EXPRESSION OF INTEREST

SANEDI INFO	**:**	**VIABILITY AND VALIDATION OF INNOVATION FOR SERVICE DELIVERY VVISD EXPRESSION OF INTEREST**
Expression of Interest No.	**:**	**EOI2923**
EOI Issue Date	**:**	05 February 2024
Briefing Session	**:**	**15 February 2024 at 12:00pm via Teams :Please use the provided link to join:** **Microsoft Teams meeting** **Join on your computer, mobile app or room device** Click here to join the meeting Meeting ID: 369 367 198 020 Passcode: JtbBia Download Teams | Join on the web Learn More | Meeting options
Total Cost	**:**	
EOI Closing Date	**:**	**26 February 2024 at 11:00am**
Enquiries Must be directed To	**:**	enquiries.procurement@sanedi.org.za
Electronic Submissions To	**:**	**2923.procurement@sanedi.org.za**

1. RESPONDENT INFORMATION

REQUIRED INFORMATION	**DETAILS**					
Name of Applicant						
Email Address						
Contact Number						
CPIC Registration No.						
Ownership	**Demographic**				**Gender**	
	Black	**Coloured**	**Indian**	**White**	**Male**	**Female**
	Attach CIPC Certificate					
Project Lead (Qualifications)						
Project Team (Qualifications)						
Attach CVs						
Projects Applied For	**Projects Applied For**				**✓ Please Tick**	
					Yes	**No**
	CCTV Cameras					
	Free Basic Alternative Energy Study					
	Geyser Tag					
	Load Management					

Respondent Information	**Smart Technologies**		
	No. of years' experience		
	No. of project team members		
	Respondent Location		
Budget		**R**	

2. BACKGROUND

The DSI received grant funding from the European Union (EU) to implement the Viability and Validation of Innovation for Service Delivery (VVISD). The programme seeks to ensure integration and institutionalisation of innovation in the delivery of basic services across municipalities. This involves creating an enabling policy environment that facilitates diffusion of good practices and the adoption and scaling of successful innovations. Municipalities will work with the key stakeholders DSI, SALGA, CoGTA, TIA and SANEDI, notwithstanding universities and technology developers, to identify and adopt a select number of innovations and technology pilot projects to test the viability of preferred technologies or innovations. The programme is structured into four key focal areas:

- Innovative Technology Solutions.
- Decision-support Tools.
- Innovation Capacity and Capability.
- Integration of Innovation.

The VVISD programme comprises the subprogramme Energy Management. This subprogramme seeks to identify, source, and demonstrate appropriate energy innovations/technologies (preferably locally manufactured) with a view to improve *quality services* within municipalities. The goal is to promote the uptake of innovations in municipalities and scale-up successful innovations to improve the socio-economic situation of all. This initiative seeks to drive economic growth and socio-economic development in the country, while empowering *black woman*, *youth*, and *persons with disabilities*.

The key objectives of the programme are as follows:

- To support the Government of South Africa to improve the National System of Innovation responding to the priorities of the National Development Plan.
- To develop policy and programme interventions through dialogue and consultations with non-conventional partners/government stakeholders that will stimulate investment in Research, Development and particularly Innovation for service delivery to improve access to socio-economic rights to all and women, youth, persons with disabilities and vulnerable groups.
- To support learning from models that have been successful in applying innovation and commercialisation of technologies arising from existing cooperation and other projects.

3. INVITATION FOR EXPRESSION OF INTEREST

The Department of Science and Innovation (DSI), the Technology Innovation Agency (TIA) and its implementing partner, the South African National Energy Development Institute (SANEDI), would like to invite Expressions of Interest (EOIs) from SMMEs, black Technology Providers, Higher Learning

Institutions (HEIs) and Research Institutions focusing on technologies/innovations that will lead to accelerated implementation of Energy Management innovations/technologies, which will improve quality service delivery in municipalities.

Expressions of interest (EOI) are hereby invited from suitably qualified companies; higher learning institutions, and technology providers (respondents) to be prequalified for the provision of energy management products and services. Respondents are required to submit EOIs to provide all-inclusive or targeted products or services based on the scope of work specified in the technical specifications of this EOI.

Only companies with demonstrable knowledge and experience within the identified scope of work will be considered. Respondents may submit an EOI for *individual competencies* or can do so. Submissions will be scored according to specific E**valuation Criteria** (Section 5). Expression of Interests must be clearly marked on the outside with the Tile - **EOI Viability and Validation of Innovation for Service Delivery** (VVISD) and Bid Number 2923 and Title VVISD to which they are responding.

4. REQUIREMENTS

The following requirements apply:

- Application documents completed electronically and supplied in Word format.
- A description of the technology accompanied by a photo or evidence of a product prototype, e.g., key features, impact, competitive advantage.
- Proof of the granted licence, for in-licensed technology.
- A clear indication of the (intended) socioeconomic impacts resulting from implementation of the solution.

5. EXPRESSION OF INTEREST SPECIFICATIONS

All expressions of interests are to be submitted in a format specified in this enquiry (as applicable). However, companies are welcome to submit additional or alternative expression of interest over and above the originally specified format (e.g. other capabilities that you may deem to be relevant).

- Company Profile and/or Individual Capability: List of previous projects, organogram, and reference letters in the technologies/innovations *scope of work* and *work packages* to which interest is expressed.
- Resources: A team consisting, at minimum, of a technologies/innovations project manager with at least 7 years' experience and a specialist resource(s) as per individual scope of *work*.
- Curriculum Vita's (CVs) of *resources* are required to be submitted. Note that CVs should not exceed two (2) pages.

6. CVs included must include qualifications and experience of the project leader and team members specific to each of the project areas chosen under **Section 1:** Respondent Information**.**

- Sanedi is not obligated to accept candidates proposed and may request alternatives at such time when a proposal is requested for a particular work package.

Submissions will be **evaluated** based on a Scoring Matrix and following **evaluation criteria**:

- Company/Institution years of experience.
- Project Team Leader and Project Team qualifications and years of experience.

- Method used to implement the innovation or technology.
- High level project plan.
- Reference letters demonstrating experience projects of a similar nature.
- Pricing schedule.

7. ELIMINATION CRITERIA

Expression of interests will be eliminated insofar the following conditions:

- Submission of EOI after the deadline.
- Responses submitted at incorrect email address or location.
- Submissions from restricted suppliers in terms of the Treasury Regulations.
- Submission of incomplete EOI documentation.
- Respondents having less experience than that stipulate in the Scope of Work: **Annexure 1**.

8. EOI RESPONSE SUBMISSIONS

- All expressions of Interest are to be submitted to 2923.procurement@sanedi.org.za

- Email document size 25MB, please send multiple emails if exceeded.
- All expressions of interest are to be clearly marked with the EOI Name and Reference Number on the subject line.
- Responses submitted by companies must be signed by a person or person duly authorised.

9. DEADLINE OF SUBMISSIONS

- Expression of interest (proposal) shall be submitted at the email address mentioned above, no later than the closing date of **26 February 2024** at **11:00am** .
- EOI submissions must be emailed to 2923.procurement@sanedi.org.za

- Where an EOI is not received by SANEDI on the due date and email/stipulated place, it will be considered a late response.
- Late EOI's will not be considered.

10. EVALUATION PROCESS

The EOI evaluation process will include a functionality/technical evaluation. No price evaluation will be done at this stage. To be a preferred supplier the service provider shall meet the minimum threshold for functionality and will have a valid BBBEE certificate. Approved suppliers shall meet a minimum threshold **functionality** of **70**.

11. PRICING SCHEDULE

The pricing schedule listed here shall be completed by the respondent for each of the projects listed as follows with pricing completed in **Annexure 1**:

12. NATIONAL TREASURY CENTRAL SUPPLIER DATABASE REGISTRATION

Before submitting the proposals, bidders must be ensure that the following requirements are in order:

- To be registered on the National Treasury's Central Supplier Database (CSD).
- Registrations can be completed online at: www.csd.gov.za; and • Provide the SANEDI with their CSD registration number.
- Submit a certified SANAS (B-BBEE certificate) for RSA suppliers or a Sworn affidavit.

13. EOI PROGRAMME

The EOI program, as currently envisaged, incorporates the following key dates:

- Issue of EOI documents: 05 February 2024
- Closing Submission Date: 29 February 2024 @11:00am

14. VALIDITY PERIOD OF RESPONSES

Each expression of interest shall be valid for a minimum period of **three (3) months** calculated from the closing date.

15. ENQUIRIES AND CONTACT WITH SANEDI

Any enquiry regarding this EOI shall be submitted in writing to SANEDI at enquiries.procurement@sanedi.org.za with **Title**: Viability and Validation of Innovation for Service Delivery.

16. COST OF EXPRESSION OF INTEREST

Respondents (service providers) are expected to fully acquaint themselves with the conditions, requirements, and specifications of this EOI before submitting responses. Each service provider assumes all risks for resource commitment and expenses, direct or indirect, of EOI preparation and participation throughout the EOI process. SANEDI is not responsible directly or indirectly for any costs incurred by service providers.

17. CORRECTNESS OF RESPONSES

The Respondent (service provider) must confirm their satisfaction regarding the correctness and validity of their EOI.

18. VERIFICATION OF DOCUMENTS

Respondents (service providers) should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the SANEDI with regards to anything arising from the fact that pages are missing or duplicated. Only electronic copies must be submitted.

19. ADDITIONAL TERM AND CONDITIONS

Service providers shall not assume that information and/or documents supplied to SANEDI, at any time prior to this request, are still available to SANEDI, and shall consequently not make any reference to such information document in its response to this request. Copies of any affiliations, memberships and/or accreditations that support your submission must be included in the response. An omission to disclose material information, a factual inaccuracy, and/or a misrepresentation of fact may result in

the disqualification of a response, or cancellation of any subsequent contract. Failure to comply with any of the terms and conditions as set out in this document will invalidate the response.

20. SANEDI RESERVES THE RIGHT TO

- Extend the closing date.
- Verify any information contained in a response.
- Request documentary proof regarding any tendering issue.
- Cancel or withdraw this EOI as a whole or in part.
- Not to include any supplier on the list of suppliers on the approved database based on functional criteria not met.

21. DISCLAIMER

This EOI is an expression of interest only and not an offer document. Answers to it must not be construed as acceptance of an offer or imply the existence of a contract between the parties. By submission of its EOI, service providers shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this EOI. SANEDI makes no representation, warranty, assurance, guarantee or endorsements to service provider concerning the EOI, whether regarding its accuracy, completeness or otherwise and SANEDI shall have no liability towards the service provider or any other party in connection therewith.

22. EXPRESSION OF INTEREST AND SCOPE

22.1. CCTV AND CONTROL ROOM TECHNOLOGIES

Company/Institution Name	Contact Person	Contact Number	Email Address	
Company Registration No.	**Years of Experience**	**Company Size**	**No. Team Members**	**Project Duration**
Scope of Work				

Closed circuit television (CCTV) can play a huge role in deterring crime and protection of electrical distribution assets. However, this is highly dependent on a range of factors. These factors include but are not limited to camera location, camera capability, camera robustness, control room capability, police/law enforcement response, public perception of responsiveness, offender perceptions, budget provision, and relationship management. The data gathered from the CCTV cameras needs to be collected and integrated within a back-office or control room. The study must determine which of the study areas are the best positioned to do a cost effective and efficient pilot demonstration of the CCTV installation, associated equipment, and integration options, notwithstanding costs. The uMhlathuze Local Municipality have identified cameras for locating the cameras and the information is available. The information must be used to do analysis of the appropriateness of the locations and determine technical requirements like equipment, materials, and cost. Figure 1 shows the required pole and solar panel.

Control Room There is also a need to determine the best location for constructing a control room. The design, size and infrastructure requirements must be determined. Draft designs should be completed.	
Wi-Fi Extension There is currently Wi-Fi installed in certain parts of the municipal area. An extension of Wi-Fi services is required. This will have to be scoped as part of the five installation areas and equipment and materials must be costed.	
Cost Estimates Cost estimates must be provided for the full scope of equipment, materials, and infrastructure to be costed.	
Company Experience	

(250 words)

Qualifications	Capabilities	Relevant Experience
• **Project Lead** - PhD/master's in engineering., Science, or ICT. - Degree master's in engineering., Science, or ICT. - B.Tech. in Engineering., Science, or ICT. • **Project Team** - Degree in Engineering., Science, or ICT. - B.Tech. in Engineering., Science, or ICT.	• CCTV design and installations • Fibre optic cable installations. • Point to point radio. • Control room design and installation.	• Minimum 5 years of experience • Building full software solutions from conceptualisation / user. • Functional specifications to implementation / maintenance and support • Assist in expanding CCTV cameras and build new infrastructure. • Assist in designing and installing point to point radio infrastructure.

- **Diploma in** engineering., Science, or ICT. - B.Tech. in Engineering., Science, or ICT.		• Assist in designing and installing PV panels on CCTV poles.
Project Lead Rate/hr		
Team Rate/hr		
Total Price		

22.2. FREE BASIC ALTERNATIVE ENERGY STUDY

Company/Institution Name	Contact Person	Contact Number	Email Address	
Company Registration No.	**Years of Experience**	**Company Size**	**No. Team Members**	**Project Duration**

Scope of Work

To administer the subsidy efficiently and cost-effectively, the City is investigating how to establish an appropriate dispensing system that can distribute the monthly FBAE allowance to eligible households. This project, specifically, seeks to understand the relevant business and system requirements, as well as to identify viable options for a dispensing system that meets the defined requirements. Ultimately, the investigation and solution formulation resulting from the proposed partnership with SANEDI should assist the city in selecting the best fit solution for the municipality, distribution partners as well as the FBAE subsidy recipients. The overall FBAE programme aims to achieve a reformed subsidy regime to meet energy needs of unelectrified low-income households by providing direct financial assistance for a range of clean energy sources. The objective of this piece of work is to understand and articulate the system requirements of a voucher dispensing mechanism that is cost effective, secure, and administratively streamlined for the City, vendors, and eligible FBAE recipients, as well as mapping the business/ workflow process required to disperse the subsidy. The following aspects of the FBAE programme fall outside of the scope of this project:

- Defining the eligibility criteria for FBAE subsidy recipients.
- Defining eligible alternative energy sources.
- Authoring the City's FBAE policy.
- FBAE policy implementation.
- Development/implementation of the disbursement system.

Company Experience

(250 words)			
Qualifications		**Capabilities**	**Relevant Experience**
• **Project Lead** Master's degree in engineering, Science, or ITC, with 10 or more years' experience in all four focal areas. • **Project Team Members** - Master's degree in engineering, Science, or ITC. - Hons degree in Engineering, Science, or ITC, with 5 or more years' experience in all four focal areas. - Degree in Engineering, Science, or ITC, with 5 or more years' experience in all four focal areas. - Diploma in Engineering, Science, or ITC, with 5 or more years' experience in all four focal areas.		• Project Management. • ICT Systems and management • Business analysis/requirements engineering/process/systems modelling. • Payments/voucher IT systems. • Energy service delivery systems based on a pay-as-you-go model.	• Ten or more years of relevant industry and technology product experience. • Five or more years of relevant industry and technology product experience. • One to four years of relevant industry and technology product experience.
Project Lead Rate/hr			
Team Rate/hr			
Total Price			

22.3. GEYSER LOAD CONTROL TECHNOLOGIES

Company/Institution Name	**Contact Person**	**Contact Number**	**Email Address**	
Company Registration No.	**Years of Experience**	**Company Size**	**No. Team Members**	**Project Duration**
Scope of Work				

Smart Geyser technologies are aimed at deploying 300 - 500 geyser load control technologies in select City owned staff houses in the City of Cape Town metro area and run an intelligent geyser control program that integrates into City's existing systems and platforms to improve service delivery. The project will run for a period of 18 months from the date of appointment. This will be achieved by installing an intelligent geyser controller which will be retrofitted onto existing geysers and uses artificial intelligence to time when these geysers draw power. The goal is to ensure that households continue to get hot water when they want it, but in a manner, that makes the most sense for the electricity grid. The project will analyse the potential of the deployed intelligent controllers in reducing bulk electricity costs, reducing demand during peak periods, and thereby lessening the strain on the grid, it's potential to contribute towards loadshedding prevention, and improving the business case for solar adoption through greater utilization. During the project, the ability of geyser controller/geyser tag to provide three services will be analysed:

- **Load Shedding**
  Reducing bulk electricity costs for a municipality like the City of Cape Town: By shifting geyser load from expensive peak times to cheaper standard and off-peak times and reducing maximum demand, the price of electricity for the municipality can be reduced.
- **Reduced Demand**
  By remotely turning off geysers during periods when the grid is under strain, the demand is reduced.

Company Experience

(250 words)

Qualifications	Capabilities	Relevant Experience
• **Project Lead** - Master's degree in engineering, Science or ICT with 10 or more years' experience in all four focal areas. - Hons degree Engineering, Science, or ICT, with 5 or more years' experience in all four focal areas. - A degree in Engineering, Science, or ICT with 5 or more years' experience. - Diploma in Engineering, Science, or ITC in one or all focal areas. Diploma Engineering, Science, or ITC.	• Project Management (engineer). • ICT Management • Plumber Artisans (trade tested) • Electrician Artisans (trade tested) • EPWP workers (City of Cape Town)	• Experience in identifying, sourcing, and installing geyser load control management. • Ten or more years of relevant industry and technology product experience. • Five or more years of relevant industry and technology product experience. • One to four years of relevant industry and technology product experience.

• **Project Team** - Degree in Engineering, Science, or ICT. - Diploma in Engineering, Science, or ICT. - Electrician Artisan with trade test. - Plumbing Artisan with trade test. - EPWP workers.		
Requirement	**Capability**	**Rate**
Geyser Tag (each)	Geyser controller/geyser tag with ability to control geysers with an element rating up to 6kW via Wireless Radio Remote Control (GSM Powered or any other wireless network).	
Systems integration (sum)	The tag must have remote control and leak detection capability using an installed sensor.	
Installation	Resident's requirements: The system needs to send notifications to residents and come with a free downloadable application available for residents containing water consumption, leakage, energy usage.	
Geyser Tag	The City's requirements - containing data on state of the geyser, management device, and built-in alerts sent to dedicated City email. Data management must comply with the POPI Act.	
Systems integration	Geyser controller/geyser tag with ability to control geysers with an element rating up to 6kW via Wireless Radio Remote Control (GSM Powered or any other wireless network).	
Installation	The tag must have remote controlling and leak detection using an installed sensor.	
Labour	**Number**	**Rate**

Initial connection and user profile.		
Foreman		
Artisan Electrician		
Artisan Plumber		
EPWP/General Worker		
Total Costs		

22.4. LOAD CONTROL

Company/Institution Name	**Contact Person**	**Contact Number**	**Email Address**	
Company Registration No.	**Years of Experience**	**Company Size**	**No. Team Members**	**Project Duration**
Scope of Work				

Rustenburg Local Municipality operates load management equipment to reduce the demand for power on its distribution network by disconnecting deferrable loads (mainly water heater loads) whenever necessary. This enables the organisation, to a degree, to reduce the price paid and charged, for the power that it further distributes to its customers. The systems are also used to control loads to the technical limits of the transmission and distribution networks if necessary. the scope will include refurbishing the injection equipment at Industries substation for both coupling cells. It will further include installation of new injection set equipment at Waterkloof substation.

- The design, construction, supply, delivery, installation, testing, commissioning, and handing over in a proper working condition the control, transmitter and coupling cell equipment specified as definite work in **Table 2** - equipment required and installation location. (All equipment is to be installed indoors).
- All software, software licenses, software utilities, software manuals, initial software configuration, de-bugging and testing necessary to ensure the performance of the system conforms to the specifications of this contract.
- All cabling, trunking, cable supports, cable installation and termination necessary to effect installation to acceptable standards of safety, and to the approval of the engineer.

- All technical documentation, schematic diagrams, as built drawings, and site plans showing equipment layout and cabling routes, necessary to operate, configure, test, and maintain the system.
- Optional goods and services may include - The supply of appropriate spare components and modules to the recommendations of the original equipment manufacturer, to enable staff at Rustenburg Local Municipality to perform first-line system maintenance and repair of the new equipment.

Table 2: Goods or Services Required

Location	Requirement	Quantity	Goods or services required
Waterkloof Substation	Definite	1 1 2 2 1	Central controller Transmitter Unit, dual output 33 kV Coupling cells, complete Coupling cell isolators Installation and commissioning, all equipment, turnkey basis
Rustenburg Control Centre	Definite	1	Supervising computer for Waterkloof supply point.

Company Experience		
(250 words)		
Qualifications	**Capabilities**	**Relevant Experience**
• **Project Lead** - M.Eng. with more than ten years' industry experience. - B.Eng./B.Eng. Tech with five to seven years' industry experience. - B.Eng. Tech/Electrician with one to two years industry experience. • **Project Team**	• Experience in project management. • Experience in electrical infrastructure i.e. substations and networks. • Experience in load control technologies, products, and installation. • Experience in load control injector set product sourcing and installation.	• More than ten years' industry and technology experience. • More than five years' industry and technology experience. • Two to four years industry and technology experience.

- M.Eng. with more than ten years' industry experience. - B.Eng./B.Eng. Tech with five to seven years' industry experience. - B.Eng. Tech/Electrician with one to two years industry experience.	• Appointment of EPWP labour to develop skills and experience.	
Requirement	**Capability**	**Rate**
Technical Pre-requisites*		

• Only the parallel method of coupling the control signals to the medium voltage bus bar system will be accepted. No series coupling system will be accepted. • The transmitter equipment must be capable of transmitting a master shed command in under 10 seconds into the medium voltage distribution system, with a final signal strength of 1,5% of nominal LV supply. • The coupling cells must be equipped with their own isolators that automatically apply earth potential to the coupling cell components, to discharge these components, when the isolator is opened. The isolator must also be equipped with 'make-before-isolator breaks' auxiliary contacts, to cause an automatic trip of the feeding circuit breaker in the event of an operator actuating the isolator under live conditions, as well as block the transmission of ripple signals from the transmitter equipment. • Rustenburg Local Municipality will provide communication channels for control and data communications between the substation and the Rustenburg Control Centre. These channels may be configured for LAN operation. • In Waterkloof substation a single transmitter with two outputs will be		

suitable for 33 kV coupling circuits. Both coupling circuits will be near each other. • Transmitted signal feedback must be taken from the voltage transformers installed on each incoming circuit breaker, the nominal voltage of which is 110 VACS, as opposed to monitoring the local 380-volt supply for the substation.		
Load Control Pre-requisites* The Load controller must be capable of accepting pre-programmable targets suitable for shifting energy and controlling the demand in Peak, Standard and Off-peak periods as well as respond to over-ruling Eskom pricing signals initiated at the Rustenburg Control Centre. The Main Characteristics of the Central Controller shall be as follows:		

• Minimum of 200 objects with 16 load groups. • Outputs for alarms • Inputs for Eskom reset pulse, repetition request, photocell etc. • Password access with 4 authorisation levels • The operation and the programming shall be done via keyboard or mouse. • The operating language shall be English. • 4 modes of telegram triggering: • Time or date dependent • Demand dependent (dynamic load control) • External inputs (minimum 4) • Manual control. Every transmission, which is triggered in any of the 4 ways, must be logged on the printer and the hard drive and show: Time and Date and command number or load group and status. Programming must be possible taking account of: External events (minimum of 4 inputs). Subject to the status of another function (conditional logic) seasonal; weekly; monthly; and public holidays (minimum of 20 days). In the event of a power failure this program shall be maintained by battery reserves for at least 24 hours. The following tests shall be permanently performed: - • Status of the transmitters		

• Check back after each transmission (pulse length, structure of the transmitted telegram and signal level) • Status of the central controller • In the case of signals being injected at more than one Substation, it must check each signal independently and in the event of an alarm it must print out and store on hard drive: - • The nature of the alarm. • The substation name. • Time and date. • In case of an alarm, the number of repetitions must be programmable. • Bidders must give details of their standard code with reference to: Security and error detection, Pulse length, Code length, Master commands.		
System Configuration*		

• The system shall use the *parallel coupling method* to inject the control signals into the medium voltage (33 kV) feeder-board systems. • An isolation transformer shall be used to accept the injected signal (approximately 500 Volts) from the transmitter units and transfer the signal to the 33 kV circuits through the tuned coupling cell. • The *substation controllers* that control the transmitter units must be able to operate as autonomous controllers with 30-minute reset pulse and demand dependent meter or transducer signals being connected at substation level. • *Feeders from any substation* will practically never be connected to the distribution network of any of the adjacent substations. • All *components of the system* shall be constructed and designed to provide a *high reliability in service*. Best quality components of ample rating for the duty required must be provided and the design must be such that a minimum amount of routine adjustment is required.		
System Strength and Message Type		

• The MV distribution network comprises a combination of overhead lines and underground cables. Load centres fed from the MV switchboard can be up to 8 km in length. The load centres contain medium voltage (33kV) to low voltage (400/240V) transformers which supply customers, up to 400 m away, by underground cable, bare overhead line, or aerial bundled conductors. • It is required that the 'ripple' signal shall be of sufficient strength to operate the receivers installed at all 400/240V customer premises receiving supply from the individual feeder boards. The transmitters are to have an adjustable output, so that the ripple signal strength, measured at the receivers, falls within the 1,0 to 1.5% of nominal supply voltage. • In designing the equipment, due cognisance of the possibility of power factor correction equipment, network resonance effects, street lighting capacitors, etc. must be taken.		
Equipment Power Supply		

• The 50 Hertz AC power supplies available at the substations are either three-phase 400 V nominal, or single phase 240 V nominal. The supplies may range between +5% and –15% of nominal value. Substation battery supply for the protection and control gear is 110 V DC. The equipment shall restart automatically following any interruption of the AC or DC power supplies, whether momentary or prolonged. If any of the equipment contains programmes or configuration parameters that are stored electrically as well as real time clocks. To allow for extended power outages, interruption, or severe depression. Where batterie s provide such retention, such batteries shall have a design life of at least ten years.		

Table 1:Specified Parameters

Table 2:Specified Parameters

Parameter	Unit	Specified	Tendered
Parallel coupling method used	-	Yes	
Message synchronicity maintained when driven by existing central controller	-	Yes	
Signal strength at customer point of supply	%	1,5 to 3,5	
Ripple signal frequency	Hz	317 Hz	
Transmission time less than 10 sec	-	Yes	
AC Power supply frequency	Hz	50	
3 Phase AC Power supply voltage	V rms	400	

	Single Phase AC Power supply voltage	V rms	240	
	DC Battery supply for control gear	V	110	
	System self-booting after power supply failure	-	Yes	
	Memory back up battery design life	Year	10	
	Halt mode fully supported	-	Yes	
	Isolator interlocked to feeder board breaker	-	Yes	
	Transmitter thermally protected	-	Yes	
	Control system feedback loop complete	-	Yes	
	Control system able to log events to a depth of 150 or more	-	Yes	
	Control system able to communicate alarm status to Rustenburg control room	-	Yes	
	Control system able to support all described modes of operation	-	Yes	
	Controller programmable by means of a standard portable PC	-	Yes	
	Transmitter of solid-state design	-	Yes	
	Transmitter able to absorb harmonic energy without using a resonant shunt	-	Yes	
	Transmitter output power adjustable	-	Yes	
	Transmitter protected from output open or short circuit conditions	-	Yes	
	Transmitter capable of 20 transmissions per hour duty cycle	-	Yes	
	Ripple frequency stability	%	0,01	
	Transmitter efficiency	%	>90	
	Coupling cell capacitors specifically designed to operate at audio frequencies	-	Yes	
	Equipment able to operate over a –5-to-+45-degree Celsius temperature range	Degree C.	Yes	
Supporting Documents				

• Additional supporting documentation called for in this specification must be attached and submitted with the tender. Please use documentation schedule as a checklist to ensure all relevant documentation is attached. • Product brochures may be submitted as supporting documentation. • Offers must include overview line diagrams or block diagrams to indicate the general electrical layout and items of equipment to be supplied, equipment ratings and model numbers must also be entered on the diagram. • Offers must include a list of reference sites, preferably within South Africa where the offered equipment has been installed.		
Labour	**Number**	**Rate**
Project Lead		
Engineer		
Artisan Electrician		
EPWP Workers		
Total Cost		

22.5. SMART TECHNOLOGIES

Company/Institution Name	**Contact Person**	**Contact Number**	**Email Address**	
Company Registration No.	**Years of Experience**	**Company Size**	**No. Team Members**	**Project Duration**
Scope of Work				

The project scope comprises installation of smart electricity meters with electronic functionality which includes meter reading at predetermined intervals, linked to a fixed network. The scope covers 500 electricity meters in the Drakenstein Local Municipal area which includes installation and management costs for a three-year period. The electricity smart meters must include the following requirements:

- The new meters must have the ability to be read remotely.
- Ability to interface seamlessly with existing meter reading software.
- Ability to transmit data at predetermined times via a fixed network to the Head Office.
- Solution must be compliant with NRS057.
- Data must be secured, POPI regulations and ICT policies conformed to.

Company Experience

(250 words)

Qualifications	Capabilities	Relevant Experience
•	•	•

Requirement	Capability	Rate
Meter data retention period* The licensee shall be accountable for retaining meter billing information (historical billing information) for a period of at least five years.		
Data to be downloaded* Minimum data to be downloaded on interrogation shall consist of the following, as a minimum: • a unique identification numbers. • the data logger ID, or meter point ID, or stand number. • the time and date from the data logger at the commencement of the download.		

• the energy data: this may be limited to the data accumulated since the last interrogation and download; and • the events log: this may be limited to the events information accumulated since the last • interrogation and download.		
Communication integrity* All data transmissions shall employ techniques to ensure the integrity of the data transmitted and received.		
Archiving of metering information* All downloaded metering information shall be archived in such a manner that it cannot be altered without leaving a detailed audit trail, and that a copy of the raw meter data is kept by the electricity supply authority or independent meter operator for a minimum period of five years.		
Interrogation log* An interrogation log shall be generated to record details of all interrogations. This log shall form part of the interrogation audit trail and shall contain the following: • the date of interrogation. • the time of commencement of the interrogation. • the status of the interrogation attempt, i.e., attempt failed/was successful. • the operator ID (where appropriate).		

• the data logger ID. • clock updated (where appropriate) and extent of change. • clock errors outside the range specified. • the method of interrogation (e.g., automatically, handheld); and • the ID of the handheld computer used for interrogation (where applicable).		
Data validation* All raw meter data shall be checked for validity at regular intervals or at a frequency that will allow a further interrogation of the meter (or both) before the data is overwritten within the meter and before this data can be used for any purpose. Validity checks shall include the following, as a minimum: • checks for missing data. • checks for invalid dates and times. • checks of zero consumption levels. • d)comparisons with standard or previous consumption patterns. • checks of the sum of demand values against the register advance; and • investigations of any meter error codes.		
Data Transmission* Transmissions and transfers of metering information between parties shall be carried out electronically. The format and structure of transmitted files shall be agreed upon, in writing, by the parties before communications takes place. Recognized and secure transmission media shall		

be used. A complete audit trail shall exist for all data gathering, validation and processing functions. This audit trail shall apply to all archived data for a period of five years.		
Data Logs* Logs of communications and processing activities shall form part of the audit trail. This shall apply most particularly where automated processes are in operation.		
Data Management Specifications* • Data becomes the property of the Council. • Data must be flexible to comply with Council's needs. • Data storage, communication and management must be provided by the service provider.		
Labour	**Number**	**Rate**
Project Lead		
Artisan Electrician		
EPWP Workers		
Total Costs		