

PILOT INITIATIVE TO FACILITATE BENCHMARKING IN THE WATER SERVICES SECTOR

**Report to the
WATER RESEARCH COMMISSION**

by

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EXECUTIVE SUMMARY

The Water Research Commission commissioned a pilot benchmarking project for municipalities in April 2003 and awarded the contract to Philip Pybus Consulting Engineer, assisted by Afrosearch, Dr. Brenda Sham, Dr. Thomas Mogale and John Connolly. This covered the disciplines of engineering, business and development management

The project entailed a series of workshops and follow up visits to the municipalities concerned.

The First Workshop was directed at the Municipal Managers and Portfolio Councillors with a view to obtaining the support of top management for the project. The workshop took place in July of 2003. One of the lessons learnt was that the top management of the municipalities was too busy frequently to read its email or to respond to the invitations. In the event there was representation from the following municipalities:

- City of Cape Town
- Divalaseng
- eThekweni Metro
- Groblersdal
- Kungwini
- Mogalakwena
- Mogale City
- Moretele
- Ngwathe
- Potchefstroom
- Randfontein
- Rustenburg
- Tshwane Metro

A formal and signed Agreement was reached with all of these, either at the event or as the result of follow up visits, to participate and cooperate with the project and supply the data that would be required.

A second workshop was held shortly thereafter with the heads of the departments of engineering and finance in particular, but other heads of human resources were invited. The response was fair. The workshop sought agreement on the performance indicators that would be relevant to the operations of the municipalities concerned. It was explained that the data to calculate the indicators should be readily available and that they should be capable of improvement over the relatively short term, that is to say the data would be required monthly.

A presentation was also made on the research that had been carried out in four suburbs of Tshwane to ascertain what the customers considered to be the most important attributes for their water service providers. The Water Research Commission has published the Report by under the title 'Community Identified Performance Indicators for Measuring Water Services' Report TT 228/04.

A third workshop was convened to review the Performance Indicators that had been selected and to confirm the definitions and methods of calculation. It also introduced the topic of Change Management and the creation of learning organisations. There were few changes to the selected indicators, which were based on those that could help in improving service delivery. It was emphasised during the course of the workshop that it was essential for the participating organisations to have the resources of people time and funding for the project as well as the availability of the data. Five of the participating municipalities were unable to send a representative.

A fourth workshop was held in February of 2004 to introduce the web based system and receive instruction on how to enter the data of the performance indicators. The instructions, which have been modified in the light of experience, are printed as Appendix 3 to be found at the end of this Report. The importance of entering the data accurately, regularly in due time was emphasised. The programme had an automatic lock that meant the data, once entered could not be changed after a

period of 7 days. By request of the participants this was increased to 30 days for the start to the period and later was taken off completely.

The fifth and last of the workshops was held on 15 September 2004. It was significant that there were no less than 9 absentees. The meeting discussed the reasons for the failure of the participants to submit data. These are summarised below:

1. The municipalities are not ready yet for such a project having just survived the demarcation process and having to rationalise different business systems.
2. The municipalities are severely under capacity, less than 50 % of them having sufficient staff for the water supply services and apart from 1 province the rest have less than 33% for sanitation services.
3. The management systems in use do not align with one another and the sourcing of the data was therefore difficult.
4. Internal communication within the municipalities is poor and the silo effect worked against the success of the project
5. There has been a high turnover of staff and persons delegated to work on this project. Few of the municipalities finished with the same representative that they started with.
6. There was a general lack of understanding of benchmarking and what it could do for and organisation in improving the service.
7. There were no incentives for the individual participants.
8. The staffs of the municipalities were being overwhelmed with questionnaires from central government, mostly requiring the same information, but in a different format.

The workshop then decided that a very much-reduced number of performance indicators should be used and the list was reduced to a total of six. It was agreed that the data would be available for the indicators that were selected. It subsequently transpired that this was incorrect and only one municipality complied in submitting data. By January of 2005 this was the only municipality that submitted any meaningful data.

During the course of the project visits were made to all the participants on a number of occasions to coach them in the use of the web site and to assist where possible in the acquisition of the data. In all cases there was willingness and promises to supply the information but this did not materialise.

For future projects of this nature it is recommended that:

- The participating municipalities give proof that the staff members delegated to do the work will have the time and the support of their superiors.
- The project be confined to municipalities having common management information systems.
- The business of incorporating the business systems of any incorporated areas is complete
- The staff members involved are fully trained and understand the concepts and purpose of benchmarking
- The list of indicators to be used should be severely limited to only those of real significance to the municipalities concerned.
- A standardised spreadsheet should be prepared so that only the raw data need be entered and that the indicators be calculated in a consistent and uniform manner.
- That the indiscriminate requests for information by the central and provincial governments be limited and controlled.

The project was terminated with effect from 15 February 2005.

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Chapter 1

1.1 Introduction

Both the Water Services Act and the Municipal Systems Act are aimed at improving the standard of service delivery by the municipalities. A generally recognised route to improved performance is through benchmarking. This involves measuring the performance being achieved in certain important functional activities and comparing it with what others are achieving. Once the leader in a particular activity is identified, it is possible to discuss the processes by which the activity is undertaken with the leader and identify better methods of working. Thereafter it becomes necessary to introduce the new concepts of working and to effect the changes needed to improve. The measurement of performance is called metric benchmarking and the comparison of working methods is known as process benchmarking.

There is a great deal of activity world wide in the measurement of performance but relatively little is being done, or written about the process benchmarking side. This project is therefore in the forefront of process benchmarking in the water sector.

1.2 Earlier Water Research Commission Projects

In 1998 the Water Research Commission funded a small project to ascertain whether municipalities were interested in the provision of a handbook or guidelines on the topic of benchmarking water services. The survey was conducted amongst 12 municipalities ranging from the largest megacities to some of the smallest district councils responsible for several village water supplies. In general, all the municipalities interviewed were in favour of the production of such guidelines and intimated that they would be willing to participate in any benchmarking exercise. There was however a reservation from certain municipalities that they felt they had insufficient capacity both in regards to the qualifications of their technical officers as well as their number to measure the performance in a manner that would be comparable with others and that they would be unable to implement the research into the processes that they were using to effect change.

1.3 Production of Guidelines

The Water Research Commission subsequently promoted a project to prepare "*Guidelines for the Benchmarking of Water Services for Local Authorities in South Africa*" which was published in June 2003. The guidelines have proved to be in great demand and are available freely from the Water Research Commission.

The first chapter provides an introduction to the concept of benchmarking with examples of historical successes. The second chapter is concerned with the definition and derivation of performance indicators and their use in effecting improvements in performance. The next section covers process benchmarking and how to engage with benchmarking partners who are leaders in the class. It also emphasises that unless there is change, there will be no improvement.

The next section deals with the opportunities for benchmarking offered by current legislation in South Africa, notably the Water Services Act and the Municipal Systems Act, both of which focussed on the performance of the water services provider. The final chapter proposed a system whereby municipalities could provide data to a central database accessible to all for chosen indicators. Various sets of indicators were shown by way of example including those of the International Water Association, the Water Utilities Partnership, the Start-up Benchmarking kit provided by the World Bank and made reference to other systems. The final set of indicators was prepared based on practice of the South African Association of Water Utilities, but with additional performance indicators relevant to water distribution systems and the collection and treatment of wastewater. Finally, because these lists were all in excess of 80 indicators, which was deemed to be too cumbersome, a workshop was held

with municipal representatives from both the financial and technical sides in order to select *inter alia* the 30 indicators that were deemed to be the most important for municipal practice.

1.4 Water Research Commission Pilot Project

During 2002 the Water Research Commission called for proposals to institute a pilot project to implement benchmarking amongst a small number of municipalities.

According to the World Bank, inter-institutional comparisons are needed in the water sector, which offers limited scope for direct competition. Commercial institutions operating in competitive markets are under constant pressure to out-perform each other, but water institutions, which are monopolistic in nature are sheltered from this pressure. The result is poor productivity, wastage and negative influence on the economy as a whole, as well as on service delivery.

Water institutions in South Africa need information about the performance of their organizations as well as that of other similar organisations in order to compare performance. Such information is not readily and routinely available due mainly to a lack of a common framework within which to communicate and share the information effectively.

Benchmarking is a process for continuous improvement that involves the measurement of performance. It is a continuous, systematic process for evaluating the products, services and work processes of organisations for the purposes of organisational improvement. It is a process where organisations exchange ideas and methods of working amongst themselves, with a view towards improving their own performances and striving towards best practice. The benchmarking process enables an organisation to compare and improve performance in a number of areas, both within the organisation and across organisations.

The WRC has produced the manual, "Guideline on Benchmarking in the Water Services Sector". These guidelines, which were based on desktop studies, need to be developed through the implementation of a pilot study which puts the theory into practice and tests its efficacy. Outputs from this study will not only contribute to improved performance, but will also, by demonstrating the value of the benchmarking process and tools, create the impetus needed for general application of the process.

Objectives

The main aim of this study is to demonstrate through a pilot project, the setting up of a benchmarking process for the water services sector. Related to this, the objectives of the study will be to:

Refine and test the benchmarking process and methodology developed for the WRC (Report TT 168/02), through the pilot project.

Identify the key performance areas or benchmarking criteria compatible with generally accepted best practice (and future regulation) and in consultation with participants.

Develop new software or tools, or enhance existing software or tools to facilitate benchmarking comparisons.

Implement the benchmarking process within a group of between 10 and 15 selected water services institutions. (Water Services Authorities and Providers, Water Boards)

Link with other benchmarking initiatives both locally and internationally.

Capture and record experiences and lessons learnt, generated through the pilot project. Prepare reports and newsletters on a regular basis to keep the water services sector updated and informed of new developments. (NB. It is anticipated that the pilot will cover two financial year cycles)

1.5 Proposed Methodology

The following methodology was proposed for the project in order to meet the above requirements.

“The delivery of municipal services is circumscribed by legislation and regulations, many of which are directed towards the measurement of performance of the local authorities. In these circumstances the municipal officials feel threatened in case they do not perform. In most instances the senior officials are shouldering tasks that should be performed by more junior staff, but because of a lack of training and experience are unable to perform successfully. These officials are therefore chary of accepting new and perhaps burdensome tasks. Furthermore there is a tendency for each of the departments to work in isolation of one another in the so-called silo effect.

From a brief survey, many councillors are unaware of what benchmarking is and how it can benefit the operations of the municipalities.

The present system of remuneration for municipal officials does not enable the payment incentives for improvement in performance or for outstanding performance.

However, since process benchmarking requires a learning organisation in which good ideas and innovative ideas are rewarded, it is necessary to bring about a change in mindset of both the councillors and the more senior officials to enable them to approve the award of benefits to staff who contribute to improved performance as a result of process benchmarking. This is the most important aspect of the project because if those municipalities that participate are not prepared to learn and change, the whole project will fail.

The project divides itself naturally into three main phases.

- **Phase 1** will cover a period of capacity building in relation to benchmarking. This in turn will be divided into separate stages involving initial buy in of the participants, the development and agreement of the performance indicators to be used, the confirmation of the initially agreed performance indicators and criteria as well as the clusters. During this phase the software required will be developed in relation to the performance indicators that will be used and the data that will be readily available. This is expected to last some 10 to 12 months. It may have to overlap with some of the activities of Phase 2
- **Phase 2** will cover the operational period. It is expected that additional training and capacity building will be needed during this phase. Comparative benchmarking will be encouraged and if necessary work shopped for the participants that will need assistance. This Phase is due to last 24 months.
- **Phase 3** will be a relatively short review period to document the experiences of the trial, measure its success and failures with the remedies to the latter to avoid repetition of the same mistakes. This Phase will commence some three months prior to the end of the contract period and conclude at the end of the period”.

Note: the detailed Methodology is given in Appendix 1

A contract was entered into with Philip Pybus Consulting Engineer. He was assisted by:

- Afrosearch, Social Scientists
- Dr. Brenda Sham, Industrial Psychologist
- Dr. Thomas Mogale Development Management and
- Mr. John Connolly. Management Consultant

The expected duration of the contract was to be three years.”

CHAPTER 2 - PROGRESS OF THE PROJECT

2.1 Background

The participants were selected to provide a cross section of the municipalities from three basic groups. The first group was the cities of Cape Town, eThekweni and Tshwane, all of whom had expressed interest in participating. The second was a selection of older municipalities with inherited capacity. The final group was the perceived poorer municipalities. In order to minimise travel costs these were selected to be within a radius of approximately 200 km of Tshwane. These were selected from the provinces of Mpumalanga, Free State, North West Province, Limpopo and Gauteng.

2.2 First Workshop

In order to obtain support for the project from the top, the first workshop was directed at the Portfolio Councillors and the Municipal Managers in order to expose them to the project and obtain their commitment to it as well as setting out the benefits that could accrue from it.

Broadly these included:

- Providing a basis for statutory reporting,
- Demonstrating organisational efficiency,
- Enabling defensible measures of performance that can be compared nationally and perhaps internationally,
- Providing a focus for management attention,
- Facilitating the exchange of skills and knowledge,
- The opportunity to learn and improve organisational efficiency and competence,
- Providing a link to incentives for innovative thinking and constructive improvements,
- Emphasise the need for cooperation and contribution in the way of creating learning organisations, providing data, initiating internal benchmarking and later to benchmark externally and compare performance with other organizations,
- Demonstrate the need to commit resources to learning the basics of data capture, the discipline of routine transmission of the data and lastly but most importantly, the need to discuss with others better ways of doing things and changing the organization, and
- Create a desire to participate and to buy in to the process.

Invitations were sent by fax and email, where this was available, to the Executive Managers or the proposed municipalities. Not all were aware of the invitations and not all responded. A number were committed to other meetings. Eventually only six of the fourteen municipalities were able to send delegates. Visits were subsequently made to those who were unable to attend.

The delegates were given copies of "Guidelines for Implementing Benchmarking Practices in the Provision of Water Services in South Africa" and copies of a brochure outlining the Rationale, Objectives and Methodology of the Project.

After a brief history of the project, the concepts and theories behind benchmarking were explained as well as the benefits likely accrue. Benchmarking was defined as a process of continuous improvement resulting from the measurement of performance and then comparing the measurements with others and initiating a process of learning from those with the better performance. The indicators would be selected at the next workshop and would be calculated from data regularly supplied by the municipalities from normal operations. The underlying principle was to minimise effort by already overstretched local municipal officials.

The learning nature of the project was highlighted with the expectation that participating municipalities would change if they are to derive benefit from the project. The 'Learning Organisation by Peter Senge which emphasised the importance of collective and continuous learning if an organisation is to remain vital was cited. The process and benefits of benchmarking are directly linked to the concept of the Learning Organisation. It was also noted that the so called silo effect was to be overcome if the project was to be successful.

In further elaboration on the Operational Phase, the three key stages of the phase were identified. The first, incorporated the input of data on the agreed key performance indicators from the Local Municipalities. It was stressed that where local municipalities could not transfer data electronically, that it could be faxed to the project team leader. The second stage highlighted data processing. At this stage, Performance Indicators would be calculated from the data sets transmitted after a period of approximately six months. A reality test to test the consistency and reliability of the information would be done during this stage. In the event that anomalies in respect of the information are found, follow-ups would be undertaken and the necessary corrections and or coaching would be made. The third stage was about linking of municipalities data bases. It was again stressed that the Municipalities would be given all round support in the process.

Participants raised the following points and suggestions in response to the presentations;

- The Benchmarking project could be retooled in its terminology and substantive content to include certain sector issues raised in existing municipal Integrated Development Plans and Performance Management Systems,
- The concept of and principles underpinning “learning organisation” could be utilised to galvanise the vision of local government officials and councillors’ in the delivery of water services to local communities.
- It was pointed out that in the bigger metros, the project contacts should rather be at strategically placed lower ranking officials as municipal managers are virtually swamped with responsibilities.

At the conclusion of the workshop, the participants were asked to sign a commitment form providing details of the important contact people and numbers. Some signed immediately and others after visits, formal presentations and finally approval by Council. Ultimately all the municipalities invited to participate endorsed the project and committed themselves to support it.

2.3 Second Workshop

The Financial and Technical Heads of Departments were invited to the Second Workshop which was held over two days on 7 and 8 August 2003.

The main purpose of this Workshop was to introduce the concepts of benchmarking to the operational heads. The next objective was to determine and define the key performance indicators that could realistically be applied in benchmarking contexts. The officials were asked to identify the key areas of performance in five different sectors of the operation covering financial, technical, customer satisfaction, human resources and environmental and define some fifteen performance indicators for these sectors. The data required to calculate the indicators was to be readily obtainable from the existing management and reporting systems. Definition of key performance indicators raised the challenge of sourcing capacity, availability and validity of data required for the useful calculation.

The results of a survey made amongst the communities in Brooklyn-Hatfield (Suburbs), Mamelodi (Township), Nellmapius (Low Cost Housing), and Stanza Bopape (Informal Settlement) to determine the key areas of customer satisfaction were presented. The full report has been published by the Water Research Commission as ‘Community Identified Performance Indicators for Measuring Water Services’ TT 228/04.

The purpose of the survey was to identify the performance expectations of consumers of municipal water services within the areas concerned and thereby draw appropriate inferences. The survey results covered expectations on issues such as communities’ access to basic municipal services, awareness of benchmarking exercise, measuring municipal performance, municipality’s information communication system with communities, etc.

The key findings were based on the perception of the participants willingness or otherwise to pay for service. These are presented in the Tables below.

Table 1 : Factors influencing payment for services

Suburbs	Township	Low Cost Housing	Informal Settlement
Factors that would encourage the consumers to pay for the water.			
<ul style="list-style-type: none"> •Accounts are reasonable and understandable •Water is clean •Everybody pays •Good quality water •Water is metered •After hours services •Timely accounts sent •Elderly & paraplegics get discount •Satellite pay points 	<ul style="list-style-type: none"> •Job creation •Availability of water •Accurate accounts •Accounts sent on time •Everybody pays •Discount for pensioners •Proper meter reading •Meters working 	<ul style="list-style-type: none"> •Job creation •Good delivery. •Communication •Proper meter reading •Enough water for everybody •Good maintenance team •Reduced costs 	<ul style="list-style-type: none"> •Water everyday •Receive accounts •Meters installed •Everybody pays •Discount for unemployed and pensioners •Yard connection •Reduced costs •Job creation •No illegal connections
Factors that would discourage the consumers from paying			
<ul style="list-style-type: none"> •High cost •Other people not paying •Availability •Polluted water •Illegal connections •Not receiving accounts •Meters not read •Frequent leakages and blockages •Poor quality 	<ul style="list-style-type: none"> •High cost •Others not paying •Water cuts due to arrears •Unchecked meters •Relying on the ward committees •Free houses and services for others •Polluted water •Implementing without consultation •Leakages 	<ul style="list-style-type: none"> •High cost •Polluted water •Meter reading •Water cuts •Lack of income •Poor communication •Poor maintenance 	<ul style="list-style-type: none"> •High cost •Water is not metered •Illegal connections •Others getting free water •Not receiving accounts •Not getting water •Disconnections •Poor maintenance

A presentation on the management of change and performance measurement in municipalities followed. This covered the history of municipal service transformation over the past eight years, underpinning legislation and policies and why the establishment of mutually agreed performance indicators would assist municipalities to improve service performance levels as well as meeting statutory reporting obligations.

Once the presentations were completed and participants were given the opportunity to ask questions, request clarifications or offer comments, participants were split into two task teams to;

- agree on categories of performance indicators
- identify performance indicators and agree on classifications
- agree on computation formulae, and
- agree on definitions.

The groups were then asked to report on their deliberations in plenary session.

The performance indicators covered the principal clusters of:

- Service Delivery,
- Finance,
- Customer Satisfaction,
- Human Resources
- Environmental.

Certain profile indicators were selected to define the size of the municipality, its tariff in the form of a comparison of the amount the customer would have to pay assuming monthly consumptions of 8 cubic metres and 35 cubic metres per month.

A key feature of officials' responses focused attention on the aspects that affected their departments as a whole rather than looking at those indicators that reflected day to day actions and which would show the greatest change and perhaps improvement by benchmarking with others. A request was made for this to be reviewed at the next workshop.

There was also a concern that certain of the participating municipalities were not able to send representatives, since it was these local municipalities that stood to gain the most from improved performance.

Possible remedies that were suggested included the recommendation that project team members visit municipalities concerned and discuss the problem not only with the executive managers, but also with other senior members of the staff in order to motivate them to participate and make the time available. Other lessons included highlighting the importance of communication. Thus, it was important to differentiate among municipal officials and communicate messages through modes most familiar. For instance, busy local government officials, who are not computer oriented, will not read messages through their emails and may not pay a great deal of attention to a matter that is not pressing on them. In this case, faxes seemed appropriate.

2.4 Third Workshop

This was held on 18 November 03.

Documentation concerning Benchmarking Processes and Change Management was handed to each of the participants. Additional copies were put aside and made available to those unable to attend.

The Water Research Commission saw the project as one of the more important pieces of research being undertaken as it could impact on all the municipalities in South Africa. It was for this reason that it had been made a three-year project in order to give it time to come to maturity. The Commission looked to the active cooperation of the municipalities in the implementation phases of the project. The success of benchmarking depended on committing the whole organisation to the concept. This required understanding and acceptance from the top to the bottom.

The workshop objectives were to:

- Review the performance indicators that were agreed at the previous meeting.
- Discuss how the data is to be collected and the procedures for metric benchmarking
- Discuss how changes can be effected to improve ways of working
- Assess how the selected performance indicators can assist in improving performance
- Create an understanding of the next steps in the project

Defining and developing performance indicators was not a simple process. It was necessary to compare the same apples with the same apples.

- All organisations, although they may engage in the same or similar activities, will be unique in terms of a wide range of fundamental issues such as:
 - resource availability,
 - infrastructure layout and design,
 - processes,
 - systems,
 - procedures,
 - topography,
 - customer profiles and the like.
- Benchmarking requires that participating organisations identify, agree and confirm performance indicators that are applicable to all, and can be used to measure organisational water services performance uniformly, consistently and accurately.

The requirements for continuous activity in the benchmarking field were:

- Participants will need to ensure that organisational resources are made available to support the project,
- People,
- Time,
- Funding,
- Data collection and input, and
- Business systems and processes need to be revised to generate the required information

It was important to understand the elements of performance indicators and to ensure that the data was accurate and comparable with other organisations.

The elements are:

- Be capable of representing the true situation without bias,
- Be clearly defined with a unique interpretation,
- Should not overlap,
- Be readily calculated from available data, or if not available, readily obtainable,
- Capable of being audited,
- Be easy to understand, by specialists as well as lay people,
- Refer to a defined time period, usually one year,
- Be referenced to a defined geographical area.
- Be applicable to the full range of water institutions with different characteristics and stages of development, and
- Be limited in number.

Measurements could be inaccurate. It was important to recognise those errors that arose from personnel error and those that arose from machine error. Both sources of error could be managed if identified correctly. Measurements should be over the same time periods. Preferably for this project the monthly readings and records should refer to the 1st of the month and to the first day of any longer period. Readings that are not recorded correctly are useless. It is important that the readings, whatever the nature are captured correctly and transferred into an electronic format without distortion or error. Readings may be distorted in order to provide a better indicator of performance. This does neither the person concerned nor the project any good. It is dishonest and should be guarded against. The measurements and records should be checked and validated before they are entered into the system.

There followed a review of the Performance Indicators that had been selected at the previous workshop. A number of changes were agreed and which are recorded on the attached sheets. A full list of the performance indicators that were finally accepted is shown in Appendix 4 at the end of this Report.

A presentation was made on change management and the importance of becoming a learning organisation. Change Management was presented as a methodology, which, systematised and organised the change process and thus facilitated change.

The South African Local Government Association has defined change management as: "An intervention to influence the attitude and behaviour of individuals to the benefit of the organisation in terms of maximising productivity". It is essential in bringing about new or different ways of working within an organisation. So often when bringing about change and new ways of working, only the technical side of change is addressed and not the people aspect of change, and the change fails and/or is not sustained. Change management programmes facilitate positive conditions for change, establish mechanisms to help people cope with change, and ensure that the change is sustainable. Such programmes are:

- proactive: because they aim to make a system or organisation susceptible to change;
- reactive: because they deal with discomfort during change; and
- post active: because they ensure sustained delivery.

It was stressed that today's organisational leaders are experiencing a consciousness shift. Where they sought excellence, they now seek learning – not only to achieve excellence but also to stay that way through being flexible, intelligent and responsive.

Some of the major drivers of interest in the idea of becoming a learning organisation were outlined. These were:

- Competitive pressures – need to compete, survive and grow.
- The need to improve quality.
- The wish to encourage more active experimentation.

- The increasing pace of change.
- The wish to become more people orientated.

The characteristics of a learning organisation were outlined and discussed as well as the elements of and the steps to form a vision for a learning company. Because of the need to adapt and change intelligently and to be consciously developing as a whole organism, the learning organisation places emphasis on values rather than on structure and processes. Some examples of learning organisation values are experimentation, listening, feedback, and celebration.

It is useful for the project manager and agent of change to understand the typical stages and reactions people go through when faced with change. These stages based on the studies of Kubler-Ross are:

- shock,
- immobilisation,
- denial,
- anger,
- bargaining,
- depression,
- alternatives and
- finally acceptance.

When any business goes through a major change, a clear, consistent integral communications strategy is vital to explain the positive benefits of the change. There is a strong need for effective communication. The basics of a communication strategy were outlined and a template for conducting a stakeholder assessment was provided.

2.5 Fourth Workshop

The Fourth Workshop was held on 20 February 04.

The primary purpose of the workshop was to introduce the Olap Solutions team, which had designed the software to be used for the capture of the benchmarking data, and to explain how to operate the system.

The system could be accessed through a standard modem dial up, which would be secure from intruders. The data would be monitored on historic trend, such that any significant departure from previously entered data would be queried so that corrections could be made. However, once data had been entered, it would not be possible to alter it after a period of one week. This was to prevent the doctoring of the data to present a better picture after comparison with the data of others. The software provided secure data access in the sense that it required any person capturing or editing data to first enter the correct Username, Password and Pin Number. There were three levels of access covering the project manager, the data capturers and observers who would be interested in the data, e.g. Councilors.

The data could be used to generate tabular and graphical interpretations of the data both internally within the organisation and with other participants.

The system:

- Provides a directory of all the key performance indicators,
- Historic trending in the sense that it provides for options to capture monthly, year-to-date or annual data, and further that it can,
- Perform all required calculations to represent valid data fields for each performance indicator and sub categories of relevant Performance indicators.

In respect of bench marking, the software system:

- provides options to report on any selected category of data or performance indicator or sub category of a performance indicator.
- Provide “audit reports” on problem areas that users experience.
- Closest 5 participants: provides the facility to do comparisons of each performance indicator with up to 5 other participants.
- Present graphical information on each performance indicator in a bar or line format.
- Provide for the retention of monthly and year-to-date data for two previous years and the current year periods.
- Provide for the retention of annual data for three years, the current year and a target to be achieved in the future.
- Provide a hit counter for access to the project as well as each cluster and performance indicator.
- Provide for admin support and data input/validation from a central co-ordinator.

The web address www.wrcmb.org was selected for system.

The City Water Managers’ Forum was discussed, especially in so far as this related to our benchmarking framework. The performance indicators agreed upon in the current bench marking process were compared with those selected by the City Water Managers’ Forum. There was consensus among workshop participants that the performance indicators that had been agreed upon previously should be retained. Workshop participants recognised the relevance of City Managers’ Forum recommendations and were mindful of the potential for their integration within the current water services benchmarking framework.

Once the data base infrastructure was up and running it was recommended that:

- the data base be accessible without a password in the first month of operation,
- given that the first few months (at least, first three months) of system operation were likely to be dogged by problems, it was agreed that the time lock safety feature not be activated. In the interim, participants experiencing problems could call on the project team for assistance.
- the software be able to record and display on the “most asked” questions.
- the web site provide for contact persons and participants telephone and cellular numbers, emails and faxes for ease of contact.

2.6 Fifth Workshop

The Fifth Workshop was held on 15 September 2004.

The Municipality of Randfontein had been forced to withdraw from the project, as it did not have the capacity to assist in this and attend to all the other duties they were obliged to carry out.

A minute’s silence was observed for Mr. Herman Cronje of Emalahleni who was tragically killed in a motor accident.

The workshop was concerned at the inability of the participants to obtain and enter the data onto the database.

During the course of the visits made to the municipalities to assist in the provision of data a number of factors had become apparent.. These were:

- While the senior managers had seen the potential benefits of benchmarking and had remained positive towards it, those who had been delegated to collect the data were not familiar with the concept and remained negative.
- There was a general problem in lack of capacity particularly to cope with the challenges that the incorporation of new areas into the municipality had brought.
- There were no formal management information systems from which the data would be extracted.
- The people delegated to abstract the data had no stake in the process.

- There were no benchmarking teams as such and no interaction on the topic with other departments that were really involved in the benchmarking system.

The problems were also looked at from the perspective of the individual. There were no less than 144 pieces of legislation that influenced the Local Government Sector. Some of these are listed in Appendix 2 at the end of this report..

From the point of view of the individual, there did not appear to be any personal benefit from supplying benchmarking data.

- It is seen as a duplication of other separate initiatives, e.g. Department of Water Affairs and Forestry, the Department of Provincial and Local Government and also other organisations.
- There are time constraints and pressures to 'fight fires' in a crisis management situation.
- The data was not always readily available with the resultant 'back burner' syndrome
- Problems had been experienced in accessing the web site.
- It did not feature in the job descriptions.
- The benchmarking was acting in a hostile environment with lack of integration of systems.
- Changing systems made certain data difficult to obtain.

In-house training over a prolonged period would be needed to overcome the disadvantages for the individual.

The mechanics of entering the data onto the Web Site was reviewed. The nature of the software was demonstrated and how it should be utilised to capture and record benchmarking data. Additional boxes had been added to the speed data capture boxes since the system had first been introduced.

- A date box had been added which referred to the date of the data, which enabled back data to be entered.
- An accuracy box was added to provide an estimate of the accuracy of the data. This was to prevent people having to search for the most accurate figures available. It was predicated that it was better to have some slightly inaccurate data than none at all.
- The final box was for notes. This would enable explanations to be given for data that due to different local circumstances might not be strictly comparable with other data. The notes would be limited to 255 characters.

How to make the data easier to enter was discussed. It was agreed that an Excel spreadsheet would be constructed that would allow raw data to be entered into appropriate fields for the automatic calculation of the performance indicators. This could then be emailed to the project managers who would arrange for it to be entered onto the web database.

An explanation was also given on how to access the data that had been entered. It was necessary to select the city or town, followed by a Group and then the Indicator. A 'question and answer' session followed in which various explanations were given to problems that had occurred.

Given the fact that most participating municipalities had expressed concerns about completing a long list of performance indicators which appeared rather daunting and resulted in it being deferred down the priority list in favour of more urgent items, a shorter list was introduced. Rather than complete the whole of the questionnaire it was agreed to limit, the number of indicators, which the municipality wished to benchmark to those that were most relevant to its operations. This would reduce the load considerably.

The attendees at the workshop were then asked to identify the most accessible and easy to complete data sets. The following were chosen:

Table 2 : Reduced List of Performance Indicators

No.	Description	Calculation	Data Required
1	Water supply: Pipe bursts per month	No. of Pipe bursts per month per 100km of pipe, excluding property connections	Length of Pipelines No. of pipe bursts each month.
2	Spillage from sewers	No. of spillage events per month per 100 km of sewer, including all outfalls.	Length of sewers. No. of spillages per month.
5	Revenue collection	Amount received divided by the amount billed times 100.	Amount of receipts Amount billed.

It was expected that implementation of the reduced number of performance indicators would significantly relieve the pressure on all the officials who have been tasked with collecting and capturing the data. Municipalities that have the capacity and the information systems to complete all the indicators should do so.

Note: No further workshops were held due to the closure of the project due to lack of data.

2.7 Visits to the Municipalities

During the course of the project a number of visits were made by members of the team to municipalities initially to obtain the commitment of the Municipal Managers and if possible to bring in the Portfolio Councillors and subsequently to provide training and instruction on the use of the web based database. Eventually a few visits were made to actually enter some of the data. The following municipalities received visits:

- City of Cape Town
- Divalaseng
- eThekwini
- Groblersdal
- Kungwini
- Mogalakwena
- Mogale City
- Moretele
- Ngwathe
- Potchefstroom
- Randfontein
- Rustenburg
- Tshwane

There were a number of commonalities related to these visits. The municipalities concerned are not listed in view of the nature of some of the comments.

- Appointments were made that were not kept. Appointments would be made with senior officials but when the members of the team arrived at the appointment, it was to be told that the official had been summoned to meetings, either with the Councillors or with another more senior official. The impression gained was that the Councillors paid no attention to the time constraints of the officials nor their commitments.
- The officials changed causing duplication of visits. In the one municipality the team member was asked to make a formal presentation to senior officials on the background and benefits of the project. This was done twice and to a different set of officials, as the original group was no longer there.
- In almost all instances after instructing the officials on how to enter the data onto the database, they promised faithfully to do so but in the end did not. This happened on a number of occasions from the same people.

- Certain of the visits were abortive because the connections to the Internet were too slow or the servers had gone down. In particular the speed of the server in one of the cities was so slow that it was impossible to enter data. The management information system was very sophisticated which was one of the causes of the slow reaction.
- In other smaller municipalities it was found that only one machine could connect to the Internet. It took a number of visits to establish this.
- Finally in a number of cases although the meetings were properly arranged and the purpose spelt out, there was a blank refusal by the people concerned to cooperate and enter the data as they complained that they were being asked for similar information from the Department of Water Affairs and Forestry, and the Department for Provincial and Local Government. They were too busy also in trying to obtain uniform systems established after the incorporation of other towns into the new municipality.
- In all cases there was enthusiasm for the project as a whole and a willingness to assist other than for the competing forces in their work.

CHAPTER 3 - PERFORMANCE INDICATORS AND THE WEB BASED SYSTEM

The primary purpose of this Project was to enable the participating municipalities to measure and above all improve performance in those areas that were important for the successful operation of the water services utilities. To this end the participant needs to have clear ideas on those areas in which improved performance is most needed before the performance indicators are selected. In this way the performance can be measured, compared with previous results or else with an outside benchmarking partner. This did not occur and the concentration as will be seen from the reports of the various workshops where this was discussed, was on departmental objectives rather than specific team operations. It is the improvement in the smaller areas that enables an improved overall result to be obtained. However another imperative in measuring performance through the use of indicators is that the data should be readily available.

It is worth repeating that this was not the case although those debating the selection of the performance indicators gave repeated assurance that the data required for the calculation of these was available within the relative Departments. In practice even at the end of the project when the number of indicators was to be reduced to three monthly indicators it was found from one of the larger municipalities that the data was only available on an annual basis.

3.1 The Specific Data Fields and Calculations

It was emphasised that the performance indicators should be calculated from data that was readily available and could be extracted from the municipalities management systems. Another criterion was that the value of the performance indicator could be influenced by the performance of the responsible section. Measurement of these would be monthly so that the changes could be brought about relatively quickly to try and improve the performance.

The participating municipalities selected a set of performance indicators for each of the clusters below. This was a difficult and exhausting task as the areas of expertise, experience, skills and knowledge as well as the situational differences of the municipalities and of the workshop delegates was extremely diverse. The following broad approach was adopted for the selection of the Performance Indicators.

- **Service Delivery**

It was agreed that this cluster should deal with indicators covering issues such as pipe bursts and interruptions to services on water service delivery and spillages and blockages with waste water. Planned and unplanned maintenance and unaccounted for water were also dealt with under this cluster.

- **Finance**

After lengthy discussions a range of fairly standard key financial indicators was discussed and agreed. There were substantial difficulties in agreeing specifically what these indicators should be as the financial autonomy of water service functions and associated controls and reporting structures differed from one municipality to another.

Only a small number of financial representative were able to contribute to this debate.

- **Customer Satisfaction,**

Few of the municipalities had formal processes in place to track customer satisfaction but it was agreed that this was a critical area for performance measurement. Two indicators were selected for this cluster concerning response times for complaints and the number of complaints.

- **Human Resources**

The indicators selected for this cluster were strongly linked to statutory reporting requirements. The staff complement ratio for each of the water and wastewater systems was based on the numbers per cubic metre sold or treated. The balance covered the number of training days per employee, the person days lost per month and the disabling injury frequency rate.

- **Environmental.**

This was also a difficult cluster to get agreement on as functional practises varied dramatically between municipalities. Ultimately it was agreed that the focus be directed at Performance Indicators related to compliance with statutory reporting requirements for the quality of the water supplied and the wastewater discharged and a further indicator that measured the frequency with which trade wastes were sampled.

The workshop delegates finally agreed to a total of 30 Performance Indicators but many of these were sub-divided as between water supply and sanitation. The agreed Performance Indicators are attached as **Appendix 6** to this report. Although the approach of the project team was to ensure that the participants were able to determine the Performance Indicators that they felt would best serve their needs for benchmarking from available data, it was noted with concern that many of the Performance Indicators finally selected would not be useful for the purpose of measuring monthly performance and progress.

This has proved to be a very difficult process, primarily due to the following:

- Participating municipalities had different functional responsibilities, structures and approaches to water service activities and the management thereof.
- Participating municipalities utilised different business systems and procedures for the management of water service activities.
- Many municipalities did not have ring fenced water service functions, which meant that it was not possible to generate certain data fields and verify the accuracy of the information.
- The data fields should be selected on strategic issues rather than the technical.
- The “silo effect” and divided responsibilities in many municipalities are very real constraints to data collection and verification.

Due to the many different management information systems the integrity of the data may be suspect when comparing with external partners. A rigorous set of definitions is required, which will dictate the management information that can be made available. This in turn will need a uniform approach to the data that is required from each water service provider, whether this be a branch of the municipality, a public-public service provider or a public-private service provider.

The selection of meaningful and realistic Performance Indicators for benchmarking municipal water service delivery activities using a cross section of municipalities is an extremely difficult process for the reasons outlined above. Institutional diversity (structures, systems, activities, approaches size and capacity) is a major factor that complicates a synergised and strategic approach. This is also further complicated by the nature of inputs from participants who come from different functional areas of the municipality. It is clear that with few exceptions there is not a holistic understanding of the business imperatives related to running an effective and efficient water service delivery function. Building a business-orientated mindset in municipal activities will be a key challenge for the future.

The suitability of the selected Performance Indicators for process benchmarking (the ongoing measuring of results for performance improvement) that the participants selected was also a cause for concern. Most of the selected Performance Indicators, although important indicators did not lend themselves to ongoing performance measurement. The reality is that few municipalities have the capacity to produce the required data on a monthly basis.

3.2 Web Site and System Architecture

A web based benchmarking system and supporting architecture was seen to be an essential requirement in order to enable participating municipalities to access the benchmarking project data easily, upload and view data, select Performance Indicators, select benchmarking parameters and view and print comparative reports.

Detailed terms of reference for the design and development of web based benchmarking system and supporting architecture were developed and a number of companies (local and international) was invited to submit tenders to undertake this work.

The terms of reference set out the following specifications for the design and development of the web based system architecture and database:

The web based system architecture and database is able to:

- Provide for user access to the data via the World Wide Web on a credible browser using a simple dial-up connection.
- Be installed and housed on an existing server.
- Be accessed via an existing web site with a membership logon facility.
- Enable secure data input with varied levels of access.
- Enable effective data downloading without undue problems from corporate firewalls and similar protocols.
- Provide factual and graphical interpretation of data with direct printing from the web.
- Accommodate a minimum of 15 participating organisations and have the capability of being expanded over time to include up to 30 others
- Be user friendly and easy to use.

In terms of specific project performance parameters the system and database was designed to be able to:

- Accommodate all the Performance Indicators as set out in Appendix 2 in the appropriate clusters.
- Provide a directory of all Performance Indicators.
- Provide user controlled login/logout facilities and data input capability.
- Provide options to capture monthly, year-to-date or annual data.
- Perform all required calculations to represent valid data fields for each KPI and sub categories of relevant Performance Indicators.
- Perform logic-based calculations to validate data inputs and automatically generate a query on data that appears to be invalid. (using trends, variables and tolerances that are to be agreed with the project team).
- Provide options to report on any selected category of data or KPI or sub category of a KPI.
- Provide "audit reports" on problem areas that users experience.
- Provide the facility to do comparisons of each KPI with up to 5 other participants.
- Present information on each KPI in a bar or line format.
- Provide for the retention of monthly and year-to-date data for two previous years and the current year periods.
- Provide for the retention of annual data for three years, the current year and a target to be achieved in the future.
- Provide a hit counter for access to the project as well as each cluster and KPI.
- Provide for admin support and data input/validation from a central co-ordinator.

The terms of reference for the tender also required that the contractor complied with the following:

- Develop the application using Microsoft "Active Server Pages" running off a Microsoft SQL Server database

- The system was to be developed around an n-tier model, the data layer was to contain structured queries and stored procedures, the middle tier will be server side COM objects which will manage the security and integrity of the data. The presentation tier will be ASP and HTML. Embedded JavaScript will facilitate graphical layout.
- The model should minimize client side traffic with no need for modification to existing firewall and virus protection on the user side. The presentation tier, should not require any third party downloads or cumbersome third party interpreters.

The ownership of the Intellectual Property Rights would vest in the Employer who is to be provided with all relevant documentation and program source codes at the end of the contract.

The requirement for refinement and review of the Performance Indicators, or the development and accommodation of sub Performance Indicators was to be covered in the overall project cost.

The requirement to provide expertise and reasonable support during the implementation phase of the project must be covered in the overall project cost.

The contractor was to ensure that the system would run on hardware that is available and accessible to users and is to provide clear proposals and guidelines on the specifications and requirements for the operating system.

After evaluation of the proposals received for the design and development of the web based system architecture and database the contract to undertake the work was awarded to Olap Solutions (Pty) Ltd. This company had previous experience in web based benchmarking and could offer the most suitable product at the best price.

The design and development of the web based system architecture and database was completed and put into service in April 2004. The project software is currently located and housed on the SAAWU server under the address www.wrcmb.co.za

A user manual was developed by the contractor and distributed to the participants. After initial technical difficulties in housing the system, access to the system was provided for all participants in April 2004. The Users Manual is published separately.

Limited access to computers and the Internet was a major constraint for some municipalities (contrary to earlier agreements and assurances from municipalities) and this led to the design and introduction of a simplified Excel spreadsheet by the project team for manual data capture. The ability of municipalities to successfully utilize this spreadsheet as a regular and accurate means of data capture was also largely unsuccessful for many reasons.

CHAPTER 4 - PROJECT CONSTRAINTS

The pilot project in benchmarking at the municipal level has taught a number of very useful lessons concerning the management and delivery of water services. Many of the factors identified have severely handicapped the progress of the project and lead to its premature closure. These are listed under the various headings below.

A survey was conducted amongst the participants as to why they had found it difficult to capture and submit data.

A short questionnaire designed in a standardised format was distributed to the key role players, This required the incumbent to consider some of the salient points which contributed to the slowness and general non-performance of the participants in the project. There was an improved response to this simple questionnaire which only required subjective answers.

A summary of the questionnaire and its findings is given in Table 2.

Table 3 : Perceived Reasons for Inability to Provide Data

Too busy	High
Too Many Interruptions	Medium
Too Many other Questionnaires	High
Not Interested in the Project	High
Cannot get Departmental Information	High

Comments

From the above table, the excessive workload of the officials was noted as a major contributory factor to the poor outcome and poor availability of information on the performance indicators.

Many of the participants considered that too many interruptions in their daily work was a major contribution to the excessive workload although some delegates had come to regard interruptions as a part of their every day work, it still impacted on their planning and functioning.

The point of other questionnaires being circulated in the selected departments was also noted as being a major cause of the failure rate. One could infer that there were questionnaires arriving from other Departments too, not only those from DWAF and DPLG, and this undoubtedly caused saturation in this area. This is commented on below.

The following problems, constraints and impediments to skills development have been identified during this study. Each of the constraints identified serves as a synthesis of core problem areas with clear multiple undesired effects. Please note that not all issues may be present in all organisations/ instances. Issues are, therefore, **not provided as blanket statements applicable at all times and under all circumstances**

4.1 State of Readiness of the Municipalities

Municipalities have been undergoing rapid and substantial changes and transformation in the past number of years, largely as a result of two specific causal factors. The first has been the extensive rationalization in the number of municipalities through the demarcation process, whilst the second has been the changes in the regulatory framework. The new municipal demarcations have served to compound the administrative and financial challenges faced by municipalities at a time when the regulatory changes have resulted in significant alterations in the depth and scope of municipal functioning. This process is ongoing and creates a strategic delivery arena that is characterised by the introduction of a suite of new functions and skills that are to be incorporated into municipal functioning.

Difficulty was therefore experienced by the participants in coordinating the data concerning new areas incorporated into the new municipality and in reconciling different systems of working.

4.2 Capacity of the Municipalities

One of the primary features of the sector is the lack of capacity and skills. The large majority of municipalities that function as water services authorities have fewer than 20 water and sanitation staff and, as well, report staff shortages (see Table 3 below).

Table 4 : Reported staff shortages per province

Province:	EC	FS	GP	KZN	MP	NW	NC	LP	WC
# of DMs who are WSAs	6	0	1	10	2	3	5	5	5
% reporting adequate water staff	0%		0%	20%	0%	0%	0%	0%	60%
% reporting adequate sanitation staff	0%		0%	30%	0%	0%	0%	0%	60%
# of LMs who are WSAs	10	20	9	3	17	9	27	7	24
% reporting adequate water staff	30%	30%	33%	33%	24%	11%	48%	29%	63%
% reporting adequate sanitation staff	50%	25%	22%	33%	29%	11%	41%	0%	54%

(Source: Demarcation Board Studies and Reports)

In a large part, deficiencies in productivity and organisational performance are attributed to staff shortages. This includes the failure by a large number of municipal services to implement effective consumer services. Despite this, benchmarking results reveal that South African municipalities (many of whom perform poorly) have, on average, slightly *higher* numbers of water and sanitation staff than New South Wales water utilities¹ (where poor performance is not a significant problem).

These results indicate that the number of water and sanitation staff required by a municipality does not only depend on “external” variables (such as service area, service backlog, etc.) but also on “internal” capacity related variables such as staff competence and productivity.

All of the participants reported shortages of staff with the requisite skills and experience. There were a number of contributory factors. Senior staff had been put on early retirement after completion of their contracts. During the wind down period no shadow staff had been appointed to enable them to undergo a period of mentoring and training. This led to a change in the personnel of the participants and the need to repeat all the instruction given earlier. A consistent set of workers is needed to ensure the success of this type of project

4.3 Lack of Uniform Management Information Systems

In the selection of performance indicators an assurance was given that the data required would be readily available. In some of the municipalities this was available but not on a monthly basis as had been agreed at the start of the project. Only an annual figure was available. There appeared to be no business systems at some of the municipalities and if there were they did not cover the identified important issues that were being benchmarked.

In certain of them no monthly reporting system existed from which the data could be readily extracted. This points to more effective monitoring and evaluation of the operations of the service provider. In this regard, the Council needs to be empowered to understand what are the critical operations in the provision of service in the water sector so that it can interrogate correctly.

A lack of consistency in the acquisition of data and the business systems used meant that the data was not in the correct format for the project purposes.

4.4 Ineffective Internal Communication

At the outset of the project it was assumed that having gained the support of the Municipal Managers and Portfolio Councillors that they would inform and encourage their staff to participate fully in the project. In the event, little information appears to have been passed down despite assurances from the top management that the data would be made available. When it appeared that the information would not become available spontaneously visits were made to the different municipalities. It was found that the task of finding the information had been passed down the line to junior staff who were not aware of the programme and how benchmarking could assist them. In consequence they did not place the matter of data collection and entry very high on the list of priorities and allowed other activities to take precedence.

The communication was therefore all one way and the person entrusted to obtain the information was thus not fully informed of the benefits of benchmarking.

In addition the communication between the different departments appeared to be almost non-existent with the 'silo effect' being prominent in all cases. There is a need to integrate these activities and ring fence at least the provision of water services.

4.5 Staff Turnover

In a number of instances senior staff left the organisations or were transferred to alternative posts during the two-year currency of the project. The replacement staff, if appointed, had then to have the principles of benchmarking explained once again and be encouraged to participate fully. They then had to learn their new duties and responsibilities first before embarking on a new and as yet untried system. In Appendix 3 a comparison is made of the names of those attending each of the workshops. It will be seen that there have been some substantial changes in the delegates being sent to the different workshops.

4.6 Lack of Understanding of Benchmarking

Benchmarking involves the measurement of performance. It is not directed at the individual but rather measures the performance of a team in any particular aspect of their work and operations. In order therefore to obtain the maximum benefit from the enterprise the whole team needed to be introduced to the concepts and benefits of benchmarking and improving so that it could take a pride in its work and the efficiency with which it conducted its operations. This takes a great deal of team training to encourage the aspect of competition with self to gain improvement. It is also important to emphasise that the tool of measurement is not intended to influence work-place position but rather to determine where one is.

This project in fact emphasised the need to take the concepts as far down the organisation as possible until the people that actually influence the value of the performance indicator are aware of what benefits it can bring to their work.

4.7 Lack of Incentives and Motivation

A repeated comment from the participants was 'what is in it for us?' The municipal system does not permit the payment of performance bonuses or the provision of other incentives. This acts as a demotivating factor in the search for self-improvement. In this case it is the improvement of the team's performance that is being measured and suitable rewards and incentives should be put into place. These do not of necessity have to be of a monetary nature, but rather by public recognition, the award of certificates or even possibly additional days leave.

4.8 Questionnaires from other authorities

Another factor that prevented the submission of suitable benchmarking information was the number of questionnaires that were being circulated by the Department of Water Affairs and Forestry and the Department for Provincial and Local Government. These questionnaires were being supplemented by those from research organisations and other similar institutions. In so many of the cases cited the information being requested or demanded was of a similar nature, one questionnaire from the other but phrased differently so that additional work was required to answer them. There was a further factor that caused dissolution

CHAPTER 5 - RECOMMENDATIONS

When reviewing the project there are certain changes needed to the methodology that were not allowed for in the original proposal. This was followed and amended as the project progressed but there were a number of constraints to implementing the changes fully. The team therefore recommends the following be implemented in future benchmarking programme for municipalities:

Recommendation 1

That the municipalities that are invited to participate provide proof of willingness to do so and that there is the capacity to allow adequate time for the staff members to take an active part,. Full information on the time and financial involvement should be given at the outset before such commitment is obtained.

Recommendation 2

That the participating municipalities have common management information systems that cover the data required to calculate the performance indicators.

Recommendation 3

That the participating municipalities have completed all the necessary steps to have a fully integrated system after the incorporation of outside areas necessitated by consolidation so that staff members are not extended with these tasks.

Recommendation 4

That the proposal to benchmark any particular activity is fully accepted and understood by the members of staff that will be involved in order for them to take an interest in improving performance and appearing amongst the leaders in that activity. Depending on the activity selected for benchmarking this should include everyone from senior management to the actual operators concerned.

Recommendation 5

That proper training should be given to the group involved in the exercise in following up, comparing with past performance and with others and then analysing what they are doing and how it impacts of performance. Only then should they start to initiate change.

Recommendation 6

That only five or six indicators should be selected from the published lists of performance indicators. The selection should be based on those indicators that are of significance to the municipality concerned. The usual criteria of availability of data and the verification of the data should apply.

Recommendation 7

That a standardised spreadsheet should be prepared, appropriate to the performance indicators that have been selected, so that the participants need only enter the data and the performance indicator is calculated automatically.

Recommendation 8

That the gathering of information by Central and Provincial Governments be limited to data that is required by statute only and that municipalities be allowed to refuse to answer any other questionnaires.

Chapter 6 - Products of the Research

Training Manuals

Olap Solutions, "*The WRC Municipal Benchmarking Project Users Manual*" See Appendix 4

Geraldine Schoeman, Dr. Brenda Sham and Philip Pybus Consulting Engineer. "Best Practice and Benchmarking" See Appendix 6

Papers Presented

P Pybus and J Bhagwan. "*Implementing Benchmarking Practices In South Africa*" Global Developments in the Water Industry. Performance Benchmarking under the auspices of the International Water Association. Perth Western Australia, September 2003.

P Pybus and J Bhagwan. "*Implementing Benchmarking Practices In South Africa*" Water Institute of Southern Africa , Biennial Conference, Cape Town, May 2004

P Pybus and J Bhagwan. *Implementing Benchmarking Practices In South Africa*" IWA Specialist Group Conference on Water & Wastewater Management for Developing Countries, Victoria Falls, July 2004.

Pamphlets Prepared

Six Issues of a Newsletter entitled "The Benchmark".

APPENDIX 1 - DETAILED METHODOLOGY IN THE SUBMISSION

Phase 1

The first step will be to invite a number of Local Municipalities to participate in the project. The invitations will be directed in the first instance to the Municipal Managers after telephone calls to establish a willingness to participate in the first workshop. The written invitations will also be structured to ask a series of questions designed to establish whether the local municipality has the necessary business systems and processes to be able to obtain the required data as well as the commitment to take part in the pilot project and acquire and or mobilise the necessary resources. The invitations will then be sent to three mega-cities which have already indicated an interest in participating; to some three to six well established local municipalities and then finally to three to six local municipalities that may be under-resourced but nevertheless will have some capacity to participate as well as having a strong desire to do so. The former group can lend experience and capacity to the project, while the smaller ones can show that lack of capacity and staff does not preclude improvement and enhanced working. All of these will be selected from organisations that are within a relatively close travel distance from Tshwane and Johannesburg. The local municipalities will be selected to be within a radius of 200 km from Tshwane and Johannesburg.

The first workshop will be held in Pretoria within six weeks of the inception of the project and will:

- Set out and discuss the aims of the project and the advantages that will accrue from starting a benchmarking process. Briefly these are seen to be:
 - Providing the basis for statutory reporting
 - Demonstrating organisational efficiency
 - Enabling defensible measures of performance that can be compared nationally and perhaps internationally.
 - Providing a focus for management attention
 - Facilitating the exchange of skills and knowledge.
 - The opportunity to learn and improve organisational efficiency and competence.
 - Providing a link to incentives for innovative thinking and constructive improvements.
- Emphasise the need for cooperation and contribution in the way of creating learning organisations, providing data, initiating internal benchmarking and later to benchmark externally and compare performance with other organisations.
- Demonstrate the need to commit resources to learning the basics of data capture, the discipline of routine transmission of the data and lastly but most importantly, the need to discuss with others better ways of doing things and changing the organisation.
- Create a desire to participate and to buy in to the process.

The Municipal Managers and the Councillor responsible for the delivery of services will be invited from each of the local municipalities.

In that the constituency forums are required to define what they require in the way of performance, a survey will be made at this level and with other community forums to determine the perceived needs of the customers by way of improved performance. The survey will be conducted on a limited basis.

The proceedings of the workshop will be recorded and forwarded to all the participants.

A second workshop will be arranged for the heads of the financial and technical departments shortly thereafter. The purpose will be to define, develop and agree on some 15 critical performance indicators on which the future and efficiency of the water services department depends. So far as possible these will be indicators that are performance based and which can be influenced over the short term during the currency of the project. The expected outcomes from the workshop will be to:

- Establish with the participants some 10 to 15 key areas of performance for which the information to calculate the performance indicator is readily available. The workshop will also agree the precise definition of the Performance Indicators. The performance indicators will preferably be ones that can be influenced by superior performance rather than slow moving ratios that are subject to outside influences and are not in the control of the local municipality.
- Advise on the methods of data capture, submission to the central database and the calculations that will be performed on the data to verify it in relation to previous data.
- Solicit queries and problems that may arise in order to ensure that everyone is aligned and clear on what is required.

We assume that some 50 copies of Report TT 168/02 will be available to supplement the notes of the team. In the event that they are not, copies will be printed from the source documents but at a cost to the project.

A report will be prepared that will record the agreements that have been reached on the definition of the performance indicators that will be used for the project as well as the data that will be required to calculate the performance. The report will be circulated to all the participants.

After the conclusion of the second workshop, steps will be taken to appoint a service provider to develop the benchmarking system architecture and the software required to manage the database into which the data will be placed. The outputs of the workshop in the form of specific agreements on the following will serve as broad terms of reference for the service provider and will be used to inform the development of the system and software:

- The participating organisations profiles
- The agreed KPI's and the criteria/formulae on which the KPI input data is based
- Requirements for monthly, quarterly and annual data
- The database requirements
- The system architecture
- The reporting parameters and comparison charts required
- Automatic data verification methodology (using range/profiles)
- Methodologies for user input supported by centralised co-ordination.
- System security and access

It is envisaged that the system architecture for the benchmarking will be web based in order to provide for real time use of the system and to ensure ease of access and data input. This would also necessitate the setting of minimum hardware and software systems required by participants to ensure effective connectivity and to transmit and access data and engage fully in the project. Minimum requirements for hardware and software for the centralised co-ordination function would also be determined.

The specific output from this stage of the project would be in the form of a benchmarking system and supporting software that meets the requirements of the participants and is in a form that is ready to be deployed on suitable hardware for the web.

Based on previous experience of introducing the concept of benchmarking a follow up workshop will be required for the heads of departments in order to eliminate any of the problems that have arisen, or are likely to arise in the gathering and entering the data.

This workshop will therefore focus on an exchange of experience in gathering and inputting the data and the difficulties that have been encountered and more specifically the solutions that have been found to overcome the problems. This workshop will also expose the participants to the process of active benchmarking.

The workshop will discuss inter alia:

- The teams and staffing necessary to obtain the data.
- The ready availability of the data in relation to the normal business processes, systems and IT practices of the local municipality.

- Any changes to the performance indicator definitions that may be advisable where the data gathering becomes unduly difficult and onerous.
- How to select the benchmark partners and how to approach them.

The output from this stage of the project will be a comprehensive user guide on the benchmarking project for all participants that clearly and logically sets out all functions, requirements and related information.

An important component of the project is to build capacity in the local municipalities to enable them to collect the required data and transmit this to the service provider for the database as well to understand the underlying concepts of benchmarking and how it will enable them to measure performance and to change and improve. This will be undertaken by the different members of the team in accordance with training material prepared specifically for this project.

Members of the project team will visit the municipalities concerned in order to promote the concept of benchmarking and to coach the participants on the requirements of

- Measuring the factors from which the performance indicators will be calculated.
- Submitting information to the database on a regular basis.
- Checking performance against the selected indicators
- Comparing performance internally where different teams are performing the same tasks and effecting changes to improve performance
- Providing information to the data base for external comparisons
- Identifying best practice partners
- Arranging meetings to exchange information and identifying those factors that will lead to improved performance
- Effecting changes that will lead to improved performance,
- Measuring performance
- Rewarding innovation that leads to improved performance.

This training will initially be conducted with all the participants in order to ensure that there is capacity and capability established in each of the participating municipalities. The requirements for the training (nature and intensity) will vary from one participant to another depending on existing institutional capacity and the training programme will be flexible enough to accommodate this.

The outcome of this stage is that appropriate training is provided for selected staff from all participating municipalities. It is anticipated that the training will be intensive at this stage.

It is expected that Phase 1 will be completed within a period of from ten to twelve months, depending on a number of unknown factors, the most critical of which is how long it will take to agree on the performance indicators and then in building the necessary capacity with the local municipalities.

A quarterly newsletter will be initiated after a period of some six months from the inception of the project. The newsletter will encapsulate the experience that is being gained in a report form. It will also include articles gleaned from the international experience. These will be sourced via the Internet as well as from the personal contacts that Mr. Pybus has made in the World Bank, the Water Research Centre of Great Britain, the Water Utilities Partnership as well as the working group of the International Water Association on Benchmarking and members of the teams that produced the manuals of the American Water Works Association and the Water Environment Federation.

Phase 2

This is the operating phase of the project.

During this period the local municipalities will be providing data for comparison with others on the agreed performance indicators. The data will be used to calculate the performance indicator which will be stored in the database. The data will be transmitted electronically in an agreed format that will eliminate difficulties in entering the data and performing the required calculations.

The programme will provide for a number of basic checks for consistency and reality so that outlying data will be queried and if needed corrected.

Should a local municipality fail to provide the data within a certain period, a report will be issued so that the omission can be followed up and if necessary a visit made to the affected local municipality in order to provide assistance and corrective action. This duty will continue throughout the period of twenty-four months for the project to run.

After some six months there should be sufficient data on most KPI's to conduct comparisons, produce a set of reports and identify the performance profiles of participating organisations. This will enable those organisations with low performance profiles to contact others who have better profiles in order to compare methods of working to obtain the improved results. The members of the team will be visiting the participants on a regular basis each month and will identify those activities in which improvement, compared to other organisations can be expected. The affected organisation will then be helped to select a suitable benchmarking partner.

Coaching will be given in analysing the operations of the local municipality in order to identify the exact methods of working so that relevant questions can be asked of the prospective benchmarking partner. Assistance will be given in making specific contacts, framing the questions and in facilitating the visits or other means of contact.

Each such contact will be followed up to assess the outcomes of the communication and whether useful information was obtained. In the event that the contact did not yield any positive information, an examination will be made of the whole procedure of making contact and comparing the methods of working in order to try and identify the causes of the failure and seek out the remedies.

In the event that the enquirer feels the information is useful, assistance will be given to ensure that new methods of working are adopted and by when so that the changes in performance can be monitored to test the efficacy of the interventions.

It is intended that this phase should so far as possible be able to run without significant attention from the project team. However, they will be available throughout the period of two years to render such assistance as is needed apart from routine and regular visits to the municipalities. These will be tapered towards the end of the project.

All incidents and interventions will be recorded for subsequent referencing when preparing the final project report.

A workshop will be held after the first 18 months of the project in order to evaluate and review the project and make appropriate changes that will ensure the project fully meets the requirements of the participants. The system will be revised to accommodate appropriate changes that are agreed to at this workshop and the user manual will be updated.

This Phase will last for two years and terminate within two months of the due date of the project. At the end of this phase it is envisaged that the full value of this benchmarking project will have been realised and that it will be a going concern that will attract other participants and have established its merits so that it will remain sustainable into the future.

During the course of the project consideration will be given as to who should take charge of the software, such hardware as may have been purchased. There is also the aspect of whether the system can be made into a commercially viable on-going initiative.

The team will also make itself available should any of the participants wish to continue to furnish data and continue the benchmarking exercise. Such assistance will be external to any Water Research Commission initiative and subject to such terms and conditions as may be agreed with the participants. This offer is made in order not to lose the momentum gained in this project.

Phase 3

This is the concluding phase and will be used to prepare the final report that will record the progress of the project, the lessons learnt, the mistakes that were made as well as the successes that were achieved.

A final workshop will be held to obtain the views and opinions of the participants on the value of the project to their organisations. The workshop will not be so strictly structured as the previous ones in order to give the participants the maximum opportunity to express their views and not those of the project team. Their contributions will once again be recorded and included in the final Project Report.

Preparation of the final Project Report will commence during Phases 1 and 2 in order to record the information while it is still fresh in the minds and does not become distorted due to the passage of time.

The report will cover:

- An introduction\
- A description of the project covering the Terms of Reference and its objectives
- A description of the process that was followed.
- A summary of the successes of the project and the lessons that were learnt
- A summary of the failures of the project and the lessons that were learnt.
- Recommendations for any further benchmarking initiatives
- A conclusion

In addition the "Guidelines for Implementation of Benchmarking Practices in the provision of Water Services in South Africa" Publication TT 168.02 will be revised for reissue in the light of the experience gained and the latest international information.

This will mark the completion of the project.

APPENDIX 2 - SCHEDULE OF ACTS THAT IMPINGE ON LOCAL GOVERNMENT

1 Principle Legislation

- South African Constitution
- Transitional Measures: White Paper on Local Government
- Municipal Demarcation Act
- Municipal Structures Act
- Municipal Systems Act
- Municipal Finance Management Act
- Water Services Act
- National Water Act

2 Legislation that Impacts on the Skills Development Strategies

- National Qualifications Framework
- South African Qualifications Authority Act
- Skills Development Act
- Further Education and Training Act
- National Education Policy Act
- Employment Equity Act

3 Legislation that impacts on Local Government

- Development Facilitation Act
- Micro Economic Policy
- GEAR Policy
- Green Paper on e-Commerce
- Basic Conditions of Employment Act
- Labour Relations Act
- Occupational Health and Safety Act
- White Paper Traditional Leaders
- Public Finance Management Act

4 Pending Legislation

- Primary Health Care
- Housing
- Regional Electricity Distributors
- Draft Human Resource Development Policy
- Strategic Framework for Water Services.

APPENDIX 3 - LIST OF ATTENDEES AT VARIOUS WORKSHOPS

Municipality	First Workshop	Second Workshop	Third Workshop	Fourth Workshop	Fifth Workshop
Dates Held	24 June 03	7/8 August 03	18 November 03	20 February 04	15 September 04
City of Capetown	J De Bruyn	J De Bruyn R Page	J De Bruyn R Page	J De Bruyn R Page	A Meehan
Dipaleseng	Did not attend	Did not attend	Did not attend	D Kubheka I Moshoadiba	Did not attend
Emalahleni	J van Rooyen	H Cronje	H Cronje	Did not attend	Did not attend
Ethekwini Metro	F Stevens	F Stevens	Did not attend	Did not attend	F Stevens
Groblersdal	Did not attend	P Makoko R Palmer	Did not attend	Did not attend	Did not attend
Kungwini		G Seleka	G Seleka	Did not attend	Did not attend
Mogalakwena	Did not attend	Y Mathabatha S Mathunyane	Y Mathabatha	Y Mathabatha S Mathunyane	Did not attend
Mogale City	J Mazibuko	Dr. M van de Merwe	M Van der Schyff G Viljoen	M Van der Schyff G Viljoen	G Viljoen
Moretele	Did not attend	Did not attend	Did not attend	L Motsepe P Nyanlungu	Did not attend
Ngwathe	Did not attend	H Coetzer	Did not attend	H Coetzer T Roberts G Botha	Did not attend
Potchefstroom	Did not attend	Did not attend	J Kleynhans	Did not attend	J Kleynhans L Carson
Randfontein	M Mangyani	D Venter	D Venter	Did not attend	Did not attend
Rustenburg	P Mashile	P Mashile	Did not attend	S Mooi	T Isaacs
Tshwane Metro	Did not attend	F Sherrif L Lotter K Snyman P Jordaan C Posthumus	L Lotter	L Lotter R Rall P Jordaan K Snyman	Did not attend

Comments:

The attendance at the first workshop was disappointing as the Municipal Managers and the Portfolio Councillors had all been invited. The lesson that came out of this was that the most senior officials did not read their emails and were also at the beck and call of either the Provincial officials and of their own councillors. Many did try and send alternates but they were inadequately briefed by their superiors. One failed to read his email invitation and subsequently apologised, another was called to a meeting half an hour before he was due to leave and others, who apologised, had to attend a meeting called at the Provincial level.

The second workshop was held over two days. Heads of departments were invited to come and attendance was much improved with only two of the municipalities being unable to send representatives. Three of the municipalities had changed their representatives. Five on the municipalities came for the first time.

The third workshop, some three months later was poorly attended, although this was also an important workshop when the delegates were to be introduced to the web database and were to be taught how to enter the data. No less than six of the participating organisations were unable to be present. It was significant that Tshwane was unable to send more than one delegate and not the one that was finally selected to enter all the data.

The fourth workshop was intended to assist those participants that were experiencing difficulties in logging into the web site and entering data. Six municipalities were not represented, one of which had withdrawn from the project due to overload caused by lack of qualified staff. Two of the municipalities came for the first time.

The fifth and last of the workshops was very poorly attended. Only five of the participating organisations came of whom one had to deputise for one of the more regular attendees due to ill health. One delegate had been killed in a motor collision some four days before the workshop.

APPENDIX 4 - IMPLEMENTING BENCHMARKING PRACTICES IN THE PROVISION OF MUNICIPAL WATER SERVICES IN SOUTH AFRICA

FINAL SELECTION OF PERFORMANCE INDICATORS

No	Category	KPI Description	Classification	Sub-Classification	Calculation	Reporting (Annual, Monthly)	Units	Definition	Data Required
	Institutional Profile	Cost to customer for water services	8 kilolitres/month		Average tariff charged per kiloliter of water supplied	Annual	R/kl	Average tariff charged per kiloliter of water supplied at a level of consumption of 8 k/lper month. First block above the Basic Free Water level	<ul style="list-style-type: none"> Any fixed monthly charges that would be payable. Tariff for 2 kl
			35 kilolitres/month		Average tariff charged per kiloliter of water supplied	Annual	R/kl	Average tariff charged per kiloliter of water supplied at a level of consumption of 35 k/lper month	<ul style="list-style-type: none"> Any fixed monthly charges Tariff up to consumption of 29 kl
	Institutional Profile	Service Delivery and Service levels	Level 1	Full water borne water + sanitation	Dwelling units in each category divided by the total number of units x 100	Annual	%	Dwelling unit would be any flat, stand, household, property	Access rates data and accounts books
			Level 2	Yard connection On site san			%		
			Level 3	Stand pipe/fixd tank/ 200m +VIP			%		
			Un-serviced				%		
	Institutional profile	Human Resources (water and waster water	Number of training days per employee		Total no of person days spent on training divided by no of staff.	Annual	Day/staff member/ annum	Person Day is a period of 8 hours spent on training. Employees excludes external contractors but include salaried and hourly paid staff Training is defined as formal structured courses at all levels as defined in Skills Development Act	<ul style="list-style-type: none"> Personnel Files
	Institutional Profile	Total Employee complement			Total number of employees on the approved organogram of the organisation. (Fixed establishment).		#	Excludes all contracted staff	

No	Category	KPI Description	Classification	Sub-Classification	Calculation	Reporting (Annual, Monthly,)	Units	Definition	Data Required
	Institutional Profile	Water sold Total volume of potable water sold.			Average number of cubic metres sold on a monthly basis		10 ⁹ x m ³		Total Annual sales divided by 12.
	Institutional Profile	Waste Water Total volume of waste water treated.			Average number of cubic metres disposed of / treated on a monthly basis.		10 ⁹ x m ³		Total Annual flow divided by 12
	Institutional Profile	Total gross annual revenue			Total value of water sold		R		Sold is defined as the amounts billed over a period of 12 months from 1 July to 30 June.
	Institutional Profile	Total gross annual revenue			Total value of waste water treated/disposed of.		R		<ul style="list-style-type: none"> Total value of sanitary charges, including fixed rates, transportation charges and treatment costs.
1		Infrastructure reliability	Water Supply	Pipe Bursts	Number of pipe burst per month per 100 kilometers of network	Monthly		Any event which will lead to pipe repair action on mains	<ul style="list-style-type: none"> Check against all works orders.
				Failure to deliver services	Number of incidents on main lines per month where interruptions exceed 6 hours	Monthly		Planned and unplanned Incidents on main lines where interruptions exceed 6 hours	<ul style="list-style-type: none"> Check from completed works orders as to the extent of the disruption.
			Waste Water	Spillage from pumping facilities	No of spillage incidents per month divided by no of pumping facilities	Monthly		Spillage – any overflow as a result of mechanical or electrical failure at pumping facility	<ul style="list-style-type: none"> Check from alarm records Check from call centre records Check from works orders
				Spillage from sewers	No of spillages per month per 100 kilometers of wastewater network	Monthly		Spillage – failure of the sewer line to carry the full flow	<ul style="list-style-type: none"> Check from call centre records Check from works orders Note whether the incidents were manageable or not.
3		Maintenance	Wastewater	Planned	Total Cost (R) of planned maintenance on sewers divided by total network length per 100 km	Monthly	R/100km	Total cost is the monthly expenditure on all planned maintenance in terms of dedicated/direct labour, plant and materials costs.	<ul style="list-style-type: none"> Check completed works orders

No	Category	KPI Description	Classification	Sub-Classification	Calculation	Reporting (Annual, Monthly,)	Units	Definition	Data Required
				Unplanned	Cost (R) of unplanned maintenance divided by total maintenance cost x 100	Monthly	%	Emergency maintenance work not part of the normal maintenance programme	<ul style="list-style-type: none"> Check completed works orders Confirm what aspect of the incident could have been avoided through manageable action.
			Water supply	Planned	Total Cost (R) of planned maintenance on supply mains divided by total network length per 100 km	Monthly	R/100km	Total cost is the monthly expenditure on all planned maintenance in terms of dedicated/direct labour, plant and materials costs.	<ul style="list-style-type: none"> Check completed works orders
				Unplanned	Cost (R) of unplanned maintenance divided by total maintenance cost x 100	Monthly	%	Unplanned maintenance is emergency maintenance work not part of the normal maintenance programme	<ul style="list-style-type: none"> Check completed works orders Confirm what aspect of the incident could have been avoided through manageable action.
4		Unaccounted for water			Total volume of water billed divided by total volume supplied x 100	Monthly year to date	% (vol)	Volume of water billed is the actual amount of water billed. Volume supplied is defined as the volume of water that is available after losses in treatment.	<ul style="list-style-type: none"> Obtain data from Town Treasurer or other finance department. Ensure that the bulk meters are correctly calibrated.
5	Financial Profile	Revenue collection			Amount received divided by amount billed x 100	Monthly/ Accumulative	%	Revenue includes income from sale of water and sundry income but excludes interest. Amount billed is the total Rand value of all accounts issued.	<ul style="list-style-type: none"> Obtain data from Town Treasurer or other finance department.
6		Conformity to Capital expenditure (Capex) Budget			Actual Capex (R) spent per month divided by planned Capex per month x 100	Accumulative/ Monthly	%	Measures the capacity of the municipality to manage expenditure in terms of the approved capital expenditure plan for water services.	<ul style="list-style-type: none"> Sum the monthly payments certified (A) Sum the monthly payments predicted (B) Divide A by B and express as a percentage. <p>Note: It is important to be consistent with the inclusion of VAT and the deduction of retention.</p>
7		Net surplus			Net income divided by operating revenue x 100	Annual	%	Measures the level of cost recovery and profitability of expenditure water and waste water services	Net Income is

No	Category	KPI Description	Classification	Sub-Classification	Calculation	Reporting (Annual, Monthly,)	Units	Definition	Data Required
8	Financial	Unit cost of water /wastewater	Water		Total cost of potable water divided by total volume of water supplied in m3	Annual	c/m3	Total cost of potable water is all operation and maintenance costs but excludes the purchase cost of the water.	
			Waste water		Total cost of waste water treated divided by total volume of waste water treated in m3		c/m3	Total costs for waste water is all operation and maintenance costs covering treatment and collection	
9	Customer satisfaction	Average response time to customer complaints	Water		No of response times > than 24 hours divided by total no. of complaints	Monthly	%	Response time- total time from call to solution	Establish records of when complaints or notification of leaks are made
			Waste Water						Establish records of calls of complaint or of spillages and the like.
10		Number of complaints	Water	Technical	No of complaints per 1000 dwelling units served	Monthly	Number per 1000	Customers includes all categories of service	Record all complaints and classify
				Billing					Record all complaints and classify
			Waste Water	Technical					Record all complaints and classify
				Billing					Record all complaints and classify
11		Person-days lost per month	Water		No of person days lost divided by total number of available person days	Monthly	%	Total number of days lost is everything excluding annual leave. Available person days is no of working days less annual leave.	Note: The purpose of this indicator is to measure all the time lost that can be managed and controlled.
			Waste Water				%		
12		Disabling Injury Frequency Rate (DIFR)			Number of disabling injuries x 200 000 divided by total actual man hours worked over a rolling 12 month period.	Monthly		The disabling incident frequency rate is defined as the total number of disabling incidents times 200 000 divided by the number of actual man hours worked over a twelve month period	

No	Category	KPI Description	Classification	Sub-Classification	Calculation	Reporting (Annual, Monthly,)	Units	Definition	Data Required
13	Environmental	Compliance with discharge permit standards			Total no of core analyses failing to meet specified criteria / total no of analysis x 100	Monthly	%	The core analysis will be COD, total ammonia, o-phosphates, suspended solids and fecal coli. The quality of water discharges at the point of disposal should be measured and analyzed to ensure that the license standards are met. The failure of one core parameter constitutes a failure of the sample.	Analytical results
14		Percentage of potable water analysis failing to meet SABS 241			Total number of analyses failing to meet specified criteria / total number of analysis x 100		%	Potable water analysis failing to meet SABS 241 Class, standards measures the percentage compliance of potable water to the specification. A single sample comprises multiple tests/analyses.	
					Class 1				
					Class 2				
					Class 3				
15		Monitoring of Trade Effluent			Number of samples of trade effluent completed in a month per registered discharge	Number per 1000	#	Sample is a specimen taken to undergo a minimum of 8 analyses	