Eskom	Quality Requirements Specification for Solar PV Projects	Template Identifier	559-797952293	Rev	1
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.....	.....	.....
Charles Dlamini	**Lebo Memela**	**Isaac Blou**
Senior Consultant - Quality Engineering	**Programme Manager Renewables**	**Senior Manager Renewables**
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1. INTRODUCTION

This Specification describes the minimum quality requirements for all potential Eskom Contractors and Suppliers, and defines the quality criteria for the evaluation, selection, and monitoring of same.

2. SUPPORTING CLAUSES

2.1 SCOPE

2.1.1 Purpose

The purpose of this specification is to specify the Quality Requirements for the Photovoltaic Renewable Projects in line with Technical Specification of for the PV Projects Eskom Engineering Technical Requirements Specification for which Contractors and Sub-Contractors shall comply with in order to implement, maintain and continually improve a quality management system (QMS) and (latest applicable revision). The intention is that Contractors and Suppliers should continuously adhere to Eskom's Quality Requirements in respect of the supply of products and related services.

ISO 9001 Certification shall be in line and in accordance with SANAS ACT, IAF or recognised Certification Authority in line with SANA ACT.

2.1.2 Applicability

This specification applies to all Employees, Entities, Suppliers, Contractors, and Sub-Contractors involved in the PV Module, Mechanical, Electrical, Civil, Security, HVAC, and Telecoms for MW ac Photovoltaic Renewable Projects Solar PV Project. Critical Specification Requirement are stated in Annex B section 10, and the business process requirements are indicated on the enquiry/contract/order quality requirement forms (see Annexure A section 9)

Furthermore, the following projects are conditions of this specification

- **Arnot PV Project: 12.82MW**
- **Duvha PV Project: 22.83MW**
- **Majuba PV Project: 31.67MW**
- **Tutuka PV Project :28.93MW**.

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

Refer to the latest version of the following standards:

[1] ISO 9001: Quality Management Systems Requirements

[2] PV Plant at Duvha Power Station Functional Specification **559-280959254**

[3] Tutuka Solar PV Functional Specification **559-189375010**

[4] PV Plant Functional Specification at Arnot Power Station **AEEP 0127**

[5] Majuba PV Functional Specification **374-MAJ-AABZ28-SP0004-57**

[6] ISO 10005: Guidelines for Quality Plans Standard

[7] PV PS Solar Plant Technical Specification

[8] BS EN 61215-1-3 Terrestrial Photovoltaic (PV) Modules Design Qualification and Type Approvals

[9] BS EN 62446-1 -1: Photovoltaic System –Requirements for Testing, Documentation, and Maintenance

2.2.2 Informative

[1] QM 58 Eskom Quality Specifications Requirement

[2] NEC family of contract documents, as applicable to the specific contract

[3] 240-106628253) For Welding: Standard for Welding Requirements on Eskom Plants

2.3 DEFINITIONS

2.3.1 **Supplier** - The word Supplier refers to the Contractor and Subcontractor any person doing business with Eskom

2.3.2 **Customer** - The word customer refers to Eskom Holdings SOC Limited (in the context hereof referred to as Eskom)

2.3.3 **Contractor** - A group of people and facilities (Corporation, Firm, Enterprise, Institution etc.) with an arrangement of responsibilities, authorities, and relationships, including Supplier, Consultant and Service Provider.

2.3.4 **Subcontractors** - An organisation or legal entity that provides a product to the Supplier and/or that enters a subcontract and assumes some of the obligations of the Supplier or primary Contractor

2.3.5 **Inspection Agency** - An organisation or person appointed by Eskom for the purpose of performing quality assurance or quality control monitoring and or inspection services

2.3.6 **Approved Inspection Authority** - An organisation or person approved by the Chief Inspector, South African Department of Labour, in terms of the Occupational Health and Safety Act 85 of 1993 and appointed by Eskom

2.3.7 **Regulatory body** - A person or persons representing a statutory body as required by laws

2.3.8 **Works** - All deliverables expected from the Contractor or Subcontractor in accordance with the scope of works and requirements specified in the request for tender

2.3.9 **Refurbishment** - Restoration to a sustainable usable state or as near as possible to a new state (within agreed limits)

2.3.10 **Project Quality Plan (PQP)** - A document specifying the activities to be inspected throughout the execution of the Project, inclusive of test methods, procedures and acceptance criteria.

2.3.11 **Contract Quality Plan (CQP)** - A Project Quality Plan specific to the contract, compiled by the Contractor which spells out all the aspects of the quality management system to be applied. It must include the methods that will be utilized to ensure quality assurance, control and improvement of the identified activities as stated in the Works Information.

2.3.12 **Intervention points** - Intervention points are those control points indicated by the various controlling bodies responsible for the implementation of a specific QCP / ITP. These can be in the form of tests, inspection, surveillances, witnessing, reviews, and failure and incident investigations.

[1] **Hold points** - An activity on an inspection and test plan where work shall not proceed without the attendance of Eskom's Representative or the written approval of Eskom to proceed.

[2] **Surveillance Point** - An activity on an inspection and test plan where work can be randomly monitored by the Eskom Representative.

[3] **Witness point** - An activity on an inspection and test plan where work may proceed providing the Eskom Representative has been notified as required in the QCP/ITP and that he has authorised the activity to continue.

2.3.13 **Document review** - A review of all the Contractor quality related records to ensure that relevant activities have been performed in accordance with the contractual requirements.

2.3.14 **Project 3rd Party Quality Representative** - An external Contractor appointed by Eskom responsible for the management and administration of the Quality System on the Project.

2.3.15 **Technical expert** - This refers to a person responsible for all technical aspects and integrity of the Project, service, or process in respect of the specific contract (e.g. Eskom Specialist, Auditor)

2.3.16 **Advisory expert** - This refers to a person responsible for providing specialist advice as may be determined and required in connection with any relevant aspect of the review (e.g. Quality Management Expert etc.). This person is only called upon as and when required.

2.3.17 **Contract Manager** - This refers to a person responsible for the contractual aspect of the Eskom commercial relationship with the Contractors for the specific contract.

2.3.18 **Quality Assurance Data Package (QADP)** - An indexed file containing all applicable records, documentation, certificates, data package, and other data applicable to the works. The QADP will be reviewed during the handover process.

2.3.19 **Criticality Rating** The risk ranking of structures, materials, equipment, components and/or systems determined based on FMECA/FMEA, studies/reports or any applicable risk and criticality basis.

2.3.20 Non-Conformance and defects

[1] A **non-conformance** is a deviation from prescribed processes and procedures by the Contractor.

[2] A **defect** is a deviation from the works information by the Contractor or defective plant and equipment.

2.3.21 **Corrective Action** - Action taken to eliminate the cause of a detected non-conformity or any other non-compliance to the works information.

2.3.22 **Preventative Action** - Action taken to eliminate the cause of a potential non-conformity or any other non-compliance to the works information.

2.4 ABBREVIATIONS

Abbreviation	Description
AIA	Approved Inspection Authority
AVL	Approved Vendor List
PVMKPS	PV Modules Komati Power Station
CV	Curriculum Vitae
CQP	Contract Quality Plan
ISO	International Standards Organisation
ITN	Inspection and Test Notification
ITP	Inspection and Test Plan
MoC	Management of Change
MRB	Manufacturing Record Books (also referred to as Data Books)
NC	Non-Conformance
NCR	Non-Conformance Report

Abbreviation	Description
NDE	Non-Destructive Examination
NDT	Non-Destructive Testing
NEC	New Engineering Contract
O&M	Operating & Maintenance Manual
OHSA	Occupational Health and Safety Act
PER	Pressure Equipment Regulation
PQP	Project Quality Plan
PMI	Positive Material Identification
QIP	Quality Inspection Plan
QC	Quality Control
QMS	Quality Management System inclusive of Project requirements
RCA	Root Cause Analysis
RFQ	Request for Quotation
SANS	South African National Standards
SABS	South African Bureau of Standards
SHE	Safety, Health and Environmental
WPS	Welding Procedure Specification
WQR	Welders Qualification Record

2.5 ROLES AND RESPONSIBILITIES

2.5.1 Quality forum

A quality forum identifies the interactions and responsibilities of Eskom and the Contractor during the performance of work. This document, together with the Project procedures, describes administrative and procedural requirements that the Contractor must satisfy in accomplishing the work.

2.5.2 Eskom

From reports compiled by the Contractor, evaluate the performance of the work of the Contractors regarding schedule, quality, cost, and requirements for compliance by the Contract. Eskom will notify the Contactor of any deficiencies of which it is aware. Such review shall not relieve the Contractor of its contractual responsibilities.

2.5.3 Contractor

2.5.3.1 Evaluate and assume full responsibility for all design work performed by the Suppliers, and Sub-Contractors including manufacturing drawings and samples for quality, conformance to design, and safety. The Contractor shall be responsible for construction means, techniques, methods, and procedures.

2.5.3.2 Submit all quality related documentation to Eskom for approval prior to commencement of construction.

2.5.3.3 Distribute all quality correspondence originating from the Contractor in accordance with the Project documentation control requirements.

2.5.3.4 For Welding: Standard for Welding Requirements on Eskom Plants (**240-106628253**)

2.5.3.5 Ensure all aspects of the Project fully comply with the requirements of the Contract.

2.5.3.6 Ensure that the PQPs / CQPs are implemented and effective in controlling the quality of all items in the Contract.

2.5.3.7 In a timely manner, inform the Eskom Project Manager of any aspect that could impact the quality of the Project and agree to remedial action.

3. ESKOM RIGHTS

Eskom has the right, but is not limited, to:

[1] access Contractor's information as determined by applicable statutory requirements,

[2] oversee Contractor audit programmes by participating in and assessing selected audits as an observer,

[3] obtain access to any audit reports performed by the Contractor reflected in the audit programme.

[4] conduct independent quality audits during all phases of the contract and the Contractor shall provide all resources to support these activities.

[5] participate in or request a technical investigation to be launched and conducted on the Contractor and Sub Contractors premises or other sites when risk to Eskom products or service deliverables are identified.

[6] claim from the Contractor, all costs related to re-inspections as a result of cancellation, test failures, etc.

[7] access for measurement, testing and inspection of products and workmanship as necessary at the Contractor's factory or on site, and in accordance with approved Contractor QCP/ITPs

[8] participate in incident investigations if the quality and / or technical characteristics of products and/or services to Eskom are affected, irrespective of whether the incident occurred on an Eskom site or the Contractor's premises.

4. GENERAL REQUIREMENTS

4.1 QUALITY MANAGEMENT SYSTEM

All Contractors shall be both ISO 9001 certified or possess an objective auditable documented system compliant to both ISO 9001, proof of certification or compliance shall be made available to Eskom.

4.1.1 Design Element Identification, Traceability, and Composition Verification

Material certification must be in accordance with the EN 10204, or ASTM or any recognised International Standard

The enclosure is constructed of corrosive-resistant materials and shall be accepted by Eskom prior to any utilisation.

4.1.2 Constructability Maintainability, Operability Reviews

The Contractor shall:

[1] conduct continuous behavioural observations related to working at heights, safety in design, and other hazardous work conditions. These reviews shall be planned, formal meetings, during which an appropriately qualified multi-discipline team examines aspects of constructability, maintainability, and operability,

[2] Provide Eskom with a minimum of five-day (5) days' notice of such reviews to allow for appropriate Eskom personnel representation. The timing and durations of constructability, maintainability, operability reviews shall be reflected in the Project schedule,

[3] Document outputs from reviews and make these available to Eskom on request.

4.2 QUALITY MANAGEMENT IN FABRICATION & CONSTRUCTION

4.2.1 General

[1] A Quality Management function independent of the Contractor's division who performs the Works, is required for fabrication, construction and testing.

[2] The Quality Management organisation chart for fabrication, construction and testing shall clearly illustrate reporting relationships between:

- Contractor fabrication and construction site Project Quality Management organisations
- Contractor home-office Quality Management organisation.

[3] The Contractor shall document and submit to Eskom for review, a PQP. The plan shall include all quality management plans, processes, procedures and methods.

[4] The PQP and organisation structure, including a bar chart representation of the schedule proposed for personnel mobilisation, shall be submitted to Eskom for review not later than thirty days (30) from Contract award.

[5] All applicable codes, standards, and relevant acceptance criteria documents shall be available at the work location and accessible to Eskom representatives. All documentation shall be available in English and in any workforce appropriate language.

4.2.2 Quality Audits and Related Quality Performance Reviews

[1] Quality audits and related quality performance reviews are intended to provide an objective evaluation of compliance with performance expectations.

[2] Quality audits and related quality performance reviews shall be carried out by trained, accredited, and experienced personnel.

[3] The Contractor shall provide a schedule of anticipated quality audits covering all functional areas and related quality performance reviews at the time of first CQP submittal.

[4] Conduct audits and reviews in accordance with risks identified in the Project Risk Register

[5] Assessments and audits shall be carried out on all new Contractors and Subcontractors.

[6] Qualification requirements for Contractor and Subcontractor personnel engaged in conducting quality audits and related quality performance reviews shall be defined in the PQP.

4.3 CONTRACT AWARD PHASE

4.3.1 Access to premises, facilities, documentation, and information:

[1] The Contractor shall provide suitable facilities to Eskom or its appointed inspection agency and shall provide any assistance necessary for the performance of any audit, surveillance, assessment and/or inspection activities to be conducted by Eskom.

[2] The Contractor shall provide timely notification to Eskom of changes to any agreed request for inspection.

[3] The Contractor shall ensure a safe working environment for Eskom or its appointed inspection agency/authority, by informing it of the necessary safety requirements and possible safety hazards.

4.3.2 Eskom non-conformance & inspection defect/reject reports:

[1] Non-conformance reports raised by Eskom and issued against the Contractor shall be investigated by the Contractor, in order to determine the root cause, corrective action and preventative measures. These results and the required time frame for correction shall be submitted within 5 working days.

[2] A formal response to the non-conformance shall be prepared in respect of the defined criteria, and submitted to Eskom for its review, evaluation and acceptance, within the prescribed period of reply.

[3] By mutual agreement, an earlier response may be requested.

[4] The nature, magnitude and/or frequency of non-conformance or inspection defect/rejection reports raised by Eskom or its appointed inspection authority/agency, shall form the basis of any action taken to rescind the Contractor's approved vendor listing.

4.4 CONTRACT EXECUTION PHASE

[1] The Contractor shall submit the following documents within five days (5) days after the contract award date, or prior to the commencement of any work, for acceptance by Eskom:

a. CQP/PQP.

b. QCPs / ITPs

c. Any equipment classified under the Statutory, Regulatory such as codes mandatory.

d. Any equipment classified under IEC, ISO, SANS, IEEE, and EN or any Equivalent.

e. Individual method statements for all work (describing how work will be executed)

Note: These plans are to be compiled in accordance with Eskom's requirements and shall be accepted by Eskom prior to any work commencing.

[2] Correspondence on any Quality aspects shall be directed to the Project Manager and at all times copied to the nominated Project Quality Manager or its Quality representative for the contract, as well as the PV Solar Power Station document controller at ChiloaBP@eskom.co.za.

[3] Mandatory Quality Review meetings will be convened by the nominated Project Quality Manager or its representative for the contract.

[4] Monthly Quality performance and management reports shall be prepared by the Contractor during contract execution. The format and content of these reports shall be agreed by Eskom and submitted to Eskom monthly.

4.4.1 Inspection Reports

[1] The Contractor shall provide typed inspection reports to Eskom after each visit to the Subcontractor site by Contractor inspector or on a weekly basis if there is a resident inspector.

[2] Inspection request shall be submitted minimum of 3 days prior to inspection witness date

[3] Reports submitted by the Subcontractor to the Contractor shall be submitted to Eskom within five days (5) calendar days.

[4] Each report shall be assigned a unique identification number in accordance with Eskom's numbering system.

[5] A log of reports shall be maintained by the Contractor per Purchase Order.

[6] Each report is to include, but is not limited to, the following clearly identified sections:

- Engineering status.
- Material status.
- Fabrication/production status (include scheduled starting and shipping dates);
- Inspection performed during that visit.
- Significant conditions found requiring rework, repair, or replacement by vendor.
- Action and defects list (including who is responsible for taking action and required completion date).
- Estimated completion percentage, and delivery dates.
- Testing information (if applicable).
- Safety observations.
- Areas of concerns.

[7] The Contractor shall add the following information, as a minimum, with the initial inspection report:

- Estimated start/finish dates.
- Manufacturing facility work hours, days of week.
- Manufacturing facility holidays.
- Overtime requirements.
- Number of Subcontractors.
- Safety observations.
- Areas of concern - technical & administrative
- Methods of documenting failures, deficiencies, and reporting
- Section for inserting the criticality rating of the product/component. This rating will be provided by the Contractor based on the FMECA and HAZOP studies and a documented work procedure.
- Definition of terms
- Any other documents as prescribed by Eskom.

4.4.2 Non-Conformance and defects register

[1] All Non-Conformances (NC) and defects shall be kept in an appropriate register (in book/binder form) by the Contractor. This also includes defects and NCs of all

Subcontractors. Both the initial NC item and the disposition reports are to be included in the register and readily available to any Eskom personnel upon request.

[2] Eskom shall be notified of any NC on a timely basis in accordance with the Eskom approved Project quality plan (PQP), so that any Eskom input or guidance can be rendered. In addition, a NC and defect log shall be maintained showing all NCs and descriptions, along with dates showing when the NCR was generated, resolved, and the name of the responsible person. The updated log shall be issued weekly to Eskom and the Site Quality Representative.

[3] Resolution of NCs shall be the responsibility of the Contractor and Eskom shall be kept informed of all significant issues, e.g., major weld repair, test failures, non-conforming materials, etc.

[4] All dispositions requiring Eskom approval shall be sought by the Contractor using Eskom approved concession request processes**.**

[5] Recurring problems shall be addressed by the Contractor and Eskom may offer solutions/ideas to minimize such reoccurrences.

[6] Prior to the commencement of work, the Contractor NC documentation requirements shall be reviewed, discussed, and agreed upon between Eskom and the Contractor. The results of this agreement, including problems and actions taken, shall be documented, and included in the Contractor NC register.

[7] Dispositions of “conforms to requirements” shall not be used for items that do not conform to stated requirements. Eskom reserves the right to reject any equipment or component that does not fully comply with the specifications or requirements at any stage of the project life cycle.

[8] NCs should be closed prior to any work commencing during a next phase if the previous phase required full compliance.

4.4.3 Contractor’s inspection and testing

[1] The Contractor shall perform his own internal quality control inspections and testing in accordance with accepted inspection and test plans for activities during all the project life cycle phases. This shall be completed prior to presenting the various items of works to Eskom for inspection.

[2] Inspections carried out by Eskom or on behalf of Eskom shall not relieve the Contractor of responsibility for defects or omissions found at a later stage. Where defects or omissions are discovered at a later stage, the cost for repairs to correct the defect shall be borne by the Contractor.

4.4.4 Verification of purchased product.

[1] The Contractor shall perform quality control, inspections, and testing in accordance with Eskom accepted inspection and test plans for activities affecting quality during all the project life cycle phases.

[2] The Contractor shall submit to Eskom individual ITPs in compliance with “Supplier Mandatory Quality Requirements” (criticality level 1 and 2); [Refer 240-72273656].

[3] Prior to commencement of any Work, activities covered by any ITP include:

a. Shop fabrication and manufacture

b. Construction, installation, and

c. Commissioning and start-up Work

[4] The Contractor shall document and implement processes and procedures for verification of compliance with specifications for all purchased products, inclusive of equipment, services, materials, systems, system components or other elements of Work scope procured. Processes and procedures shall, as a minimum, address compliance with specification elements identified below:

a. A Criticality rating based inspection programme in compliance with Eskom “Criticality Assessment Programme” [Refer to 240-72273656 Power Generation Asset Critical Classification Standards] shall be developed for all equipment, services, materials, systems, system components or other elements of Work scope procured. Contractor criticality rating based inspection programme shall be utilised to determine Contractor, third party, and Eskom inspection activities defined in terms of Witness, Interim Witness, Hold, and Document Review points.

b. The Contractor shall require Suppliers of package equipment to participate in Contractor Criticality Rating based inspection programmes to ascertain appropriate extent of Contractor and Supplier involvement in product verification of Supplier lower tier or sub-Suppliers.

c. The Contractor shall arrange coordination meetings with Eskom prior to placement of orders for Criticality level 1 or level 2 items or equipment, to ensure that all technical and commercial requirements are clear and understood. Three-day (3) days advance notice of meetings shall be given to Eskom.

1. Requirements for inspection checklists and inspection assignments with lists of items to be inspected.
2. Inspection and testing report format, report content, schedule for report processing and distribution and report retention requirements.
3. Inspection and test report results response tracking (log) and resolution of non-conformance in inspection and test processes, procedures or methods and non-conformance identified in inspection and test results.

d. For Criticality Level 1 and 2 Work scope deliverables, the Contractor shall establish processes and procedures to ensure final pre-shipment verification of the quality of the Contractor and Subcontractor sourced equipment. The Contractor or Eskom may request the same for Criticality Level 3 Work scope deliverables.

e. The Contractor shall establish processes and procedures for formal assessment of Contractor and Subcontractor inspection and testing programmes. These shall include review of Supplier and Subcontractor inspection reports and other quality control documentation. Additional formal assessment of manufacturing, fabrication and assembly facility operations shall be conducted by the Contractor to ensure continuing suitability, adequacy and effectiveness of the Supplier and Subcontractor inspection and testing programmes. Assessment frequency and scope schedule shall be developed in consultation with Eskom, taking into account the criticality of scope deliverables and performance information of the Supplier or Subcontractor.

f. The Contractor processes and procedures for verification of the Supplier and Subcontractor purchased product and compliance with the specifications, shall be approved by Eskom prior to implementation.

g. The Contractor shall ensure that all work associated with product destined for Eskom, has been fully inspected, tested in accordance with the specified technical requirements, and formally accepted on completion of manufacture, transportation, erection and commissioning as defined in the relevant quality plan(s). The Contractor shall compile, or acquire valid inspection records/test certificates, in respect of each batch of product to be consigned. The Contractor shall implement a process whereby a unique identification stamping system is implemented to show objective evidence of the verification of product quality and material integrity. These stamps shall be issued to individual authorised personnel who are responsible for verification. The applicable company's procedure shall be equivalent to or exceed Eskom QMS Procedure No. QM-61: "Issue and Control of Certification Stamps". Hard “low stress” stamps shall be used for identification of pressure retaining materials and witness verification of special tests, Rubber inked stamps shall be used for documentation review processes.

4.4.5 Control of Special Processes

Refer to **240-106628253: Standard for welding Requirement on Eskom Plant**

4.4.6 Third Party Inspection

The Contractor shall notify Eskom Five (5) days in advance of all visits to the Work site(s) by third party inspectors, to facilitate planning for Eskom participation in such visits.

4.4.6.1 Appointed Inspection Authority (AIA)

The Contractor shall appoint Eskom approved inspection agencies where statutory inspections are applicable.

4.4.6.2 Eskom appointed AIA organisation.

Eskom appointed AIA organisation shall be responsible for:

[1] Advising on all aspects relating to statutory inspections and requirements

[2] Verifying statutory inspections, if applicable.

[3] Verifying the acceptability of the statutory aspects of the QCP/Works information, and to issue non-conformance reports to the Contractor and its Subcontractors as applicable.

[4] Ensuring that specified requirements (e.g., designs, materials, etc.) relevant to any statutory items, test methods, acceptance criteria, assurance and documentation comply with applicable statutory requirements.

[5] P employed to render such services

[6] Carrying out all activities associated with product verification, including surveillances, to establish that work and products conform to Eskom's specifications and requirements, and to certify products.

[7] Issuing non-conformance reports to the Contractor and its Subcontractors.

All welding documentation requirements shall be in accordance with **240-106628253** Standard for Welding Requirements on Eskom Plant

4.4.7 MATERIALS MANAGEMENT PROGRAMME

To be in accordance with ISO 9001 or as per EN or ASTM or any equivalent codes/standards

To be in accordance with SANS10142-1 or any international equivalent Standards

4.4.7.1 Traceability

To be in accordance with ISO 9001

4.4.7.2 Positive Material Identification

To be in accordance with accordance with supplier/contractor own documented system)

4.4.7.3 Quantitative quality measurement tools

To be in accordance with ISO 9001

4.4.7.4 Preservation

To be in accordance with ISO 9001

4.4.8 Expediting during contract execution

The Contractor will ensure reasonable access to his Suppliers and Sub Suppliers for the purpose of monitoring manufacturing activities.

During contract execution, the Contractor shall also provide the following Supplier and sub-Supplier documents and information:

[1] Drawing/document schedules detailing submission dates.

[2] Detailed manufacturing programme

[3] Details of long lead items

[4] Raw material status report

[5] Unpriced sub-orders

[6] Monthly progress reports

[7] Non-conformance reports

[8] COC's upon delivery

[9] Release reports

4.4.9 Quality Control on Completion of the Contract

4.4.9.1 Manufacturing Record Books.

A sample of a typical Data book index is indicated below.

5. TABLE 1: TYPICAL DATA BOOK INDEX

No	Description
1.	A numerical Index
2.	Quality Control Plan
3.	Scope / Description of the work/task order
4.	Hand-over certificates / MC / EC / IC / COC
5.	Material certificates/Rotor/ Stator/Casing/Baseplate
6.	Welding Procedure Specifications
7.	Welding Procedure Qualification Records
8.	Welder Qualifications
9.	Welding consumables
10.	Calibration certificates
11.	Heat treatment records
12.	Hydraulic tests
13.	Concessions (Acceptance and defects)
14.	Inspection and test reports
15.	Non-Conformance reports
16.	NDT reports and index of
17.	NDT Operators qualifications
18.	NDT procedures (Approved register)
19.	Drawings, as built, weld map
20.	Final Release Certificate

5.1 PAYMENT AND DELIVERY

Eskom's appointed/authorised quality representative shall support approval of all invoice(s) for payment before any such payment will be made to the Contractor.

5.1.1 Delivery:

[1] Eskom accepts or rejects items only after the inspection and review of the Quality Data Package and the verification of conformance with the contract requirements.

[2] Eskom does not accept items by confirmation of delivery.

[3] Eskom reserves the right to suspend any pending deliveries, by the issuing of a 'cease delivery order' at any time and for any portion of the work that is not being performed in accordance with the specified/agreed requirements. When such an order is issued by Eskom, the Contractor shall immediately stop deliveries of defined product to all destinations and shall not resume until written authorisation is again given by Eskom.

[4] Eskom reserves the right to withhold payment for products/work due to outstanding non-conformances, irrespective of the agreed payment schedule and in accordance with the conditions of contract.

[5] All replacement, repair and rework activities shall be undertaken by the Contractor at his own cost and expense.

[6] Eskom shall, by written notice to the Contractor, reject any items which are incorrectly supplied or found to contain a defect when inspected, tested or delivered. The notice shall specify the reasons for rejection. Rejected items shall either be returned to the Contractor for corrective action or corrected on Site in accordance with the provisions of this clause. Unless otherwise instructed by Eskom, the Contractor shall promptly replace, repair or rework any items which need to be re-supplied. In either case, all expenses incurred by Eskom shall be for the Contractor's account, set-off against any payments due by Eskom to the Contractor.

[7] Items rejected after delivery will be held and returned at the risk and expense of the Contractor. Written notice of rejection by Eskom will specify whether the items shall be re-supplied or whether the contract in respect of the rejected items shall be terminated without liability to Eskom. If Eskom has paid any part of the price of rejected items, the Contractor shall refund such payment, interest thereon and any other expenses incurred by Eskom in respect of such rejection, on demand.

[8] For Overseas Inspections or any other inspections outside the republic of South Africa a notification period of at least 6 weeks is mandatory. This is for Eskom to comply with its internal governance for processing of flights, motivation and approval of overseas inspections

6. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
Charles Dlamini	Quality Engineering
Lwando Limba	Programme Manager
Brenda Shange	Procurement Manager
Yvonne Gombele	Contracts Manager

7. REVISIONS

Date	Rev.	Compiler	Remarks
August 2023	2	C. Dlamini	Document was developed to specify the contract quality requirements of Photovoltaic Renewable Projects Solar PV Project

8. DEVELOPMENT TEAM

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

Charles Dlamini	Pamela Dondashe	Yvonne Gombele
Lwando Limba	Brenda Shange	

9. ANNEXTURE A: QUALITY REQUIREMENTS FOR ISO 9001 SOLAR PV SOLAR PV

Eskom	Supplier Quality Management: PV Solar Project	Unique Identifier	240-12248652
		Revision	7
		Effective Date	2022/01/26
		Specification	240-105658000

Category 1 : Quality Requirements	Deliverables to be evaluated indicator = 1	

SECTION A : Quality Management System Requirements ISO 9001 (Option 1) Valid certification of Quality Management System by an ISO accredited body	
	Apply =1
A.1 Product / Service Scoping on ISO 9001 certificate is defined and relevant	1
A.2 Certificate by Approved and Authorized certification authority	1
A.3 Certification Authority has Recognized International Accreditation	1
A.4 Validity (expiry date) of certificate	1
Section A Score Option 1	**4**

SECTION A : Quality Management System Requirements ISO 9001 Objective evidence of documented QMS that is not certified but complies with ISO 9001	
	Apply =1

SECTION B : Evidence of QMS in operation (Tender Quality Requirements -Ref 240-105658000)	
	Apply =1
B.1 Documented information for defined roles, responsibilities and authorities - Organization chart and Responsibility matrix (must include but not limited to quality management function/role) (Clause 5.3 of ISO 9001:2015)	1
B.2 Documented information for Control of Externally Provided Processes, Products and Services - Must include criteria for evaluation, selection, monitoring of performance, and re-evaluation of external providers (Clause 8.4 of ISO 9001:2015)	1
B.3 Latest copy of an internal management system audit report (with Nonconformity, Correction and/ or Corrective Action Reports) - Report must include but not limited to Objective, Scope, Criteria and outcomes of the audit. (Clause 9.2 of ISO 9001:2015)	1
B.4 Latest copy of a certification management system audit report not older than 12 months (with Nonconformity, Correction and/ or Corrective Action Reports)	1
B.5 Records of Management Review meetings (minutes, attendance registers e.t.c)	1
Section B Score	**5**

SECTION C: Contract Quality Plan Requirements (Ref 240-105658000 and 240-109253698). Draft Contract Quality Plan specific to the scope of work as described in the tender documents (Ref ISO 10005)	
	Apply (Yes=1)
NB! Draft Contract/Project Quality Plan has important QA deliverables	1
Section C Score	**1**

SECTION D: Quality Control Plan Requirements (Ref 240-105658000 or 240-109253302) QCP /Checklist/ ITP (Quality Control Plans) as per Scope of Works (Ref ISO 10005)	
	Apply = 1
NB! Draft/ Example of an Inspection and Test Plan (ITP) or Quality Control Plan (QCP) on similar and/ or previous work done	1
Section D Score	**1**

SECTION E: User defined additional Requirements & miscellaneous (Ref 240-105658000) Customer specific requirements & other standards and required can be listed and evaluated here	
	Apply (Yes=1)
UL Certification WPS, PQR and WPQR	1
IEEE, IEC , UL or Equivalent Certificate or Procedures	1
Section E Score	**2**

NAME OF ESKOM REPPRESENTATIVE	Charles Dlamini
DATE ISSUED	04/11/2025
PROJECT: TENDER TITLE	Solar PV Project
SIGNATURE	

10. ANNEX B PRODUCT VERIFICATION PLAN

Purpose

- To define precisely the extent and type of inspection and testing during manufacture and erection of statuary operating plant equipment and components. Including those equipment that falls on the non-statutory.

Scope

- All Raw Material Preparation:, Cell Production Module Assembly Quality Control: to complete installation, Sub-systems, combiners, strings & Series , Inverters , Rectifiers , Power Conventions Systems , Ring Main Units, Power Transformers, Cabling , Termination Baseplates foundation NDT of the entire plant.

Responsibilities

- It is the responsibility of the assigned Inspection Authority, to establish the Product Verification Plan and submit it to Eskom for approval. Eskom shall verify and introduce its own interventions. It is the Contractor's responsibility, to provide proof of compliance with the product verification plan, e.g. through records, quality control plans, NDE reports and Third Party inspections.

References

- In addition to the specifications referenced in the Specification the type and extent of inspections and testing per PV Panels for solar Module shall be based on an internationally recognized manufacturing specification, or equivalent. The Product Verification Plan shall reference the relevant international, national and Eskom Specifications ruling the applicable method of tests and the approval criteria.
-

Product Verification Plan Structure

- As a general guidance the Product Verification Plan shall be structured similar to the proven system used for the previous Eskom Power Stations, but adjusted to present regulations and material, welding and testing specifications.

The following essential aspects should be covered in the Product Verification Plan, but are not limited to:

- personnel qualifications
- welding qualifications and verified manufacturing capabilities
- stamp transfer agreements
- component quality control plans
- type and extent of inspections
- type and extend of NDE/DE
- approval criteria
- all Third-Party interventions and certification requirements
- documentation and records
- Including all HVAC related issues
- Civil Works
- Electrical Works
- SCADA and C&I
- Mechanical on all process and equipment's for Solar PV Projects

11. . ANNEX C IDENTIFICATION AND DEFINE TERMS

Identified and defined terms

11

11.1 In these conditions of contract, terms identified in the Contract Data are in italics and defined terms have capital initials.

11.2 (1) The Accepted Programme is the programme identified in the Contract Data or is the latest programme accepted by the *Project Manager*. The latest programme accepted by the *Project Manager* supersedes previous Accepted Programmes.

(2) Completion is when the *Contractor* has

- done all the work which the Works Information states he is to do by the Completion Date and
- corrected notified Defects which would have prevented the *Employer* from using the *works* and Others from doing their work.

If the work which the *Contractor* is to do by the Completion Date is not stated in the Works Information, Completion is when the *Contractor* has done all the work necessary for the *Employer* to use the *works* and for Others to do their work.

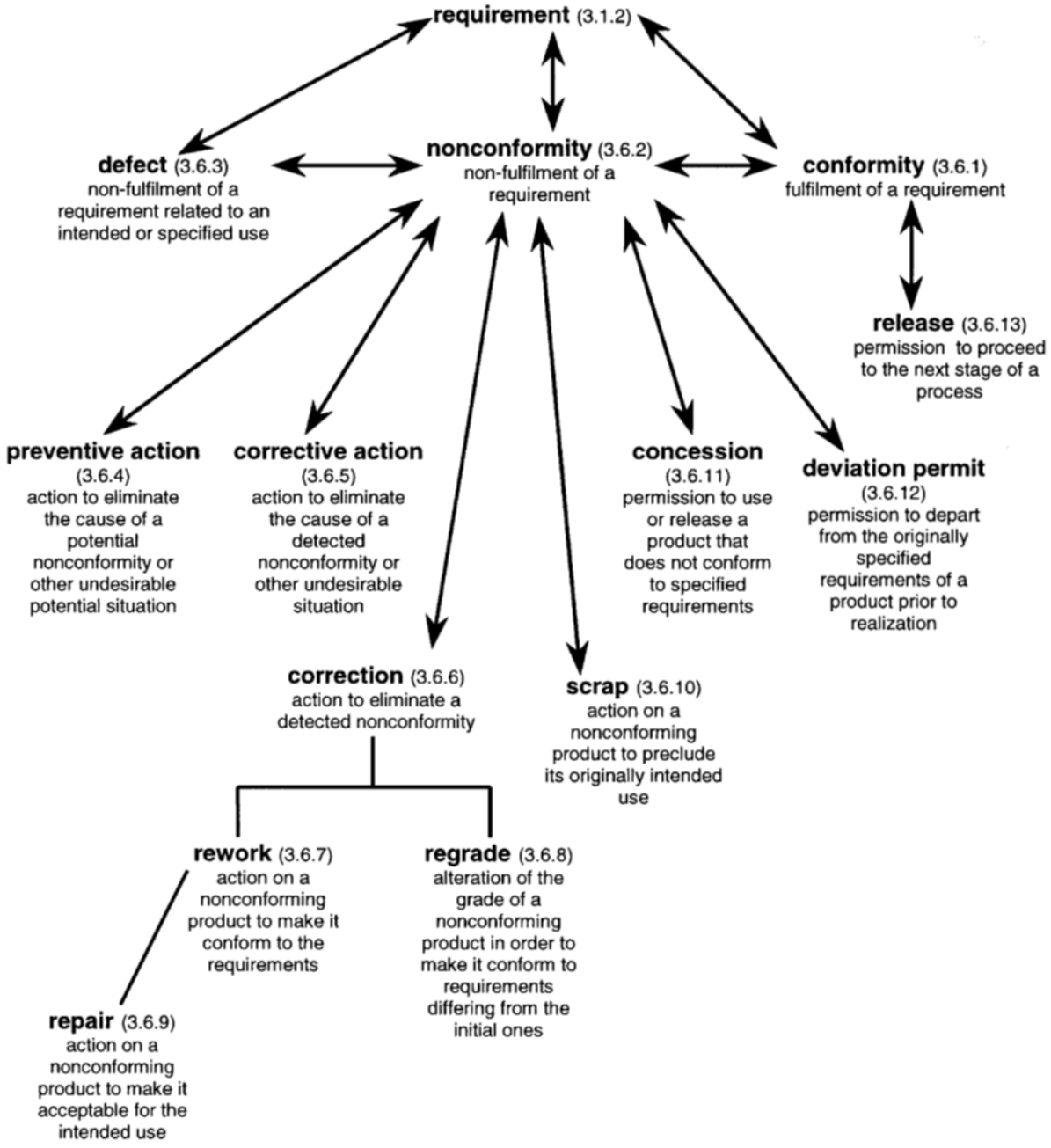
(3) The Completion Date is the *completion date* unless later changed in accordance with this contract.

(4) The Contract Date is the date when this contract came into existence.

(5) A Defect is

- a part of the *works* which is not in accordance with the Works Information or
- a part of the *works* designed by the *Contractor* which is not in accordance with the applicable law or the *Contractor*'s design which the *Project Manager* has accepted.

12. ANNEX D NONCONFORMITY CATEGORISATION



13. ANNEX E PERFORMANCE DAMAGES

performance damages

ount : The amounts for low performance damages are:

initions

refer to :

efect is a part of the *works* which is not in accordance with Works Information or a part of the *works* designed by the *ractor* which is not in accordance with the applicable law e *Contractor*'s design which the *Project Manager* has pted

The above mentioned NEC definition is supported and fied by the following definitions for Quality :

9000: 2009 Standard

Quality (3.1.1) : degree to which a set of inherent racteristics (3.5.10 fulfils requirements(3.1.2)

Requirement (3.1.2) : need or expectation that is ed , generally implied or obligatory

Defect : (3.6.3)

– fulfilment of a requirement (3.1.2) related to nded use. **Note: The distinction between the concepts ct and non-conformity (3.6.2) is important as it has l connotation. Particularly those related with product lity issues.**

Deviation Permit (3.6.12) : Permission to depart n the original specified requirements of a product prior ealization

Concession (3.6.11) : Permission to use or release duct that does not conform to specified requirements

Scrap (3.6.10) : Action on a nonconforming product preclude its originally intended use

Regrade (3.6.8): Alteration of a grade (3.1.3) of onconforming product (3.4.2) in order to make it form to requirement (3.1.2) deferring from the ial ones.

Rework (3.6.7): Action on a nonconforming duct (3.4.20 to make it conform to the uirements (3.1.2)

Repairs (3.6.8): Action on nonconforming duct (3.4.2) to make it acceptable for the intended

Performance level:

The supplier has a philosophy of continuous improvement embedded in the QMS will be stated in their improvement initiative in their Clause of ISO 9001 : 2015 and previously indicated in their NCR procedure ISO 9001 : 2008 , the following will be handled as follows :

R[●] **1.** For every Nonconformities and Defects (ISO 9000:2009), opened longer than 14 days**.** This has to be in line with the Perfomance

defined as indicates

1.1 **Defect:** 20% recoveries
1.2 Deviation permit : No recoveries only to be registered as an NC
1.3 Concession : 20 % recoveries
1.4 Scrap : Full amount will be recovered
1.5 Regrade : 20% recoveries
1.6 **Rework :** for every 5 common NC raised to be charged an amount +/_R20 000, this must be relevant to the scope of work e.g. (design Eskom will be responsible for the CE since the verification and validation is done by Eskom) but for the other the contractor will be liable
1.7 Repairs : 20 % recoveries

R[●] **2.** for Submission of manufacturing data books before delivery to site and **for** ITP's/QCP's review and submission on