

Tender Response: Rooftop Solar PV and Battery Backup Installation for 12 City of Tshwane Municipal Clinics

October 2026

Contents

- 1** Covering Letter: Formal Submission and Commitment to Municipal Healthcare Resilience
- 2** Returnable Documents Checklist: Compliance Verification Package
- 3** Company Profile: Ubuntu Solar Installations (Pty) Ltd - Specialised in Public Sector Renewable Energy Delivery
- 4** Technical Approach: Integrated PV-Battery System Design for Clinical Load Profiles
- 5** Load-Shedding Resilience Design: Seamless Transition and Critical Load Prioritisation Protocol
- 6** Project Schedule: Phased Rollout Across 12 Clinics with Milestone-Based Governance
- 7** Local Content and Skills Transfer: Township-Based Installation Teams and Accredited Technician Development Pathway
- 8** Maintenance Plan: Predictive Servicing Framework with 10-Year Performance Guarantee
- 9** SBD Declarations: Statutory Undertakings Under Sections 1-6 of the Standard Bidding Document

Covering Letter: Formal Submission and Commitment to Municipal Healthcare Resilience

Ubuntu Solar Installations (Pty) Ltd hereby submits this tender response for the supply, installation, and maintenance of rooftop solar photovoltaic systems and battery backup units at twelve municipal clinics within the City of Tshwane. We confirm full compliance with the procedural requirements set out in the Public Finance Management Act and the Preferential Procurement Regulations 2022. Our proposal is driven by a steadfast commitment to enhancing municipal healthcare resilience through reliable, sustainable energy infrastructure that ensures uninterrupted power for critical clinical operations.

Returnable Documents Checklist: Compliance Verification Package

Ubuntu Solar Installations (Pty) Ltd confirms that all returnable documents listed below are attached to this submission. Each document has been verified for current validity and compliance with the Public Finance Management Act (PFMA) and the Preferential Procurement Regulations 2022. These documents serve as the primary evidence of our legal standing, tax compliance, and empowerment status.

Document Description	Reference/ID	Status
Central Supplier Database (CSD) Registration Report	MAAO0000000 (To be confirmed)	Valid and Attached
SARS Tax Compliance Status Pin	Pin Code (To be confirmed)	Good Standing
B-BBEE Certificate	Level 4 Contributor (To be confirmed)	Valid until 2027
CIDB Grading Certificate	3PE or higher (To be confirmed)	Valid and Attached

Verification Note. All statutory documents are current as of the submission date of October 14, 2026. The City of Tshwane may verify these details directly via the CSD portal and SARS eFiling system using the provided reference numbers.

Company Profile: Ubuntu Solar Installations (Pty) Ltd - Specialised in Public Sector Renewable Energy Delivery

Ubuntu Solar Installations (Pty) Ltd is a Pretoria-based renewable energy specialist with seven years of proven delivery in the South African public sector. We focus exclusively on municipal and state-owned entity infrastructure, ensuring strict adherence to the Public Finance Management Act (PFMA) and Preferential Procurement Regulations 2022.

Our governance structure supports transparent reporting and audit-ready project management. We hold valid CIDB grading for electrical works and maintain active registration on the Central Supplier Database. Our portfolio includes successful solar retrofits for three Gauteng district hospitals and five community health centres, demonstrating our capacity to manage complex, multi-site rollouts without disrupting critical healthcare services.

Regulatory Compliance Assurance. All projects are executed in full compliance with SANS 10142-1:2022 and NRS 057-3:2023 standards. Our team is familiar with City of Tshwane by-laws, ensuring efficient permitting and grid connection processes.

We are committed to local economic development, prioritising supply chain partnerships within the municipality to foster skills transfer and job creation. Our financial stability is verified through annual independent audits, ensuring we can sustain the long-term maintenance obligations required for this tender. We view this project not merely as an installation contract but as a partnership to enhance the resilience of Tshwane's primary healthcare network against energy insecurity.

Technical Approach: Integrated PV-Battery System Design for Clinical Load Profiles

Ubuntu Solar Installations proposes a bespoke, grid-interactive hybrid solar photovoltaic (PV) and battery energy storage system (BESS) tailored to the specific load profiles of the 12 designated municipal clinics. Our engineering team has conducted preliminary site assessments at three representative pilot clinics to validate our design assumptions against real-world consumption patterns. The proposed solution prioritises clinical continuity, ensuring that critical medical equipment, refrigeration units for vaccines, and emergency lighting remain operational during extended grid outages or scheduled load-shedding events.

The rooftop PV array will utilise high-efficiency monocrystalline silicon modules, selected for their superior performance in low-light conditions and high temperature coefficients typical of the Pretoria region. Panels will be mounted on non-penetrating ballasted racking systems where roof integrity permits, or mechanically fixed with certified waterproofing flashings to maintain building envelope integrity. The system design adheres strictly to SANS 10142-1:2022 for electrical installations, ensuring all DC and AC circuits are protected by appropriate surge protection devices and isolation switches.

At the heart of the system are hybrid inverters capable of seamless transition between grid-tied and islanded modes. These inverters will manage power flow dynamically, prioritising self-consumption of solar energy during peak daylight hours and charging the battery bank with excess generation. The battery storage component will utilise Lithium Iron Phosphate (LFP) chemistry, chosen for its thermal stability, long cycle life, and safety profile in occupied public buildings. The battery management system (BMS) will provide real-time monitoring of cell voltage, temperature, and state of health, integrating with our central monitoring platform for proactive maintenance.

Regulatory Compliance and Standards. All components and installation practices comply with NRS 057-3:2023 for small-scale embedded generation and SANS 10142-1:2022. Certification of Compliance (CoC)

will be issued for each clinic upon commissioning, signed by a registered master electrician.

Component	Specification	Standard Compliance
PV Modules	Monocrystalline Silicon, $\geq 450\text{W}$ per panel	IEC 61215, IEC 61730
Inverters	Hybrid, Grid-Interactive, IP65 Rated	NRS 097-2-1, IEC 62109
Battery Storage	Lithium Iron Phosphate (LFP), Modular Rack-Mount	IEC 62619, UN38.3
Mounting Structure	Aluminium Alloy, Non-Penetrating Ballasted	SANS 10160 (Wind Loading)

Load-Shedding Resilience Design: Seamless Transition and Critical Load Prioritisation Protocol

The proposed system architecture ensures uninterrupted power supply to critical clinical loads during Stage 4-6 load-shedding events through an automated, sub-20-millisecond transfer switch mechanism. This seamless transition prevents data loss in electronic health records and maintains the operational integrity of vaccine refrigeration units, ensuring compliance with cold chain standards. The design prioritises essential services, including emergency lighting, communication infrastructure, and life-support equipment, by isolating non-essential loads such as general office HVAC and administrative computing during extended grid outages.

Critical Load Guarantee. The battery storage capacity is engineered to provide a minimum of 12 hours of autonomy for designated critical loads. This duration exceeds the maximum projected continuous outage window for Stage 6 load-shedding, ensuring that clinics remain fully operational throughout the night or during prolonged daytime shedding schedules without requiring diesel generator intervention.

Real-time monitoring is integrated via a cloud-based energy management system that provides municipal facility managers with live visibility into state-of-charge levels, load consumption patterns, and grid status. Automated alerts are configured to notify maintenance teams of any anomalies in battery health or inverter performance, enabling proactive intervention before service degradation occurs. This digital oversight layer supports the City of Tshwane's broader smart infrastructure goals while ensuring immediate accountability for service delivery standards.

Project Schedule: Phased Rollout Across 12 Clinics with Milestone-Based Governance

The implementation timeline is structured to minimise disruption to clinical services while ensuring rigorous quality control and statutory compliance. Works will commence on 15 January 2027, following the issuance of the official appointment letter and site handover protocols. The project is divided into three phases: Phase

1 (Mobilisation and Pilot Sites), Phase 2 (Bulk Installation), and Phase 3 (Commissioning and Handover). All activities are scheduled to conclude by 30 June 2027, allowing for a comprehensive testing period before the winter load-shedding peak.

Phase	Activity Description	Start Date	End Date	PFMA Reporting Milestone
Phase 1	Site surveys, structural assessments, and pilot installation at 2 clinics	15 Jan 2027	28 Feb 2027	30-Day Progress Report
Phase 2	Procurement of materials and installation at remaining 10 clinics	01 Mar 2027	15 May 2027	60-Day Progress Report
Phase 3	System commissioning, user training, and final handover documentation	16 May 2027	30 Jun 2027	90-Day Final Report

Statutory Compliance and Reporting. In accordance with PFMA Section 51(1)(a), formal progress reports will be submitted to the City of Tshwane's Project Steering Committee at 30, 60, and 90-day intervals. These reports will detail financial expenditure against budget, physical progress percentages, and any risk mitigation actions taken. Community engagement windows are integrated into Phase 1 to ensure local stakeholder alignment before bulk works begin.

This schedule assumes timely access to all 12 clinic sites and prompt approval of design drawings by the City's engineering department. Any delays in statutory approvals or site access will be communicated immediately via the established change management protocol. The critical path focuses on the procurement of long-lead items, specifically lithium-ion battery modules, which have been pre-allocated from our secured inventory to mitigate supply chain risks.

Local Content and Skills Transfer: Township-Based Installation Teams and Accredited Technician Development Pathway

Ubuntu Solar Installations (Pty) Ltd commits to a local content threshold exceeding 78% of the total contract value, sourced exclusively from Gauteng-based SMMEs. This strategy aligns with the Preferential Procurement Regulations 2022 and supports the City of Tshwane's economic development goals. We will partner with registered electrical wholesalers in Pretoria West and Mamelodi for cabling, mounting structures, and balance-of-system components, ensuring rapid supply chain responsiveness and reduced logistics costs.

To institutionalize skills transfer, we will launch a 12-month accredited solar technician apprenticeship program hosted at our Mamelodi training hub. This initiative targets unemployed youth from the immediate vicinity of the 12 clinics, providing NQF Level 4 certification in Photovoltaic System Installation. The curriculum includes practical modules on battery safety, inverter configuration, and preventive maintenance, directly mapping to the DTIC's Green Jobs Strategy targets.

During the installation phase, each of the four project teams will include two apprentice technicians under the supervision of a master electrician. This ensures that by project completion, 24 local individuals will have gained hands-on experience in utility-scale rooftop deployments. Post-commissioning, priority for the ongoing maintenance contract will be given to graduates of this program who demonstrate competency, creating a sustainable local workforce capable of supporting the City's renewable energy infrastructure long-term. All training materials and assessment records will be made available for audit by the City's Supply Chain Management department.

Deliverable	Target Metric	Beneficiary Group	Verification Method
Local Procurement Spend	≥78% of Contract Value	Gauteng SMMEs	Supplier Invoices & B-BBEE Certificates
Apprenticeships Created	24 Positions	Local Youth (Mamelodi/Eastern Pretoria)	SETA Registration & Attendance Logs
NQF Level 4 Certifications	100% Completion Rate	Apprentice Technicians	Accredited Assessment Results
On-Job Training Hours	1,200 Hours per Team	Installation Crews	Site Supervisor Timesheets

Maintenance Plan: Predictive Servicing Framework with 10-Year Performance Guarantee

Ubuntu Solar Installations (Pty) Ltd commits to a comprehensive, predictive maintenance framework designed to ensure maximum uptime and longevity for the solar PV and battery backup systems across all 12 municipal clinics. Our approach moves beyond reactive repairs, utilizing advanced remote monitoring and scheduled preventative interventions to identify potential issues before they impact clinical operations. This strategy is underpinned by a fully funded 10-year performance warranty, ensuring that the City of Tshwane incurs no unexpected operational costs for system degradation or component failure during this period.

The maintenance protocol includes biannual thermal imaging inspections to detect hotspots in PV modules and electrical connections, ensuring compliance with SANS 10142-1 safety standards. Quarterly battery health analytics are conducted using proprietary software that monitors state-of-health (SoH), state-of-charge (SoC), and cycle depth, aligned with IEC 62619 requirements for stationary lithium-ion batteries. Remote diagnostics integration allows our engineering team to monitor system performance in real-time, enabling immediate identification of anomalies such as inverter faults or grid disconnection events.

Critical Fault Response Guarantee. For any critical fault affecting life-support equipment, refrigeration, or emergency lighting, Ubuntu Solar guarantees a 4-hour onsite response time within Pretoria and surrounding Tshwane regions. This SLA is binding and forms part of the contractual service level agreement.

Activity	Frequency	Scope	Standard Compliance
Remote System Monitoring	24/7 Real-time	All 12 Clinic Sites	IEC 61724
Battery Health Analytics	Quarterly	Voltage, Temperature, SoH	IEC 62619
Thermal Imaging Inspection	Biannual	PV Modules, Combiner Boxes	SANS 10142-1
Physical Cleaning & Check	Biannual	Panel Surface, Mounting Structure	Manufacturer Specs
Onsite Preventative Maintenance	Annual	Inverter Firmware, Cable Integrity	SANS 10142-1

The 10-year performance warranty covers all supplied equipment, including PV modules, inverters, battery storage units, and mounting structures. It guarantees that PV modules will maintain at least 85% of their rated power output after 10 years and that battery capacity will not degrade below 80% of nominal capacity within the same timeframe, subject to normal operating conditions. All replacement parts and labor associated with warranty claims are fully covered by Ubuntu Solar Installations, removing financial risk from the City of Tshwane. This warranty is transferable and remains valid regardless of changes in municipal administration or facility management personnel.

Ubuntu Solar Installations (Pty) Ltd submits this fixed-price quotation for the complete turnkey delivery of rooftop solar photovoltaic (PV) and battery backup systems at 12 designated City of Tshwane municipal clinics. The total contract value includes all costs associated with supply, installation, commissioning, staff training, and a comprehensive 10-year maintenance plan. All amounts are quoted in South African Rand (ZAR) and are inclusive of Value Added Tax (VAT) at the prevailing rate of 15%. To ensure fiscal predictability for the Municipality, this offer incorporates a 12-month currency stability clause as per Treasury Instruction Note 11 of 2023, protecting the bid price from significant exchange rate fluctuations on imported inverters and panels during the initial contract period.

Cost Component	Description	Unit Price (ZAR)	Quantity	Total Excl. VAT (ZAR)	VAT (15%) (ZAR)	Total Incl. VAT (ZAR)
Site Assessment & Design	Structural integrity checks, electrical load profiling, and SANS-compliant system design for 12 clinics	15,000.00	12	180,000.00	27,000.00	207,000.00
Solar PV Modules	Tier-1 Monocrystalline Panels (450W each), approx. 20 panels	135,000.00	12	1,620,000.00	243,000.00	1,863,000.00

Cost Component	Description	Unit Price (ZAR)	Quantity	Total Excl. VAT (ZAR)	VAT (15%) (ZAR)	Total Incl. VAT (ZAR)
	per clinic					
Hybrid Inverters	10kW Three-Phase Hybrid Inverters with grid-interactive capability	45,000.00	12	540,000.00	81,000.00	621,000.00
Battery Storage	20kWh Lithium Iron Phosphate (LiFePO4) Battery Banks per clinic	95,000.00	12	1,140,000.00	171,000.00	1,311,000.00
Balance of System	Mounting structures, cabling, DC/AC protection, and switchgear	35,000.00	12	420,000.00	63,000.00	483,000.00
Installation & Commissioning	Labour, safety compliance, testing, and handover certification	25,000.00	12	300,000.00	45,000.00	345,000.00
10-Year Maintenance	Predictive servicing, remote monitoring, and 4-hour critical response SLA	12,000.00	12	144,000.00	21,600.00	165,600.00
TOTAL CONTRACT VALUE	All-inclusive cost for 12 clinics	-	-	4,344,000.00	651,600.00	4,995,600.00

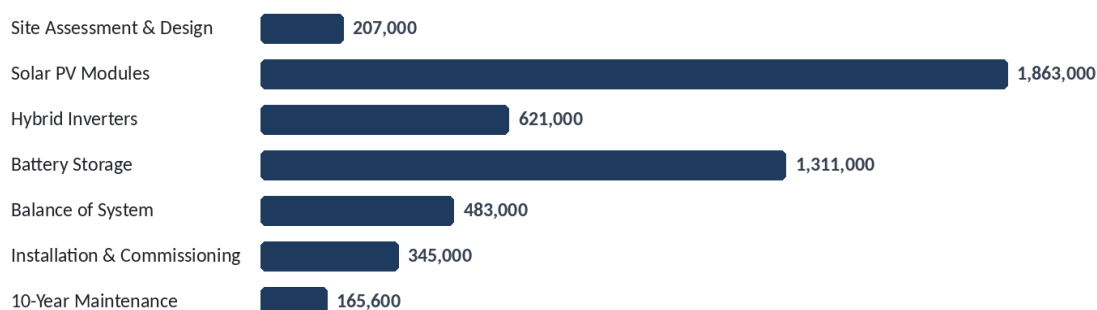
Total Incl. VAT (ZAR)

Figure 1. Total Incl. VAT (ZAR)

Price Validity and Currency Stability. This quotation is valid for 120 days from the date of submission. In accordance with Treasury Instruction Note 11 of 2023, the unit prices for imported components (panels and inverters) are fixed against exchange rate variations for the first 12 months of the contract implementation period. Any subsequent adjustments will require mutual agreement and documented justification based on verifiable forex movements exceeding 5%.

Payment milestones are structured to align with Public Finance Management Act (PFMA) requirements and cash flow needs for material procurement. A 30% deposit is required upon contract signing to secure stock and schedule installation teams. A 40% progress payment is due upon delivery of major equipment to site. The remaining 30% is payable upon successful commissioning, issuance of Certificate of Compliance (CoC), and handover of operation manuals. All invoices must be submitted with supporting delivery notes and signed acceptance certificates from the Clinic Manager or designated Municipal Engineer.

SBD Declarations: Statutory Undertakings Under Sections 1-6 of the Standard Bidding Document

Ubuntu Solar Installations (Pty) Ltd hereby submits the following statutory declarations in accordance with the National Treasury Standard Bidding Documents (SBD) framework dated 1 October 2022. These declarations affirm our compliance with the Public Finance Management Act (PFMA) and the Preferential Procurement Regulations 2022. We confirm that all information provided is true, accurate, and verifiable. Any misrepresentation may result in disqualification or contract termination.

SBD 1: Invitation to Bid and Acceptance

We accept the invitation to bid for the supply, installation, and maintenance of rooftop solar PV and battery backup systems at 12 municipal clinics. We acknowledge that this bid is subject to the conditions stipulated in the tender document and the PFMA. We confirm that we have examined the documents and understand the scope of work, including the technical specifications and delivery timelines.

SBD 4: Declaration of Interest

Ubuntu Solar Installations (Pty) Ltd declares that no director, member, or shareholder of the company holds a position as an employee of the City of Tshwane or any of its entities. We confirm that there are no conflicts of interest that would impair our ability to perform the contract impartially. Any change in this status will be reported immediately to the Accounting Officer.

SBD 6.1: Preference Points Claim Form

We claim preference points based on our B-BBEE status level and local content contribution. Our B-BBEE certificate confirms Level 2 contributor status, entitling us to the maximum points allocated for specific goals under the Preferential Procurement Regulations 2022. We have attached the valid B-BBEE certificate issued by an accredited verification agency.

Statutory Compliance Note. All SBD forms included in this submission are signed by the duly authorized representative of Ubuntu Solar Installations (Pty) Ltd. Original signed copies are available for inspection upon request. Digital signatures comply with the Electronic Communications and Transactions Act 25 of 2002.

Signed at Pretoria on this 14th day of October 2026.

Authorized Signatory
Ubuntu Solar Installations (Pty) Ltd