Eskom	Standard	KZN OU

Title: **TECHNICAL EVALUATION CRITERIA FOR THE RESIDENTIAL SOLAR PV INSTALLATION PROJECT ON MV/LV TRANSFORMER PUGS26, ST. JOSEPHS NB70 – KZN SOUTH COAST.**

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SCOT Study Committee Number/Name: **Small Scale Embedded Generators**

Content

Tables

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1. Introduction

This document outlines the technical evaluation criteria that Eskom will use to assess tender submissions for the design, supply, installation, commissioning, and maintenance of 3kW and 5kW home solar PV systems for the 22 households at MV/LV transformer PUGS26 on St. Josephs NB70 – KZN South Coast.

The purpose of this document is to provide tenderers with a comprehensive understanding of the technical standards and requirements against which their proposals will be evaluated. These criteria will form a critical part of Eskom's assessment process, ensuring that the proposed solutions meet the necessary specifications for performance, reliability, and long-term operational sustainability.

2. Supporting clauses

2.1 Scope

The trial implementation site is centred around the MV/LV PUGS26 transformer on St. Josephs NB70. Two system capacities have been identified for evaluation:

- 3 kW PV System
- 5 kW PV System

PR_LAT_LONG	Ave Monthly kWh	Ave Monthly REV (R)	System Type	System Size (kW)
300754.177S 305028.485E	252.683333	511.66667	<R600	3
300757.105S 305032.844E	235.866667	579.166667	<R600	3
300754.929S 305031.505E	230.825	560	<R600	3
300754.974S 305029.624E	228.466667	441.666667	<R600	3
300749.594S 305035.685E	220.46667	536.66667	<R600	3
300755.082S 305029.167E	217.275	560.75	<R600	3
300759.716S 305025.573E	185.466667	450.83333	<R600	3
300752.514S 305028.913E	183.883333	367.916667	<R600	3
300754.611S 305030.733E	180.316667	320.083333	<R600	3
300722.440S 304515.840E	172.2	362.5	<R600	3
300800.398S 305033.380E	167.258333	330.416667	<R600	3
300747.295S 305034.713E	160.2416667	325.83333	<R600	3
300752.052S 305030.015E	155.03333	300.833333	<R600	3
301300.230S 308400.380E	151.216667	305.833333	<R600	3
300755.252S 305031.903E	135.458333	334.58333	<R600	3
300756.955S 305030.340E	127.75	315.8333	<R600	3
30°07'51.8"S 30°50'36.4"E	325.458333	659.166666	<R800	5
300754.955S 305029.590E	306.358333	753.5	<R800	5
300748.600S 305026.000E	272.2	658.33333	<R800	3
300757.759S 305022.765E	260.5416667	646.083333	<R800	3
300748.461S 305038.313E	349.908333	875	<R1000	5
300753.642S 305037.555E	430.45	1059.416667	<R1000	5

The appointed engineering entity is required to design and install 22 PV systems at 22 customers premises. The installation is to be done outside the customer's houses. The size of the PV system for each premise is shown on the table above. In addition, the appointed entity is required to undertake maintenance work for the duration of 2 years.

The systems shall be as follows:

18 X 3 kW PV Systems: 3.6kW hybrid inverter with 3.6kWh battery, 5x550W solar panels.

4 X 5 kW PV Systems: 3.6kW hybrid inverter with 5kWh battery, 9x550W solar panels.

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Details of the PV mounting structure shall be provided for an **outdoor-only, platform-mounted** PV array that accommodates a **dedicated IP65-rated kiosk enclosure**. The platform and racking system shall be engineered to support the PV modules and provide sufficient space and access for the kiosk housing the **battery system, inverter(s), and all supporting balance-of-system equipment** (including protection, isolation, metering, communications and cabling). The submission shall include the **installation methodology/procedure**, structural support details, and **associated engineering drawings**.

Details of the **outdoor IP65 kiosk enclosure** for the inverter and battery system shall be provided. The kiosk shall be suitable for external environmental exposure and shall include all required internal mounting arrangements, ventilation/thermal management where applicable, gland plates/cable entries, and access provisions. The submission shall include the **mounting/installation method or procedure**, kiosk layout and general arrangement drawings, and **technical data sheets** for the kiosk and all installed equipment.

For the detailed scope please refer to “Project Brief SOW ST Josephs” document.

2.1.1 Purpose

The purpose of this document is to outline the technical evaluation criteria and requirements for the design, supply, installation, commissioning, and maintenance of home solar PV systems for the 22 households at MV/LV transformer PUGS26 on St. Josephs NB70, providing guidance for tenderers on the standards and expectations for the project.

This document serves as a detailed guide for tenderers and evaluators, outlining the expectations and technical requirements for ensuring the successful execution and lifecycle management of the system.

2.1.2 Applicability

This document is applicable exclusively to Eskom’s Distribution Division within the Central East Cluster.

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] 240-48929482: Tender Technical Evaluation Procedure

[3] 32-1034: Eskom Procurement and Supply Chain Management Procedure

[4] KZN-EBC-0406-1037843: Network Engineering & Design Preliminary Report

[5] 240-75655504: Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment, Components, Materials and Structures Manufactured from Steel Standard

[6] 240-75655380: Low Voltage Services Section 1 – Electrification

[7] 240-171000418: Major Equipment Requirements for Distribution Solar PV and BESS: SSEG and Microgrids. A compliance checklist against the document should be provided.

[8] NRS097-2: Grid Interconnection of Embedded Generation; Part 2: SSEG

[9] KZNYP202601: Functional Specification for Household Solar PV & Bess Installations – PUGS26, St. Josephs NB70 – KZN SOUTH COAST.

2.2.2 Informative

None.

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2.3 Definitions

2.3.1 General

Definition	Description
Tender	A tender refers to an open or closed competitive request for quotations / prices against a clearly defined scope / specification.
Electrification	The process of connecting households and other consumers to the electricity grid.

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
BESS	Battery Energy Storage System
FAT	Factory Acceptance Test
FC	Fully compliant
ILAC	International Laboratory Accreditation Cooperation
LFP	Lithium iron phosphate (in reference to batteries)
MDB	Main Distribution Board
NB	Network Breaker
NC	Non-compliant (major deviation)
PC	Partially compliant (minor deviation)
PUC	Point of Utility Connection
PV	Photovoltaic
SANAS	South African National Accreditation System
SAT	Site Acceptance Test
SME	Subject Matter Expert
STC	Standard Test Conditions
TEC	Technical Evaluation Criteria
TET	Technical Evaluation Team

2.5 Roles and Responsibilities

Standards Implementation Department shall be responsible for the technical adjudication of the tender submissions from prospective tenderers.

2.6 Process for Monitoring

The acceptance of the proposed solution will be based on a thorough evaluation of the fully compliant design review and documentation submission.

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After the contract is awarded, the components procured by the successful bidder will be subjected to technical quality inspections prior to the installation of any of the proposed components as a solution to the project.

2.7 Related/Supporting Documents

Refer to clause 2.2 of this document.

3. Overview and Expectations of the Tender Technical Evaluation Process

Technical evaluations are a critical function carried out by engineers and technical specialists in alignment with the Eskom Procurement and Supply Chain Management Policy (32-1033) and the Eskom Procurement and Supply Management Procedure (32-1034). These evaluations play an essential role in ensuring that tender processes adhere to established procurement standards.

The Technical Evaluation Strategy will outline the following evaluation criteria:

- Mandatory Evaluation Criteria
- Functional Scoring Criteria

The process begins immediately after the receipt of tender submissions following the closing date, under the guidance of a Procurement Practitioner. Throughout the evaluation, if any indication of dishonesty or misrepresentation is found in a tenderer's submission, Eskom reserves the right to disqualify the tenderer and cancel any related contracts, if applicable.

By adhering to this structured and consistent approach, Eskom ensures that technical evaluations are conducted with the highest levels of integrity and professionalism.

The evaluation process will align with the Request for Proposal (RFP) commercial process, ensuring a thorough assessment of the proposed solutions. While considering the Tenderer's suggested solution, the equipment proposed must meet the requirements outlined in the Technical Schedules A and B, as well as comply with the relevant standards and regulations referenced within these schedules.

3.1 Technical Returnable Documents

3.1.1 The primary evaluation criterion is the submission of fully completed Technical Schedules A and B, submitted in PDF format.

3.1.2 The supporting documents shall include items such as datasheets, technical drawings, brochures, technical manuals, type test certificates, and test reports.

3.1.3 All supporting documents specifically compiled for the tender, such as site layout drawings, design calculations, and similar materials, must be submitted by the tender closing date.

3.1.4 No additional supporting evidence will be accepted after the tender submission deadline.

3.1.5 Bidders are encouraged to organize their submissions in a manner that helps the TET locate returnable and supporting documents.

3.1.6 When completing the "Schedule B (Compliance)" and "Reference / Statement (Supporting Evidence)" columns, the Tenderer is required to provide a clear and accurate statement of the compliance level for each clause that necessitates such a declaration in the "Schedule B (Compliance)" column. The following compliance options are available from the provided dropdown list in Schedule B:

a. Comply – Confirmation of full compliance with all clauses of the relevant section or clause of the Technical Standard. No deviations are permitted.

b. Non-compliant – Any non-response, partial compliance, unacceptable deviations or non-conformances will be considered non-compliant for the purposes of evaluation.

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3.1.7 The Tenderer must list all deviations in the designated "Deviation Schedule" worksheet, providing clear reasons and any proposed alternatives. The document reference number, title, specific clause, and details of the deviation must also be clearly specified.

3.1.8 The verification of Schedule A and B responses provided by Tenderers will be carried out as follows, as specified in the schedules:

a. **Tenderer response accepted at face value:** For less critical functionality, Eskom will not verify these items during the tender evaluation. Compliance will instead be confirmed through a Technical Quality Inspection of the key components, namely the Inverter, Lithium Iron Phosphate Batteries, and PV Panels, prior to installation.

b. **Tenderer response verified through supporting documentation:** Responses will be cross-checked against the provided documentation to ensure accuracy and compliance.

3.2 Tender Evaluation Process

3.2.1 All tenders must meet the mandatory technical criteria. Any tender that fails to meet these criteria shall be disqualified, deemed non-compliant, and considered non-responsive.

3.2.2 Tenders that successfully pass the mandatory phase shall proceed to be evaluated against the functional criteria.

3.2.3 To be considered technically acceptable, a tender must achieve a minimum overall weighted final score of 80% in the functional evaluation.

3.2.4 Eskom reserves the right to reduce the functionality threshold to 70% at their discretion should the need arise.

3.2.5 A clarification phase will follow to finalize the remaining items.

Only tenderers who achieve a minimum score of 80% in the Functional Scoring Technical Evaluation Criteria will be eligible to provide further clarifications to ensure full compliance with Eskom's technical requirements. This means that all technical requirements must ultimately be met at 100%.

Note: This process ensures that the product fully complies with the technical evaluation criteria, guaranteeing it meets Eskom's standards before proceeding further.

3.2.6 Such post tender clarifications as required shall not be used to render a non-responsive tender responsive or to change the outcome of scoring or ranking. Clarifications shall not trigger changes in the price, scope, lead times or risk position of Eskom or the tenderer. The objective is to provide assurance to Eskom that any remaining ambiguities arising during the functional technical evaluation stage are resolved prior to contract award recommendation. During this stage of clarification that will be administered through the relevant appointed Procurement Practitioner, documents that are required to resolve outstanding matters for full compliance in support of the technical requirements shall be submitted by the tenderer. This is required prior to contract award recommendation.

3.2.7 After the contract is awarded, the components procured by the successful bidder will be subjected to technical quality inspections prior to the installation of any of the proposed components as a solution to the project.

3.3 Scoring

3.3.1 Each item will be evaluated by the TET based on the quality of the tendered response, verified where applicable (refer to Table 1). This applies to all items except for Technical Schedules A and B, which will be assessed based on the weight assigned to each item listed in the schedules.

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3.3.2 Technical Schedules A and B will be assessed using weighted criteria, with each item allocated a percentage contributing to the overall score (100%). Items will be evaluated for compliance, with fully compliant items receiving the full score and non-compliant items receiving no score (zero).

3.3.3 Items with no supporting documentation (where required) will be scored as non-compliant (zero).

Table 1: Scoring of items in Technical Schedules A and B

Criteria	Abbreviation	Score
Does Not Comply	DNC	0
Compliant and Acceptable Response	CAR	1 x Criterion Weighted %

3.3.4 The TET will follow the guidelines in Table 2 to ensure consistent scoring across all tender responses.

Table 2: Guideline for Scoring of Items

Abbreviation	Guideline
DNC	NO information provided OR does not comply with the requirement
CAR	Compliant response with minimum required detail and clarity. "It's all there"

3.3.5 Items with no references to supporting documentation (where applicable) will be scored non-compliant (zero).

3.3.6 If a response claims "Comply" but is found partially or non-compliant during verification, a score of zero will be assigned.

3.3.7 Items with no response selected will automatically be scored as “Do Not Comply.” Technical Schedule A and B items for which no selection is provided shall automatically be scored as “Do Not Comply” regardless of the supporting evidence provided.

3.3.8 All responses will be assigned a score of either 0 or 100% of the criterion’s weighted percentage with exception to the Technical Schedules A and B which will be scored as per the points awarded evaluating the submitted Technical Schedule B document as per the scoring tool developed.

3.3.9 The scores for all items in the Technical Schedule A and B will be summed, and a percentage will be calculated based on the maximum possible score. This percentage will represent the score for each sub-system or standard section. These sub-system scores will then be weighted to calculate the overall score for the proposed solution.

3.4 Mandatory Evaluation Criteria

If a response of 'NO' is given for any criterion outlined in Table 3 below, the assessed tendered design will be automatically disqualified from advancing to the next stage of the Functional Evaluation process. This disqualification emphasizes the importance of meeting all specified requirements to ensure that the design is considered for further evaluation.

Note: *Only resources who are direct employees of the tendering company or employees of a subcontractor with a valid, documented agreement in place will be considered. Any information submitted for individuals who have no formal affiliation with the tendering entity will not be evaluated.*

Table 3: Mandatory Technical Evaluation Criteria

No.	Description of Mandatory Technical Criteria	Tender Returnable	Compliance (YES/NO)
1	**Resource Capability**		
1.1	**Skills Base**		

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1.1.1	Electrical Design Engineer/Technologist	a) Qualifications b) ECSA registered Professional Engineer or Professional Technologist.	
1.1.2	Structural Design Engineer/Technologist	a) Qualifications b) ECSA registered Professional Engineer or Professional Technologist.	
1.1.3	Professional Quantity Surveyor	a) Qualifications b) Professional registration with the SA Council for the QS Profession (SACQSP)	
1.1.4	Installation Electrician (IE) or Electrical Tester for single phase applications.	a) IE card issued by the Department of Labour clearly showcasing the IE's registration number. **or** b) Electrical Tester for Single Phase registered with the Department of Labour (DOL).	
1.2	**Software and Tools**		
1.2.1	Design and simulation software for solar power systems.	Proof of a valid license/subscription.	
1.2.2	CAD software capable of *.DGN export.	Proof of a valid license/subscription.	
1.3	**Related Experience**		
1.3.1	Related Solar PV and BESS projects.	List of **at least three** previous roof top/ground or pole mounted solar PV projects that were designed, constructed, and commissioned, indicating installed PV, battery and inverter capacity, year of completion, location and client reference letter which shall include the client's contact details.	
2	**Documentation**		
2.1	Submission of Operating and Maintenance (O&M) training manuals.	Operating and Maintenance (O&M) training manuals for the entire Solar PV System.	

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2.2	Submission of **completed and signed** deviation schedules.	a) Deviation Schedule: PV Module b) Deviation Schedule: Inverter c) Deviation Schedule: Lithium Iron Phosphate Batteries	
2.3	Submission of **completed and signed** Technical Schedules A and B.	a) Technical Schedule AB: PV Modules b) Technical Schedule AB: Inverter c) Technical Schedule AB: Lithium Iron Phosphate Batteries	
2.4	Submission of confirmation letters verifying adherence to testing and standards for the installation of solar PV and BESS, specifically for PV modules, inverters, the fire system and lithium iron phosphate batteries in the templates provided.	a) LTRINV_ESKSTJ_001 b) LTRPV_ESKSTJ_002 c) LTRLFP_ESKSTJ_003 d) LTRCOR_ESKSTJ_004	
2.5	Submission of all design reports, including the drawings specified in Technical Schedules A and B, for the required technologies.	a) Reports and drawings as specified in Section 4.1 of the Functional Evaluation Criteria. b) PV Panel: OEM drawing showcasing dimensions in metric units (include the drawing & revision number on the submission) c) LFP Batteries: OEM drawing showcasing dimensions in metric units (include the drawing & revision number on the submission)	

3.5 Functional Evaluation Criteria

Bids that satisfy all Mandatory Evaluation Criteria outlined in Table 3 will proceed to be assessed against the Functional Evaluation Criteria detailed in Table 4. The evaluation of these functional criteria will be based on the Bidder's level of compliance with the technical requirements set forth in Bid Technical Schedules A & B (Appendix A). Compliance levels are defined as follows:

- **Compliant and Acceptable Response:** Full compliance with all clauses of the relevant section of the Technical Standard, with no deviations.
- **Do Not Comply:** Non-compliance with all requirements in the specified section.

The Bidder is required to respond to each criterion, indicating the level of compliance. Where "compliance with reference" is necessary, the Bidder must provide the corresponding supporting documentation.

In cases where the response is "Partial Compliance" or "Do Not Comply," the Bidder must provide a list of deviations, reasons for these deviations, and any proposed alternatives. Deviations – those that, if accepted, would prevent the Bid from fulfilling its intended purpose – will result in technical rejection of the Bid.

Bids deemed substantially responsive under this process will be recommended from a technical standpoint. A substantially responsive Bid is one that meets the technical requirements without deviation, reservation, or omission.

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Each item will be evaluated by the TET based on the quality of the tendered response, verified where applicable (refer to Table 1). This applies to all items except for Technical Schedules A and B, which will be assessed based on the weight assigned to each item listed in the schedules.

Technical Schedules A and B will be assessed using weighted criteria, with each item allocated a percentage contributing to the overall score (100%). Items will be evaluated for compliance, with fully compliant items receiving the full score and non-compliant items receiving no score (zero).

To reiterate: Following the post-evaluation clarification engagement, any shortfalls or non-compliant items shall be resolved to achieve 100% compliance with Eskom's requirements prior to contract award, ensuring the service provider fully meets Eskom standards. Service Providers will be granted a 14-day turnaround period to reach full compliance.

In order for LV works to be undertaken to connect the PV system to the specified households, the works need to be carried out by persons that are in possession of an LV Authorisation letter issued by Eskom. Should the service provider not have personnel currently employed at their company without LV Authorisation then such a service may be contracted in for the duration of this project.

The Prepaid Meter Training Certification is obtained from accredited training service providers. It is required that the service provider shall have a competent person employed at their company to install and commission a prepaid meter. Should the service provider not have personnel currently employed at their company without Prepaid Meter Training Certification then the services of a competent resource may be contracted in for the duration of this project.

Table 4: Functional Scoring Technical Evaluation Criteria

No.	Functional Technical Criteria Description	Tender Returnable	Weight
3	**General**		**14%**
3.1	Completed Tenderer Information Schedule	Tenderer Information Schedule	3%
3.2	Operating & Maintenance Training	Submit the facilitator's CV, including relevant qualifications and details of similar training sessions previously conducted in line with the required installation.	3%
3.3	Quality Assurance	PV Green Card Certification or equivalent	4%
3.4	LV authorisation for a resource employed at the tendering company during the tender period.	A copy of the LV authorisation letter issued by Eskom to the relevant resource. **OR** If resource is contracted in: Names, ID numbers, and relevant authorisation letter of the personnel deemed competent must be submitted.	4%
4	**Design Reports**		**30%**

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4.1	Design reports concerning the installation of solar PV systems at 22 households at MV/LV transformer PUGS26 on St. Josephs NB70, KwaZulu-Natal South Coast. ***Note:*** *All design reports must be signed off by a Professional Engineer or Technologist registered with ECSA, with expertise in the relevant discipline related to the proposed design, or by a specialist recognized by and registered with the ECSA.*	4.1.1 Final Design TEC score	30%
5	**Submission of Technical and Deviation Schedules**		**50%**
5.1	PV Modules	5.1.1 Technical Schedule A and B	13%
		5.1.2 Deviation Schedule	4%
5.2	Inverters	5.2.1 Technical Schedule A and B	13%
		5.2.2 Deviation Schedule	3%
5.3	Lithium Iron Phosphate Batteries	5.3.1 Technical Schedule A and B	13%
		5.3.2 Deviation Schedule	4%
6	**Maintenance**		**6%**
6.1	Preventative Maintenance Schedule	Submission of a maintenance schedule for all components that are to be installed.	2%
6.2	Corrective Maintenance	A letter, signed by the company's Director, confirming the tenderer's ability to provide corrective maintenance for two (2) years post-installation, including response times for repairs and replacements, must be submitted. If maintenance services are subcontracted, contracts must also be provided.	2%
6.3	Spare Parts List	Provide a detailed list of spare items and associated costs and quantities.	2%

4. Authorization

This document has been seen and accepted by:

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5. Revisions

Date	Rev.	Compiler	Remarks
October 2025	0	Y Peer	Draft technical evaluation criteria compiled for the installation of a household solar PV systems at MV/LV transformer PUGS26 on St. Josephs NB70, KwaZulu-Natal South Coast

6. Development team

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

- Yusuf Peer
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7. Acknowledgements

- None

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Annex A – Tenderer Information Schedule

Schedule A: Purchasers specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

1	2	3	4
Item	**Question**	**Response**	**Proof Submitted**
1	**Tenderer**		
1.1	Company name		
1.2	Company address		
1.3	Contact details		
1.4	Website address		
1.5	Company organogram		
1.6	Does your company have ISO 9001:2015 or similar certification? If yes, what is the expiration date of such certification?		
1.7	Does your company have ISO 45001/OHSAS 18001 or similar certification? If yes, what is the expiration date of such certification?		
1.8	If other certifications exist, please state them here.		
1.9	Is there a formal agreement between your company and the manufacturer (OEM)?		
1.10	Have your staff been trained on the equipment been offered?		
1.11	Will your company be able to provide the following after sales support if and when required:		
1.11.1	Technical Support		
1.11.2	Installation		
1.11.3	Commissioning		
1.11.4	Maintenance		
1.12	Does your company have the capability to perform local fault-finding and repairs?		

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BIDDER's SIGNATURE

Name (Print)	**Company Name**
Sign	**Date**

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Annex B – Technical Schedules A and B for Inverters

Schedule A: Purchasers specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

1	2	3	4	5	6
Item	**Description**	**Document Ref.**	**Parameters**	**Schedule A**	**Schedule B**
1	**Product Information**				
1.1	OEM		OEM Name	xxxxxxxxxx	
2	**Inverter Characteristics**				
2.1.1	Inverter type		Specify	Hybrid	
2.1.2	Maximum conversion efficiency	240-53114248 Cl. 3.2.19.4	%	≥ 95	
2.1.3	Operating temperature range (without derating within this range). Sunshade shall be installed. Concept shall be briefly explained in inverter concept within tender.	240-53114248 Cl. 3.1.1.2	°C	-15 to +60	
2.1.4	Connection phases	KZN-STM-1004-926987-0001 Cl. 5.2	Yes/No	Three-Phase	
2.1.5	Frequency	240-53114248 Cl. 3.1.2.3	Hz	50	
2.1.6	Total Harmonic Distortion	240-53114248 Cl. 3.2.1.34	%	≤ 10	
2.1.7	IP for inverter installed outdoor (EN 60529)	240-53114248 Cl. 3.4.9.2	Specify	≥IP65 or better	

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2.1.8		Cooling concept		Specify	Designed for installation and operation in conditions such as high humidity and corrosive salt air.	
2.1.9		Controllability of inverter output per remote control/energy management system.		Specify	Dynamic adjustable	
2.1.10		Earthing concept		Specify	Earthing according to installation requirements of PV module OEM.	
2.1.11		Multiple MPPT functionality		Yes/No	Required	
2.1.12		String failure detection		Yes/No	Required	
2.1.13		DC overvoltage protection	240-53114248 Cl. 3.2.17.1	Yes/No	Required	
2.1.14		Surge protection	240-53114248 Cl. 3.2.22.1	Yes/No	Required	
2.2	•	**Product Warranty and Performance Guarantee**				
2.2.1		Product warranty	KZNMB202401 Cl. 3.5	Specify	10 Years	
3	**Documentation for Acceptance of the Proposed Inverter**					
3.1		Detailed technical specifications		Present documentation	Required	
3.2		Product information catalogue		Present documentation	Required	
3.3		Installation manual		Present documentation	Required	

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3.4		Summary of the product's cleaning strategy		Present documentation	Required	
3.5		Calculations for ensuring electrical compatibility between the inverters and the modules		Present documentation	Required	
3.6		Operating and maintenance manual		Present documentation	Required	
3.7		Confirmation of Adherence to Testing and Standards for Solar PV and BESS Installation	Populate the letter titled "LTRINV_ESKSTJ_001."	Present documentation	Required	

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Annex C – Technical Schedules A and B for PV Modules

Schedule A: Purchasers specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

1	2	3	4	5	6
Item	**Description**	**Reference Doc.**	**Parameters**	**Schedule A**	**Schedule B**
1	**Operating Environment**				
1.1	Altitude above sea level (e.g., 1000, 1600)		m	50 - 500	
1.2	Extreme maximum temperature		ºC	50	
1.3	Extreme minimum temperature		ºC	-5	
1.4	Ambient air quality	DEAT: Air quality standards & objectives Cl. 3.1.7	Describe	Heavy	
1.5	Average humidity		%	10% - 85%	
1.6	Average daily sunshine hours		Hours	5	
2	**Product Information**				
2.1	• **PV Module Information and Characteristics**				
2.1.1	OEM		OEM Name	xxxxxxxxxx	
2.1.2	OEM's factory location		Factory Location	xxxxxxxxxx	

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2.1.3		OEM's product code		Specify Code	xxxxxxxxxx	
2.1.4		OEM drawing showcasing dimensions in metric units (include the drawing & revision number on the submission)		Drawing	xxxxxxxxxx	
2.1.5		PV panel type	240-171000418 Cl. 3.4.1		Monocrystalline	
2.1.6		Module efficiency	240-171000418 Cl. 3.4.3		>19% (STC)	
2.1.7		Peak output power per panel	KZN-STM-1004-926987-0001 Cl. 5.1 and 5.1	Wp	≥ 550 Wp	
2.1.8		Temperature coefficient on MPP		- %/°C	≥ - 0.45%/°C	
2.1.9		Nominal power tolerances from manufacturer (used for acceptance to the module)		%	0% ≤Pnom ≤ +5%	
2.2	•	**Product Warranty and Performance Guarantee**				
2.2.1		Power output guaranteed during the first year of operation	240-171000418 Cl. 3.4.5	%	97%	
2.2.2		Linear degradation coefficient from year 2 to year 20	240-171000418 Cl. 3.4.6	%/year	0.8%/year	
2.2.3		Guaranteed output of the nominal power after 10 years	240-171000418 Cl. 3.4.7	%	≥90%	
2.2.4		Guaranteed output of the nominal power after 20 years	240-171000418 Cl. 3.4.8	%	≥80%	
2.2.5		Product performance warranty	KZNMB202401 Cl. 3.5	Years	25	
2.2.6		Product warranty against manufacturing defects	KZNMB202401 Cl. 3.5	Years	10	

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3	**Documentation for Acceptance of PV Modules**					
3.1		Detailed technical specifications		Present documentation	Required	
3.2		Limited product and peak power warranty		Present documentation	Required	
3.3		Installation manual		Present documentation	Required	
3.4		Summary of the product's cleaning strategy		Present documentation	Required	
3.5		Product's recycling strategy		Present documentation	Required	
3.6		Operating and maintenance manual		Present documentation	Required	
3.7		Confirmation of Adherence to Testing and Standards for Solar PV and BESS Installation	Populate the letter titled "LTRPV_ESKSTJ_002"	Present documentation	Required	

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Annex D – Technical Schedules A and B Lithium Iron Phosphate Batteries

Schedule A: Purchasers specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

1	2		3	4	5	6
Item		**Description**	**Reference Doc.**	**Parameters**	**Schedule A**	**Schedule B**
1	**Operating Environment**					
1.1		Altitude above sea level (e.g., 1000, 1600)	240-53114248 Cl. 3.4.1.1	m	50 - 500	
1.2		Extreme maximum temperature	240-53114248 Cl. 3.4.1.3	ºC	50	
1.3		Extreme minimum temperature	240-53114248 Cl. 3.4.1.3	ºC	-5	
1.4		Ambient air quality	DEAT: Air quality standards & objectives Cl. 3.1.7	Describe	Heavy	
1.5		Lightning	240-53114248 Cl. 3.4.1.1	Describe	High	
1.6		Relative humidity	240-53114248 Cl. 3.4.1.1	%	10% - 85%	
2	**Product Information**					
2.1	•	**LFP Information and Characteristics**				
2.1.1		OEM		OEM Name	xxxxxxxxxx	
2.1.2		OEM's factory location		Factory Location	xxxxxxxxxx	

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2.1.3		OEM's product code		Specify Code	xxxxxxxxxx	
2.1.4		OEM drawing showcasing dimensions in metric units (include the drawing & revision number on the submission)		Drawing	xxxxxxxxxx	
2.1.5		Cell type		Specify	Prismatic	
2.1.6		Rated capacity	240-171000418 Cl. 3.5.3	Ah	Specify	
2.1.7		Wet weight mass	Specify	kg	OEM to indicate	
2.1.8		Discharge performance at +25 °C	240-170000103 Cl. 3.2.3	Specify	Refer to 240-170000103 Cl. 3.2.3	
2.1.9		Discharge performance at low temperature	240-170000103 Cl. 3.2.4	Specify	Refer to 240-170000103 Cl. 3.2.4	
2.1.10		High-rate discharge permissible current	240-170000103 Cl. 3.2.5	Specify	Refer to 240-170000103 Cl. 3.2.5	
2.1.11		Fully charge state – under float		V	Specify	
2.1.12		Minimum voltage/LFP cell	240-170000103 Cl. 3.4.3.2	V	2.5	
2.1.13		Maximum voltage/LFP cell	240-170000103 Cl. 3.4.3.2	V	4.2	
2.1.14		Short-circuit current	240-53114248 Cl. 3.2.9	kA	OEM to indicate	
2.1.15		Internal resistance	240-53114248 Cl. 3.2.9	Ω	OEM to indicate	
2.1.16		Maximum allowable RMS ripple current and effect on battery life	240-53114248 Cl. 3.2.7	A	<5A/100Ah	

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2.1.17		Maximum allowable RMS ripple voltage and effect on battery life	240-53114248 Cl. 3.2.6	mV	0.01 x Vnom	
2.2	•	**Product Warranty and Performance Guarantee**				
2.2.1		Expected life	KZNMB202401 Cl. 3.5	Specify	10 Years	
2.2.2		End-of-life (EOL) capacity	240-171000418 Cl. 3.5.3	%	75	
2.2.3		Capacity loss	240-171000418 Cl. 3.5.3	%Ah/Year	1.33	
2.2.4		Number of cycles to EOL	240-171000418 Cl. 3.5.3	Specify	5000	
2.3	•	**Battery Management System**				
2.3.1		Undervoltage disconnect		Yes/No	Required	
2.3.2		Overvoltage protection		Yes/No	Required	
2.3.3		Over temperature shutdown		Yes/No	Required	
2.3.4		Short circuit protection		Yes/No	Required	
2.3.5		Cell balancing		Yes/No	Required	
2.4	•	**Transportation and Disposal**				
2.4.1		What transport company will be used for deliveries?		Specify	xxxxxxxxxx	
2.4.2		Do they have the necessary licensing to operate as a dangerous goods transporter?		Yes/No	xxxxxxxxxx	
2.4.3		What procedures are in place to manage field failures and ensure that these are effectively and timeously addressed.?		Specify	xxxxxxxxxx	
2.4.4		What procedures are in place to manage field failures and ensure that these are effectively and timeously addressed.?		Specify	xxxxxxxxxx	

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2.4.5		What recycling procedure is place to ensure that redundant equipment is recycled in an environmentally friendly manner?		Specify	xxxxxxxxxx	
3	**Documentation for Acceptance of LFP Batteries**					
3.1		Discharge test results		Present documentation	Required	
3.2		If not the OEM, a licensed OEM distributor agreement must be provided.		Present documentation	Required	
3.3		Installation manual		Present documentation	Required	
3.4		Product's recycling strategy		Present documentation	Required	
3.5		Operating and maintenance manual		Present documentation	Required	
3.6		Confirmation of Adherence to Testing and Standards for Solar PV and BESS Installation	Populate the letter titled "LTRLFP_ESKSTJ_003"	Present documentation	Required	

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Annex E – Detailed Design Report and Returnables

1. Design Report and Documentation

Produce **Detailed Engineering Designs** for both 3 kW and 5 kW systems, including:

- **Detailed Design Report** signed off by an ECSA registered Professional Engineer.
- **Mounting Solutions**: Designs for platform mounted PV systems based on site-specific conditions.
- **Outdoor Enclosures:** Solution for containing the inverter, batteries and other electrical apparatus in locations that require them to be installed outside. Drawings and schematics showcasing dimensional parameters to be submitted as a returnable document.
- **Electrical Schematics**: AC and DC single-line diagrams.
- **Design of Eskom labels** for all visible apparatus including the enclosure in line with NRS097-2-1.
- **Design of rating plates** for the enclosure showcasing the technical details of the equipment housed within.

NB: If the design is the same for a number of customers, list the relevant customer details under item 2.1 of the Detailed Design Returnable document.

2. Standards and Compliance

All designs and installations must be compliant with:

- **240-171000418:** *Major Equipment Requirements for Distribution Solar PV and BESS: SSEG and Microgrids*. A compliance checklist against the document should be provided.
- **NRS097-2:** Grid Interconnection of Embedded Generation; Part 2: SSEG
- Applicable **SANS standards**, **NRS guidelines**, and **municipal building codes**.

2.1. Safety and Operational Integration

- Include a **clearly defined electrical isolation point** between the PV system and the **Customer's MDB (Main Distribution Board)**.
- Ensure the solution supports **safe operation**, **ease of maintenance**, and alignment with Eskom's safety and operational protocols.
- **Registering the SSEG with NERSA.**

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DETAILED DESIGN REPORT TEMPLATE AND RETURNABLES

Informative checklist for comparable tender submissions including detailed design requirements and score allocations.

Completion of table below- (2%)

Tenderer Information	
Physical Address	
Tenderer (Company Name)	
Designer of Record (Name + Registration)	
Document Version / Issue Status / Date	

Submission format requirement:

- Submit PDF (signed)
- Do not change the section numbering or headings.
- Complete every table. If not applicable, write “N/A” with a brief justification.

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Table of Contents - (3%)

Insert an automatic Table of Contents here:

Word: References → Table of Contents → Automatic Table

1. Executive Summary (max 1 page) - (5%)

System Type (Grid-tied (export), Hybrid (backup), Hybrid (no export) or Other	
Connection (Single-phase or Three-phase)	
Point of Connection (POC) (Main DB, Meter Cubicle, Dedicated SSEG DB, or Other)	
Key assumptions (Short bullets – cable routes, DB space, shading, etc.)	
Compliance statement	

2. Project Information

2.1 Customer and Site Details – (5%)

Customer Name	**Customer Address**	**Outdoor Platform Type**	**Outdoor other**	**Height and other Constraints**

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3. Reference Standards and Utility Rules - (3%)

List all standards, codes, and utility rules referenced for this design.

Reference	Title	Version / Date	Applicable to

4. Design Basis and Assumptions - (12%)

4.1 Electrical Supply

Item	Value / Details
Nominal voltage	
Main breaker rating	
Earthing arrangement (as observed) [TN-S / TN-C-S / TT / unknown]	
Existing DB condition and available space	
Existing protective devices (RCD/RCBO)	

4.2 PV Design Inputs

Parameter	Value / Details
Orientation – Azimuth	
Orientation – Tilt	
Shading Assumption	
Soiling / Degradation Assumptions	

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5. System Architecture - (12%)

5.1 Single Line Architecture (Summary)

Insert a simplified block diagram:

Utility → Meter → Main DB → (POC) → Inverter → Battery → PV

5.2 Modes of Operation

Operating Mode	Description
Grid Available (Normal Operation)	
Outage / Load-shedding (Backup Operation)	
PV Surplus Handling (Export / Curtail / Charge Battery)	
Battery Low State Behaviour	

6. Detailed Electrical Design - (20%)

6.1 AC Integration

Item	Details / Input
Reconfiguration of existing service connection	
Main breaker rating	
Residual Current / RCBO approach & selectivity	
PV system–to–Customer MDB isolation point (Clearly defined isolation point required)	
Point of Utility Connection (PUC) isolating switch rating	
Earthing modifications (if any)	

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6.2 Cable Schedule and Voltage Drop

Run	From	To	Length (m)	Cable type	CSA (mm²)	VD (%)	Installation method

7. Mechanical / Mounting Design - (20%)

7.1 Mounting Type Summary (Outdoor)

Equipment	Location	Fixing method	IP rating	Clearance / access

7.2 Platform Layout

• Platform plan and equipment layout drawing (to be attached as Appendix), showing array outlines, module orientation and positions of cable drip loops etc

Additionally,

Item	Description
Detail how water ingress is prevented	
Outline measures taken to prevent corrosion	
Describe the method used for lightning protection	
Measures to mitigate theft	

7.3 IP Rated Enclosure for Inverters and Batteries

• Drawings and schematics showcasing dimensional parameters

Additionally,

Requirement	Description
Explanation of how the enclosure should be mounted or fixed	
Details on fire-mitigation measures for the enclosure	

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Means of ensuring adequate ventilation for the enclosure	

7.4 Structural Considerations

Item	Details / Input
Fixing to rafters/purlins method	
Wind uplift basis	
Structural sign-off No, Yes (attach report)	

8. Construction Method Statement (CMS) Summary - (5%)

Provide a brief, site-specific construction method summary:

9. Risk Register - (3%)

Risk	Likelihood	Impact	Mitigation	Owner

10. Appendices (mandatory attachments) - (10%)

A. Full Single Line Diagram (signed)

B. Platform plan and equipment layout drawings

C. Labels or signage schedule

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Non-responsive rule: Any missing table, missing appendix, or altered section numbering may be treated as non-compliant.

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