



K O U G A
local municipality
Prosperity through vision

DEVELOPMENT OF WATERWORKS AND OPERATIONS MANUAL

Terms of Reference

Notice 194/2010

Contract No:Scm3TECH

TERMS OF REFERENCE

FOR

THE DEVELOPMENT OF WATERWORKS OPERATION AND MAINTENANCE MANUAL (WO&MM)

SECTION 1: DETAILS

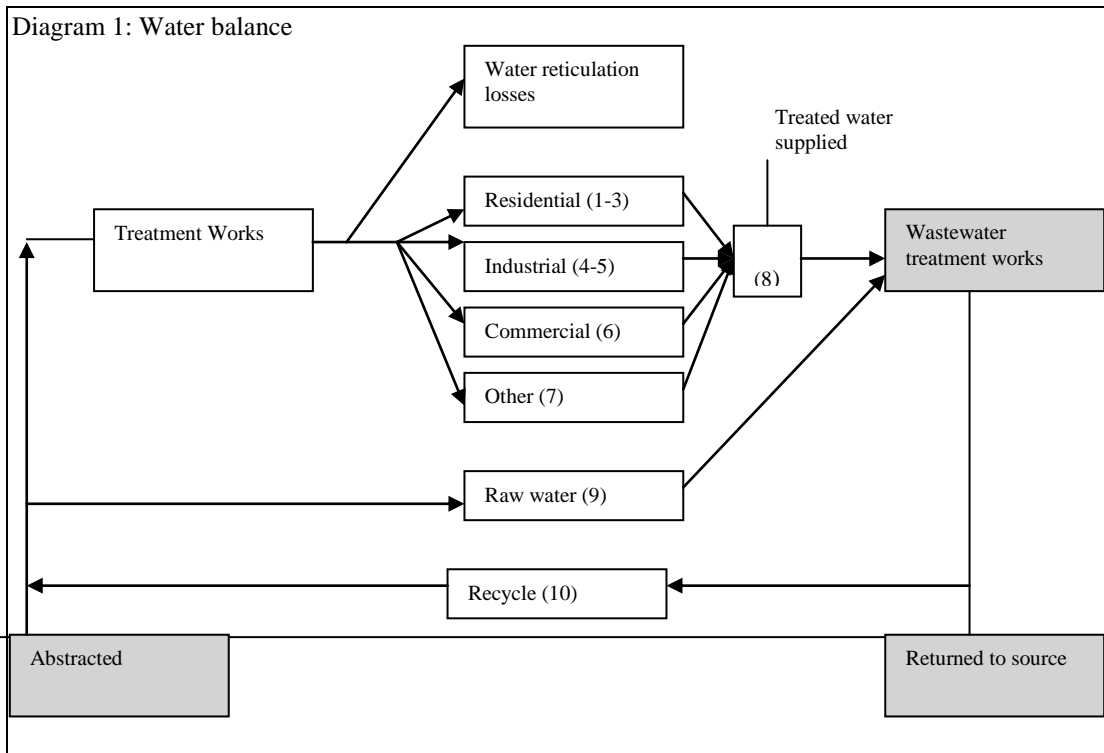
Province: Eastern Cape
Municipality: Kouga Municipality
Project Name: Development of Waterworks Operation and Maintenance Manual for Water Managers and Operators
Tender No:

SECTION 2: SUMMARY OF THE BRIEF

The bidder is expected, after technical assessment of the existing waterworks and plants as Kouga Municipality's assets, develop an Operation and Maintenance Manual which will offer the municipality and accountable personnel with the most in-depth, step-by-step procedures and processes available in the water sector in South Africa in accordance with DWA norms and standards read with other pieces of legislation on water allocation for ender users and customers.

The proposals are requested from Manual Development providers to develop the Operation and Maintenance Manual covering, *inter alia*, water treatment plant planning and design, predesigned reports, problem definition, site selection; review key issues such as raw water intake, screening, aeration, conveyance, flow measurement, pumping, coagulation, flocculation, precipitation, sedimentation, filtration, disinfection, and fluoridation; aesthetic issues such as color, taste, and odor control; techniques for residuals management; a guide to instrumentation and control; a review of non-conventional processes; and a troubleshooting guide for avoiding key design errors.

The Manual will be used by Kouga Municipality as a reference in the overall operation and maintenance of the waterworks systems. Thus, the manual must contain, *inter alia*, the necessary O&M procedures, work sheets, and record keeping forms, safety and emergency procedures, and testing and monitoring procedures. As a training tool for the engineering unit of Kouga Municipality, the Manual must be design in such a manner that it reflect the state- of- the- art in the water sector and easily updated from time to time. This must also take into account the need for water balance as in Diagram 1. Below,



SECTION 3: PROJECT DESCRIPTION

SECTION 3.1. Kouga Municipality as a Water Services Authority

Kouga Municipality is a Water Services Authority (WSA) which covers Humansdorp, Jeffrey's Bay, Hankey, Cape St. Francis / St. Francis Bay and Patensie. Kouga Municipality in partnership with the Department of Water Affairs (DWA) has an executive responsibility to implement and regulate waterworks operation and maintenance in pursuit with the provisions of the Water Services Act, 1997; and National Water Act, 1998. Accordingly, the WSA must have a well designed step-by-step waterworks operation and maintenance manual to assist water managers and operators in Kouga Municipality. This means that the Bidders must conduct a technical analysis of the existing waterworks in Kouga Municipality, taking into account the future infrastructure, development and planning at Kouga Municipality, and its water users, the bidders must ensure that the Manual is developed and designed in such a manner that it becomes a tool over a reasonable period of time. Ultimately, the O&M Manual as a tool will address, *inter alia*:

- Limited technical operation and maintenance water managers and operators ;
- Attraction and retention of technical and engineering personnel;
- Focus on legislative compliance on water quality and water treatment plants and systems; and
- Insufficient financial resources to operate and maintain the current systems without an updated manual in terms of the contemporary technology.

Notwithstanding the above, Kouga Municipality must also comply with sector specific and cross-cutting legislation, indicated in Table .1.

Table 1 – Sector Specific and Cross-cutting Legislation

Sector	Legislation
Water and Sanitation	Water Services Act, 1997 (Act No. 108 of 1997) ("Water Services Act")
	National Water Act, 1998 (Act No. 108 of 1998) ("NWA")
Electricity	Electricity Act, 1987 (Act No. 41 of 1987) ("EA")
	Electricity Distribution Industry Restructuring Bill, 2003 ("EDIRA")
Roads and Storm- water	National Land Transport Transition Act, 2000 (Act No. 22 of 2000) ("NLTTA")
	Urban Transport Act, 1977 (Act No. 78 of 1977) ("UTA")
Waste Management	National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")
	Environment Conservation Act, 1989 (Act No. 73 of 1989) ("ECA")
Cross-cutting	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) ("OHSA")
	NEMA and ECA (see above)
	Government Immovable Asset Management Bill, 2006
	Construction Supply Chain Management Regulations, 2006 (CIDB)
	Housing Act

In addition to the regulations supporting these Acts, Kouga Municipality must further comply with an extensive range of specifications and guidelines, such as water drinking standards (SANS 241: 2005), DWA Minimum Requirements for Disposal by Landfill, standards for electricity generation and distribution (NERS 047 and 048). Thus, an updatable, yet appropriate Waterworks Operation and Maintenance Manual (WO&MM) for Kouga Municipality is a prerequisite for sustainable water business, integrated planning, and, future infrastructure development

SECTION 3.2 - Scope of Work

The scope of work shall include the followings:

3.2.1. Technical analysis of the existing waterworks, technological details, gaps and new requirements to respond to new water demands for ever growing Kouga Municipality population and its limited water sources and resources

3.2.2. Develop an appropriate and updatable WO&MM. This further include, *inter alia*:

- Water treatment plants: planning, design, and operations—in depth.
- The in-depth, start-to-finish guide to water treatment planning, design, and operations
- Easy-to-apply design criteria, procedures, and concepts

- Units layout, yard piping's, hydraulic profile, instrumentation, control, and more
- Equipment specification, selection, and maintenance
- Raw water intake, screening, and aeration
- Conveyance, flow measurement, and pumping
- Coagulation, flocculation, precipitation, sedimentation, filtration, disinfection, and fluoridation
- Complete process trains demonstrating the interrelationships amongst key processes
- Practical, real-world techniques for selecting equipment and manufacturers
- Nonconventional treatment processes: removing specific constituents that conventional treatment leaves behind

In addition to the above, the WO&MM must cover as far as possible the following topics and themes: Waterworks and site details, System Identification and Ownership , Introduction and Overview, Responsibilities of Personnel, Regulatory Agency(s) and Regulations, General System Description, System Operation and Control, Testing, Maintenance, Spare Parts, Supplies, and Chemicals , Records and Reports, Emergency Preparedness and Response, Procedures, Utilities, Equipment Technical Data and Drawings, Operations and Maintenance , Preventive Maintenance and Manufacturer's Instructions, Operation and Maintenance Forms and Reports, Testing Schedule, Procedures, Forms, and Reports, Spare Parts, Supplies, and Chemicals, Operator Training Certificates, Well Driller's Report and DOTD Registration, Water System Maps, Drawings, etc.

SECTION 4 - Methodology

The bidders submitting the bids must clearly indicate how they propose undertaking the works as listed above. The proposal should clearly describe how the Bidder intends to develop the WO&MM. The Bidder should also include a program me showing how the company will undertake a rapid assessment of the existing waterworks and development of the WO&MM with milestones indicated and highlighted.

SECTION 5 Experiences and Expertise

The Bidder will be a professional company with the relevant expertise and experience in waterworks, water treatment plants, wastewater treatment plants, manual development in engineering and technical field, accredited training for water managers and operators. The Bidder has the capacity, and list only experts or specialists to be used in this project. The Bidder must also provide the panel with the overview of how the required expertise will be addressed. Experience in various waterworks technological options, and implementation of bulk infrastructure will be an advantage.

SECTION 6 - Deliverables

- Detailed work plan using Logframe (Initial Phase, Implementation Phase and Closing Phase)
- Status *Quo* on the Waterworks treatment plans, operations and systems
- State of the Art and Updatable WO&MM
- Training programme and mentorship plan aligned to SAQA minimum standards
- Monthly Progress Report
- WO&MM as reference in the overall Kouga Municipality waterworks treatment plants and systems
- An updatable WO&MM with the necessary O&M procedures, work sheets and record keeping forms, safety and emergency procedures, and testing and monitoring procedures
- Definitions of Terms, Table of Contents and Appendixes
- Final and Approved WO&MM by DWA and Kouga Municipality Council

SECTION 8 - Project Steering Committee

A successful Bidder will report to the Project Steering Committee established for the purpose of this project and the Project Manager at Kouga Municipality. This appointment will be supervised by WSA-DWA officials responsible for the Water Service Function under the **contract management of Mr. R. Botha**: Director Technical Services Kouga Local Municipality. Verbal and written reports will be presented at each session of the designated task team. The frequency of such reports shall be decided by the task team, but allowance should be made to report monthly.

SECTION 9 - Project Costs and Payment Milestones

The Bidders shall complete the Pricing Schedule indicating their bid offer per item in the bid document. The prices and rates to be in the Schedule of Quantities are to be the full inclusive of the prices of the Employer (excluding VAT, which is added on the end) for the work described under the several items. Such prices shall cover all costs and expenses that may be required for the works described, and shall cover the costs of all general risks, liabilities, and obligations set forth or implied in the documents on which the bid is based. The Bidder should price the bid to ensure that, in addition to the tasks required to deliver the outputs, it can:

- Empower the water managers and operators about the topics and their operational implications
- Provide the water managers and operators with WO&MM contents per theme or area of specialization
- Ensure that claims arising from the actions of the work are inclusive in the budget

Payment claims may be submitted when and as any of the items in Section 6 (Project Deliverables, namely Assessment and Manual Development) are irreversibly

accomplished. Supporting documents shall fully indicate the progress per bill item submitted for payment. The Employer (Kouga Municipality) shall have 7 days to verify the correctness of the invoice before processing invoice for payment.

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