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**for Supply, Delivery and Offloading
of Microgrid/ Solar PV Components
and Structures on an as and when
required basis for a duration of 5
years.**

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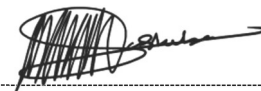
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1. Introduction and Background

1. Introduction

1.1 Project Overview:

This document serves as the definitive Terms of Reference for the supply, delivery, and offloading of electrical materials and renewable energy components to Eskom Rotek Industries (ERI) for Microgrids and Solar PV projects. The scope encompasses both Solar PV components and relevant Structures for specialized renewable energy equipment required for ERI's construction and maintenance operations.

1.2 Objectives

- Establish clear technical specifications and quality requirements
- Define logistical and project management protocols
- Outline commercial terms and compliance requirements

1.3 Compliance Framework

All supplied materials must conform to:

- **International Standards:** IEC, ISO, UL
- **South African Standards:** SABS, NRS
- **Eskom Specifications:** QM58 and other relevant technical specifications
- **Regulatory Requirements:** NRCS approvals where applicable

2. Detailed Scope of Supply

2.1 Solar Photovoltaic Systems

2.1.1 Inverter Specifications (5 kW – 500 kW)

The Contractor shall supply hybrid and grid-interactive solar inverters suitable for residential, commercial, industrial and utility-scale Microgrid applications. All inverters shall be

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compatible with **Lithium Iron Phosphate (LiFePO₄) Battery Energy Storage Systems (BESS)** and Battery Management Systems (BMS). Inverters shall comply with the latest editions of **IEC 62109, IEC 61727, IEC 62116, IEC 61000, NRS 097-2-1**, and other applicable South African standards.

Residential Hybrid Inverters (5–10 kW)

The inverter shall be suitable for residential and small commercial applications.

Electrical Characteristics

- Rated Output Power: **5 kW to 10 kW**
- Phase Configuration: Single Phase (230 VAC)
- Battery Type: **Lithium Iron Phosphate (LiFePO₄)**
- Battery Voltage: 40–60 VDC (Nominal 48 V)
- Maximum PV Input Voltage: 600 VDC
- MPPT Trackers: Minimum 2
- Maximum Input Current: Minimum 16 A per MPPT
- Maximum Efficiency: ≥98%
- European Efficiency: ≥97.5%
- Frequency: 50/60 Hz

Operating Features

- UPS functionality with transfer time ≤10 ms
- Generator compatibility
- Battery charging from grid and PV
- Smart Load Management
- Peak Shaving
- Time-of-Use Scheduling

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- Zero Export Function
- Parallel operation (minimum 16 units)

Communication

- RS485
- CAN Bus
- Wi-Fi
- Ethernet
- Optional 4G/GPRS
- Modbus RTU/TCP

Protection

- Anti-Islanding
- Reverse Polarity Protection
- DC Isolation Monitoring
- AC/DC Surge Protection
- Short Circuit Protection
- Over Temperature Protection
- Ground Fault Detection

Environmental

- IP65 minimum
- Natural Convection Cooling
- Operating Temperature: -25°C to +60°C

Commercial Hybrid/Grid-Tied Inverters (10–30 kW)

Suitable for schools, clinics, municipal buildings and commercial facilities.

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Electrical Characteristics

- Rated Output: **10 kW to 30 kW**
- Three Phase, 400 VAC
- Compatible with LiFePO₄ BESS
- Battery Voltage: 150–800 VDC
- PV Voltage Range: 180–1000 VDC
- Maximum PV Voltage: 1000 VDC
- MPPT Trackers: Minimum 2–3
- Input Current: Minimum 30 A per MPPT
- Efficiency: ≥98.5%

Operating Features

- Grid-Tied and Hybrid Modes
- Black Start Capability
- Generator Integration
- Peak Shaving
- Load Shifting
- Self Consumption Mode
- Export Limitation
- Seamless Grid Transfer

Communication

- CAN
- RS485
- Ethernet

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- Wi-Fi
- Dry Contact
- Modbus TCP/IP
- SCADA Compatible

Cooling

- Intelligent Forced Air Cooling

Protection

- AFCI
- Anti-Islanding
- DC Switch
- AC/DC Surge Protection
- Reverse Polarity Protection

Commercial String Inverters (50–125 kW)

Suitable for commercial rooftops and medium-scale solar plants.

Electrical Characteristics

- Rated Output: **50 kW, 80 kW, 100 kW and 125 kW**
- Three Phase
- PV Voltage Range: 200–1100 VDC
- Maximum PV Voltage: 1100 VDC
- MPPT Trackers: Minimum 4–10
- Maximum Input Current: Minimum 30 A per MPPT
- Maximum Efficiency: $\geq 98.8\%$

Features

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- Smart IV Curve Diagnosis
- PID Recovery
- AFCI Protection
- Export Limitation
- Remote Monitoring
- Reactive Power Control
- Night Reactive Power Compensation

Cooling

- Intelligent Forced Air Cooling

Protection

- IP66
- Type II AC/DC Surge Protection
- String Monitoring
- Reverse Current Protection
- Ground Fault Detection

Communication

- Ethernet
- RS485
- Modbus TCP/IP
- PLC (optional)
- SCADA Ready

Industrial Hybrid Inverters (100–250 kW)

Suitable for commercial and industrial Microgrid applications.

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Electrical Characteristics

- Rated Output: **100 kW, 125 kW, 200 kW and 250 kW**
- Three Phase
- Battery Voltage: 600–1000 VDC
- Compatible with High Voltage LiFePO₄ Batteries
- Maximum PV Voltage: 1500 VDC
- MPPT Configuration: Multiple Independent MPPTs
- Maximum Efficiency: ≥98.8%

Operating Features

- Black Start
- Grid Forming
- Grid Following
- Generator Synchronisation
- Load Shedding Support
- Peak Shaving
- Demand Response
- Time Shifting
- Zero Export
- Microgrid Operation

Communication

- CAN
- RS485
- Ethernet

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- Modbus RTU
- Modbus TCP/IP
- IEC 61850 (where applicable)
- SCADA Integration
- EMS Integration

Central Hybrid PCS / Utility Scale Inverters (300–500 kW)

Suitable for containerised Battery Energy Storage Systems and utility-scale Microgrid installations.

Electrical Characteristics

- Rated Output: **300 kW to 500 kW**
- Battery Voltage: 600–1500 VDC
- Maximum PV Voltage: 1500 VDC
- Three Phase
- Output Voltage: 400/480 VAC
- Efficiency: ≥98.8%

Grid Support Functions

- Black Start
- Grid Forming
- Grid Following
- V/F Control
- Frequency Regulation
- Voltage Regulation
- Seamless Island Mode

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- Peak Shaving
- Load Levelling
- Time Shifting
- Spinning Reserve
- Generator Synchronisation

Cooling

- Intelligent Air Cooling or Liquid Cooling

Communication

- RS485
- CAN Bus
- Ethernet
- Fibre Optic (where applicable)
- Modbus RTU
- Modbus TCP/IP
- IEC 61850
- SCADA Compatible
- EMS Compatible
- Remote Monitoring Platform

Protection

- Type II AC/DC Surge Protection
- Ground Fault Detection
- Arc Fault Detection
- Overcurrent Protection

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- Reverse Power Protection
- Anti-Islanding
- Emergency Shutdown Interface

General Requirements

All inverter equipment supplied under this contract shall:

- Be compatible with **Lithium Iron Phosphate (LiFePO₄) Battery Energy Storage Systems**.
- Support communication with the **Battery Management System (BMS)** via CAN Bus and Modbus.
- Support Energy Management Systems (EMS) and SCADA integration.
- Be suitable for grid-connected, off-grid and hybrid Microgrid applications.
- Include integrated anti-islanding functionality compliant with **NRS 097-2-1**.
- Be capable of remote monitoring, diagnostics and firmware upgrades.
- Include all required DC isolators, AC isolators, surge protection devices, communication accessories and mounting hardware.
- Be supplied complete with manufacturer's test certificates, commissioning documentation, warranty certificates and compliance certificates.
- Carry a **minimum 10-year manufacturer warranty** and have local technical support and spare parts available within South Africa.

This revision better reflects the range of inverter sizes and technical requirements expected in the BOQ while ensuring compatibility with **LiFePO₄ BESS, Battery Management Systems (BMS), EMS, and SCADA** for Eskom microgrid projects.

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2.1.2 BATTERY ENERGY STORAGE SYSTEM (BESS)

The Contractor shall supply complete **Lithium Iron Phosphate (LiFePO₄) Battery Energy Storage Systems (BESS)** suitable for residential, commercial, industrial and utility-scale Microgrid applications. Each BESS shall comprise battery modules, battery racks or cabinets, Battery Management System (BMS), Battery Cluster Control Unit (where applicable), Battery Energy Management System (EMS), communication interfaces, protection devices, HVAC (where required), fire detection and suppression systems, and all associated accessories necessary for a complete operational installation.

The Battery Energy Storage System shall comply with the latest editions of **IEC 62619, IEC 63056, IEC 62933, IEC 62477, IEC 62109, IEC 61000, UN38.3, NRS 097-2-1**, and all applicable South African standards.

Low Voltage Lithium Iron Phosphate Battery Systems (5–15 kWh)

Suitable for residential and small commercial applications.

a) Electrical Characteristics

- Battery Chemistry: **Lithium Iron Phosphate (LiFePO₄)**
- Nominal Voltage: 48 VDC
- Capacity: 5–15 kWh (Expandable/Stackable)
- Rated Power: 3–10 kW
- Depth of Discharge (DoD): ≥95%
- Round Trip Efficiency: ≥95%
- Cycle Life: ≥6,000 cycles at 80% DoD
- Design Life: Minimum 15 years

b) Battery Management System

The integrated BMS shall provide:

- Cell voltage monitoring
- Cell temperature monitoring

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- Automatic cell balancing
- Over-voltage protection
- Under-voltage protection
- Over-current protection
- Short-circuit protection
- Over-temperature protection
- State of Charge (SOC)
- State of Health (SOH)
- Fault diagnostics
- Event logging
- Emergency shutdown

c) Communication

- CAN Bus
- RS485
- Modbus RTU
- Modbus TCP/IP (where applicable)

d) Installation

- Wall-mounted or floor-mounted
- Indoor or outdoor installation
- Minimum IP55 enclosure
- Operating Temperature:
 - Charge: 0°C to +55°C
 - Discharge: -20°C to +55°C

High Voltage Modular Battery Systems (20–200 kWh)

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Suitable for commercial, educational, healthcare and industrial facilities.

e) Electrical Characteristics

- Battery Chemistry: **Lithium Iron Phosphate (LiFePO₄)**
- Battery Voltage: 150–800 VDC
- Battery Capacity: 20–200 kWh
- Power Rating: Up to 100 kW
- Rack-mounted or Cabinet-mounted
- Expandable Modular Architecture
- Round Trip Efficiency: ≥95%
- Cycle Life: ≥8,000 cycles
- Design Life: Minimum 15 years

f) Battery Management System

Each battery rack shall include an intelligent BMS capable of:

- Cell monitoring
- Module monitoring
- Rack monitoring
- Automatic balancing
- Thermal monitoring
- Insulation monitoring
- Fault diagnostics
- Alarm management
- Automatic isolation of faulty modules
- Remote firmware upgrades

g) Battery Cluster Controller

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Where multiple battery racks are installed, a Battery Cluster Controller shall provide:

- Communication aggregation
- Battery string balancing
- Rack coordination
- Isolation control
- Emergency shutdown interface
- Communication with the inverter and EMS

h) Communication

- CAN Bus
- RS485
- Ethernet
- Modbus RTU
- Modbus TCP/IP
- SCADA compatible

i) Safety Features

- Integrated DC protection
- Battery disconnect switches
- Fire detection
- Optional clean-agent fire suppression
- Emergency stop circuit

Containerised Utility-Scale Battery Energy Storage Systems (250–500 kWh and Above)

Suitable for utility-scale Microgrid, commercial and industrial applications.

j) Electrical Characteristics

- Battery Chemistry: **Lithium Iron Phosphate (LiFePO₄)**

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- Battery Voltage: 600–1500 VDC
- Battery Capacity: 250–500 kWh (or larger as specified in the BOQ)
- Output Power: 100–500 kW
- Container Size:
 - 10 ft ISO Container
 - 20 ft ISO Container
 - 40 ft ISO Container (where applicable)
- Round Trip Efficiency: $\geq 95\%$
- Cycle Life: $\geq 8,000$ cycles
- Design Life: Minimum 20 years

k) Integrated Systems

The containerised BESS shall include:

- Battery Modules
- Battery Racks
- Battery Management System (BMS)
- Battery Cluster Controller
- Energy Management System (EMS)
- Power Distribution Unit
- DC Protection
- HVAC System
- Internal Lighting
- Auxiliary Power Supply
- Fire Detection System
- Automatic Fire Suppression System

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- Smoke Detection
- Emergency Ventilation
- Emergency Shutdown System

l) Battery Management System

The BMS shall provide:

- Cell-level monitoring
- Module-level monitoring
- Rack-level monitoring
- Battery balancing
- SOC monitoring
- SOH monitoring
- Thermal management
- Fault diagnostics
- Predictive maintenance
- Remote firmware upgrades
- Automatic fault isolation
- Black Start support

m) Communication

The system shall support:

- CAN Bus
- RS485
- Ethernet
- Modbus RTU
- Modbus TCP/IP

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- IEC 61850 (where applicable)
- SCADA Integration
- EMS Integration
- Remote Monitoring Platform

n) Functional Capabilities

The Battery Energy Storage System shall support:

- Peak Shaving
- Load Shifting
- Time-of-Use Optimisation
- Demand Management
- Frequency Regulation
- Voltage Regulation
- Spinning Reserve
- Black Start Operation
- Grid Forming
- Grid Following
- Island Mode Operation
- Renewable Energy Smoothing
- Generator Synchronisation
- Microgrid Energy Management

General Requirements

All Battery Energy Storage Systems supplied under this contract shall:

- Utilise **Lithium Iron Phosphate (LiFePO₄)** battery technology.

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- Include a fully integrated **Battery Management System (BMS)**.
- Include a **Battery Cluster Control Unit** where multiple battery racks are installed.
- Be fully compatible with Hybrid Inverters, Energy Management Systems (EMS), SCADA systems and Microgrid Controllers.
- Be supplied complete with battery racks, cabinets, DC protection devices, communication equipment, HVAC systems (where applicable), fire detection and suppression systems, battery monitoring software and all associated accessories.
- Be factory assembled, tested and supplied with Factory Acceptance Test (FAT) reports.
- Include manufacturer's certificates, UN38.3 transport certification, commissioning documentation and compliance certificates.
- Carry a **minimum 10-year manufacturer warranty** or **6,000–8,000 charge/discharge cycles**, whichever occurs first.
- Be supported by local technical support, spare parts availability and after-sales service within South Africa.

2.1.3 SOLAR PHOTOVOLTAIC (PV) MODULE SPECIFICATIONS (630 W – 645 W)

The Contractor shall supply high-efficiency photovoltaic (PV) modules suitable for residential, commercial, industrial and utility-scale Microgrid applications. The PV modules shall utilize the latest **N-Type TOPCon** or **Heterojunction (HJT)** cell technology with bifacial glass-glass construction and shall comply with the latest editions of **IEC 61215**, **IEC 61730**, **IEC 61701**, **IEC 62716**, **IEC 62804**, **ISO 9001**, **ISO 14001**, **ISO 45001**, and all applicable South African standards.

The modules shall be suitable for rooftop, ground-mounted, solar carport and containerized Microgrid installations.

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I. 630 W N-Type TOPCon Bifacial Module

Suitable for commercial, industrial and utility-scale solar PV installations.

II. Electrical Characteristics

- Rated Power (Pmax): **630 W**
- Module Efficiency: **≥23.3%**
- Open Circuit Voltage (Voc): Approximately **52.8 V**
- Short Circuit Current (Isc): Approximately **15.2 A**
- Maximum Power Voltage (Vmp): Approximately **44.2 V**
- Maximum Power Current (Imp): Approximately **14.3 A**
- Maximum System Voltage: **1500 VDC**
- Power Tolerance: **0 to +5 W**

III. Construction

- Cell Technology: **N-Type TOPCon**
- Cell Configuration: 132 Half-Cells (66 Full Cells) or equivalent
- Module Type: **Bifacial Glass-Glass**
- Front Glass: 2.0 mm Tempered Low-Iron Glass
- Rear Glass: 2.0 mm Tempered Glass
- Frame: Anodized Aluminium Alloy
- Junction Box: IP68 Rated
- Connectors: MC4 Compatible
- Dimensions: Approximately **2382 × 1134 × 30 mm**
- Weight: Approximately **33.5 kg**

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IV. 645 W N-Type TOPCon Bifacial Module

Suitable for utility-scale, Microgrid and Battery Energy Storage System (BESS) applications.

V. Electrical Characteristics

- Rated Power (Pmax): **645 W**
- Module Efficiency: **≥23.9%**
- Open Circuit Voltage (Voc): Approximately **53.3 V**
- Short Circuit Current (Isc): Approximately **15.4 A**
- Maximum Power Voltage (Vmp): Approximately **44.8 V**
- Maximum Power Current (Imp): Approximately **14.4 A**
- Maximum System Voltage: **1500 VDC**
- Power Tolerance: **0 to +5 W**

VI. Construction

- Cell Technology: **N-Type TOPCon**
- Module Type: **Bifacial Double Glass**
- Front Glass: 2.0 mm Tempered Glass
- Rear Glass: 2.0 mm Tempered Glass
- Frame: High Strength Anodized Aluminium Alloy
- Junction Box: IP68
- Connectors: MC4 Compatible
- Dimensions: Approximately **2382 × 1134 × 30 mm**
- Weight: Approximately **34 kg**

VII. Performance Characteristics

The PV modules shall have the following minimum performance characteristics:

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- Bifaciality Factor: **≥80%**
- Temperature Coefficient (Pmax): **≤ -0.29%/°C**
- Operating Temperature: **-40°C to +85°C**
- Maximum Series Fuse Rating: **30 A**
- Fire Rating: Class C or better
- Mechanical Load:
 - Front Load: **5,400 Pa**
 - Rear Load: **2,400 Pa**
- Hail Resistance: 25 mm hailstones at 23 m/s (minimum)
- PID Resistant
- Low Light Performance Optimized
- Excellent Anti-LID/LeTID Performance
- Salt Mist Resistance (IEC 61701)
- Ammonia Resistance (IEC 62716)
- Dust and Sand Resistance (IEC 60068)

VIII. General PV Module Requirements

All photovoltaic modules supplied under this contract shall:

IX. Electrical Requirements

- Be rated between **630 W and 645 W**.
- Utilize **N-Type TOPCon** or equivalent high-efficiency technology.
- Be compatible with **1500 VDC** photovoltaic systems.
- Have a minimum module efficiency of **23.3%**.
- Have a positive power tolerance of **0 to +5 W**.

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- Be compatible with hybrid, string and central inverter systems.

X. Mechanical Requirements

- Dual Glass (Glass-Glass) Construction.
- Corrosion-resistant anodized aluminium frame.
- IP68-rated junction box.
- UV-resistant 4 mm² PV cables with MC4-compatible connectors.
- Certified for severe environmental conditions.
- Suitable for rooftop, ground-mounted and solar carport applications.

2.1.4. Solar PV Design and Simulation Software

(a). Purpose

The purpose of this scope is to procure professional Solar Photovoltaic (PV) design, modelling, simulation, and energy-yield assessment software to support the engineering design, feasibility assessment, optimisation, and technical evaluation of Solar PV projects.

(b). Software Requirements

The software shall provide, as a minimum, the following capabilities:

- Solar PV system modelling for rooftop, ground-mounted, carport, and utility-scale installations.
- PV array layout and system configuration.
- Selection and modelling of PV modules, inverters, and associated system components.
- String sizing and inverter configuration.
- Solar resource and meteorological data integration.
- Shading analysis and associated energy-loss calculations.
- Calculation of DC and AC system losses.

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- Energy-yield simulation on monthly and annual bases.
- Performance Ratio (PR) calculations.
- Specific yield calculations in kWh/kWp.
- DC/AC ratio and inverter loading optimisation.
- System loss diagrams, including irradiance, temperature, shading, mismatch, wiring, inverter, clipping, and availability losses.
- Comparison of different PV system configurations and design alternatives.
- Assessment of system performance under different environmental and operating conditions.
- Generation of professional engineering and energy-yield reports.
- Export of simulation results and project data for further engineering and financial analysis.

(C). Software Licensing

The supplier shall provide:

- Professional/commercial software licences for the required number of users.
- A minimum 12-month licence/subscription period, where applicable.
- Access to software updates and upgrades during the licence period.
- Technical support and troubleshooting.
- Access to current PV module and inverter databases.
- User account setup and licence activation.

Training and Technical Support

The supplier shall provide initial user training covering:

- Project setup and configuration.
- Solar resource selection.
- PV module and inverter selection.
- System sizing and optimisation.
- Shading and loss modelling.

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- Energy-yield simulation.
- Interpretation of simulation results.
- Generation of technical reports.

(d). Acceptable Software

The required functionality may be provided through recognised professional Solar PV engineering software such as **PVsyst, HelioScope, or equivalent software** meeting the specified technical requirements.

3. Quality Assurance and Testing Protocol

3.1 Pre-Delivery Requirements

- **Sample Submission:** Full product samples required 4 weeks before bulk delivery
- **Documentation Package:**
 - Material certificates
 - Test reports (factory acceptance tests)
 - NRCS certificates of approval
 - ISO 9001 certification of manufacturer

3.2 Testing Regime

- **Incoming Inspection:**
 - Visual examination
 - Dimensional verification
 - Material verification (XRF testing for metals)
- **Performance Testing:**
 - PV modules: Flash testing
 - Batteries: Capacity verification
 - Inverters: Full load testing

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3.3 Compliance Verification

- Independent third-party testing may be required at supplier's cost
- Eskom reserves right to witness factory tests

3.4 Compliance Framework

All materials, equipment and services supplied under this Contract shall comply with the latest editions of the applicable International Standards, South African National Standards, Eskom Specifications and Regulatory Requirements, including but not limited to:

- **International Standards:** IEC, ISO, UL and IEEE (where applicable).
- **South African Standards:** SANS, NRS and NRCS requirements.
- **Eskom Specifications:** QM58 and all other relevant Eskom technical specifications.
- **Regulatory Requirements:** National Regulator for Compulsory Specifications (NRCS) approvals, where applicable.
- **Occupational Health and Safety Act (Act 85 of 1993)** and all applicable Regulations.
- **Environmental legislation** and applicable environmental management requirements.

Applicable Contract Annexures

The Contractor shall comply with the following Contract Annexures forming part of this Scope of Work:

- **Annexure L – QM58: Supplier Contract Quality Requirements Specification**
 - The Contractor shall implement and maintain a Quality Management System that complies with Eskom's **QM58 Supplier Contract Quality Requirements Specification**.
 - Quality plans, Inspection and Test Plans (ITPs), Factory Acceptance Tests (FAT), material traceability, non-conformance reporting, corrective actions and quality records shall be developed and maintained in accordance with QM58 requirements.

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- **Annexure M – SANS 121: Hot Dip Galvanized Coatings on Fabricated Iron and Steel Articles – Specifications and Test Methods**
 - All fabricated steel structures, mounting systems, support frames, cable support systems, brackets, and associated steelwork intended for outdoor installation shall be **hot-dip galvanized in accordance with SANS 121** (or the current equivalent standard).
 - Galvanizing shall be performed after fabrication unless otherwise specified.
 - Coating thickness, surface finish, adhesion, and testing shall comply with the requirements of **SANS 121**.
 - The Contractor shall submit galvanizing certificates and test reports for all galvanized steel components prior to delivery.

Quality Documentation

The Contractor shall provide, as a minimum:

- Manufacturer's Certificates of Conformance.
- Factory Acceptance Test (FAT) Reports.
- Material Test Certificates.
- Galvanizing Certificates in accordance with **SANS 121**.
- Quality Control Records in accordance with **QM58**.
- Inspection and Test Plans (ITPs).
- Warranty Certificates.
- As-built documentation and commissioning records.

4. Logistics and Supply Chain Management

4.1 Delivery Protocol

- **Lead Times:** Minimum 5 weeks notice for standard items
- **Delivery Windows:** Strict adherence to agreed schedules

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- **Transport Requirements:**

- Flatbed trucks for containers
- Climate-controlled vehicles for batteries
- Specialized handling for fragile components

4.2 Site Access and Offloading

- **Prior Notification:** 7 working days notice required

- **Site Requirements:**

- Offloading equipment to be provided by supplier
- All lifting gear to have current certification
- Rigging plans for heavy items (>500kg)

4.3 Packaging and Labelling

- **Packaging Standards:**

- Wooden crates for fragile items
- Waterproof wrapping for electrical components

- **Labelling Requirements:**

- Eskom project number
- Storage requirements
- Handling instructions

5. Project Management and Administration

5.1 Communication Protocol

- **Primary Contacts:**

- Technical queries: ERI Engineering Manager
- Logistics: ERI Supply Chain Manager

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- **Reporting Requirements:**
 - Weekly progress reports
 - Monthly performance dashboards

5.2 Meeting Schedule

- **Kick-off Meeting:** Within 1 week of contract award
- **Progress Meetings:** Weekly
- **Quality Reviews:** Monthly with Eskom Rotek Industries technical team

5.3 Documentation Control

- **Submission Requirements:**
 - Electronic copies in PDF format
 - Hard copies with original signatures
 - Revision control for all documents

6. Warranty Provisions

- **Standard Warranty Periods:**
 - PV Modules: 15 years product, 25 years performance
 - Batteries: 10 years
 - Inverters: 10 years

7. Health, Safety and Environmental Requirements

7.1 SHE Management Plan

- Site-specific risk assessments
- Method statements for all high-risk activities
- Emergency response procedures

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7.2 Environmental Compliance

- Material declarations (RoHS, REACH)
- Battery recycling program
- Packaging recycling requirements

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