SCOPE OF WORK RELATED TO A WATER METER AUDIT AND REPLACEMENT PROGRAMME IN EMFULENI LOCAL MUNICIPALITY

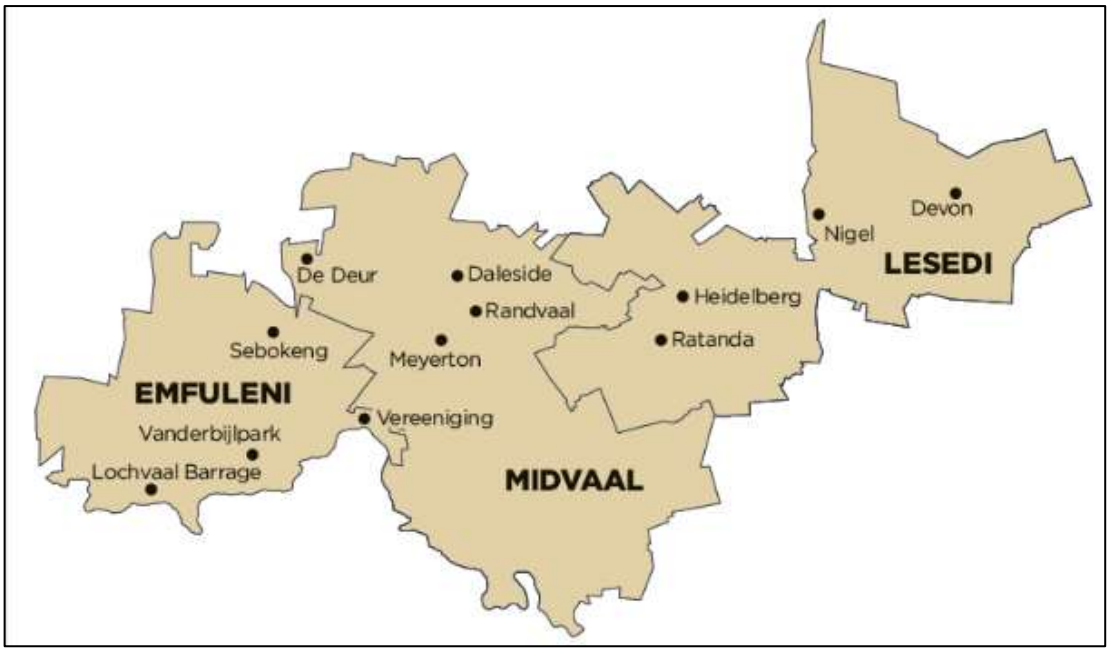
CONTENTS

1. EMFULENI LOCAL MUNICIPALITY

Emfuleni Local Municipality (ELM) is one of three local municipalities that constitute the Sedibeng District Municipality. It is the Western-most Local Municipality of the District, which covers the entire southern area of the Gauteng province and covers an area of 987.45 km².

Emfuleni Local Municipality (ELM) is situated in the south of Gauteng, within the Sedibeng District Municipality. The major centres within Emfuleni are Sebokeng, Vanderbijlpark and Vereeniging.

Metsi-a-Lekoa is the department in Emfuleni Local Municipality responsible for water and sanitation services.



2. WATER SUPPLY

Emfuleni receives the bulk of its water from Rand Water Board. The water from Rand Water is supplied through several pipelines from Vereeniging Pump Station, while water is also supplied under gravity from Rand Water's Langerand reservoir to a number of areas within ELM.

Beyond the Rand Water supply points, Emfuleni has water storage and water distribution networks used to supply water to its end users (consumers). In order to improve revenue collection, ELM will embark on several initiatives related to the installation of new water meters, as well as the replacement of existing water meters.

Emfuleni Local Municipality has appointed suppliers / contractors related to the supply and installation of new water meters. In addition, Rand Water has been directed by the Minister of Water and Sanitation under Section 63 of the Water Services Act to provide, amongst others, support to the ELM municipality to fulfil its mandate as a Water Services Authority.

A tender will thus be issued by Rand Water targeting the replacement of water meters, taking account of the inititiatives planned / undertaken by ELM as well. The objective being that all meter replacement efforts must improve revenue collection.

3. METERING AS PART OF WATER CONSERVATION AND WATER LOSS MANAGEMENT

A WCWDM intervention will normally focus on a range of outcomes and will strive to achieve the following benefits:

- Reduced operating cost.
- Improved capital cost efficiency.
- Improved metering and billing.
- Reduced health risks.
- Increased security of supply.
- Less infrastructural damages.
- Reduced hydraulic loads on sewers, sewerage pump stations and wastewater treatment works.
- Improved consumer satisfaction.
- Publicity and willingness to pay.
- Reduced ecological stress.

ELM uses the DWS Water Loss Spreadsheet on a monthly basis to estimate the water losses. The issues to be addressed are diverse and in order to understand the sources of the losses as well as the required actions to reduce losses, it will essentially fall within the following categories:

- System Input Volume (SIV).
- Water Exported (WE).
- Water Supplied (WS).
- Authorised Consumption (AC).
- Water Losses (WL).

3.1. CONSUMER WATER CONNECTIONS

Data obtained from the ELM monthly water loss spreadsheet highlighted the following related to consumer water connections:

Households / Consumers served		**259 192**
Metered water connections		**153 426**
Domestic	142 852	
Non-domestic	10 574	
Unmetered water connections		**92 005**
Other (Informal)		**13 761**

3.2. PROJECT OBJECTIVES

Within the context of the above, the project objectives related to metering that need to be dealtwith are as follows:

1. Critical evaluation of the ELM water meter database.
2. Water meter audits.
3. Logging of flows at selected locations / meter installations.
4. Meter Installations
    a. Installation of zone meters.
    b. Meter installations on all industrial fire installations.
    c. New meter installations.
    d. Meter replacements.
5. Inclusion of all new / replacement meter data into the billing system.
6. Checking the installed meter installations within 3 months after installation, and reporting back.

It must be noted that ELM has appointed suppliers / contractors associated with the supply and installation of water meters. Water meters for installation will likely be issued as free-issue meters through ELM, and such suppliers / contractors will thus be regarded as Nominated Sub-contractors related to the supply of water meters.

3.3. REQUIRED INFORMATION

ELM will supply the successful tenderer with all the required information in order to execute the project. The information will comprise of data from the billing database, GIS information, metering information, etc.

4. PROPOSED SCOPE OF WORK

4.1. THE GENERAL WORKING APPROACH

The general working approach should entail the following tasks as outlined in **Table 1** below:

Table 1: **General working approach**

Phase	Task	Activity	Output
Component A: Inception Stage	Task A1	Inception	D1 Inception Report
Component B: Preliminary Study; Evaluation of the situation	Task B1	Water Meter Audits	D2 – Baseline Study Report
	Task B2	Logging of flows	
	Task B3	Baseline Study Report	
Component C: Detailed Design Phase; Design of Best Solutions Proposed	Task C1	Detailed Study.	D3 - Detailed Design Report D4 – Tender Documentation. D5 – Tender Evaluation Report. D6 – Construction Supervision Documentation
	Task C2	Approval of Design Report	
	Task C2	Solution Implementation.	
Component D: Capacity Building and Support to Operations	Task D1	Diagnostic of the O&M.	D7 - Capacity Building Report. D8 – O&M Manuals.
	Task D2	Capacity Building and Support to O&M.	

4.2. PROPOSED TASKS

An outline of the activities associated with the various Tasks are presented below. It is provided as a guide to the Tenderers. The Tenderers may expand on the activities to provide more detail related to their tender proposal:

Component A: Inception Stage

Purpose	**To initiate and launch the project.**

Activities	The following activities are to be performed during the Inception Phase:
	• Mobilisation of the project team.
	• Kick-off meeting.
	• Establishment of the project office.
	• Creation of a Project Steering Committee with the important stakeholders.
	• Meetings with stakeholders:
	  ○ ELM Staff; Metsi-a-Lekoa Management, Planning, Operations and Maintenance.
	  ○ ELM Finance Department.
	  ○ ELM Metering Comtractors.
	  ○ Consultant responsible for the ELM Water Master Plan.
	  ○ Rand Water: Planning and Operations.
	• Obtain and review of the relevant available information required to perform the meter audit, installations.
	• Discussion of the proposed Project Programme and Workplan.
	• Review and adaptation of the methodology and the workplan according to the outcome of the Inception Phase.

Output	D1 - Inception report with detailed programme and work plan updated
Duration	Maximum duration of four (4) weeks

Component B: Baseline Study

Purpose	**An evaluation of the current situation**

Activities:
B1
	The following activities are to be performed during the Baseline Study Phase:
	• An audit of all the water meter installations in ELM area, that will comprise of:
	  ○ The audit is to focus on all meter installation:
	  ✓ Bulk check meters.
	  ✓ Cross Boundary meters.
	  ✓ Zone meters.
	  ✓ Large Consumers.
	  ✓ Household consumers.
	  ○ On site audits capturing the meter installation details as follows:
	  ✓ Meter installation GPS coordinates.
	  ✓ Photo of location on Site.
	  ✓ Photo of meter with the the meter reading, meter number, meter make, etc clearly identifiable on the photograph.
	  ✓ Capturing the critical meter details; make, model, size, meter reading.
	  ✓ Notes regarding the condition of the installation, meter etc.
	  ○ The audit data should be captured on electronic devices (mobile phones, tablets, etc), and provided to ELM in digital format, in an agreed upon hard copy format, as well as in GIS files compatible with the GIS used by ELM.

B2	• Logging of flows through meters for large meter installations / large consumers:
	  ○ This task will monitor the flow through the larger meter installations, as well as associated with large consumers. Flows are to be logged over three consecutive working weekdays.
	  ○ Additional site data from the consumer should be obtained to aid the accurate sizing of the meter installation.

B3	

	• Diagnostic of all the assessed meter installations, with clear details in a report format related to: ○ Sites that requires meter replacements. ○ Sites that requires new water meter installations. ○ Sites that requires meter installations to be upgraded / refurbished.
Output	D2 – Baseline Study Report.

Component C: Detailed Design Stage

Purpose	**Detailed Design of the PRV Installation Requirements and Construction Implementation Supervision**
Activities C1 C2 C3	The following activities are to be performed during the Detailed Design Stage: • Detailed Design of the following: ○ New meter installations. ○ Sites that requires meter installations to be upgraded / refurbished. • Approval of Design Report by ELM. • The Solution Implementation will require the drafting of a tender document related to the implementation of the design / upgrading requirements stipulated and approved by ELM, such as: ○ Specifications. ○ Drawings. ○ Detailed BOQ. ○ Construction Cost Estimate. ○ Tender Document. ○ Construction Supervision, as well as coordination of this proposed tender and the ELM Suppliers / Contractors.
Outputs	D3 – Detailed Design Report, subject to approval by ELM. D4 – Tender Documentation. D5 – Tender Evaluation Report. D6 – Construction Supervision Documentation.

Component D: Capacity Building Stage

Purpose	**To initiate and launch the project.**
Activities D1 D2	The following activities are to be performed during the Capacity Building Stage: • Diagnostic of the ELM meter installations: ○ Performing a complete assessment of the Maintenance associated with the ELM meter installations. • Capacity Building and Support to O&M and Finance. ○ The Capacity Building Report should stipulate all the requirements in terms of the resources, tools, equipment, maintenance tasks and activities, monitoring and reporting requirements associated with water meter installations. ○ The report should also provide a method statement that should be adopted and implemented to deal with checking of meters on a regular basis, as well as for dealing with meters with readings that are either higher or lower than expected.
Outputs	D7 – Capacity Building Report.

5. ADDITIONAL INFORMATION REQUIRED / NOTES

The tenderer should provide the following documents / schedules in support of their tender proposal:

1. A Project Programme indicating the time allocated to the various work stages and their respective activities, start date, duration, end date, relationships, milestone date for deliverables, etc.
2. A Resource Utilisation Schedule, indicating the allocation of the various resources and their time allocated to the various work stages, activities and deliverables.

3. CV's of the key personnel.
4. Previous experience.
5. The costed proposal must make allowances for travelling, accommodation (if required and to be detailed in terms of estimated costs, etc), printing, etc. Such costs to be verified during execution by proof of payment.

The Tenderer should note that:

- Only ELM personnel are permitted to operate valves.
- All premises to be visited being accompanied by an ELM official.
- All required Health and Safety procedures should be complied with.

ANNEXURE A – BOQ

Item	SOW Reference	Description	Unit	Quantity	Rate	Amount
1		**General Phase**				
1.1		Company Overhead Costs	Sum	1		
1.2		Project Management	Months			
1.3		Monthly Project Meetings	Months			
2		**Inception Phase (Component A)**				
2.1	A	Meetings with Stakeholders	Sum	1		
2.2		Data Acquisition	Sum	1		
2.4		Updating the Project Programme and Workplan	Sum	1		
2.5		Other aspects / activities associated with the Inception Stage (Note that details must be provided under a separate cover letter)	Sum	1		
2.6		Submission of Inception Report and Client approval thereof	Sum	1		
3		**Preliminary Study Phase (Component B)**				
3.1	B1	Water Meter Audit, complete with details provided in hard copy and Electronic Format compatible with ELM GIS requirements	No (Provisional	155000		
3.2.1	B2	Logging of Meter Installations	No (Provisional	500		
3.2.2	B3	Water Meters audit and Meter Logging Installation Baseline Sudy Report	Sum	1		
4		**Detailed Study Phase (Componnet C)**				
4.1	C1	Detailed Design of Bulk Vcheck meters, Zone meters and the identified top Consumers meter installationsMeter Installations	No (Provisional	250		
4.2	C2	Submission and Approval of Detailed Design Requirements by ELM	Sum	1		
4.3	C3	Preparation of Tender Documentation Complete associated with Meter installations under 4.2 above	Sum	1		
4.4		Assisting ELM related to the Evaluation of Tender documents received.	km (Provisional)	150		
4.5		Submission of Detailed Study Report and Client approval thereof, complete with all the relvant design calculations, specifications, drawings, a BOQ for the required work, as well as a Construction cost estimate	%	See Note 4a below		
Note 4a		The % given will have to cater and be all inclusive in respect of all costs and expenses that will be incurred by the Tenderer during the implementation stage, and will be payble proportionally to the value of the work completed.				
		Sub-Total 1				
		Contingency %				
		Contingency Amount				
		Sub-Total 2				
		VAT at 15%				
		TOTAL				

ANNEXURE B – EXAMPLE FORMS FOR METER REPLACEMENT INFORMATION

REMOVED METER			
Street Address:		GPS South Co-ord:	
Stand Number:		GPS East Co-ord:	
Meter Make & Model:		Photo Numbers:	
MAIN METER INFO		SUB-METER INFO	
Meter Size:		Meter Size:	
Date of Manufacture:		Date of Manufacture:	
Meter Serial No:		Meter Serial No:	
Meter Factor:		Meter Factor:	
Meter Reading: (m^3 Only		Meter Reading: (m^3 Only):	
Meter Reading Date:		Meter Reading Date:	
Dial Legible:		Dial Legible:	
Meter Working		Meter Working	
METER PHOTOS			
COMMENTS			

NEW METER			
Street Address:		GPS South Co-ord:	
Stand Number:		GPS East Co-ord:	
Meter Make & Model:		Photo Numbers:	
MAIN METER INFO		SUB-METER INFO	
Meter Size:		Meter Size:	
Date of Manufacture:		Date of Manufacture:	
Meter Serial No:		Meter Serial No:	
Meter Factor:		Meter Factor:	
Meter Reading: (m^3 only)		Meter Reading: (m^3 Only):	
Meter Reading Date:		Meter Reading Date:	
Dial Legible:		Dial Legible:	
Meter Working		Meter Working	

METER PHOTOS									

COMMENTS									