

	Scope	Eskom Telecommunications
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Table of Contents

1. INTRODUCTION	3
2. SCOPE	3
2.1 Purpose.....	3
2.2 APPLICABILITY	3
2.3 NORMATIVE/INFORMATIVE REFERENCES.....	3
2.3.1 Normative.....	3
2.3.2 Informative	4
2.4 DEFINITIONS	5
2.5 ABBREVIATIONS	5
2.6 ROLES AND RESPONSIBILITIES	6
2.7 IMPLEMENTATION DATE	7
2.8 PROCESS FOR MONITORING	7
3. DOCUMENT CONTENT	7
3.1 SCOPE OF WORK	7
3.2 Equipment housing inside the control room.	7
3.3 Equipment powering	7
3.4 ET equipment to be installed inside the control room	7
3.5 ET equipment to be installed on the radio tower.....	8
3.6 Equipment Cables.....	8
3.7 Commissioning and testing of equipment and services.....	8
3.8 Completion	8
3.9 SHEQ compliance	9
3.10 Scope variation	9
4. ACCEPTANCE	9
5. REVISIONS	10
6. DEVELOPMENT TEAM	10

1. INTRODUCTION

Eskom Telecommunications (ET) requires the service of an installation team to install and commission various telecommunications systems into their existing network. The service contract will be for a period of 5 years and orders will be placed as and when the service is required.

ET expectations from the contractor/s:

- The prospective contractor is deemed to be competent in the installation and commissioning of telecommunication equipment. The installation should be done by a qualified technician with relevant skills.
- It will be preferred to have a technician who has track record in installation and commissioning of telecommunications equipment and who has done training in installation and commission of various telecommunications equipment. The contractor should be accredited by the Original Equipment Manufacturer (OEM) of equipment that they are going to install. If new equipment is introduced while the contract for installation is in place, the new OEM will be requested to provide training to the installation contract technicians.
- The prospective contractor will be expected to have authorization to work at Eskom sites. (Distribution, Transmission, ET radio sites, customer premises, power stations, IPP etc.) without any supervision.
- The contractor must collect all installation material from Eskom offices (as applicable) & transport to the installation site/s as required.
- The contractor should be able to meet all requirements to work at heights as stated in the safety specification.
- The prospective contractor will have to familiarize themselves with the attached specifications and standards for installation of ET equipment. (refer to Section 2.3 Normative / Informative References), additional documentation can be provided depending on the project.

2. SCOPE

2.1 Purpose

This generic scope of work will be used for an enquiry to find a capable contractor to do installation and commissioning on various telecommunications systems which are in use by ET.

2.2 Applicability

This generic scope of work is applicable to new service request, strengthening and refurbishment projects within ET environment.

2.3 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed below:

2.3.1 Normative

- 32-85 Information Security Policy
- 240-55410927 Cybersecurity Standard for Operational Technology

- 240-86458714 Generic Requirements Specification for a Telecommunications Network Management Solution (sections 3.3, 3.5 and 3.6.1 – 3.6.2)
- 240-135089195 Generic Technical Requirements for Eskom Telecoms Contracts (sections 3.4, 3.6 and 3.7)
- 240-73198174 - SHE Specification Technical Work
- 240-100979499 - Personal Protective Equipment for Work at Heights Specification
- QM-58/ 240-105658000 Supplier Quality Management:
- Specification
- 240-135089195 Generic Technical Requirements for Eskom Telecoms Contracts (sections 3.4, 3.6 and 3.7)
- 240-56872313 Radio Station Earthing & Bonding Standard
- 240-132190480 Telecommunications Equipment Installation Standard
- 240-56362336 - Standard for the installation of a Telecoms Equipment Cabinet Standard
- 240-60725641 Specification for Standard (19 inch) Equipment Cabinets
- 240-77092389 Installation of Telecommunication Cable
- 240-69501548 Telecommunications Installation, Commissioning and Testing of Feeders and Antennas Standard
- 240-56576361 Telecommunications Transport Network Equipment Installation and Commissioning Standard
- 240-70783066 Telecommunications Transport Network Standard For TDM Circuits
- 240-105564676 - PDH Digital Radio installation & commissioning
- 240-110412152 –Generic QA tick sheet for projects
- 240-128803381 OLTE Acceptance Test Work Instruction rev1
- 240-103792430 TELECOMS CABLES AND VARIOUS MATERIALS SPECIFICATION
- 240-46263618 LABELLING OF FIBRE OPTIC CABLES STANDARD
- 240-64636794 Standard for wiring and cable marking in substations.
- ETFM 0859 Project Asset Identification form (PAIF)

2.3.2 Informative

- OHS Act Occupational Health and Safety Act
- Construction regulations Guidelines
- ISO 9001:2015 Quality Management Systems
- ISO 45001
- ISO 14001:2015

2.4 Definitions

Definition	Explanation
Eskom Telecommunications	A business unit in Eskom Holdings.
Contractor	External party appointed by Eskom Telecommunications to execute the scope of work.

2.5 Abbreviations

Abbreviation	Explanation
ECSA	Engineering Council of South Africa
QCP	Quality Control Plan
SHEQ	Safety, Health, Environment and Quality
SACPCMP	South African Council for the Project and Construction Management Professional
PDH	Plesiochronous Digital Hierarchy
SDH	Synchronous Digital Hierarchy
OEM	Original Equipment Manufacture
MSAP	Multi-Services Access Platform
NMC	Network Management Centre
PM	Project Manager
EAS	Environmental Alarm System
Planning book	Detailed project scope of work document
ATP	Acceptance Test Procedure

Abbreviation	Explanation
QA	Quality Assurance
UHF	Ultra-High Frequency
VHF	Very High Frequency
DC	Direct Current
OLTE	Optical Line Terminating Equipment
Gx	Generation
Tx	Transmission
Dx	Distribution
ET	Eskom Telecommunications
IPP	Independent Power Producers

2.6 Roles and Responsibilities

Eskom responsibility:

- Do contractor induction.
- Provide access to the relevant site/s.
- Provide the planning book with detailed project scope.
- Arrange meetings as required.

Contractor responsibility:

- Comply with all Eskom SHEQ rules and regulations i.e. safety, Eskom grid code per province.
- Understand the project scope of work.
- Provide project schedule to Eskom project manager.
- Report weekly on the project progress.

2.7 Implementation Date

The implementation date is the date of the authorising signature.

2.8 Process for monitoring

Implementation of the scope will be monitored by the Eskom project manager.

3. DOCUMENT CONTENT

3.1 Scope of Work

All the installations will be done according to Eskom specifications and standards.

Details include but not limited to: Hauling of microwave dishes/antennas; DC cable installation and termination to end of isle (to point of supply) in a control room; installation & commissioning of the network equipment microwave radios, UHF & VHF repeaters, routers, cabinets and multiplexers equipment.

The contractor will be given a detailed scope of work document which is contained in the planning book that will be specific for a project. In the scope of work there will be details on the work that needs to be done for the site/s in that project. The scope will include site drawings. These drawings are site layout, room layout, cabinet layout, DC connection layout and tower layout depending on the site and the project. The contractor shall collect all the equipment from Eskom as per project manager instruction.

If a project requires an outage, the PM will arrange for the outage and then inform the installer.

3.2 Equipment housing inside the control room.

- ET uses 19" standard steel cabinets or 19"swing frame cabinets to house their equipment on site. The installer will be provided with the layout of the cabinet in the planning book per project. There will be a room layout that will indicate where the cabinet should be installed on site. The PM/Planner will go with the installer to site for scope clarification before the work can start.

3.3 Equipment powering

- The equipment in the cabinet will be powered from a DC charger that will be on site. The DC is usually supplied as 110VDC on DX/TX sites, most of ET equipment uses a 48V DC supply or sometimes 24V. Hence most of the project will require a DC -to- DC convertor to be installed in the cabinet. The installer will be required to install a DC rail inside the equipment cabinet and connect it to the power supply. The contractor must have the relevant skills to be able to do DC connections.

3.4 ET equipment to be installed inside the control room

- ET has different equipment that will need to be installed depending on the project. This section will provide an overview of the different equipment that ET uses in their network. The installer will be given a planning book that will be specific per project and will provide the details of the work that need to be done per project per site. The equipment used will

depend on the equipment supplier contract that will be in place at the time of project execution.

1. Multiplexers differ, depending on the capacity requirements. Currently we are using MSAP.
2. Modems that are used to convert the electrical to optical interfaces.
3. Different types of radios i.e microwave indoor units and outdoor units. Mobile radios that are used as repeaters and out station mobile radios.
4. CISCO switches and routers currently we are using the CGR router and ASR series and VG350 gateway and IP telephone handsets.
5. Mobile radio repeaters both VHF and UHF currently we are using the Tait TB series.

3.5 ET equipment to be installed on the radio tower

- Antennas are mounted on brackets that attach to the tower. The brackets differ according to the tower and antenna that will be used per project.
- Antennas per radio link can either be one or two depending on the radio link design configuration. For two antenna installations there might be a splitter unit installed as well.
- There are different antenna sizes depending on the design of the radio link. The antennas must be panned as per installation standard to get the required signal levels or better; 3db variation is allowed but must be confirmed with ET planner before it can be set permanently.

3.6 Equipment Cables

- There are different cables/waveguides used in ET. The installer will run and connect all cables/waveguides per project in line with the applicable specification/s.

3.7 Commissioning and testing of equipment and services

- ET provides different services to their customers. The circuits that are required depend on the customer requests. The installer will be expected to connect the equipment to NMC. NMC must be able to see the equipment. Only then can the services be commissioned. The installer will commission the required services as per the works order that will be provided in the planning book per project.
- As this will involve logging into the ET network .The installer will be expected to comply with all cyber security requirements.
- The installer might have to fill in non disclosure agreement and confidentiality of information.
- In a case where the old equipment needs to be recovered, the installer will remove the equipment from site and take it where the PM will instruct.

3.8 Completion

- The installer must label all equipment and cables as stated in the planning book. The installer must complete all provided ATPs as applicable depending on the project scope. The ATP's will be provided with the planning book per project.

- Upon completion of the installation the installer shall do quality acceptance with ET relevant stakeholders as arranged by the PM.
- Project Asset Identification form (PAIF) to be completed by contractor, will be used by the PM.
- 7 days soak test needs to be run before circuit connection can be allowed.
- All results should be signed off by contractor and Eskom representative.

3.9 SHEQ Compliance

- The contractor will be given induction by ET but there might be additional requirements from other divisions like Gx, Tx, Dx that the contractor will have to comply with as per the project requirements.
- Contractor SHEQ file must be approved by the relevant Eskom practitioner before any work can commence on site as applicable.

3.10 Scope variation

- In case the installer comes across difficulties in doing the installation or getting the services connected. The installer must inform the PM immediately.

4. ACCEPTANCE

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5. REVISIONS

Date	Rev.	Remarks
June 2020	1	First Issue

6. DEVELOPMENT TEAM

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