty	606X76	R	R	R
11	Heavy Duty	76X76	R	R	R
12	Heavy Duty	152X76	R	R	R
13	Heavy Duty	228X76	R	R	R
14	Heavy Duty	304X76	R	R	R
15	Heavy Duty	606X76	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

13.5 Conduits

Supply, Delivery and Installation of Conduits (Galvanised)

Item	Type	Size (mm)	Price for each	Price of installation for each	Total price for supply and installation
1	Conduit Galvanised	20	R	R	R
2	Conduit Galvanised	25	R	R	R
3	Conduit Galvanised	32	R	R	R
4	Conduit Galvanised	40	R	R	R
5	Conduit Galvanised	50	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME SIGNATURE DATE

13.6 Junction Boxes IP65

Supply, Delivery and Installation of Junction Boxes (IP65) (Powder Coated to G29: Light Grey - SANS 1091)

Item	Type	Size (mm)	Price for each	Price for installation for each	Total price for supply and installation
1	Stainless Steel	175 X 250 X 170 3CR12 IP65	R	R	R
2	Stainless Steel	350 X 250 X 170 3CR12 IP65	R	R	R
3	Stainless Steel	450 X 300 X 220 3CR12 IP65	R	R	R
4	Stainless Steel	550 X 400 X 270 3CR12 IP65	R	R	R
5	Stainless Steel	650 X 450 X 270 3CR12 IP65	R	R	R
6	Stainless Steel	750 X 550 X 270 3CR12 IP65	R	R	R
7	Stainless Steel	950 X 700 X 270 3CR12 IP65	R	R	R
8	Stainless Steel	1150 X 850 X 270 3CR12 IP65	R	R	R
9	Stainless Steel	175 X 250 X 170 4CR12 IP65	R	R	R
10	Stainless Steel	350 X 250 X 170 4CR12 IP65	R	R	R
11	Stainless Steel	450 X 300 X 220 4CR12 IP65	R	R	R
12	Stainless Steel	550 X 400 X 270 4CR12 IP65	R	R	R
13	Stainless Steel	650 X 450 X 270 4CR12 IP65	R	R	R
14	Stainless Steel	750 X 550 X 270 4CR12 IP65	R	R	R
15	Stainless Steel	950 X 700 X 270 4CR12 IP65	R	R	R
16	Stainless Steel	1150 X 850 X 270 4CR12 IP65	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME SIGNATURE DATE

13.7 Junction Boxes IP67

Supply, Delivery and Installation of Junction Boxes (IP67) (Powder Coated to G29: Light Grey - SANS 1091)

Item	Type	Size (mm)	Price for each	Price for installation for each	Total price for supply and installation
1	Stainless Steel	175 X 250 X 170 3CR12 IP67	R	R	R
2	Stainless Steel	350 X 250 X 170 3CR12 IP67	R	R	R
3	Stainless Steel	450 X 300 X 220 3CR12 IP67	R	R	R
4	Stainless Steel	550 X 400 X 270 3CR12 IP67	R	R	R
5	Stainless Steel	650 X 450 X 270 3CR12 IP67	R	R	R
6	Stainless Steel	750 X 550 X 270 3CR12 IP67	R	R	R
7	Stainless Steel	950 X 700 X 270 3CR12 IP67	R	R	R
8	Stainless Steel	1150 X 850 X 270 3CR12 IP67	R	R	R
9	Stainless Steel	175 X 250 X 170 4CR12 IP67	R	R	R
10	Stainless Steel	350 X 250 X 170 4CR12 IP67	R	R	R
11	Stainless Steel	450 X 300 X 220 4CR12 IP67	R	R	R
12	Stainless Steel	550 X 400 X 270 4CR12 IP67	R	R	R
13	Stainless Steel	650 X 450 X 270 4CR12 IP67	R	R	R
14	Stainless Steel	750 X 550 X 270 4CR12 IP67	R	R	R
15	Stainless Steel	950 X 700 X 270 4CR12 IP67	R	R	R
16	Stainless Steel	1150 X 850 X 270 4CR12 IP67	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME SIGNATURE DATE

13.8 Cable Trunking and Power Skirting

Supply, Delivery and Installation of Cable Trunking and Power Skirting:

Item	Type	Description	Price for each	Price for installation for each	Total price for supply and installation
1	Galvanised	Cable trunking 76X76 mm	R	R	R
2	Galvanised	Cable trunking 150X76 mm	R	R	R
3	Galvanised	Power skirting P801	R	R	R
4	Galvanised	Power skirting P802	R	R	R
5	Galvanised	Power skirting P803	R	R	R
6	Galvanised	Power skirting P804	R	R	R
7	PVC	Power skirting P801	R	R	R
8	PVC	Power skirting P802	R	R	R
9	PVC	Power skirting P803	R	R	R
10	PVC	Power skirting P804	R	R	R
11	Galvanised	P1000 channel combinations galvanized unistrut	R	R	R
12	Galvanised	P1000 41X41 galvanized unistrut	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME SIGNATURE DATE

13.9 Surface Mounting Distribution Board

Supply, Delivery and Installation Surface Mount Distribution Board (Powder Coated to G29: Light Grey - SANS 1091)

Item	Type	Size (mm) H x W x D	No. of Ways	Price per Unit	Price for installation for each	Total price for supply and installation
1	IP54 Mild Steel Surface Mount	400 x 410 x 230	1 x 16	R	R	R
2	IP54 Mild Steel Surface Mount	700 x 350 x 230	2 x 12	R	R	R
3	IP54 Mild Steel Surface Mount	900 x 350 x 230	3 x 12	R	R	R
4	IP54 Mild Steel Surface Mount	900 x 410 x 230	3 x 16	R	R	R
5	IP54 Mild Steel Surface Mount	900 x 540 x 230	3 x 24	R	R	R
6	IP54 Mild Steel Surface Mount	1100 x 540 x 230	4 x 24	R	R	R
7	IP54 Mild Steel Surface Mount	1100 x 650 x 230	4 x 30	R	R	R
8	IP65 Mild Steel Surface Mount	500 x 410 x 200	1 x 15	R	R	R
9	IP65 Mild Steel Surface Mount	700 x 350 x 200	2 x 10	R	R	R
10	IP65 Mild Steel Surface Mount	900 x 350 x 200	3 x 10	R	R	R
11	IP65 Mild Steel Surface Mount	900 x 410 x 200	3 x 15	R	R	R
12	IP65 Mild Steel Surface Mount	900 x 540 x 200	3 x 22	R	R	R
13	IP65 Mild Steel Surface Mount	1100 x 540 x 200	4 x 22	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME SIGNATURE DATE

13.10 Markers and Earth Bars

Supply, Delivery and Installation of the following:

Item	Description	Price for each	Price for installation for each	Total price for supply and installation
1	Route markers as used at Kendal Power Station	R	R	R
2	Vermin proofing of cable entry into electrical switch boards (0,5 x 0,5 x 0 5)	R	R	R
3	Welding sockets 63A	R	R	R
4	Earth bar 50mmX6mm	R	R	R
5	Earth bar 25mmX6mm	R	R	R
6	Neutral bar 50mmX6mm	R	R	R
7	Neutral bar 25mmX6mm	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

***Contractor*:**

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PRINT NAME SIGNATURE DATE

13.11 Maintenance and Repair of Overhead Lines

Supply, Delivery and Installation for Maintenance and Repair of Overhead Lines

Item	Type	Price for each	Price for installation for each	Total price for supply and installation
1	Surge Arrestors	R	R	R
2	Fuse Assembly Base	R	R	R
3	Solid Links	R	R	R
4	Mink Conductor	R	R	R
5	Wolf Conductor	R	R	R
6	Chickadee Conductor	R	R	R
7	Chickadee Bi Metal Lugs	R	R	R
8	Mink Bi Metal Lugs	R	R	R
9	Wolf Bi Metal Lugs	R	R	R
10	22kV Post Insulators (Complete with Ties)	R	R	R
11	22kV Strain Insulators (Complete with Shackle)	R	R	R
12	11kV Post Insulators (Complete with Ties)	R	R	R
13	11kV Strain Insulators (Complete with Shackle)	R	R	R
14	MV Stays (Complete)	R	R	R
15	7,335 Earth Wire	R	R	R
16	7,265 Earth Wire	R	R	R
17	11M Concrete Poles	R	R	R
18	13M Concrete Poles	R	R	R
19	16M Concrete Poles	R	R	R
20	Drop Out Fuses	R	R	R

21	Vulcanised Joints	R	R	R

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

Contractor:

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PRINT NAME	SIGNATURE	DATE

13.12 Health and Safety

Item	Description	Qty	Price Each/ Person	Total price
1	Medicals (only if annual medical certificate expired)		R	R
2	Health and Safety Plan		R	R
3	Health and Safety File		R	R
4	Safety Training		R	R
5	Health and Safety Officer		R	R
6	Hard hats		R	R
7	Overalls		R	R
8	Gloves		R	R
9	Shoes		R	R
10	Hearing protection		R	R
11	Safety goggles		R	R
12	Safety harnesses		R	R
13	First Aid box		R	R
14	Thermal Suit		R	R
15	Flash Suit		R	R
16	Training Authorised Supervisor		R	R
Total Value for Health and Safety for the Total Contract Period				**R**

The price/rates are exclusive of VAT, but inclusive of all costs related to this scope of work

It is compulsory for the Contractor to visit Kendal Safety Department after contract award and before any work may commence to

- Be appointed in writing, and
- Sign an Agreement according to Section 37(2) of the Occupational Health and Safety Act No 85