



**water & forestry**

Department:  
Water Affairs & Forestry  
REPUBLIC OF SOUTH AFRICA

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# **National Water Services Benchmarking Initiative**

## ***Report on 2006/2007 Performance***

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**Final Report**

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## **Preface**

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### **A national initiative**

The National Benchmarking Initiative is a joint initiative of the South African Local Government Association (SALGA), the Department of Water Affairs and Forestry (DWAF) and the Water Research Council (WRC) that was established in 2005. The goal is to promote improved performance of water services by all water services providers in South Africa. The initiative undertakes annual benchmarking of key performance indicators for the provision of water services in participating municipalities. This process involves site visits and quality control (of data) to ensure consistency and reliability. Outcomes are presented at an annual benchmarking conference to highlight achievements and best practices and to direct learning efforts to areas where improvements can be achieved. DWAF has provided initial seed funding for the initiative. Ethekewini Municipality is the implementing agent. PDG in association with Africon and EarthTech (Canada) are the service providers.

### **The role of benchmarking**

Benchmarking plays an important role in helping the sector to assess to what extent water services providers are meeting their challenges and, in particular, to what extent sector performance is improving over time. More significantly, benchmarking assists with the identification of best practices from which others can learn as well as areas most needing improvement.

### **Ensuring success in benchmarking**

The National Benchmarking Initiative is a voluntary process through which municipalities provide performance data against key performance indicators (KPI) as set in the Strategic Framework for Water Services. To date the National Benchmarking Initiative has attracted 40% of all water services authorities covering 75% of all households in the country thus capturing municipalities with large populations. To ensure the success rate that has been achieved, the initiative adopted an incremental approach over a period of 3 years. Each year new municipalities participate in addition to the ones that participated the previous years.

All categories of municipalities have now established water services peer learning networks and this has increased participation in the initiative and will contribute to building a sustainable benchmarking programme in the long term. Once more the strategy of engaging with the municipal manager, water services manager and the person responsible for data required for benchmarking has ensured ownership of the process by senior water managers. There has also been a concomitant improvement in the quality data submitted despite the increase in the data elements requested in this round of benchmarking. The level of confidence on the data has also increased.

One of the goals of benchmarking is moving from knowledge to changes in practice. This will be seen in municipalities that are already participating in peer networks. The cities are already engaging in their own benchmarking exercise and there are opportunities for local and district municipalities to do the same within their networks where water managers interact on a regular basis and share common concerns.

### **For future rounds of the benchmarking initiative**

The sector is still experiencing high staff turnover in municipalities and an important success factor for benchmarking is continuity between years. It is therefore important that there are proper handovers when staff changes affecting water services happen.

While commitment is not yet an issue for the South African Water Services benchmarking initiative, it is important to note the fact that it is wholly-funded by government. The sustainability of the benchmarking system will only be guaranteed if the initiative is funded by the water services authorities themselves in due course.

The last year has seen the development of eNBI, a web based platform for all our benchmarking activities, and particularly the submission of data. The website is soon to be piloted so that broader access can be introduced in the next round.

## Acronyms

|                   |   |
|-------------------|---|
| AUW               | Unaccounted-for water                         |
| B1 Municipalities | Secondary cities                              |
| B2 Municipalities | Towns with a large urban core                 |
| B3 Municipalities | Towns with a small urban core                 |
| DM                | District Municipality                         |
| DPLG              | Department of Provincial and Local Government |
| DWAF              | Department of Water Affairs and Forestry      |
| DWQF              | Drinking Water Quality Framework              |
| ILI               | Influenza-like illness                        |
| KPI               | Key Performance Indicator                     |
| LM                | Local Municipality                            |
| Metro             | Metropolitan Municipality                     |
| MDB               | Municipal Demarcation Board                   |
| MFMA              | Municipal Finance Management Act              |
| MIG               | Municipal Infrastructure Grant                |
| PFMA              | Public Finance Management Act                 |
| SAAWU             | South African Association of Water Utilities  |
| SABS              | South African Bureau of Standards             |
| SALGA             | South African Local Government Association    |
| SANS              | South African National Standards              |
| WRC               | Water Research Commission                     |
| WSA               | Water Services Authority                      |
| WSP               | Water Services Provider                       |
| WSDP              | Water Services Development Plan               |

# Executive Summary

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## ***Purpose***

The purpose of this benchmarking initiative is to reveal municipal performance in the area of water supply and sanitation services. A better understanding of performance, both absolute performance and performance relative to ones peers, can assist by individual water services authorities to identify areas for improvement, and can spur water services managers to make improvements. Benchmarking information for a large number of municipalities can also assist national government to assess overall performance of the sector, trends in this performance over time, and where support and regulatory initiatives should be directed.

## ***Context***

This is the third round of the national benchmarking initiative managed by DWAF, SALGA and WRC, implemented by EtheKwini and undertaken by PDG and Africon, in association with EarthTech, as service providers.

A total of 67 municipalities participated in the 2006/7 round, compared to 47 and 25 in the two previous rounds. This represents a 37% increase in participation compared to the previous year. All 6 metropolitan water services authorities, 15 out of the 21 District water services authorities and 46 out of 126 Local water services authorities participated. The participating municipalities accounted for more than 75% of the total households in South Africa, which is good overall coverage. However, it can be anticipated that the municipalities not participating in the initiative are likely to perform, on average, less well than those who have participated.<sup>1</sup> Consequently, overall municipal performance is likely to be somewhat worse than the performance presented here for the participating group.

The sample was segregated into metropolitan, district and three categories of local municipalities: B1s (secondary cities), B2s (large towns), B3s (small towns) and performance compared between these "peer groups" as conditions are much more comparable within these grouping than between groupings. For example, the scale of the operation (as measure by either the number of water and sewer connections, or by revenue) is very different between these groupings. The urban and rural split also varies both between groupings and, in some cases, within groupings. For example, in the case of Districts, in most cases the rural households exceed 80% of the total number of households. The opposite is the base for B1 (secondary city) local municipalities. Staffing ranges from a few thousand in some metropolitan water services providers to a handful in some of the smaller local municipalities. Revenues range from a few billion rand in the metropolitan water services providers to just a few million in the small local municipalities.

Although the confidence in the data has improved between rounds, obtaining reliable data for all municipalities is still a challenge. Overall, the data returned were still more frequently estimates rather than reliable or audited data.

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<sup>1</sup> Participation in itself can be viewed as an indicator of capacity, and hence it is likely that non-participating municipalities, on average, have less capacity, than those who have participated.

## ***Performance outcomes – an overview***

### **Access to water**

Municipalities were asked to report on the backlog for water and sanitation services, and the rate at which the backlog was being reduced.

Access to water is still a challenge for many district WSAs with quite a few districts facing backlogs in excess of 40 000 households. More importantly, progress in eradication the back appears to be uneven, and not all are making the progress needed to eradicate the backlog by the end of 2008.

Access to water is a challenge in some of the metropolitan WSAs due mainly to the dynamic growth and changes to informal settlements. While some have already met the targets, and others claim that they will meet the target, this will not be the case for all of the metro WSAs. Some of the backlogs were in excess of 30 000 as at June 2007.

The challenges are much smaller for the local WSAs, especially those that are largely urban in character. There are some exceptions to this.

### **Access to sanitation**

Sanitation is a much more significant challenge, especially for the metropolitan and district WSAs. In three metropolitan WSAs the backlog (mainly in informal settlements) is in excess of 100 000 households. The sanitation backlogs in the district WSAs are large both in relative (as a proportion of households) and absolute terms. In many cases, the backlog exceeds 60 000 households and in some cases exceeds 150 000 households. While the challenges in the local WSAs are small, they are not insignificant.

It is hard to envisage the sanitation backlog being eradicated within the timeframes set by national government. The sanitation backlog for informal settlements poses a particularly complex challenge which is intimately linked to the housing backlog. New methods of delivery adequate sanitation within this complex environment, and without being entirely dependent on the delivery of housing need to be developed through concerted efforts and this should be considered to be a national priority.

The backlog in rural sanitation is also very significant. Rapid progress here is very difficult. There is a serious concern that a technocratic solution (rapid delivery of VIPs, for example) will not create a sustainable solution and more attention must be paid to the appropriate selection of sanitation systems.

### **Drinking water**

Municipalities were asked to report on the compliance of their monitoring systems with national standards and on the quality of drinking water supplied (turbidity and an indicator of treatment efficacy and E-coli.). It is important to note that a much more comprehensive drinking water quality monitoring and reporting system is operational. The purpose is not to duplicate or replicate this system. Municipalities should be in a position to extract the summary data requested from their more comprehensive systems.

The outcomes obtained are somewhat concerning. Although 100% of metropolitan WSAs met the monitoring requirements, only 69% of the responding district WSAs and 50% of the local WSAs did. E-coli sample failure rates for Districts in particular (but not exclusively) were also somewhat alarming if the data presented is accurate and representative.

The outcomes support the priority given by DWAF to ensuring proper monitoring of drinking water supplies and to intervening on a risk-prioritised basis.

### **Financial performance**

Municipalities were asked to report on their tariffs, degree of ring-fencing, cash collection, self-reliance (the inverse of grant dependency), and revenues per connection.

Tariffs vary quite widely between municipalities. There is generally a large difference in the tariff between small consumption levels (10 kl per month) and higher consumption levels (30 kl per month) indicating a good awareness of the importance of pro-poor tariffs. More detailed tariff data is available through a more comprehensive tariff survey undertaken by the department annually.

Very few water services are financially ring-fenced. Consequently water services authorities find it difficult to report on the financial performance of the water services function.

Cash collection efficiencies (cash collected divided by billings) need significant improvement in many water services authorities, particularly in the district WSAs, some secondary cities and many small towns. Low cash collection efficiencies represent lost revenues. This makes it exceedingly difficult for the service to be financially sustainable – either the lost revenues must be made up through greater subsidies (diverting much needed resources from elsewhere) or expenditure must be cut – neither is a palatable option. *Poor cash collection is probably the single most concerning performance indicator arising from the benchmarking initiative.*

Most districts are heavily dependent on grant income. Only 3 of the 12 reporting on this indicator had billing income exceed 50% of total income. In contrast to this, local WSAs are much less dependent on grants, with most WSAs receiving less than 20% of their income from grants.

One indicator of financial viability is the revenue received per connection per month. In metropolitan WSAs, this ranges from R200 to R550 per month per consumer. In contrast to this, the median revenue per connection per month is about R150 or less for districts and large and small towns. This means that many WSAs must manage with a very low resource base.

### **Asset management performance**

Municipalities were asked to report on the status of their asset registers, the status of their asset management plans, unaccounted-for water and the extent of metering.

Only four WSAs reported having approved asset registers, 12 were developed but not approved and 28 were still in the process of being compiled.

Un-accounted-for water was less than 20% in two metropolitan WSAs and close to or over 30% in the others. Very high (40% and over) unaccounted-for water was reported in the majority of district WSAs. Performance of the local WSAs was in-between.

### **Wastewater performance**

Municipalities were asked to report on the compliance of their wastewater monitoring systems with national standards and on compliance with effluent quality standards.

Although 100% of metropolitan WSAs met the monitoring requirements, only a minority of district and local WSAs reported meeting the full monitoring requirements.

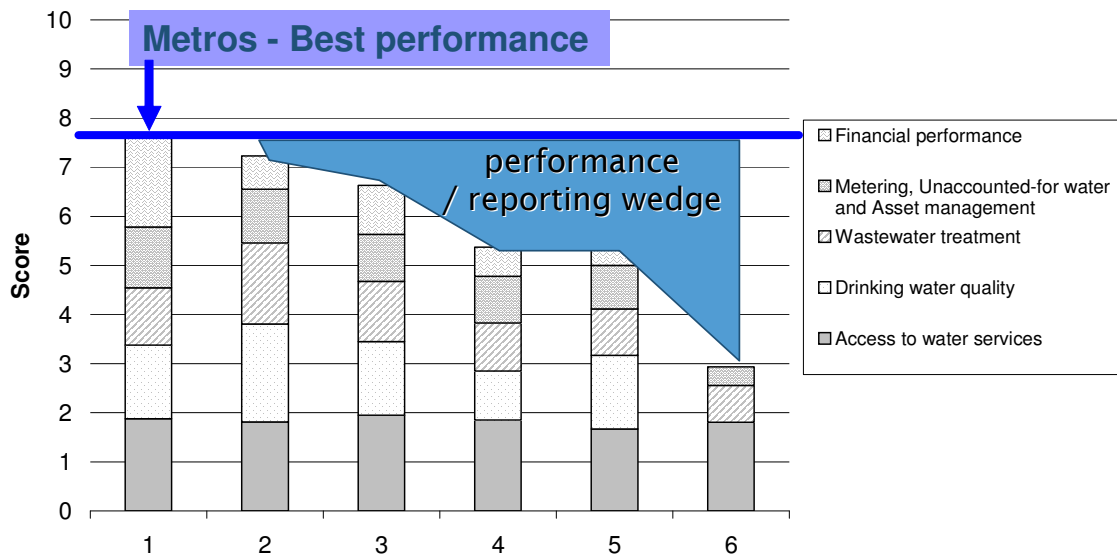
Very few WSAs reported meeting the effluent quality requirements with quite significant shortfalls in compliance in many cases.

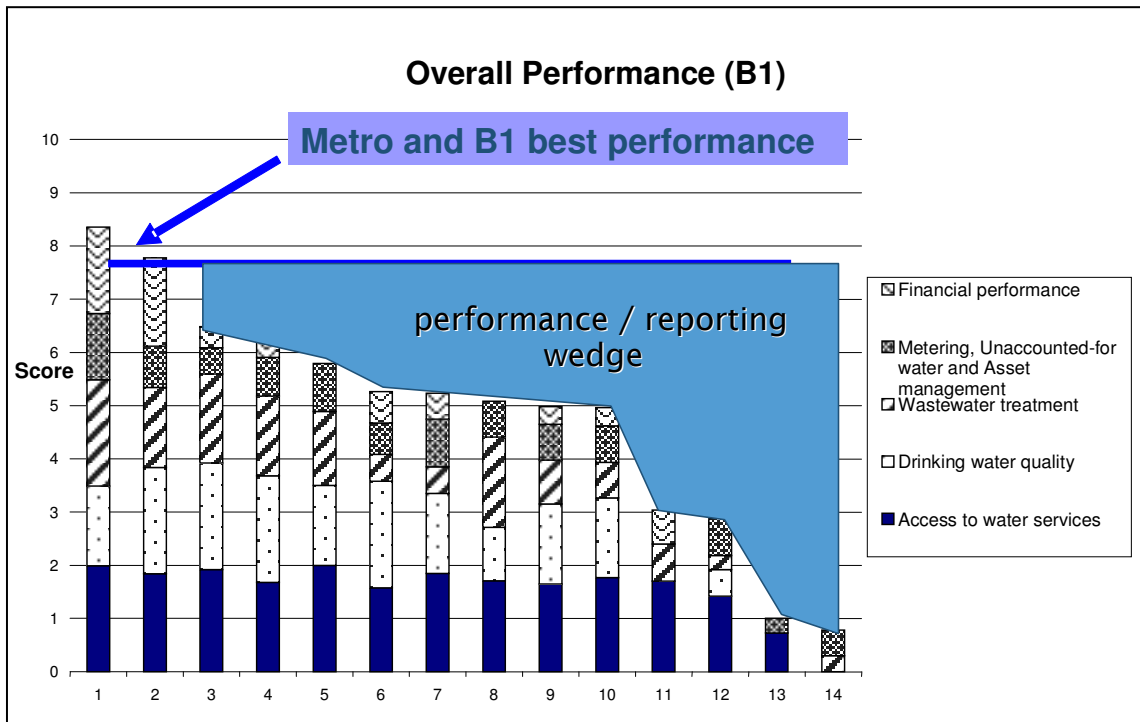
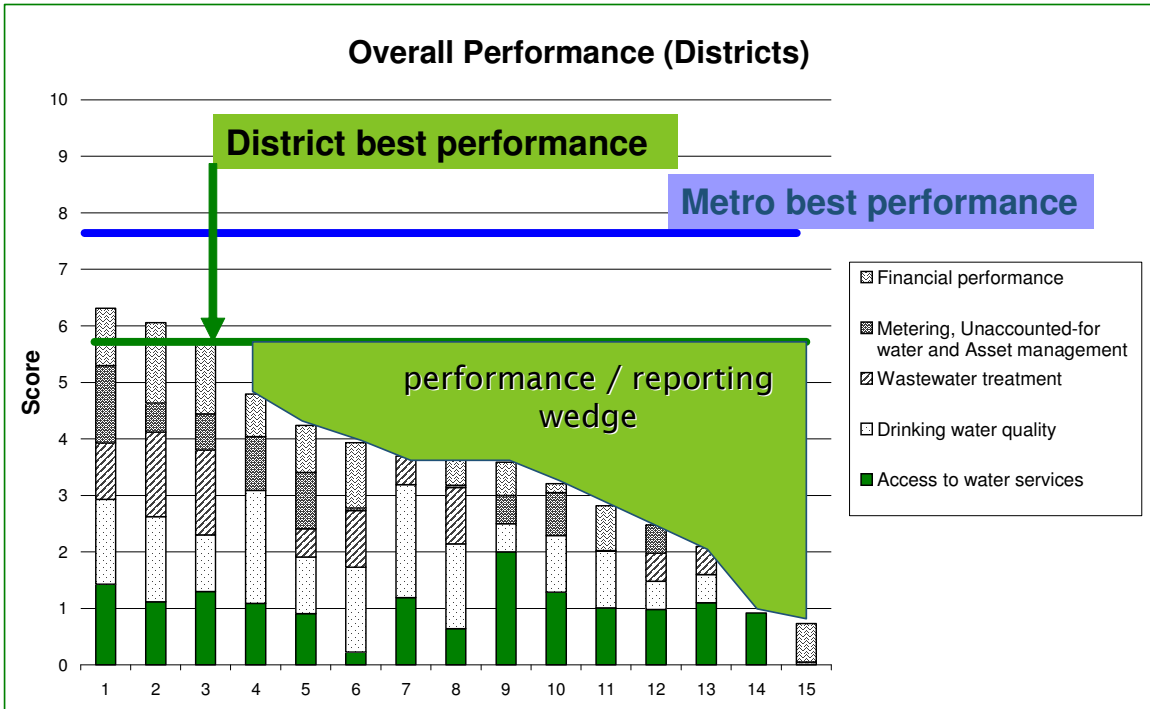
**Overall performance**

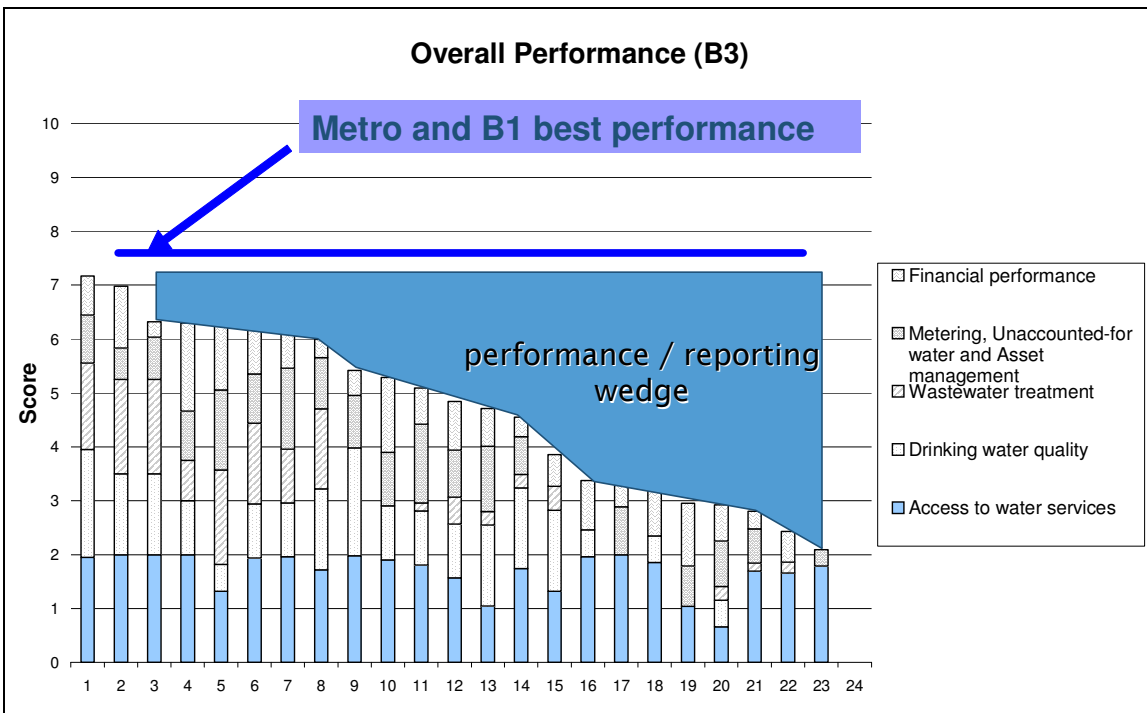
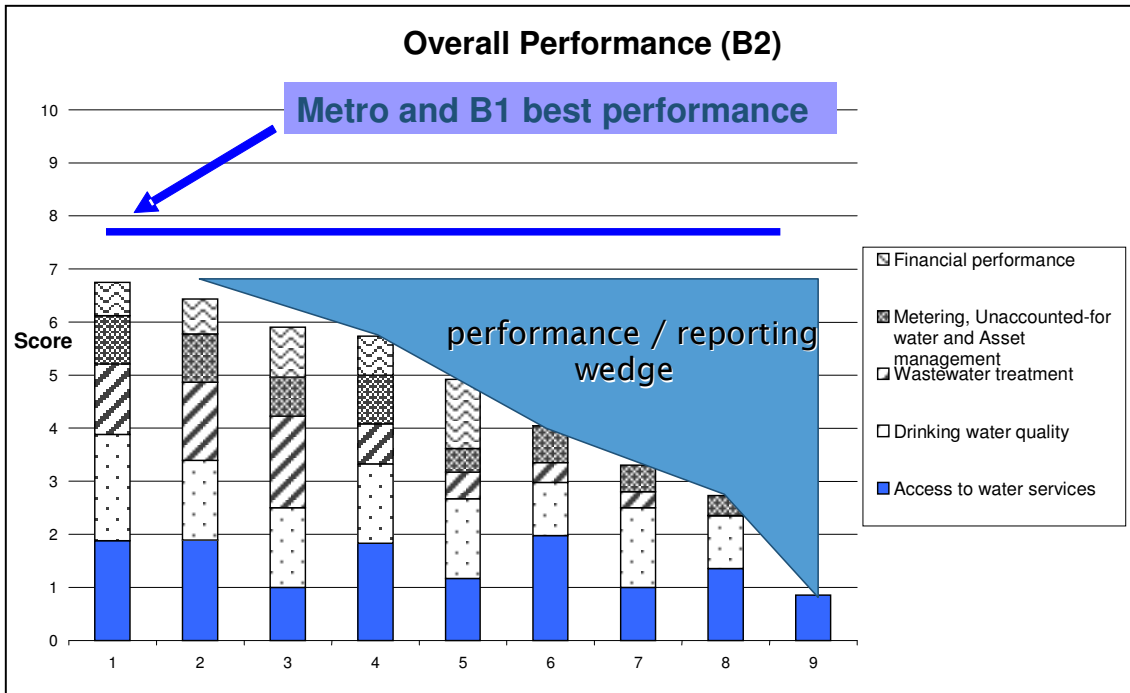
Overall performance was calculated for each participating WSAs by looking at performance in five broad areas: access, drinking water treatment, wastewater treatment, asset management and financial performance. (Details of the methodology are given in the main report. It is important to note, however, that overall performance is as much a function of the comprehensiveness of reporting as it is of actual performance – failure to report on an indicator automatically reduces the possible total score.)

The overall “performance” by main category is given below. The shaded area represents the “performance/reporting wedge”, that is, the gap in performance which could be closed if all the WSAs in the category report and perform at the same level as the best in that category.

**Overall Performance (Metros)**







In each category there are 2 or 3 relatively well performing WSAs and a few poor reporting/performance WSAs, with a full range in reporting/performance in-between. The sector goal must be to reduce the size of the "performance/report wedge".

## Summary of areas of concern – at a glance

|                     | Metros | B1s | B2s | B3s | District |
|---------------------|--------|-----|-----|-----|----------|
| <b>Finance</b>      | x      | x   | x   | x   | x        |
| <b>Assets</b>       | x      | x   | x   | x   | x        |
| <b>WWT</b>          | x      | x   | x   | x   | x        |
| <b>DWQ</b>          | ✓      | ✓   | ✓   | ✓/x | x        |
| <b>Access (w/s)</b> | ✓/x    | ✓/x | ✓   | ✓   | x/x      |

Performance with respect to access to services is relatively okay, with the exception of sanitation access in metros and B1s and water and sanitation access in districts.

Drinking water quality seems to be relatively okay in metros and most B1s and B2s with challenges in some B3s and in many districts.

All WSAs face challenges in wastewater treatment, asset management and financial areas.

### **Conclusions**

Participation in the benchmarking initiative has improved each year and this is encouraging. The quality of data is also improving, but at a slower rate than participation. The context and challenges vary between WSAs and it is appropriate to benchmark the WSAs within suitable “peer groups”.

In terms of performance outcomes:

- Access to water is still a challenge, especially in districts.
- Access to sanitation is a significant challenge, especially in the metro areas (informal settlements) and district WSAs (rural areas).
- Drinking water quality is a concern, especially for the districts and small towns.
- Wastewater treatment quality is a widespread concern.
- Knowledge and understanding of finances, and financial performance is a widespread concern.
- The status of asset management is a widespread concern.

We are still in the stage of data refinement (within the overall benchmarking project cycle), and so performance data is still coarse. However, the quality of the data is improving which is encouraging.

It is too early to conclude meaningfully on performance trends within the sector. However, there are examples of relatively well performing WSAs in each “peer group” representing “best practice” and it would be important for other WSAs in their group to learn how they can improve to emulate these best performers. The benefits of the benchmarking initiative will undoubtedly grow over time provided there is continuity in the initiative.

There are still important gaps in our knowledge of performance, particularly in two areas:

- The accountability of the service provider to consumers
- the role of human agency (in terms of leadership, management capability and the application of the necessary skills)

Thought will be given to how indicators can be developed to monitor performance in these two areas. There is also room to improve on the indicators in some cases and detailed recommendations are made in the main report.

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# **1 Introduction**

---

This report is a culmination of the 2007 round of benchmarking water service authorities over the 2006/7 financial year. It has been extensively discussed at a Benchmarking Conference held from 26<sup>th</sup> -28<sup>th</sup> February 2008. Discussions at this conference have enriched the analysis and added to the conclusions and recommendations from this round.

## **1.1 Benchmarking in context**

The Strategic Framework for Water Services (2003) set out the vision for the water services sector. It is this vision – the goal of effective, efficient and sustainable provision of water services – that benchmarking seeks to promote. Benchmarking also supports a key element of the National Water Services Regulation Strategy, namely to understand sector performance.

## **1.2 The choice of indicators**

The Water Services Act (1997) sets out a comprehensive set of measures to be monitored in terms of water services authorities' water services functions. These are amplified in the relevant technical regulations published under that Act. In addition to these, both National Treasury and DPLG have reporting requirements related to the performance of water services. In total these constitute a somewhat overwhelming set of reporting requirements and there is limited capacity in water services institutions to measure and report on these (and in national government to meaningfully monitor all of them).

For this reason, the Strategic Framework elevated a limited set of key performance indicators for priority attention. Other elements of performance may be monitored, but priority and strategic attention is given by the regulator to monitor nine key performance indicators and the benchmarking initiative collects data against seven of these (excluding access to free basic services since this data is collected and reported on by DWAF on a regular basis):

1. Access to basic water supply
2. Access to basic sanitation supply
3. Quality of services: Potable water quality
4. Quality of services: Continuity of supply
5. Access to free basic services (water)
6. Access to free basic services (sanitation)
7. Financial performance: Affordability and debtor management
8. Asset management: Metering coverage and unaccounted-for water
9. Protection of the environment: Effluent discharge quality

In addition to these regulatory indicators, a section on Institutional Issues including reporting is included.

### **1.3 An annual report on sector performance**

An annual report on sector performance will be published by DWAF. This report, focused on the benchmarking process and results, is a contribution to this more comprehensive sector performance report.

### **1.4 Caution when interpreting the data**

At this point in the benchmarking project cycle, it is still to be expected that much of the data provided are estimates. Consequently care should be taken when looking at the data for each specific municipality, as this data could, on its own, be misleading. The preferred method of interpreting this data, at present, is to view the overall patterns and trends in each data set. This is a more reliable way of interpreting the current data set. Over time, the data will improve and it will be possible to interrogate each municipality's performance in detail. It can be seen that the level of confidence provided by some of the municipalities has improved from 2006 and this is expected to improve in the next rounds of benchmarking.

### **1.5 Categorization of municipalities**

For the 2007 round of benchmarking, it was decided that the local municipalities should be further categorized to enable better comparison as they differ greatly in size and capacity. The categories are already in use for other purposes in the local government policy arena. These categories enforce the distinction between secondary cities; the larger towns with a large urban core; and the small towns with a small urban core. The end result is five categories of municipalities:

- Cities/metros
- District municipalities
- Secondary cities (B1 municipalities)
- Large towns (B2 municipalities)
- Small towns & Rural Areas (B3 municipalities)

Because there are very few B4 (mostly rural) municipalities that are WSAs, these have been included in the category B3 for the purpose of water sector benchmarking.

### **1.6 Structure of the report**

The remainder of the report details the benchmarking results and analysis against the indicators. Each section is largely organized according to the following structure based on availability of reportable data:

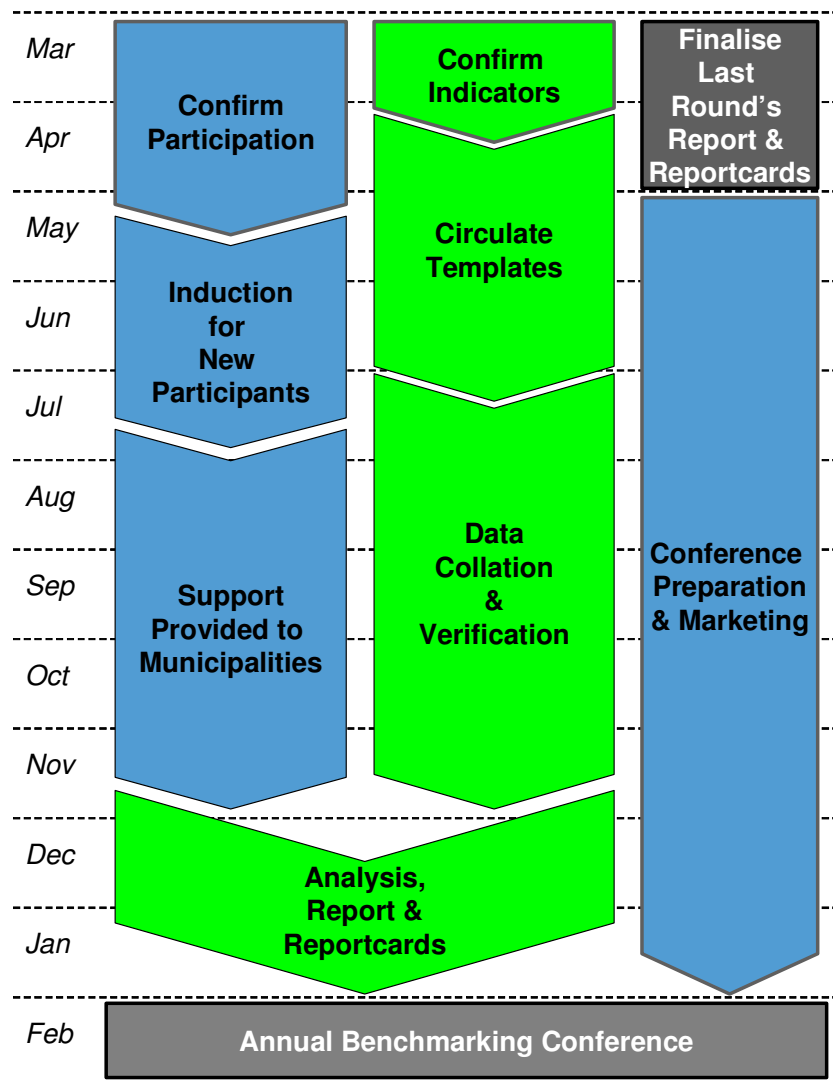
- The definition of the indicator
- The significance or importance of the indicator
- The extent of reporting against the indicator and the reliability of data
- Performance analysis of the municipalities by category and historical trends
- Implications or Recommendations for the future

Please note that all graphs are presented from best performing and then in order of decreasing performance.

## 2 The Benchmarking Process

### 2.1 The NBI Benchmarking Process

The annual benchmarking cycle is reflected in the diagram below.



**Figure 1: The Annual Benchmarking Cycle**

It is intended that the National Benchmarking Initiative be managed in terms of this annual cycle. The cycle is based on the municipal financial year ending on 30 June and allows for a period of four months after the financial year-end for water services authorities to complete their financial statements and to collate and calculate their performance data (with support from the service provider), and for this to be collected by the service provider.

Each of the steps are described, as part of the three major processes, below:

#### **Core Process**

1. **Confirmation of indicators:** The intention is to keep the indicators as stable as possible to limit them to an essential core set. (March and April)

2. **Circulation of templates:** An induction pack (for new participants), and the data templates (for both existing and new participant) are circulated. (April to June)
3. **Data collation and verification:** After the end of the Financial Year (June), municipalities collate and verify all of their performance data (with support from the service provider). (July to October)
4. **Analysis, Report and Report Cards.** Analysis takes place in the period December and January. A draft report is produced as an input into the conference. Draft report cards are produced to give each participating municipality individualized feedback. This is also an opportunity for them to check their own data.

### ***Support process***

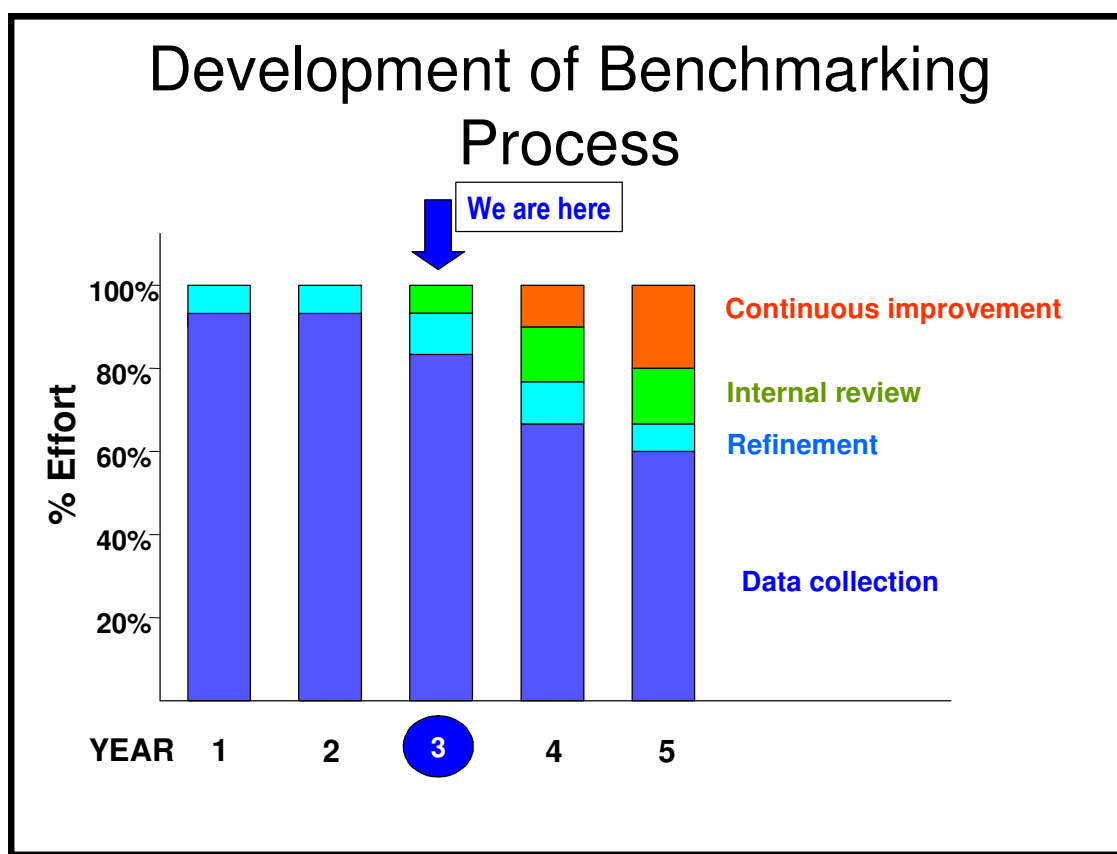
5. **New participant engagement:** SALGA invites new participants. (April to June)
6. **Induction:** An induction session is held for new participants, either provincially or within their respective learning networks
7. **Ongoing support to municipalities.** The service provider will aim to ensure ongoing contact with participating municipalities (as well as prospective participants) to support municipalities in their tasks of measuring and recording the performance related to the chosen benchmarking indicators.

### ***Knowledge-Sharing Process***

8. **Conference preparation and planning.** Intensive activities related to the conference take place in the two months running up to the conference. However planning is an ongoing activity as many arrangements need to be made well in advance and decisions pertaining to these take time.
9. **Conference.** It is the intention to hold the conference in mid-February. The conference is 2 or 3 days in length depending on the programme agreed by the steering committee comprising DWAF, SALGA and WRC.
10. **Finalise annual benchmarking report and report cards.** The report is produced after the conference, taking into account the feedback from the conference. The aim is to have a final draft available at the end of March and for this to be circulated to municipalities as soon after this as practical. Finalised municipal reportcards are produced for each participating municipality.

## **2.2 The Development of our process**

We are only in year three of the national benchmarking initiative. It is important to appreciate that initially, a lot of effort must be put into the definition of indicators, and the collation and verification of data. This year, we are likely to see more opportunity to put effort into the internal review of benchmarking findings, as our indicators and data become more settled. In time, more attention can be placed on refinement, internal review of data (interpretation of what the data means for performance and management) and continuous improvement initiatives.



**Figure 2: Benchmarking programmes follow a natural rhythm (source: Canadian initiative)**

Within this context, good progress has been made in the benchmarking initiative to date, as will be demonstrated in the next section. It has been a considerable achievement to get the participation of so many municipalities in such a short period of time. In Canada, for example, the number of participating municipalities is 35, representing about 60% of Canada's population. Their benchmarking initiative has been going for a number of years.

## 3 Progress to Date

### 3.1 The third round

The National Benchmarking Initiative was launched during 2005, and this document represents the report of the third round which covers the municipal financial year 2006/2007. The results of the first two years (2004/05 and 2005/06) were reported in the 2005 and 2006 Benchmarking Reports.

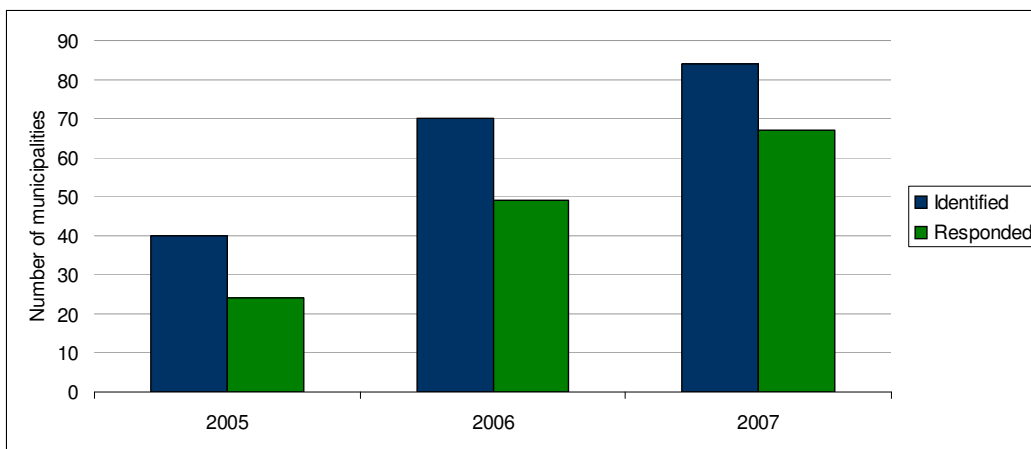
Preparations for the benchmarking process for the present year started early in 2007 with the basic decisions and arrangements being addressed, the key performance indicators and definitions being revisited and the data sheets revised. The preparation phase of the project started in July 2007 with the following activities:

- the identification of participants,
- the conceptualisation of the data collection process, and
- Data collection, analysis and report writing.

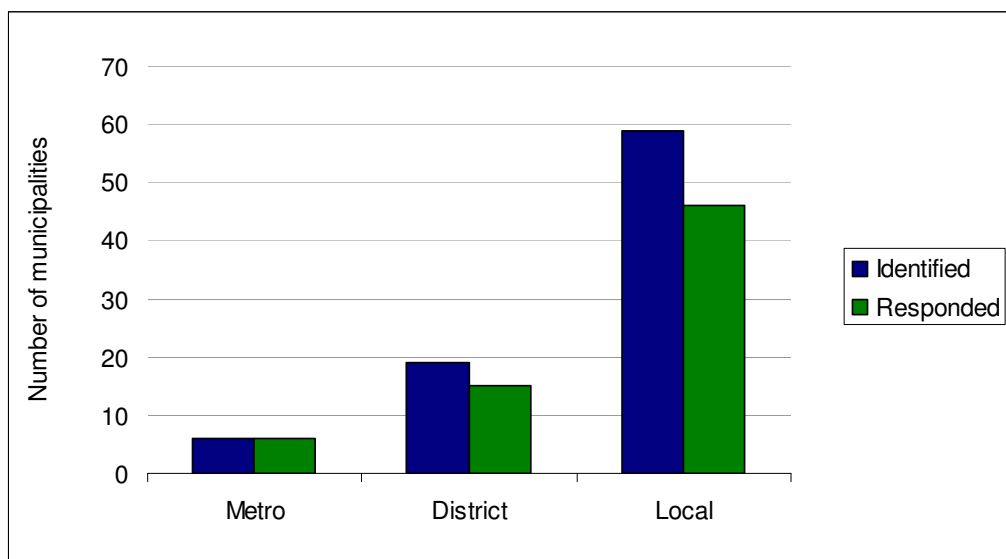
September 2007 saw the training of data collectors. The data collection process started in October 2007, and ended after more than 8 weeks. The capturing, consolidation and verification of data continued until the end of 2007, and analysis and report writing was done during December 2007 and January 2008.

### 3.2 Number of participants

The number of municipalities that volunteered to be part of the 2004/05, 2005/06 and 2006/07 benchmarking process as well as the number of municipalities that actively participated, is shown in the figure below. A point that is worth noting is that our experience has shown that while the municipal manager agrees in principle that the municipality will be participating in the benchmarking study this is not realised in data provision and responses. During the third (2006/07) round 67 municipalities participated, compared to 49 during 2005/06 and 25 municipalities during 2004/05. In the figure below a steady increase in participating municipalities is observed.

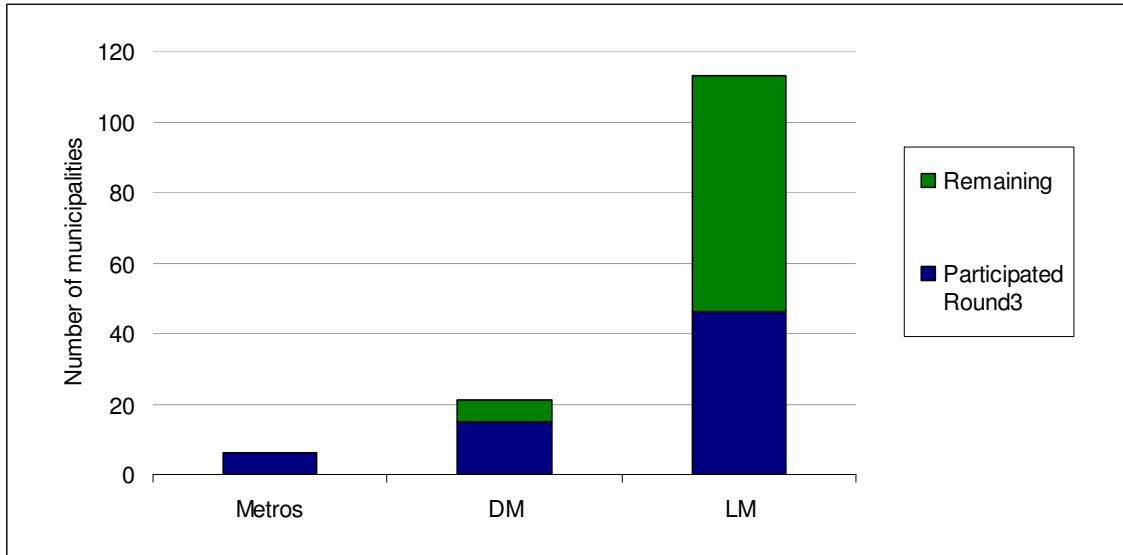


**Figure 3: Municipalities identified and responding annually**



**Figure 4: Participation by category for 2007**

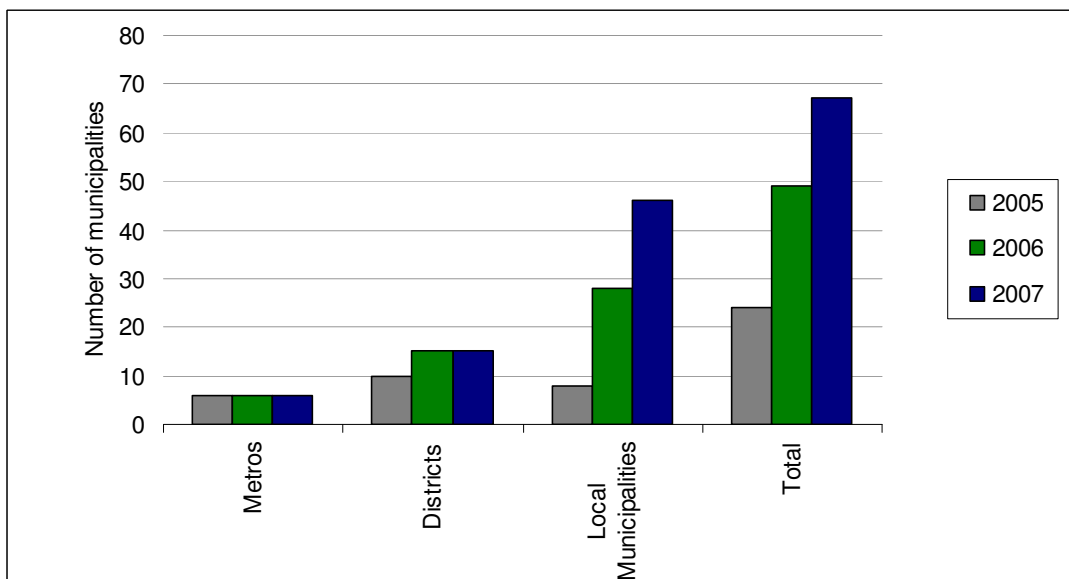
The number of municipalities that participated during the 2006/07 year for the different municipal categories (Metros, DM's and LM's) is provided above. The percentage participation for the Metros was 100% (unchanged), for Districts it was 79% (up from 75% in 2005/06) and for the LM's 78% (up from 64% during 2005/06). This indicates a positive trend.



**Figure 5: Participating WSA's and the remainder**

In the figure above the number and proportion of municipalities that have not participated during this round are indicated. A total of 6 district municipalities and 80 local municipalities were not in this round. They represent only 25 % of the total number of households in South Africa.

The graph below of participation per municipal category over the three years of benchmarking illustrates the success achieved to date and considering the voluntary nature of the program, it clearly shows that many WSA's are convinced of the benefit to be gained from participating in the process.



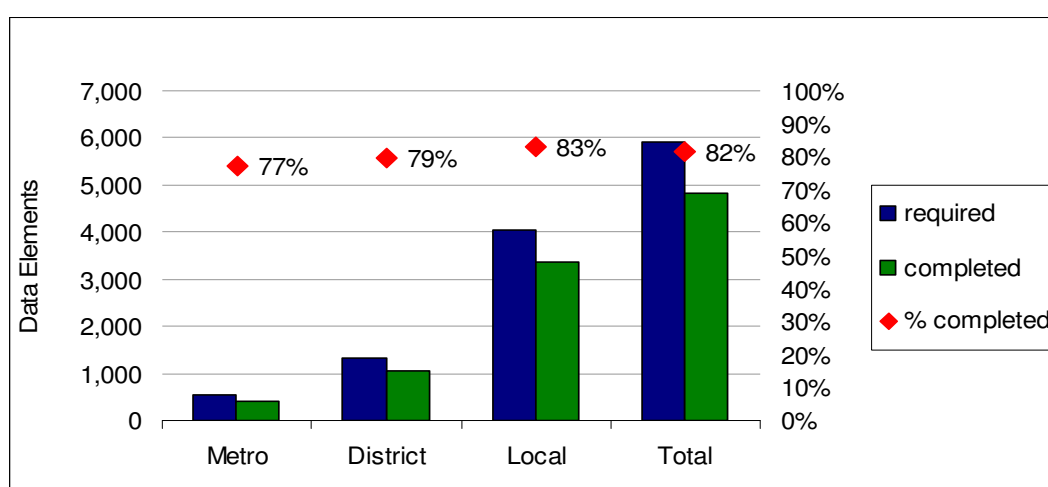
**Figure 6: Growth in participation**

### 3.3 Number of data fields

During round 3 (2006/07) a number of KPI's and data elements were added (as compared to the 2005/06 datasheets) to improve the comprehensiveness of performance measures. The data sheet now consists of a total of 88 data elements per municipality excluding locality and contextual data, which translates to a total of 5896 data elements, of which 4779 were finally completed. In comparison, the 2004/05 data sheet comprised 66 data elements (1 320 in total) and in 2005/06 68 elements (2481 in total). The number of data elements required, as well as the degree of completeness (number of data elements finally provided) expressed as a percentage per municipal category is given in the table below.

**Table 1: Degree of completeness**

| Year                       | 2005          |              | 2006          |              | 2007                   |                |              |
|----------------------------|---------------|--------------|---------------|--------------|------------------------|----------------|--------------|
|                            | Data required | Completeness | Data required | Completeness | Data elements required | Data collected | Completeness |
| <b>Metro</b>               | 396           | 59%          | 369           | 80%          | 528                    | 407            | 77%          |
| <b>District</b>            | 594           | 48%          | 718           | 62%          | 1320                   | 1049           | 79%          |
| <b>Local</b>               | 330           | 34%          | 1394          | 70%          | 4048                   | 3360           | 83%          |
| <b>Total/<br/>Average%</b> | 1320          | 49%          | 2481          | 69%          | 5896                   | 4816           | 82%          |



**Figure 7: Data elements collected: 2006/07**

### 3.4 Participating municipalities

#### 3.4.1 Identification

SALGA has the primary responsibility of identifying and inviting municipalities to participate in this process which is voluntary. This involves engaging with the municipalities, explaining the benefits and obtaining the willingness and the co-operation of the municipalities required for successful participation. The participants which responded positively are listed below.

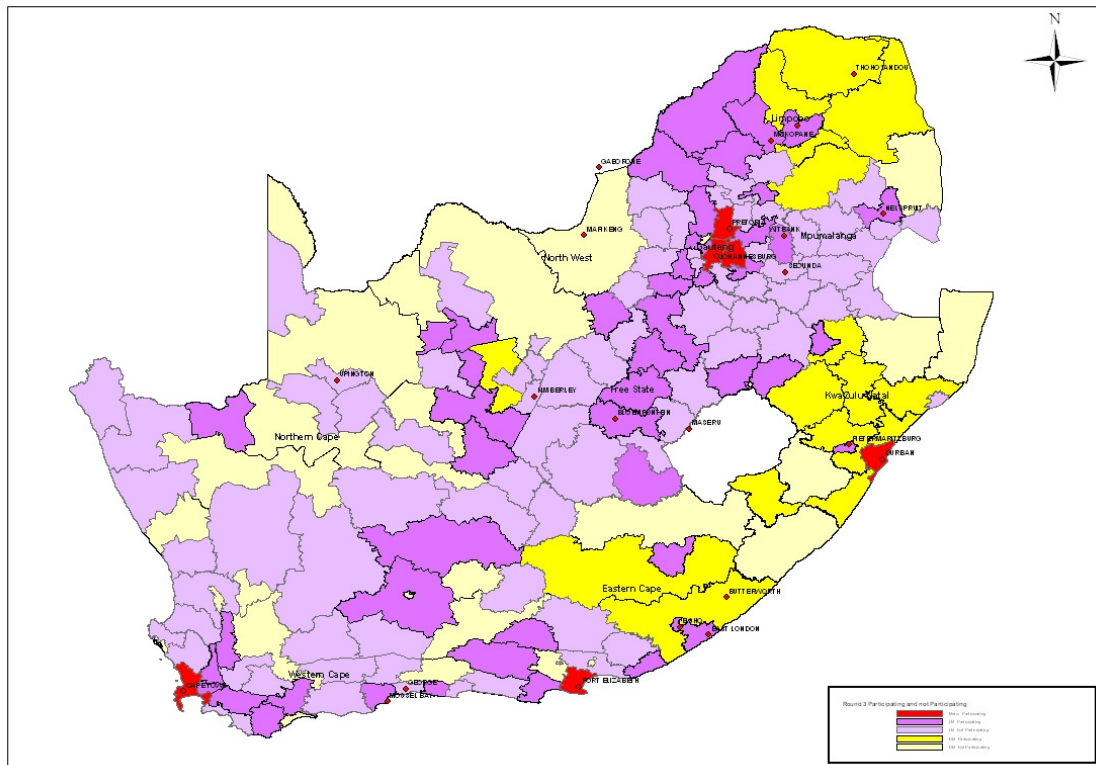
**Table 2: Participating municipalities**

| <i>Metropolitan Municipalities</i> | <i>District Municipalities</i> | <i>Local Municipalities</i> |                  |                 |
|------------------------------------|--------------------------------|-----------------------------|------------------|-----------------|
| <i>A</i>                           | <i>C</i>                       | <i>B1</i>                   | <i>B2</i>        | <i>B3</i>       |
| Cape town                          | Alfred Nzo                     | Buffalo City                | Dhlabeng         | Baviaans        |
| Ekurhuleni                         | Amajuba                        | Drakenstein                 | Knysna           | Beaufort West   |
| Ethekwini                          | Amatole                        | Emalaheni                   | Kungwini         | Cape Agulhas    |
| Johannesburg                       | Capricorn                      | Emfuleni                    | Lesedi           | Dr JS Moroka    |
| Nelson Mandela                     | Chris Hani                     | Madibeng                    | Maluti-a-Phofung | Gamagara        |
| Tshwane                            | Frances Baard                  | Mangaung                    | Merafong         | Ga-Segonyana    |
|                                    | Greater Sekhukhune             | Matjhabeng                  | Mogalakwena      | Ikwezi          |
|                                    | Ilembe                         | Mbombela                    | Moqhaka          | Kgatelopele     |
|                                    | Mopani                         | Mogale                      | Mossel Bay       | Khai Ma         |
|                                    | Ugu                            | Msunduzi                    |                  | Kouga           |
|                                    | uMgungundlovu                  | Newcastle                   |                  | Lephalale       |
|                                    | uMzinyathi                     | Polokwane                   |                  | Maquassi Hills  |
|                                    | Uthukela                       | Potchefstroom               |                  | Masilonyana     |
|                                    | Uthungulu                      | Stellenbosch                |                  | Modimolle       |
|                                    | Vhembe                         |                             |                  | Mohokare        |
|                                    |                                |                             |                  | Ndlambe         |
|                                    |                                |                             |                  | Siyathemba      |
|                                    |                                |                             |                  | Swellendam      |
|                                    |                                |                             |                  | Thabazimbi      |
|                                    |                                |                             |                  | Theewaterskloof |
|                                    |                                |                             |                  | Thembelihle     |
|                                    |                                |                             |                  | Ubuntu          |
|                                    |                                |                             |                  | Witzenberg      |

### 3.4.2 Participation

The initial target number of municipalities for this round (2006/07) was 100, 84 municipalities which are Water Service Authorities (WSAs) indicated their willingness to participate. A total of 67 out of these 84 municipalities, which amounts to 80%, followed through and provided data for analysis.

### 3.5 Geographic distribution



**Figure 8: Geographic location of the participating municipalities**

The figure above provides a presentation of the geographical location of the participating WSA municipalities as well as those that did not participate. Compared to results in the previous year, participation in the Free State and Northern Cape showed a marked improvement, with a high participation rate in the Western Cape. A map which provides more detail regarding the location of each WSA is attached as an annexure.

The number of participating WSAs accounts for 40% of the total number of WSAs in the country yet the number of households served by the participating WSA municipalities' accounts for 75% of the total households in South Africa (DWAf NIS). The first table below contains the number of municipalities, while the second shows the number of households served by the various municipal categories.

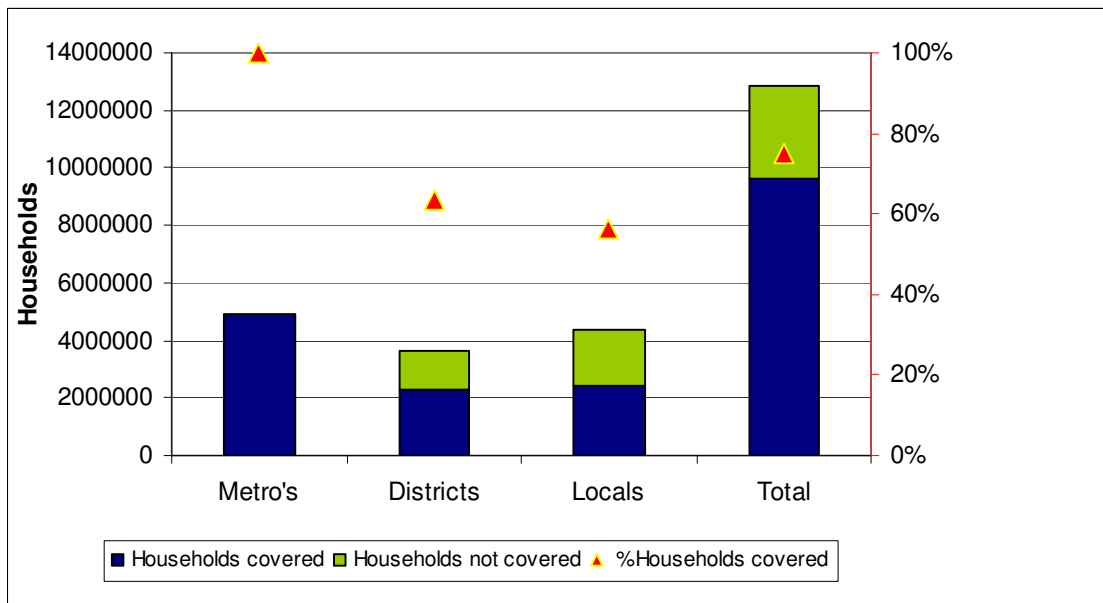
**Table 3: Number of WSA municipalities participating in the benchmarking study**

| <b>Municipalities</b>   | <b>Metros</b> | <b>Districts</b> | <b>Local</b> | <b>Total</b> |
|-------------------------|---------------|------------------|--------------|--------------|
| Participated in Round 3 | 6             | 15               | 46           | 67           |
| Not Participated        | 0             | 6                | 80           | 86           |
| Total number            | 6             | 21               | 126          | 153          |
| % Remaining             | 0%            | 28%              | 63%          | 56%          |

**Table 4: Households covered in the benchmarking study**

| <b>Households</b> | <b>Metros</b> | <b>Districts</b> | <b>Local</b> | <b>Total</b> |
|-------------------|---------------|------------------|--------------|--------------|
| Covered           | 4,910,142     | 2,295,689        | 2,446,708    | 9,652,539    |
| Not covered       | 0             | 1,313,295        | 1,911,987    | 3,225,282    |
| Total number      | 4,910,142     | 3,608,984        | 4,358,695    | 12,877,821   |
| % Covered         | 100%          | 64%              | 56%          | 75%          |
| % Not Covered     | 0%            | 36%              | 44%          | 25%          |

The figure below illustrates the households served by the participating municipalities; In summary the Metros are responsible for provision of services to 38% of all households, approximately the same number as the DMs (18%) and the LMs (19%) combined.



**Figure 9: Households covered by participating municipalities**

### 3.6 Level of Completeness & Confidence

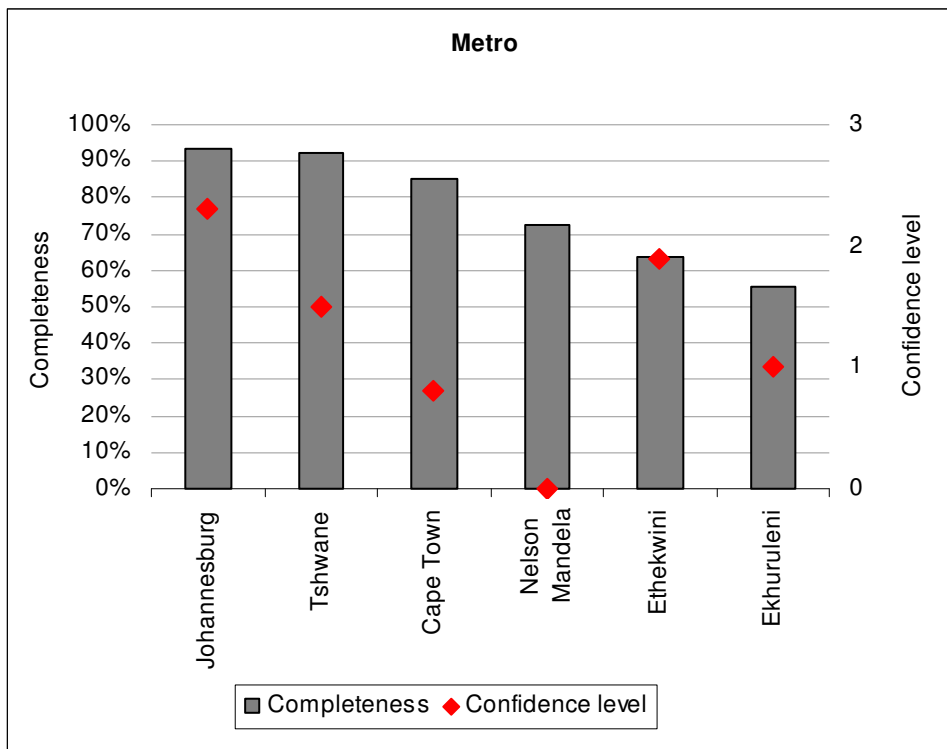
To establish the degree of accuracy of the data provided a level of confidence was attached to each data element required in the data sheets. The 'level of confidence indicators' used were:

- not stated (0),
- estimate (1),

- reliable (2), and
- audited (3)

The average level of confidence per municipality was calculated based on the values shown above, ranging between 0 (not stated) and 3 (audited information).

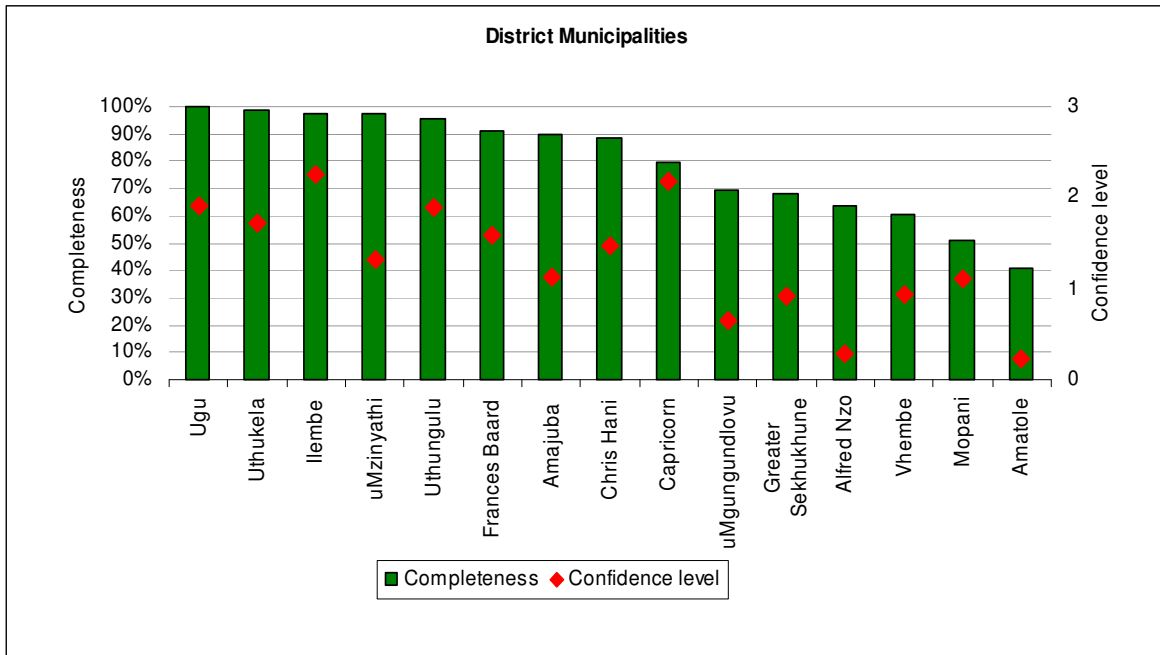
The average confidence level for data provided by the participating municipalities is presented in the graphs below. Data completeness and confidence levels are both important factors in relation to the quality and comprehensiveness of data.



**Figure 10: Completeness and confidence levels: Metros**

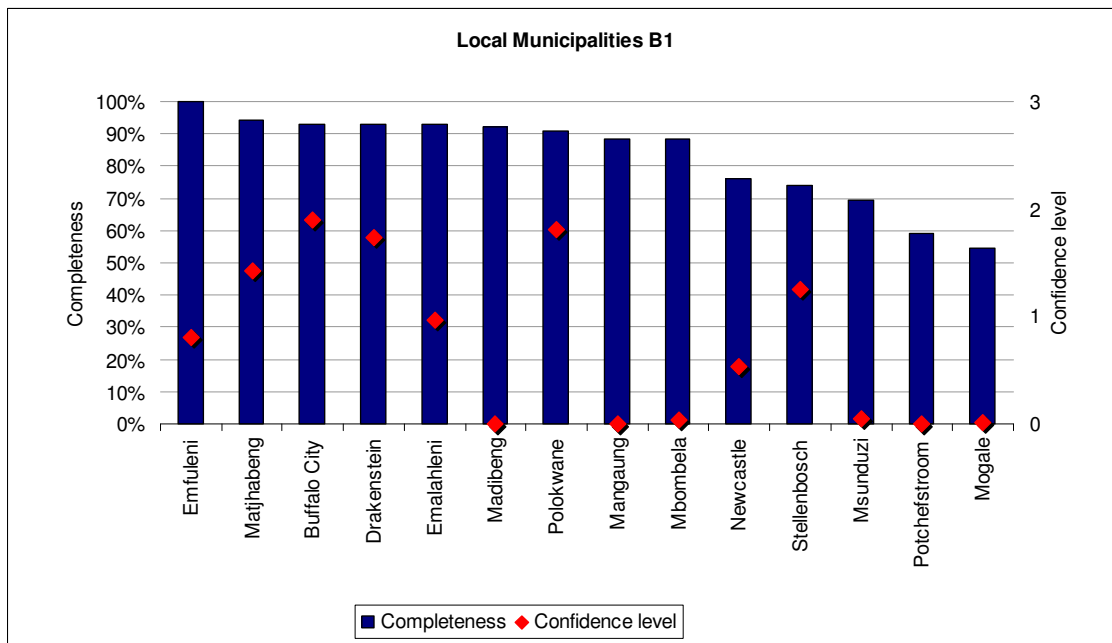
The average level of confidence for all the Metros is 1.3, or 1.5 when removing Nelson Mandela Metro from the picture as its' confidence of data was not stated at all. This is relatively low, yet higher than that for other municipalities and also higher than the average of almost 1.3 in 2005/06.

*It should be noted that Ethekwini Metro submitted a comprehensively revised set of data after the cut-off date. This could not be taken into account in the analysis of overall performance in this report. Not only is this a substantial amount of work (it would have meant redoing all of the analyses, graphs and reporting), but doing this would have unfairly advantaged Ethekwini compared to the other participating municipalities who faced the same deadlines. However, their individual report card has been changed to reflect this new data (see section 6.4).*

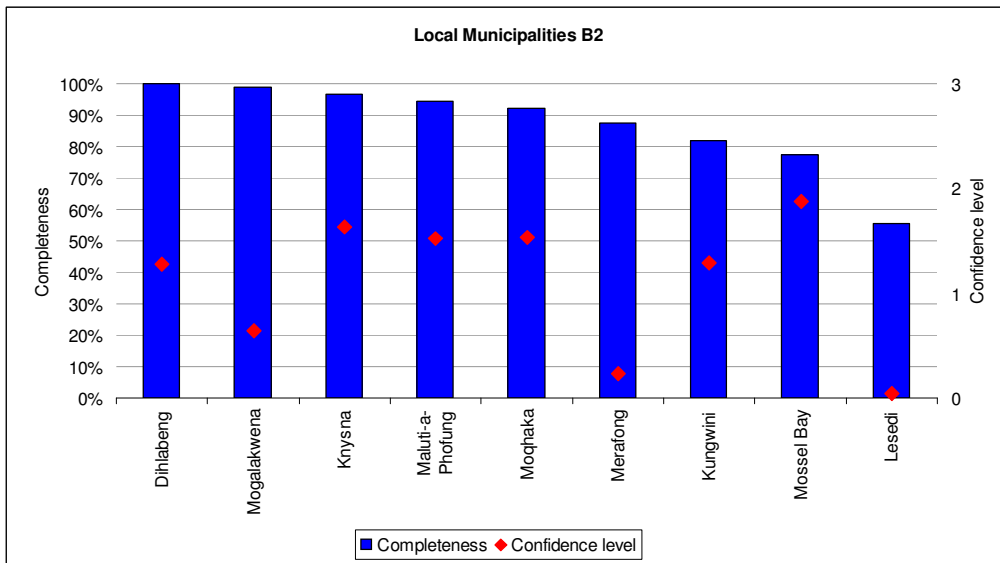


**Figure 11: Completeness and confidence levels: District municipalities**

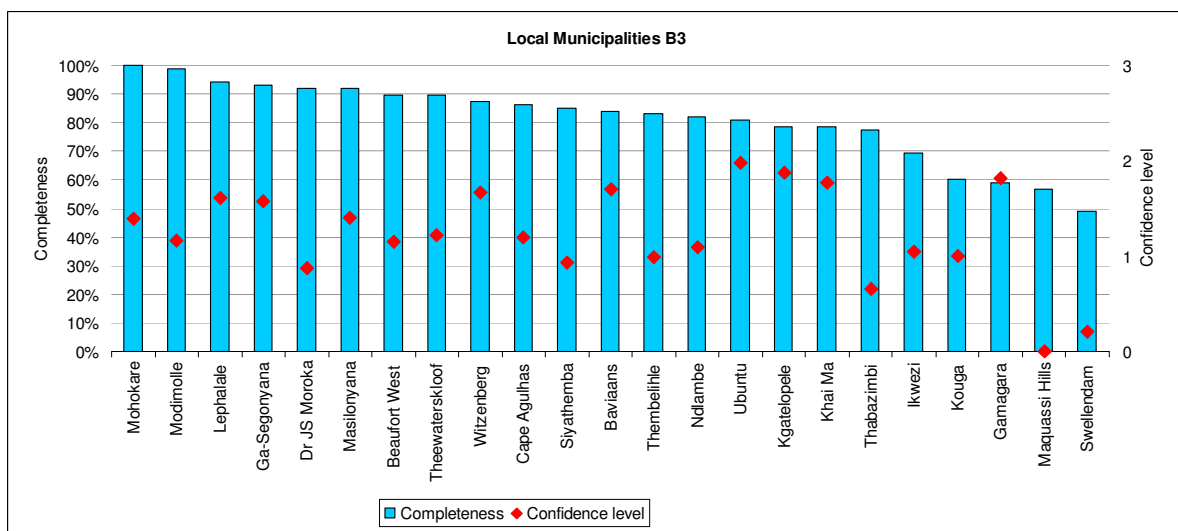
The average level of confidence for the DMs ranged between 0.3 and 2.2 with an overall average of 1.3. This is an improvement compared to the level of confidence during the previous round which was 0.7.



**Figure 12: Completeness and confidence levels: Local municipalities (B1)**



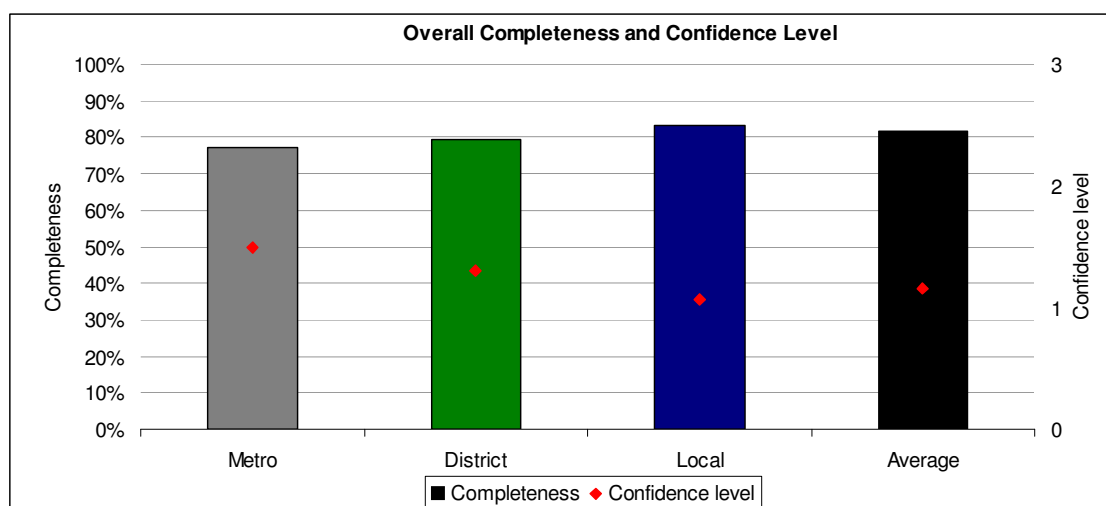
**Figure 13: Completeness and confidence levels: Local municipalities (B2)**



**Figure 14: Completeness and confidence levels: Local municipalities (B3)**

For the local municipalities the average confidence level was only 1.1 but even in this instance a significant improvement can be observed when compared to the levels of confidence associated with data provided during the previous benchmarking process which was also 0.7.

The average confidence levels per municipal category were as shown in the figure below.



**Figure 15: Average completeness and confidence levels**

In general the confidence levels indicated were low, with those for the local municipalities being the lowest, as was also observed during the second round (2005/06). The low levels of data confidence could be ascribed to a variety of reasons, including inadequate record keeping, capacity issues and time constraints. Another possible reason could be that much of the data used within municipalities is generated and used without being captured in formal reports for submission to for example Council.

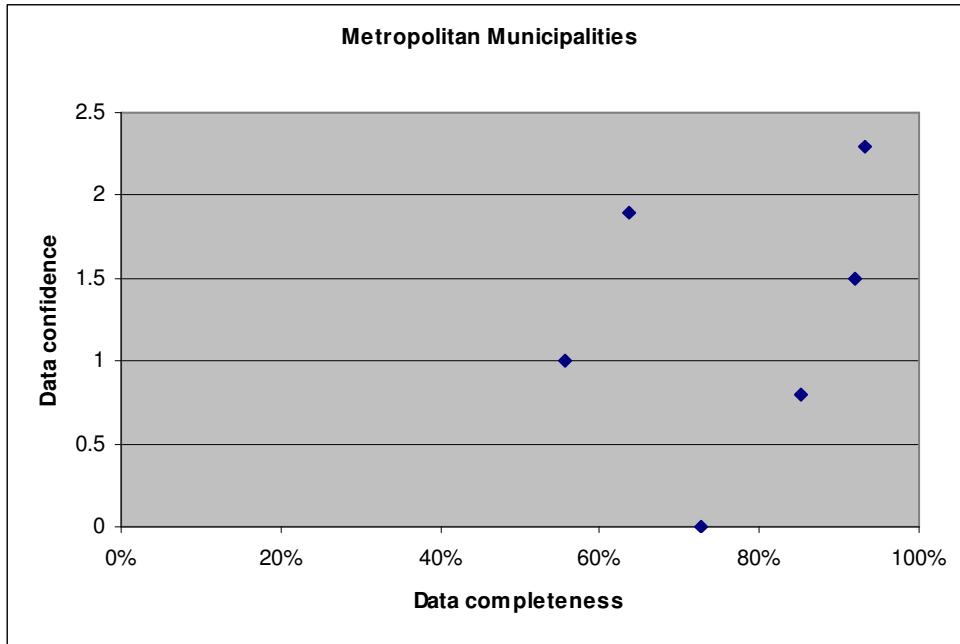
The completeness of data provided is indicated in the graphs above. The table below indicates the results for this round compared to the results for the second year (2005/06).

**Table 5: Data completeness and confidence levels**

| Year            | 2006          |              |            | 2007          |                |              |            |
|-----------------|---------------|--------------|------------|---------------|----------------|--------------|------------|
|                 | Data required | Completeness | Confidence | Data required | Data collected | Completeness | Confidence |
| <b>Metro</b>    | 369           | 80%          | 1.3        | 528           | 407            | 77%          | 1.5        |
| <b>District</b> | 718           | 62%          | 0.7        | 1320          | 1049           | 79%          | 1.3        |
| <b>Local</b>    | 1394          | 70%          | 0.7        | 4048          | 3360           | 83%          | 1.1        |
| <b>Average</b>  | 2481          | 69%          | 0.8        | 6688          | 4816           | 72%          | 1.2        |

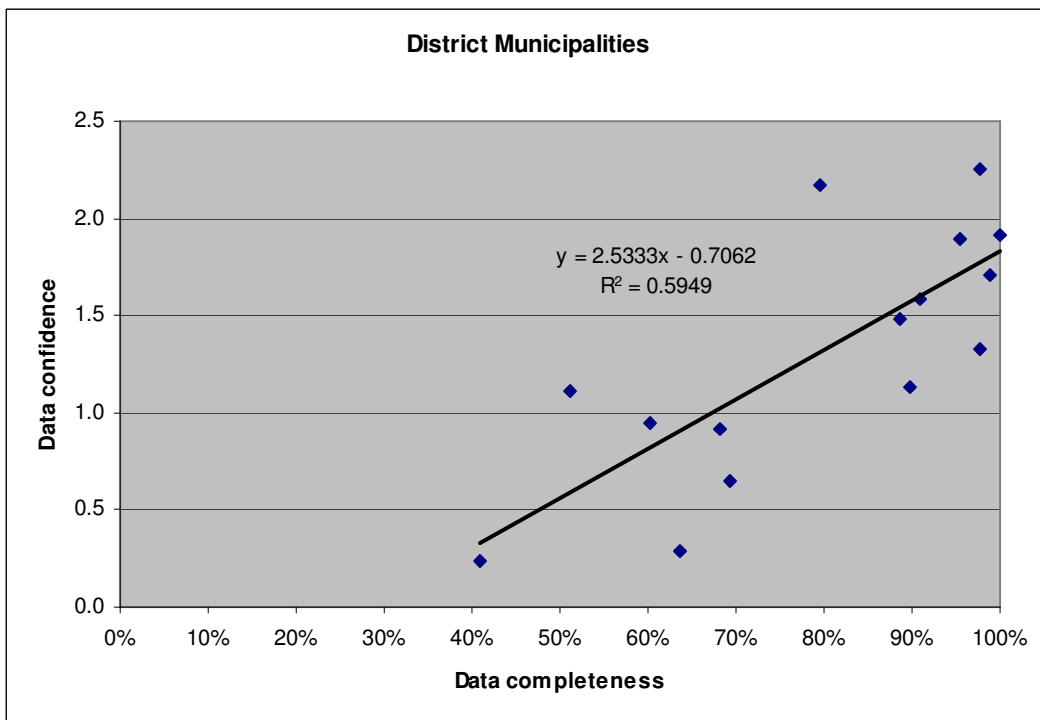
During the data gathering and analysis phase an improvement in data quality and quantity was hypothesised. This has in fact occurred with an increase in completion from 69 % (in 2005/06) to 81 % (in 2006/07). The improvement in districts was the greatest, while a slight decrease was noted in Metros, if Nelson Mandela Metro's data confidence is taken into account. Overall data confidence improved from 0.8 to 1.2.

The diagrams below presents the quality and quantity of data received in order to explore possible relationships between the completeness of data provided per municipality and the average level confidence ascribed to the data.



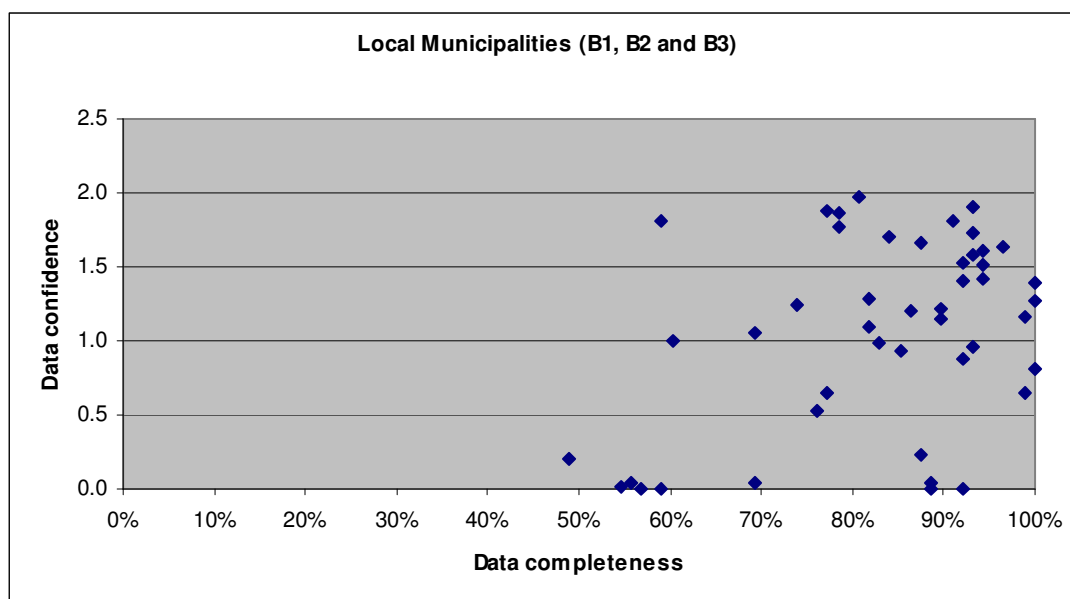
**Figure 16: Quality and quantity of data received from Metros**

With regards to the cities the sample size is too small to allow for any conclusive trends to be elucidated. However it does appear as if a positive relationship exists between data confidence and data completeness.



**Figure 17: Data confidence as a function of data completeness for Districts**

In the case of the district municipalities (graph above) a positive linear trend exists between data confidence and data completeness. These results could suggest that districts which are able to provide more data and information, have better systems, procedures and capacity and as a result are able to provide reliable data.



**Figure 18: Data confidence as a function of data completeness for Category B municipalities**

For the LMs there is a wide spread of data as is evidenced in the Figure above.

### 3.7 Evaluating our progress

This is the third year of the national benchmarking initiative and based on a similar study in Canada, the South African process is still in its infancy stage. In terms of the benchmarking process it takes considerable time to establish the:

- approach,
- process,
- appropriate KPI's,
- procedures and
- the necessary awareness and commitment.

Refinement of the process, including performance indicators and data elements still continues as does the refinement of definitions. The review and interpretation of the data and identification of constraints and best practices is continuing with the objective of continuous improvement of performance.

This round has seen continued successful growth in the number of municipalities identified and those that responded. There is also an improvement in the completion of data requirements and a growth in the body of data available. The results represent 75% of the country's households. While data confidence remains a challenge, there has been a noted improvement for local municipalities and a significant improvement in data confidence arising out of district municipalities.

## 4 Context

Contextual data is a means to provide texture to the landscape behind performance indicators. The performance indicators are presented in the subsequent sections in this report. The contextual data reported on fall into four broad categories:

- Demographics,
- Scale of operations,
- Capital Spent, and
- Revenue.

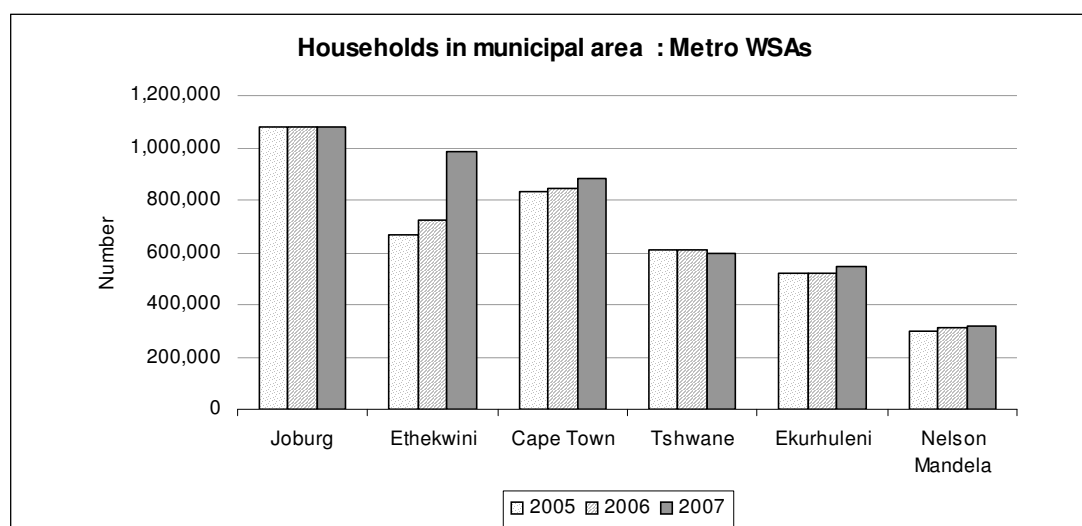
The data is presented separately for the Metropolitan Municipalities (Metros), Districts (DMs) and Local Municipalities (LMs) as the operating environment for these three kinds of water services authorities are generally quite different.

### 4.1 Demographics

When considering demographics the number of households and the urban to rural split in the municipalities are discussed.

#### 4.1.1 Number of households

The data presented is based on the information received from municipalities and a historical perspective is provided for those municipalities who have participated in the previous rounds of the benchmarking process.



**Figure 19: Households in municipal area: Metro WSAs**

The number of households in the Metros varies between 320,000 (Nelson Mandela) and 1,080,000 (Joburg). This range in data results in an average number of households for the Metros of 740,000; with the median being similar. For all the Metros, bar Joburg and Tshwane, there was an increase in the number of households in the municipal area due to in-migration and an increase in the housing units provided to replace informal housing. This is particularly apparent for Ethekwini. The decrease that is exhibited by Tshwane should be viewed with caution as it is highly unlikely that

the number of households in a municipality can decrease unless the data for 2005 and 2006 were over-estimates.

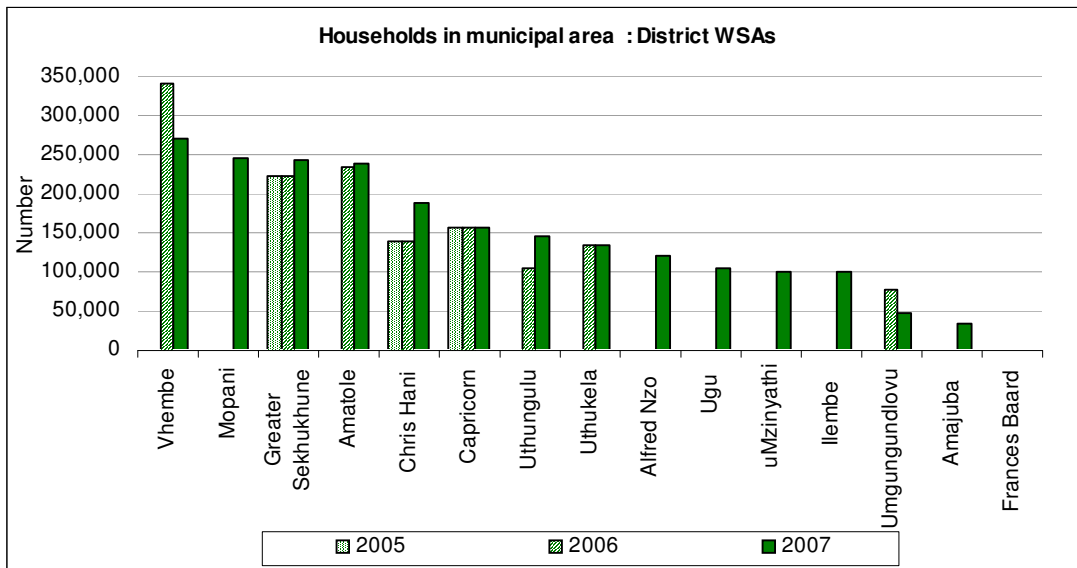


Figure 20: Households in municipalities: District WSAs

For the Districts that participated, the number of households ranged from 570 (Frances Baard, which is only a WSA for a DMA) to 270,000 (Vhembe). The average number of households for the districts that responded was 142,000; half of the data returned was above 135,000 households.

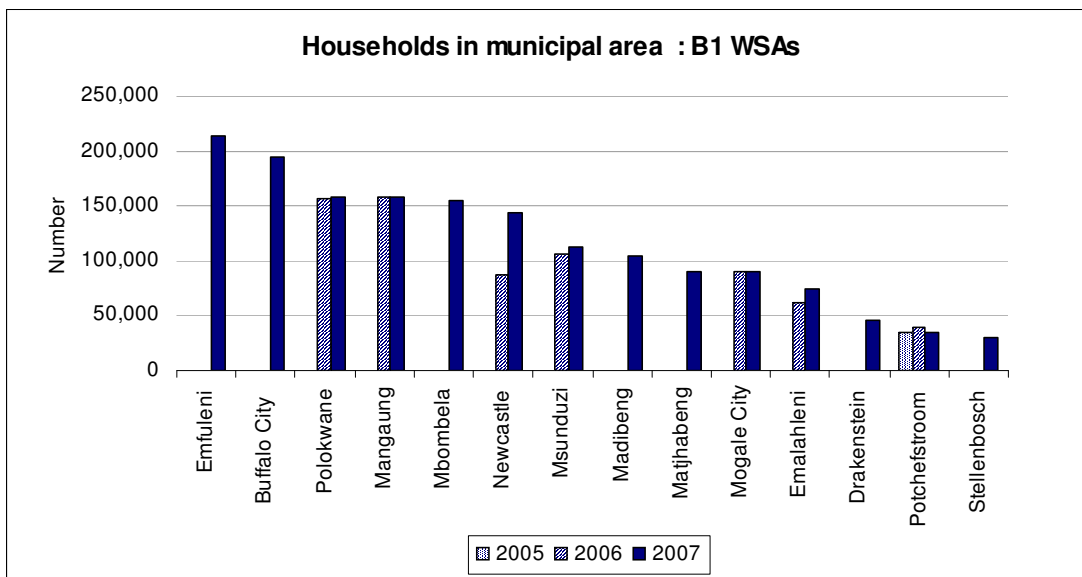
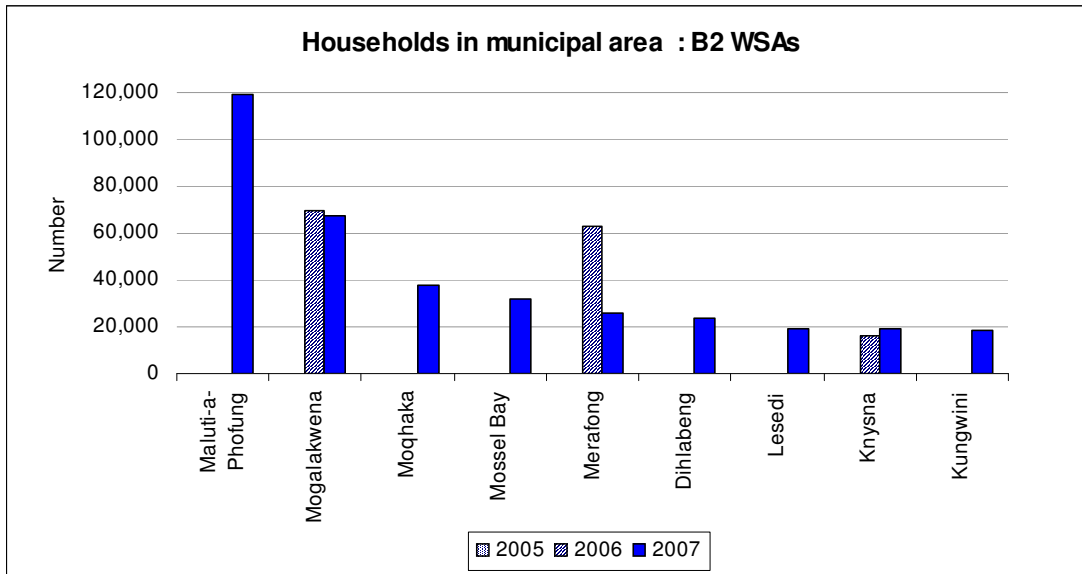


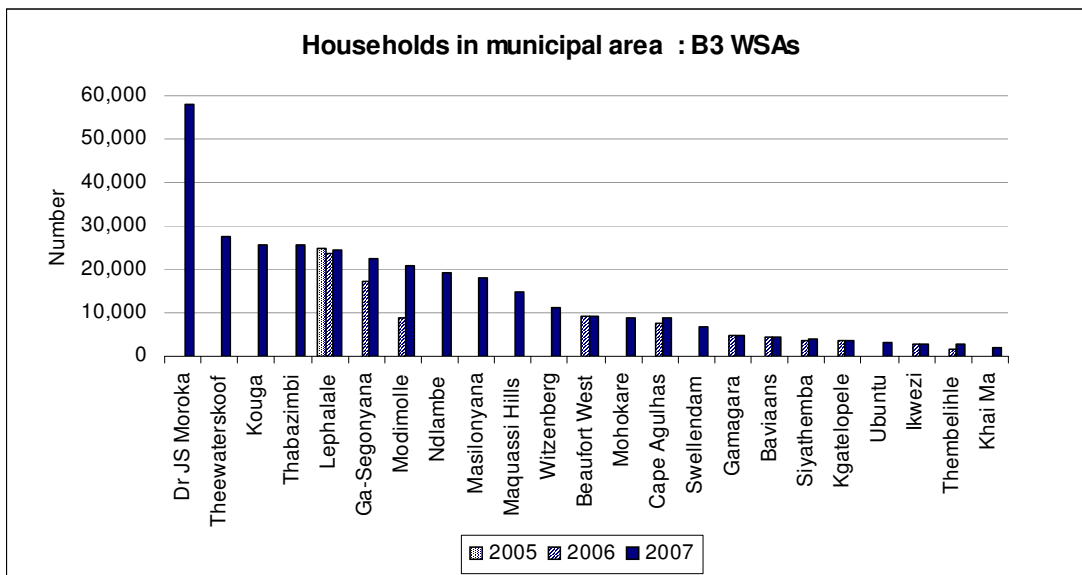
Figure 21: Households in municipal area : B1 WSAs

The number of households in the B1 municipalities range between 210,000 (Emfuleni) and 30,000 (Stellenbosch) suggesting that the biggest municipality has 14 times more households to service than the smallest municipality.



**Figure 22: Households in municipal area : B2 WSAs**

For the B2 municipalities the number of households ranges from 18,000 to 120,000. 56% of the B2 municipalities reported household numbers below 30,000.

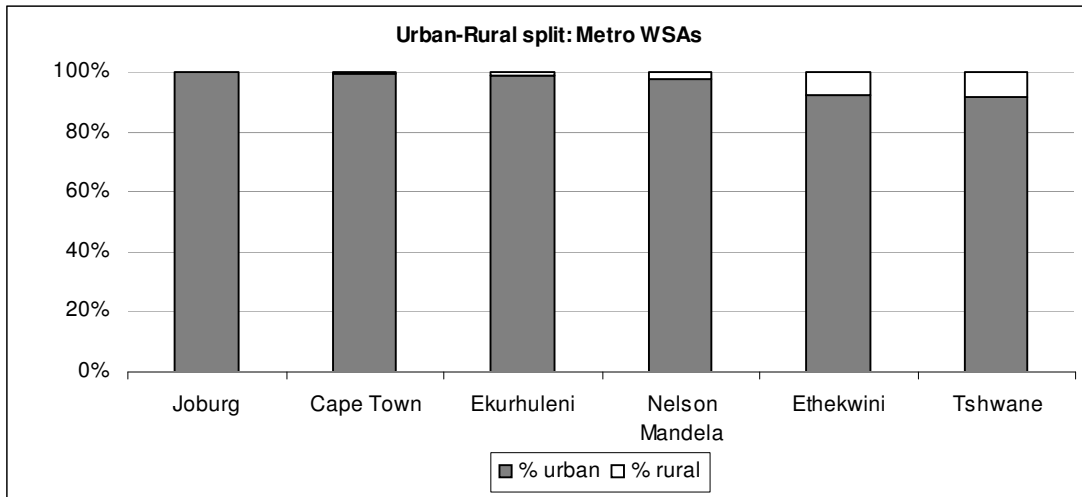


**Figure 23: Households in municipal area: B3 WSAs**

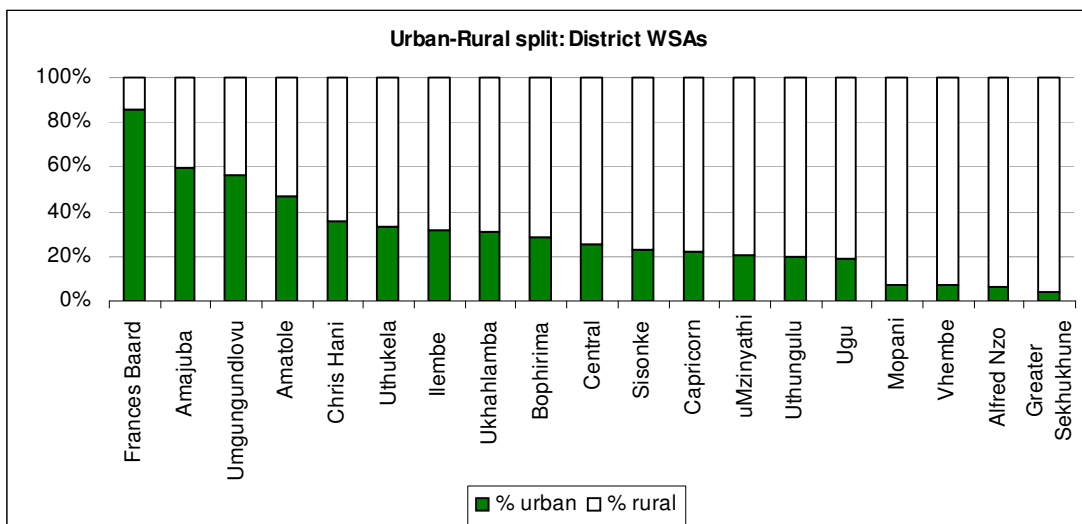
The number of households in the B3 municipalities ranged from 2,000 to 58,000. 70% of the households have less than 20,000 households.

#### 4.1.2 Urban-rural split

Based on a study done by the MDB in 2005 a split between urban and rural population numbers is presented for the municipal water services authorities that participated in the benchmarking study. As expected, the six metro have very small rural populations, with Tshwane and Ethekewini being the only municipalities with more the 5% of their population classified as rural.

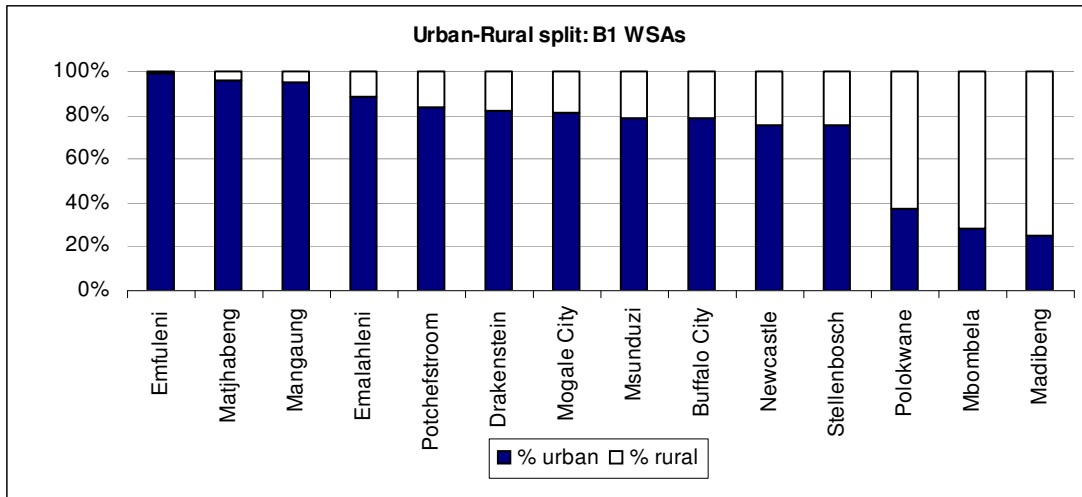


**Figure 24: Urban-rural split: Metro WSAs**



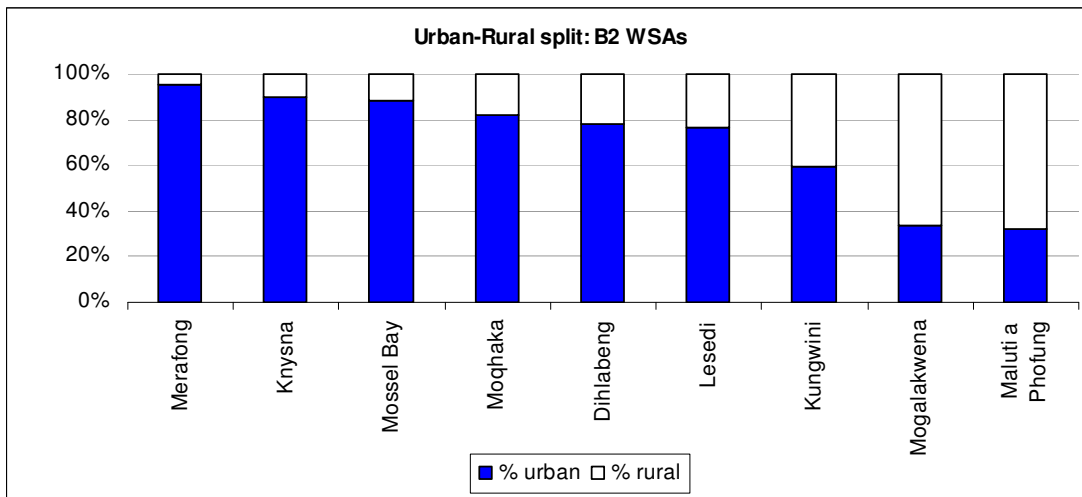
**Figure 25: Urban-rural split: Districts WSAs**

There are three districts that are predominantly urban (i.e. more than 50% of the population is urban); Frances Baard, Amajuba and Umgungundlovu. The rest of the participating districts are predominantly rural.



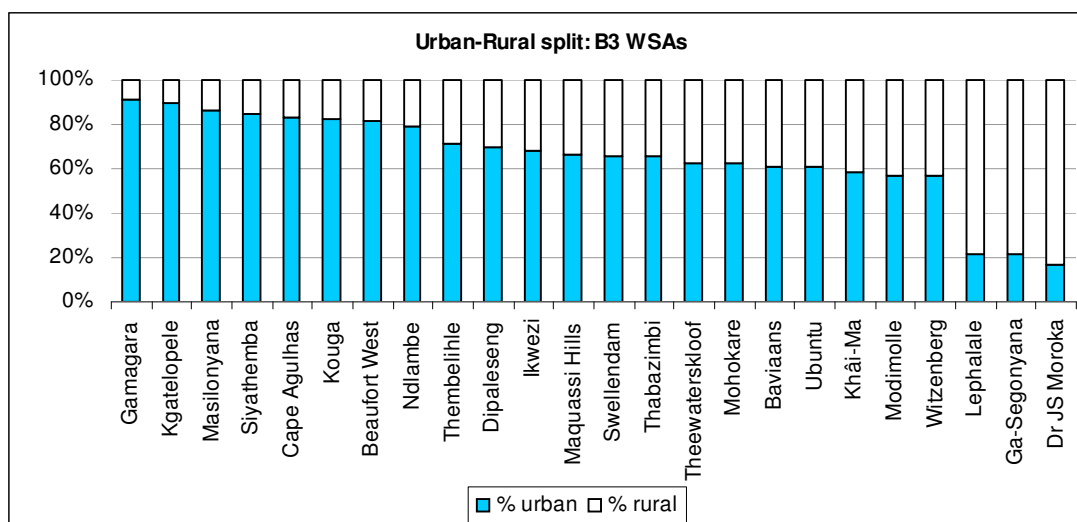
**Figure 26: Urban-rural split: B1 WSAs**

With the exception of Polokwane, Mbombela and Madibeng the participating B1 municipalities are mostly urban.



**Figure 27: Urban-rural split: B2 WSAs**

Maluti-a-Phofung and Mogalakwena are mainly rural and the rest of the B2 municipalities are urban.



**Figure 28: Urban-rural split: B3 WSAs**

Most of the B3 WSA municipalities have a predominantly urban population, with the exception of Lephalale, Ga-Segonyana and Dr J S Moroka.

In general the B municipalities are predominantly urban with the exception of:

- Polokwane (B1),
- Mbombela (B1),
- Madibeng (B1),
- Maluti-a-Phofung (B2),
- Mogalakwena (B2),
- Lephalale (B3),
- Ga-Segonyana (B3), and
- Dr J S Moroka (B3).

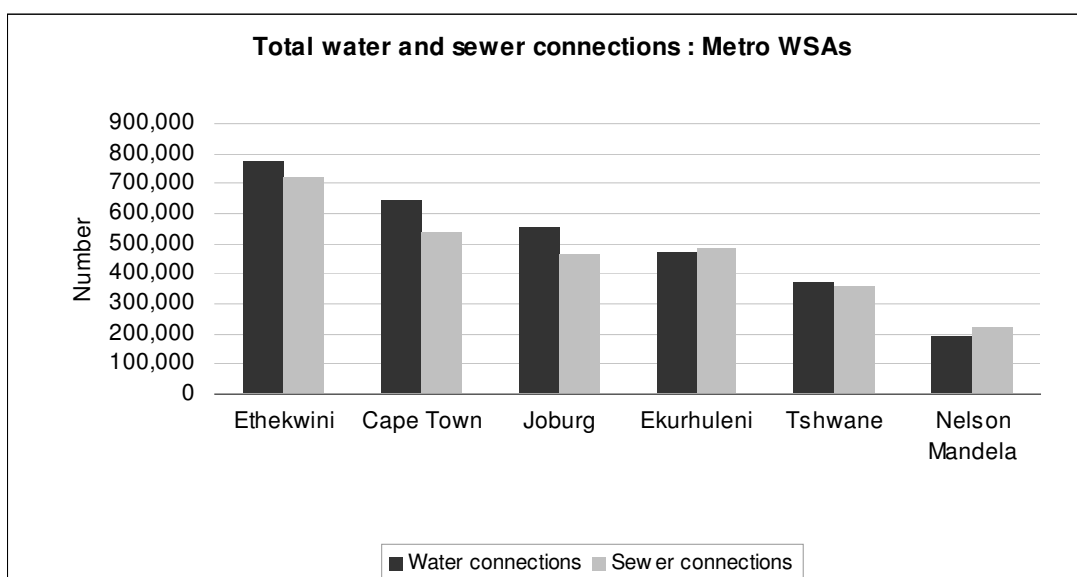
The significance of the urban-rural split for service provision is that rural communities present specific challenges with respect to effective and sustainable service delivery. These challenges include the following:

- The distances between infrastructural elements may be large, which makes transport and other expenses more costly;
- Many rural systems are small distribution stand-alone systems which require a particular approach to operation and maintenance; and
- Many rural schemes provide only a basic level of service with little or no cost recovery.

## 4.2 Scale of Operations

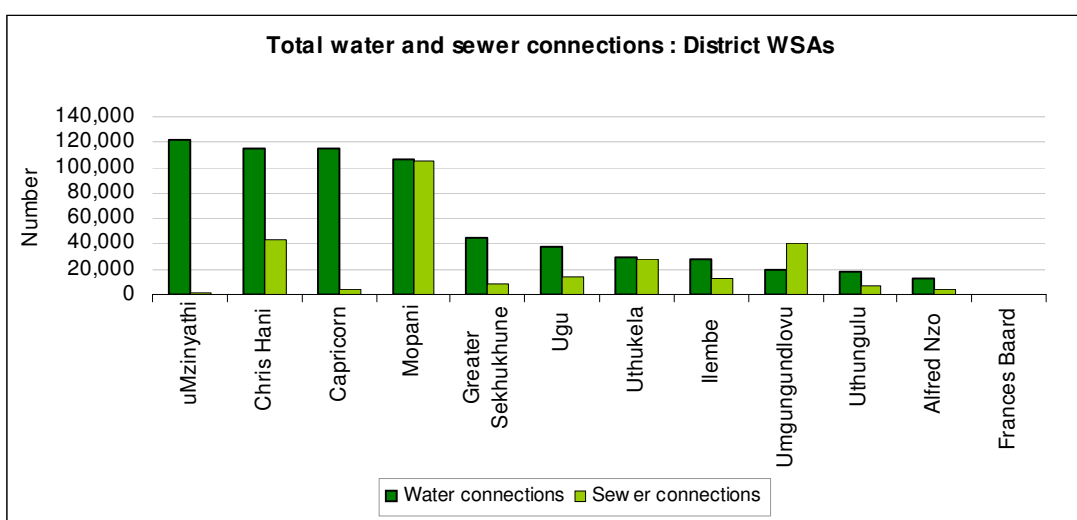
Understanding the magnitude of the WSA in terms of the number of service points provided and maintained and the number staff available to provide this service provides a deeper insight into the performance indicators of these municipalities.

### 4.2.1 Water and sewer connections



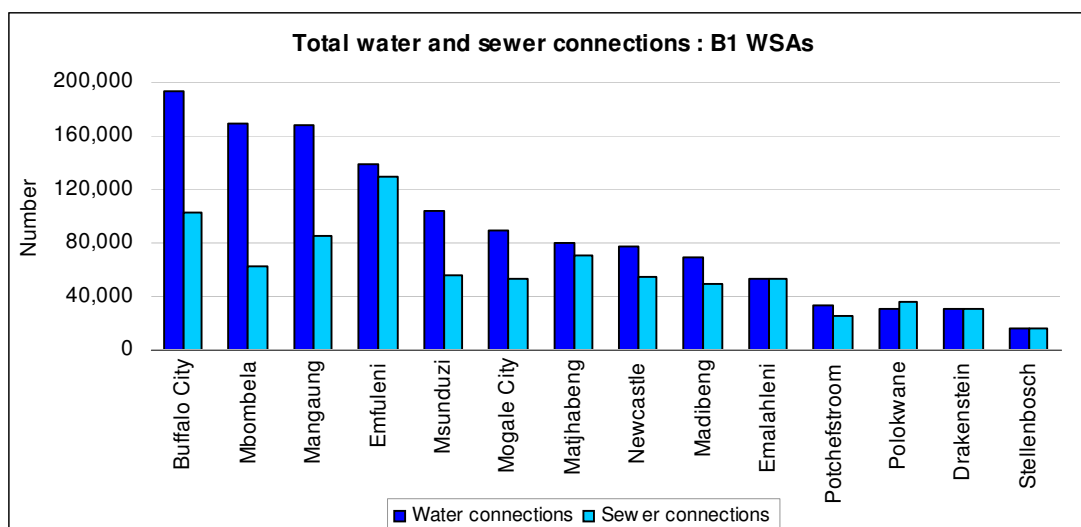
**Figure 29: Total water and sewer connections : Metro WSAs**

The metropolitan water services authorities are responsible for operations of a significant size and scale. The number of households that are served with a water connection ranges from 120,000 and 770,000 with both the average and median being approximately 500,000. Sewer connections range from 220,000 to 720,000 connections with the average and median being 470,000. In general the number of water connections exceeds the sewer connections except for Ekurhuleni and Nelson Mandela.



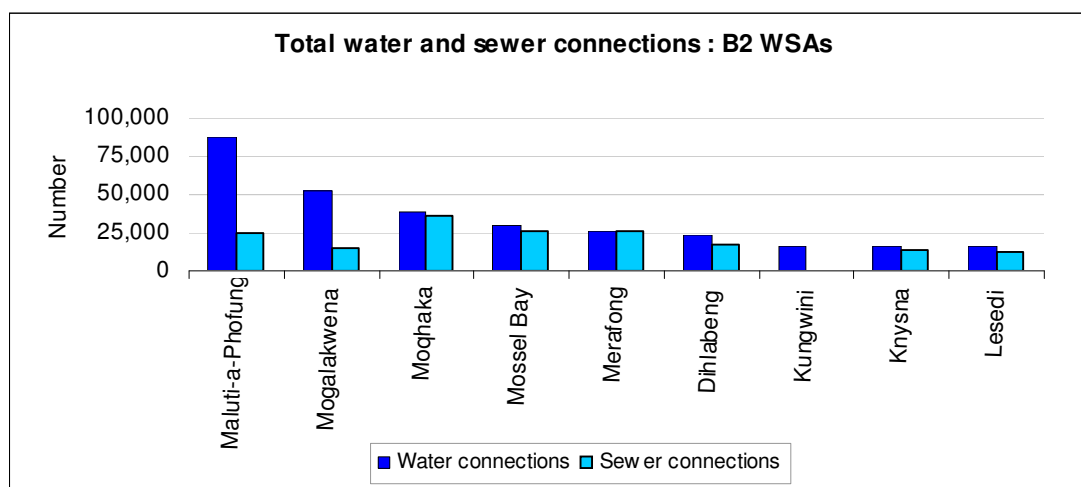
**Figure 30: Total water and sewer connections : District WSAs**

In general the total number of water connections in each district is significant, although the number of sewer connections is much smaller. The water connections range from 37 to 120,000 with an average of 50,000. The number of sewer connections range from zero in Frances Baard to 100,000 in Mopani. The district with the highest number of water connections is uMzinyathi and yet it only has 730 sewer connections.



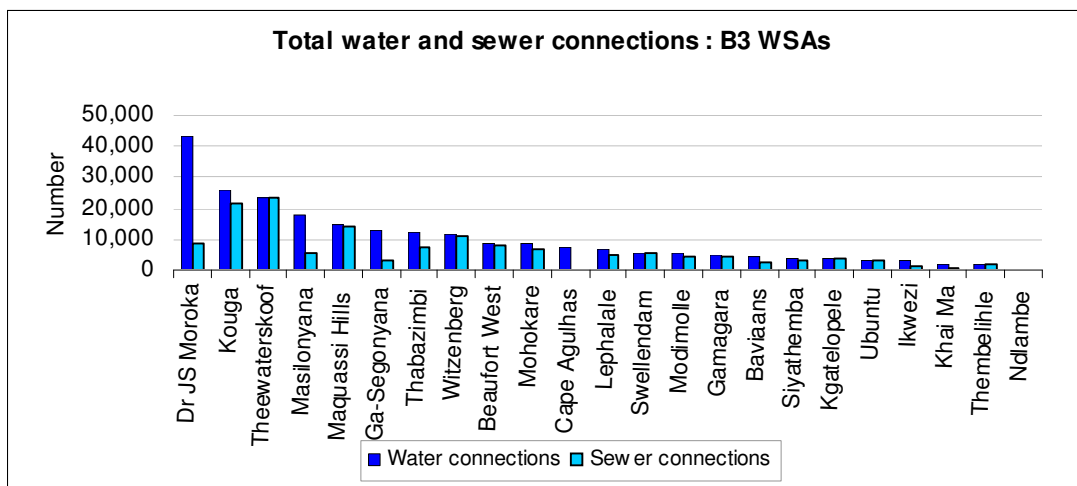
**Figure 31: Total water and sewer connections: B1 WSAs**

The number of water and sewer connections range from 17,000 in Stellenbosch to 190,000 in Buffalo City. In terms of sewer connections Emfuleni has the highest number of connections at 130,000 and Stellenbosch the lowest at 17,000. In general over half of the participating B1 municipalities have in excess of 70,000 water connections, and more than 50,000 sewer connections.



**Figure 32: Total water and sewer connections: B2 WSAs**

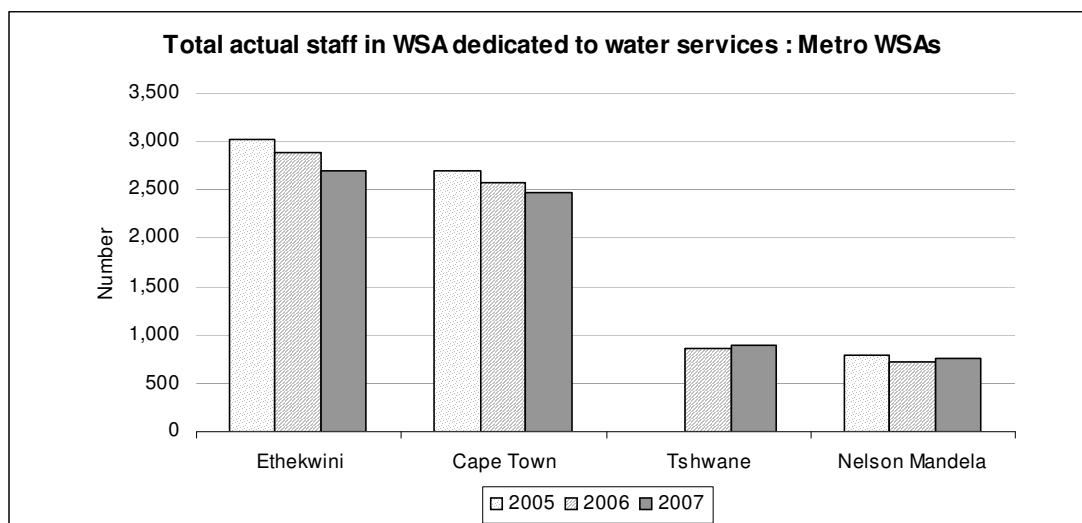
Amongst the B2 municipalities Maluti-a-Phofung reported the highest number of water connections at 88,000 and Lesedi the lowest at 16,000. Of the nine municipalities that provided data for this data field 6 of them have over 25,000 water connections. In terms of sewer connections Moqhaka has the highest number at 36,000 and Lesedi the lowest at 15,000. There appears to be big discrepancy between the number of water and sewer connections for Maluti-a-Phofung and Mogalakwena.



**Figure 33: Total water and sewer connections: B3 WSAs**

For the B3 municipalities there is a wide range in the number of water connections from, 190,000 to 80; the average number of water connections was 40,000 with half of the data points falling below 17,000. The sewer connections range from 5 to 130,000 and in all instances the number of sewer connections lags the water connections.

#### 4.2.2 Total staff

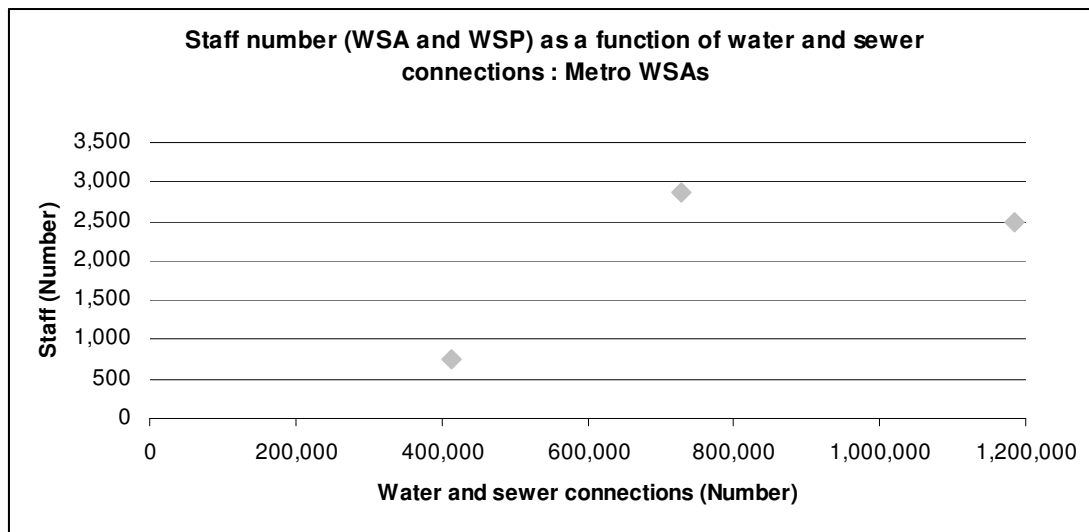


**Figure 34: Total actual staff in WSA dedicated to water services: Metro WSAs**

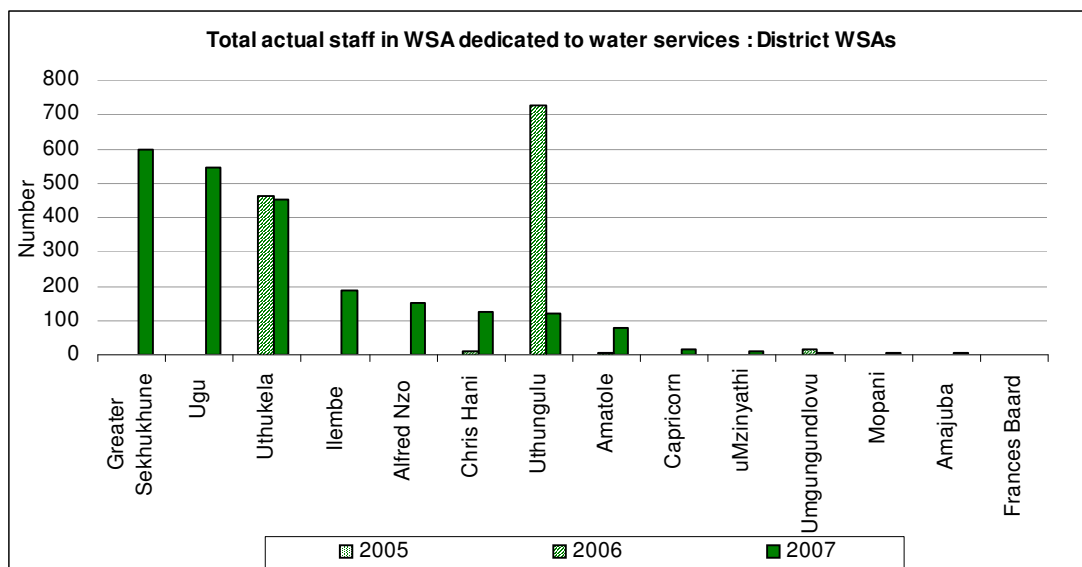
In the absence of staffing data for Joburg and Ekurhuleni; Ethekwini has the highest staff compliment dedicated to water services followed by the City of Cape Town. If one views this in light of the number of water and sewer connections the trend is the same. Worth noting is that the number of staff decreased for Ethekwini and Cape Town from 2005 to 2007.

The two figures below provide a representation of the relationship between the number of water and sewer connections and the number of staff employed. Although there are only three cases to refer to it is clear that there is a positive relationship between the number of staff employed and the number of water and sanitation connections delivered. This relationship remains unchanged (albeit it shifts on the

horizontal axis) regardless of whether we are referring to only water connections or the combination of water and sewer connections.

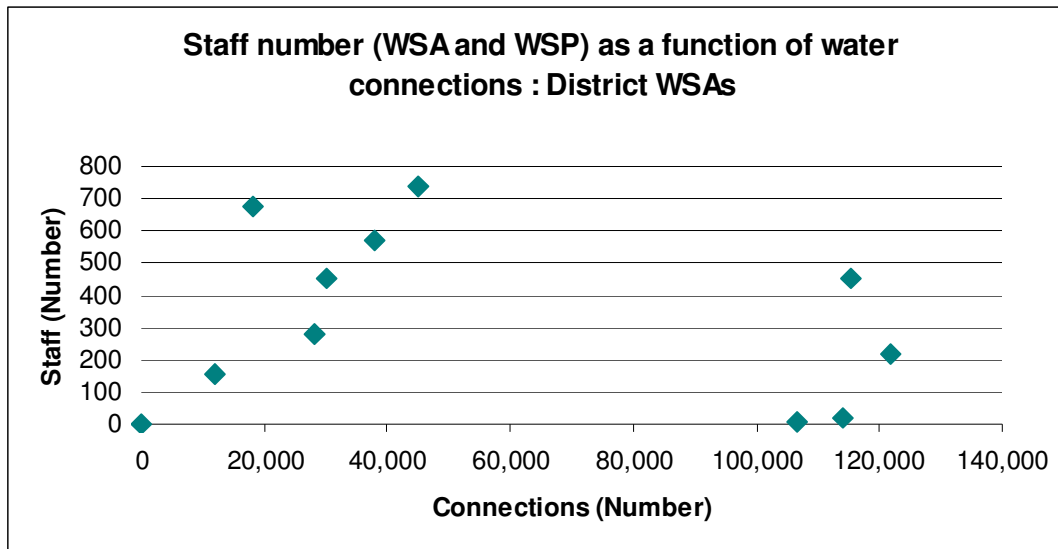


**Figure 35: Staff number as a function of water and sewer connections: Metro WSAs**

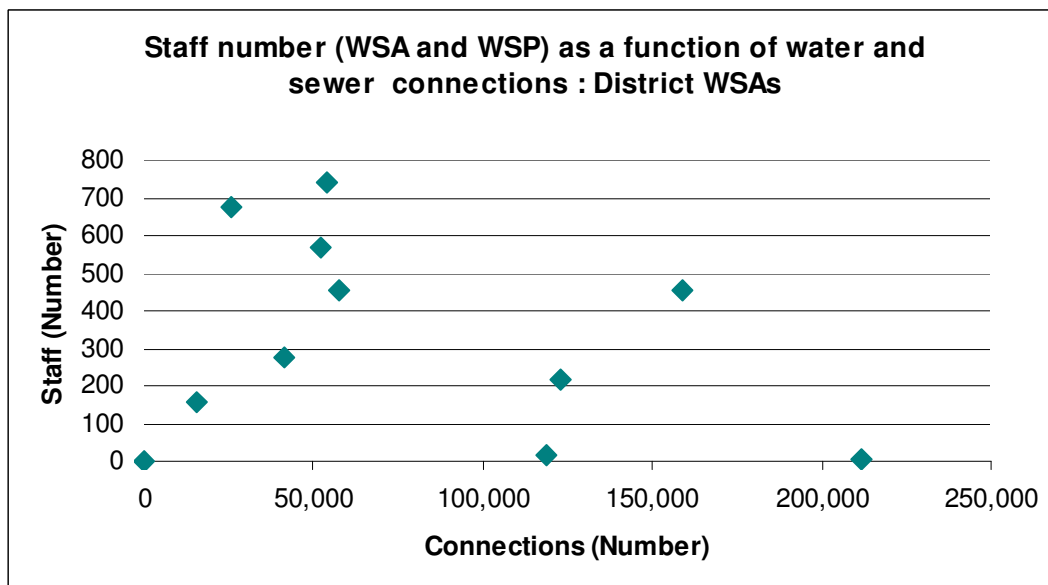


**Figure 36: Total actual staff in WSA dedicated to water services: District WSAs**

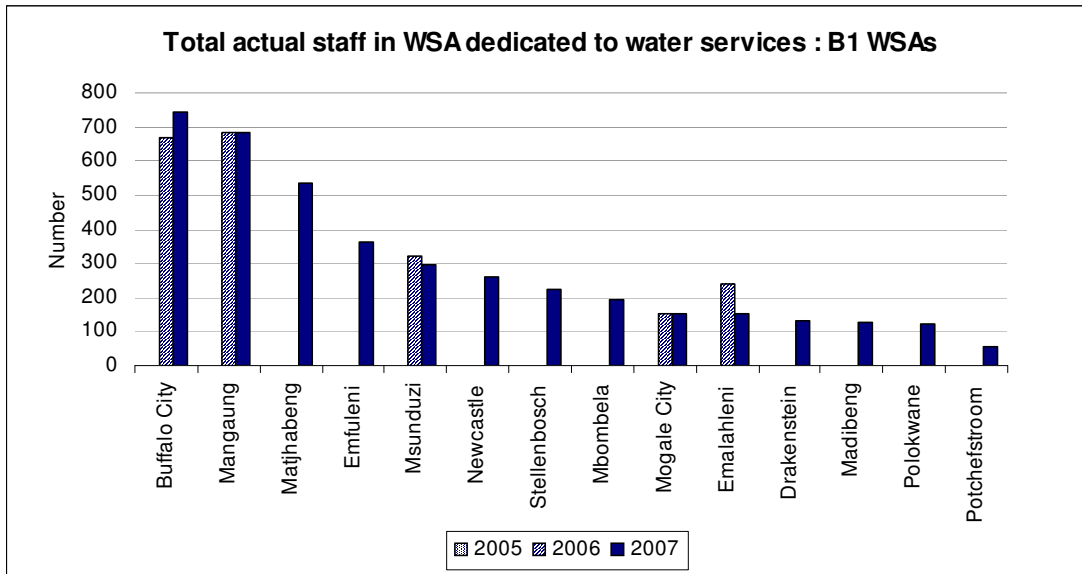
The results are scattered with respect to staffing data reported by districts, as indicated by an average of 170 and a median of 97. The highest number of staff reported is 600 and the lowest is 1 for Greater Sekhukhune and Frances Baard respectively. Worth noting is the drastic decrease in the staffing numbers reported by Uthungulu (727 in 2006 and 118 in 2007). This may be a data collection issue requiring closer investigation.



**Figure 37: Staff number as a function of water connections: District WSAs**

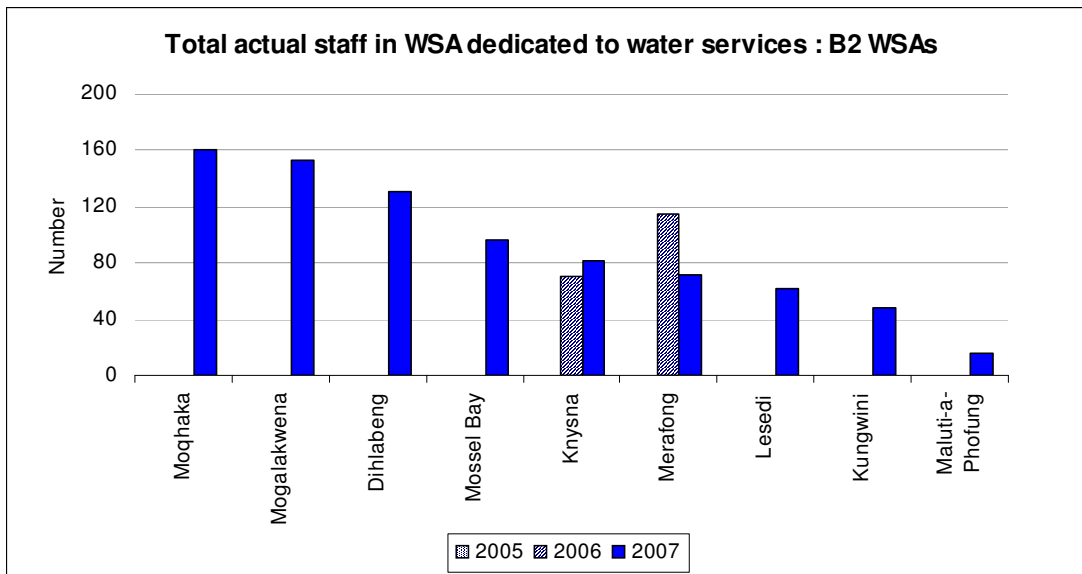


**Figure 38: Staff number as a function of water and sewer connections: District WSAs**



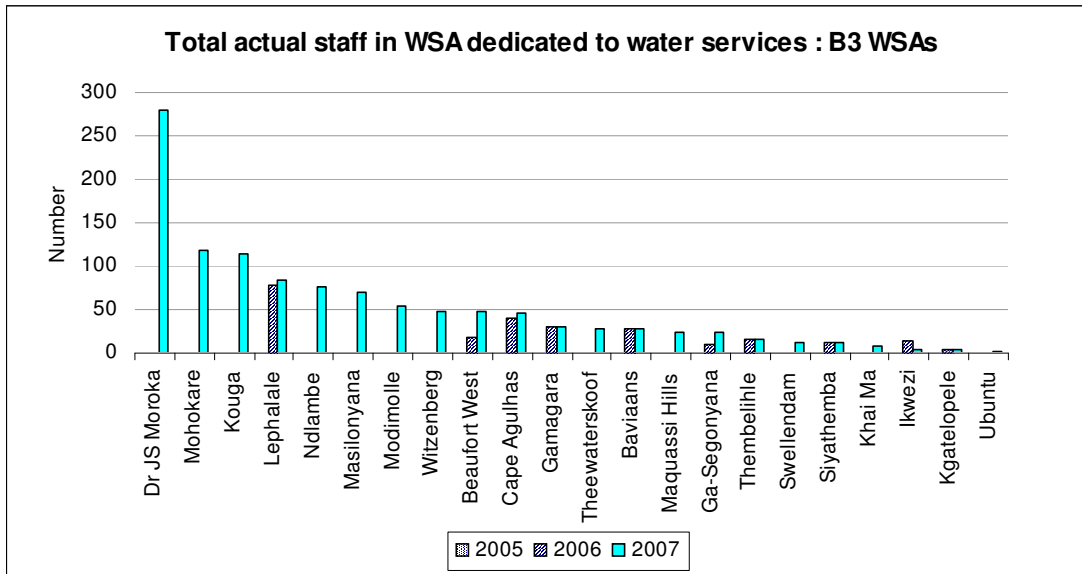
**Figure 39: Total actual staff in WSA dedicated to water services: B1 WSAs**

For the participating B1 municipalities the number of staff in the WSA dedicated to water services ranged from 742 to 54. Seven of the municipalities had staff numbers above 200 and seven below 200. Buffalo City showed an increase in staff numbers from 2006 to 2007, while Msunduzi and Emalahleni displayed a decrease over the same period.



**Figure 40: Total actual staff in WSA dedicated to water services: B2 WSAs**

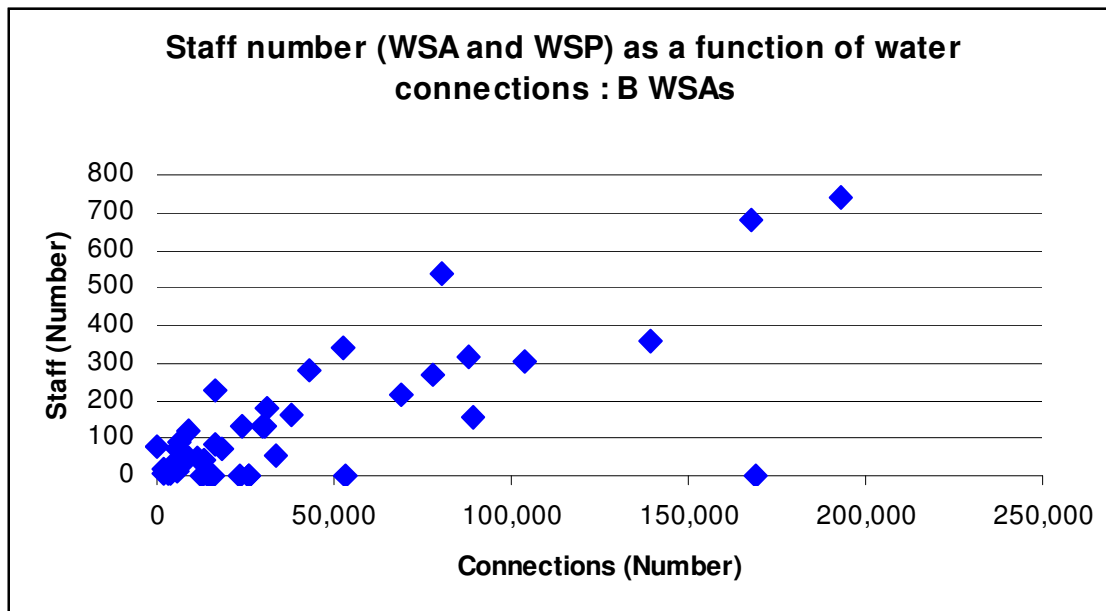
Of the B2 municipalities Moqhaka has the highest staff number; 160, and Maluti-a-Phofung the lowest at 16. Knysna appears to have employed more water services staff from 2006 to 2007 and Meratong’s staff numbers dropped.



**Figure 41: Total actual staff in WSA dedicated to water services: B3 WSAs**

Staff numbers in the B3 municipalities varied between 280 (Dr J S Moroka) and 2 in Ubuntu. An increase in staff number between 2006 and 2007 was recorded in: Lephalale, Beaufort West, Cape Agulhas and Ga-Segonyana. Staff number remained unchanged in Gammagara, Baviaans, Thembelihle and Siyathemba.

In general the number of staff is positively related to the number of water and sewer connections (See the two figures below). The relationship is the same when considering water connections only, suggesting that the delivery of water connections has a significant effect on the water services operations..



**Figure 42: Staff number as a function of water connections B WSAs**

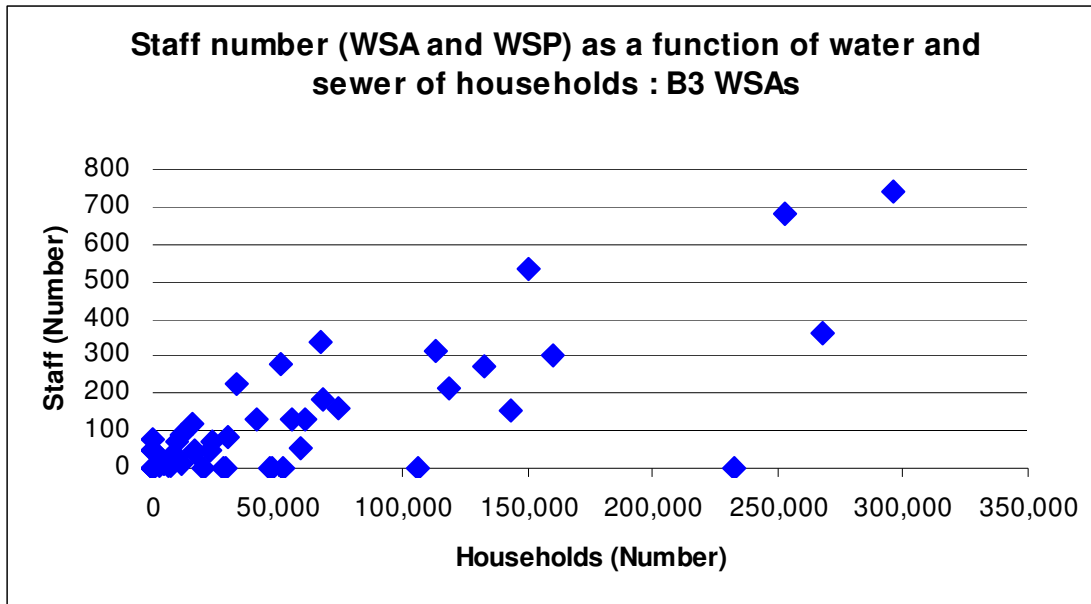


Figure 43: Staff number as a function of water and sewer of households: B3 WSAs

### 4.3 Capital Spent

#### 4.3.1 Total capital spent

The capital spending (on water services) and total MIG allocation for each participating municipalities is presented below.

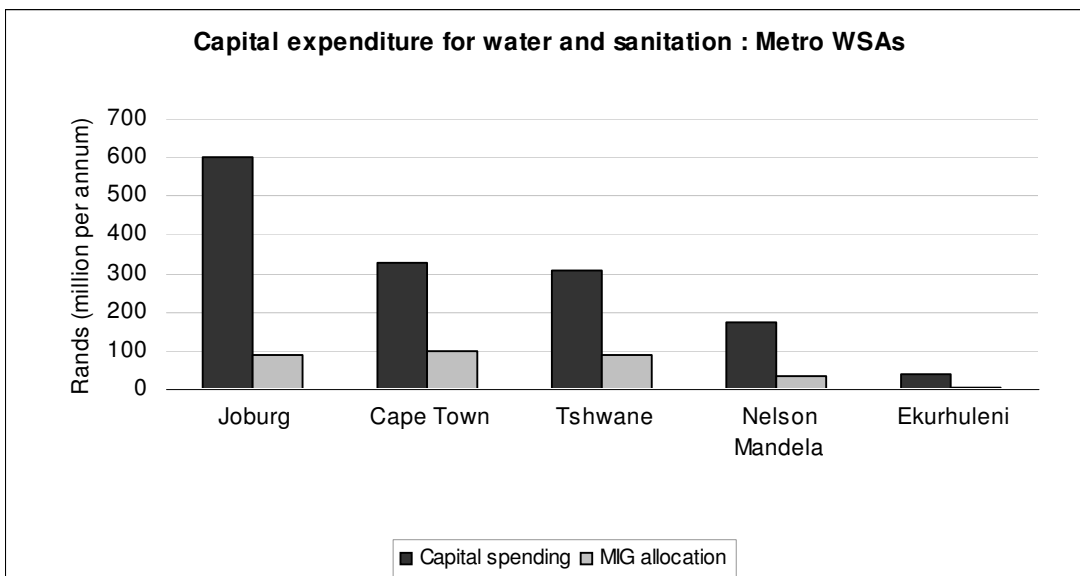
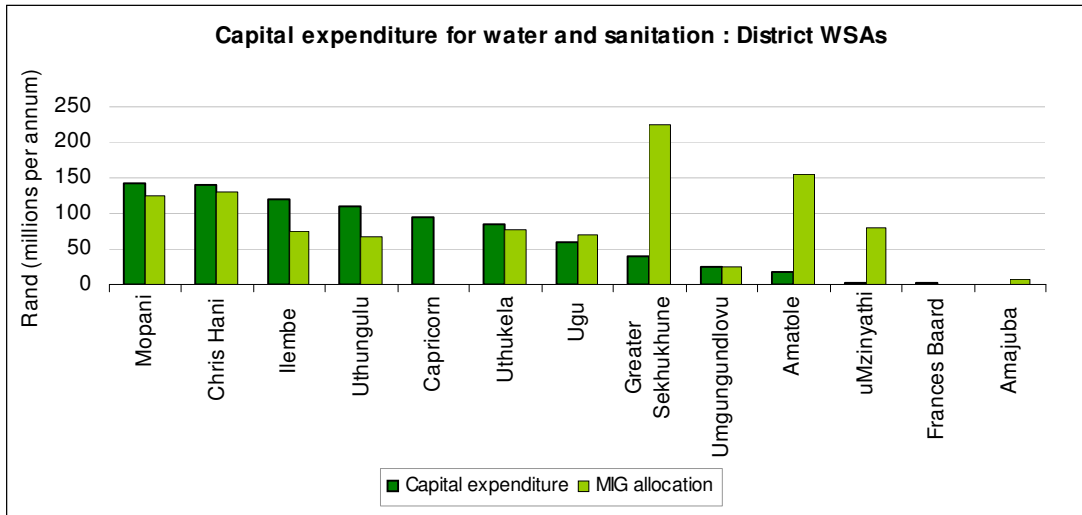


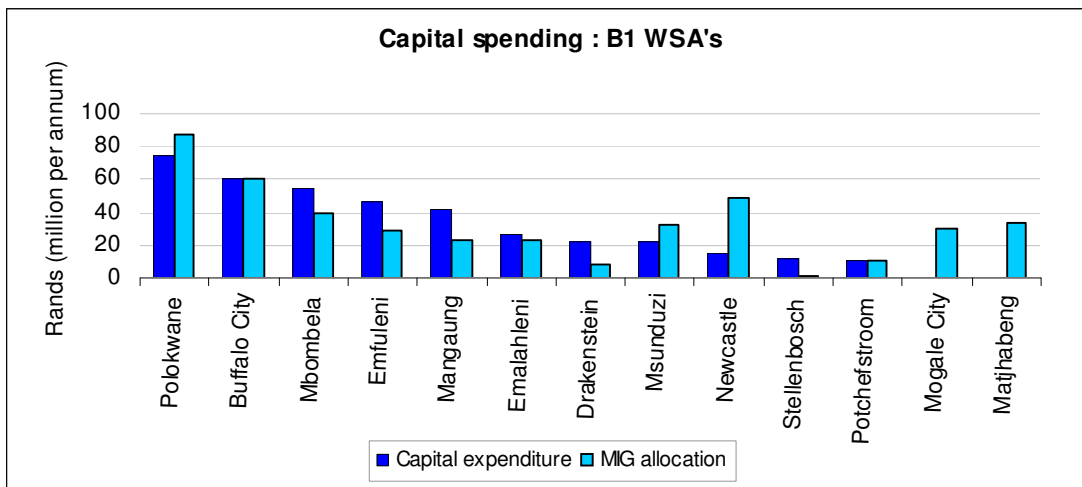
Figure 44: Capital expenditure for water and sanitation in Metros

For the Metros the capital expenditure ranged from R40 million to R600 million. The MIG allocation varied between R6 million and R100 million. Ethekewini received a MIG allocation of R170 million but did not report on their capital expenditure. The capital expenditure was not only funded from the MIG grant and other sources of funding were used for capital intensive projects.

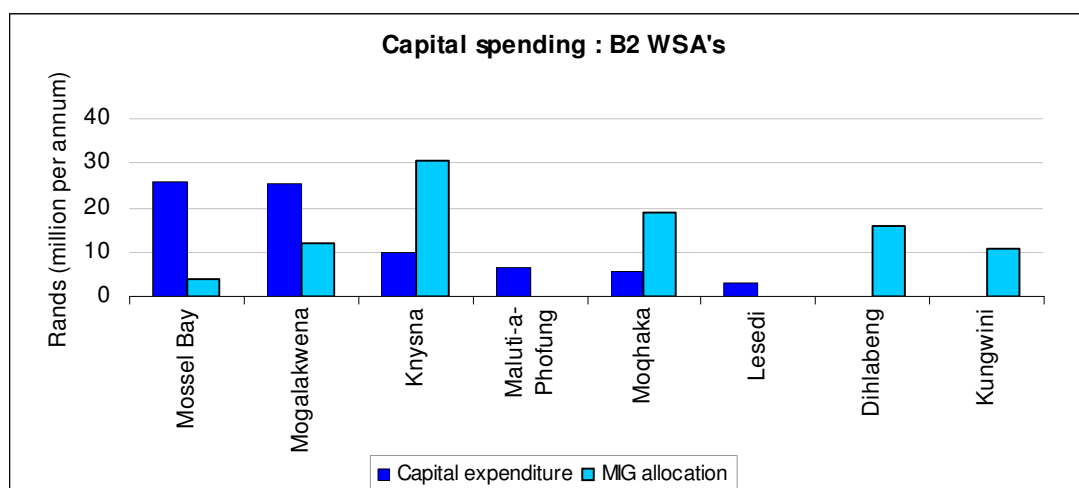


**Figure 45: Capital expenditure for water and sanitation in DMs**

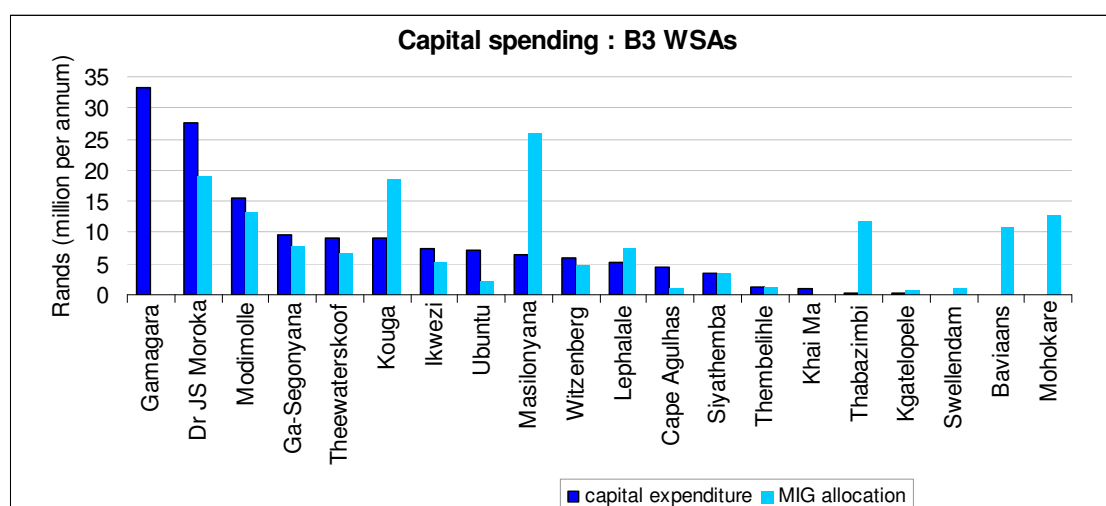
Total capital spending of water services is very similar to the MIG allocation on water services in the districts with the exception of Greater Sekhukhune, Amatole and uMzinyathi where the MIG allocated to water and sanitation was not spent on capital projects. The range of capital expenditure for the districts was between R0.5 and R142 million and the MIG allocation between R0.9 to R230 million.



**Figure 46: Capital spending : B1 WSAs**



**Figure 47: Capital spending : B2 WSAs**

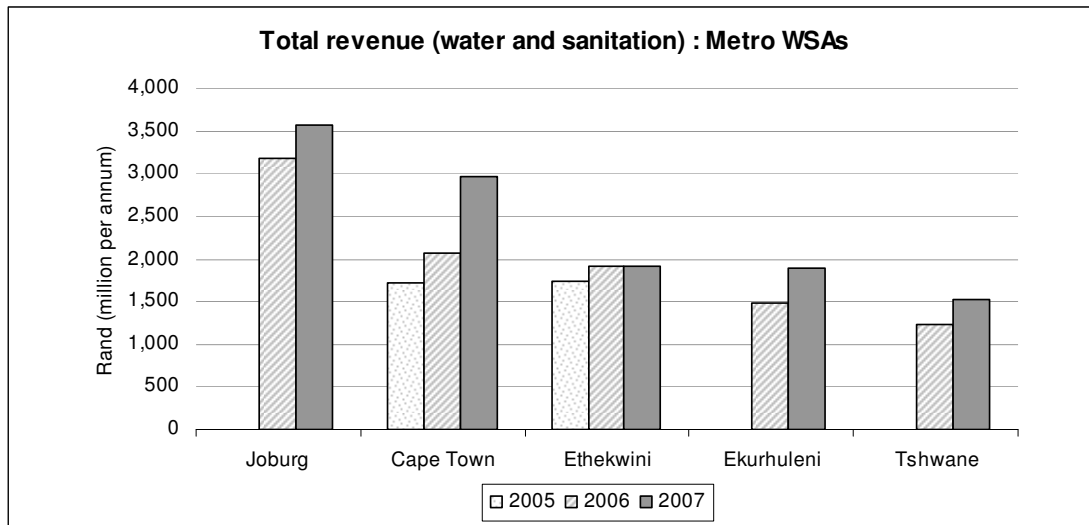


**Figure 48: Capital spending B3 WSAs**

In the B municipalities the capital expenditure ranged from R0.3 to R170 million and the MIG allocation from R0.5 to R135 million. In some instances the MIG allocation was in excess of the capital expenditure suggesting a lack of capacity to spend the capital that is available to municipalities. Gamagara and Dr J S Moroka are worth mentioning as having done some capital extensive projects in relation to the rest of the participating B municipalities.

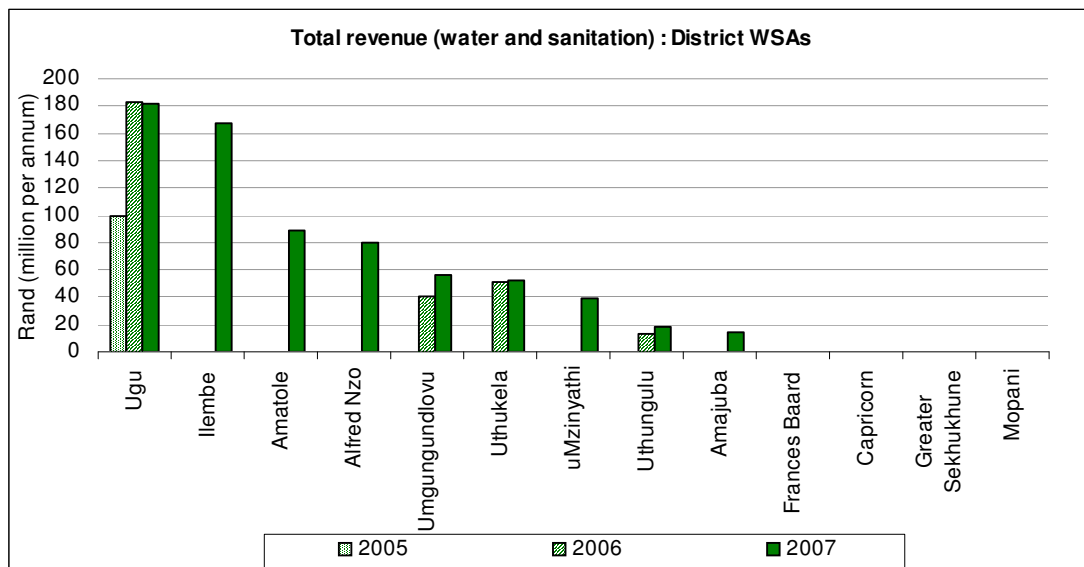
## 4.4 Revenue

### 4.4.1 Total revenue



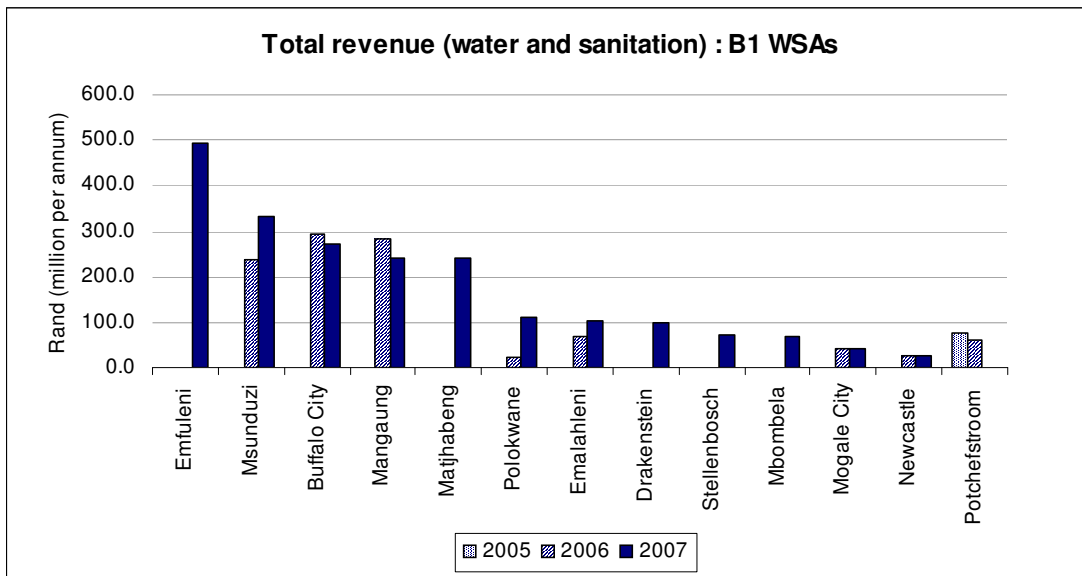
**Figure 49: Total revenue (Water and sanitation) for Metros**

Joburg has the highest revenue at R3,520 million and Tshwane the lowest at R1,500 million in 2007. The average revenue was R2,400 million. In general there has been an increase in revenue from 2006 to 2007.

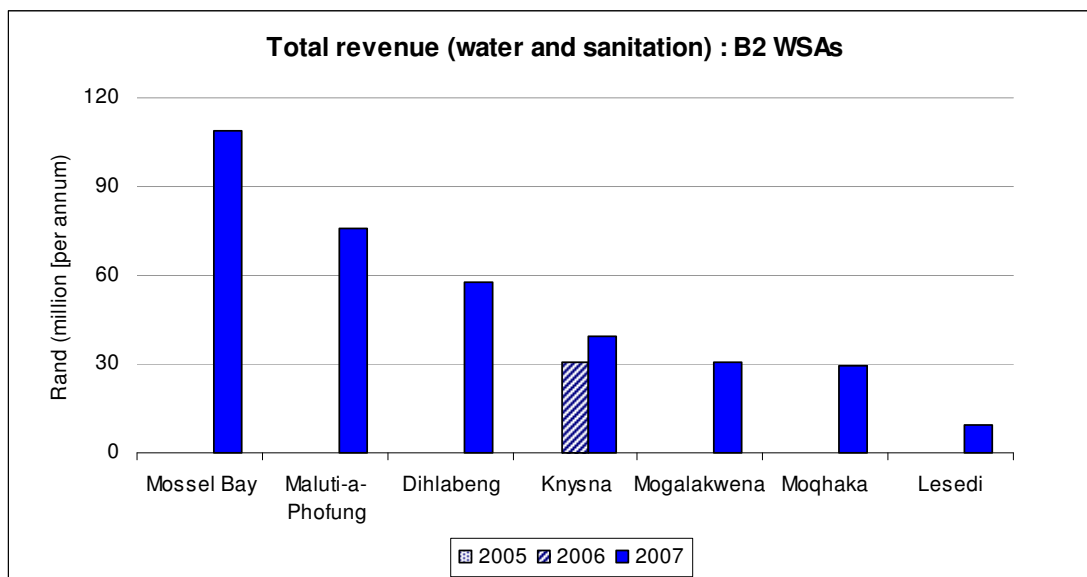


**Figure 50: Total revenue (Water and sanitation) for DMs**

Amongst the Districts that participated Ugu had the highest revenue at R182 million and Capricorn, Greater Sekhukhune, Frances Baard and Mopani reported no income. Ugu showed a slight decrease in their revenue when compared to 2005, Umgungundlovu, Uthukela and Uthungulu displayed an increase.



**Figure 51: Total revenue (water and sanitation): B1 WSAs**



**Figure 52: Total revenue (water and sanitation): B2 WSAs**

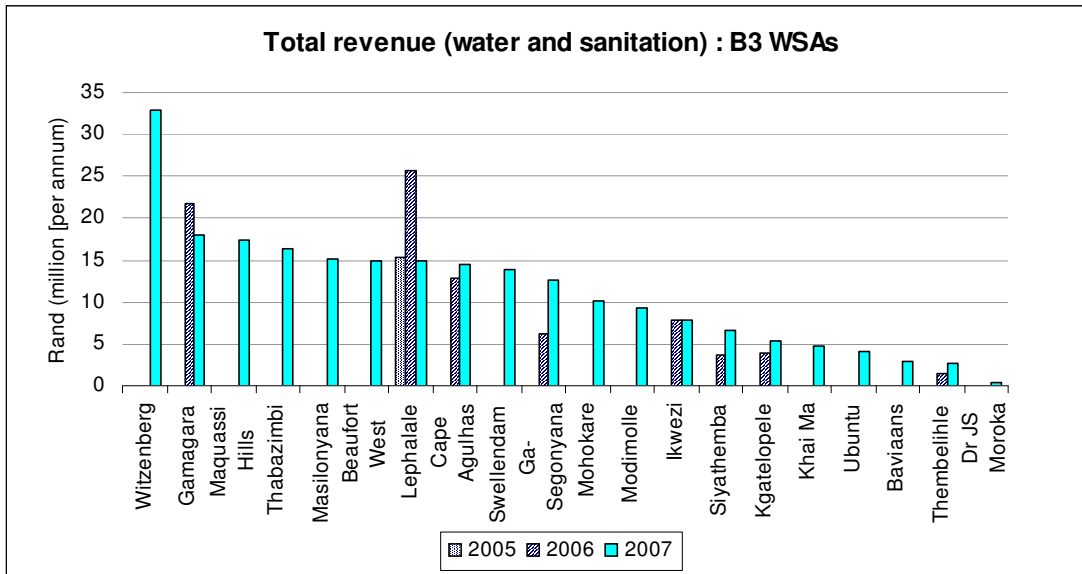


Figure 53: Total revenue (water and sanitation): B3 WSAs

The total revenue per annum for the B municipalities ranged from R0.05 million to R493 million for Potchefstroom and Emfuleni respectively. On average the revenue per annum was R67 million and there was a high degree of data spread indicated by a median of R18 million. Interestingly, Dr J S Moroka reported its revenue at R0.5 million yet it appears to be the biggest operation amongst the B's if one looks at the previous contextual data. This disparity may need to be investigated further.

#### 4.4.2 Revenue per connection per month

Normalizing the revenue with respect to the number of connections allows for

- a more direct comparison between municipalities, and
- an assessment of viability.

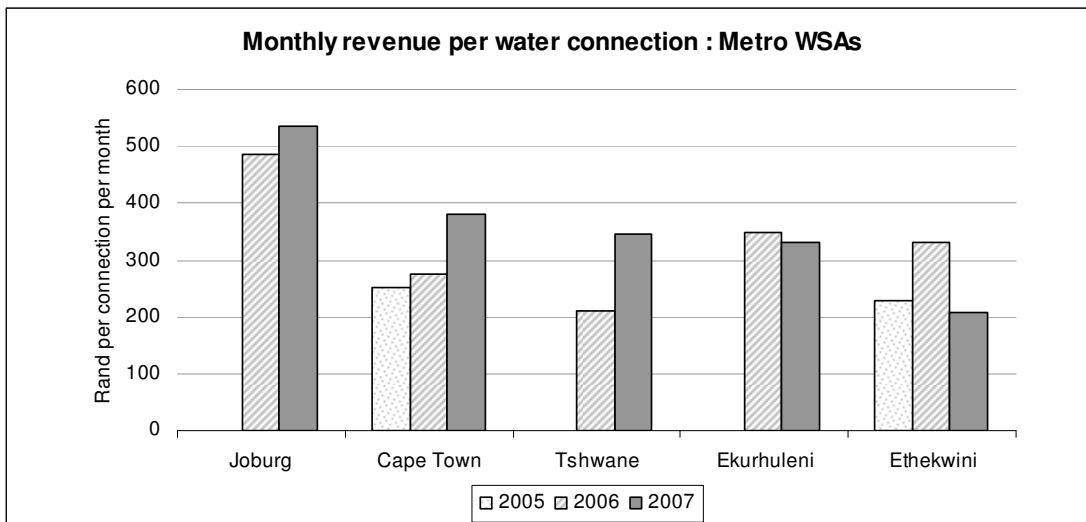


Figure 54: Monthly revenue per water connection for Metros

For the Metros, Joburg has the highest revenue per connection per month and Ethekwini the lowest at R200 per connection per month. Joburg, Cape Town and

Tshwane increased their revenue per connection per month from 2006 to 2007 and Ekurhuleni and Ethekweni showed a decrease.

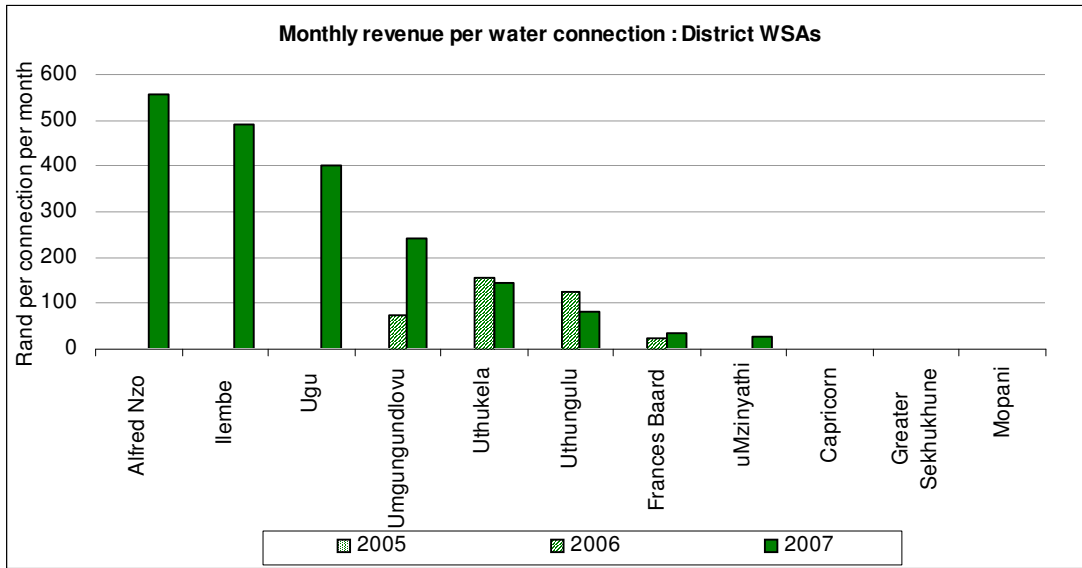


Figure 55: Monthly revenue per water connection for DMs

For the Districts Alfred Nzo reported revenue of R556 per connection per month (comparable to Joburg), the highest amongst the Districts. Umgungundlovu showed a marked increase in revenue per connection from 2006 to 2007, whereas Uthukela, and Uthungulu demonstrated a decrease.

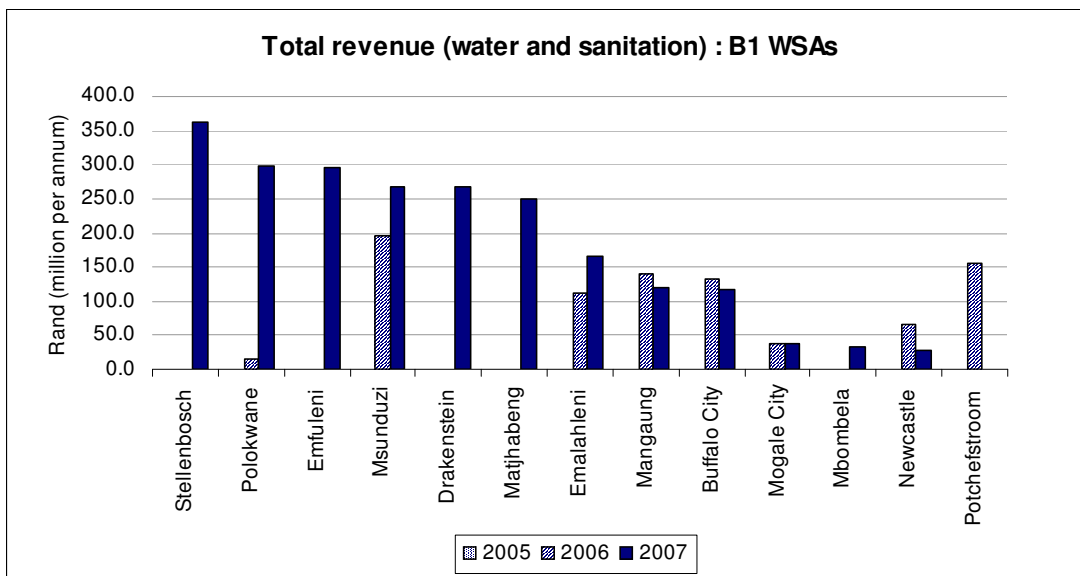
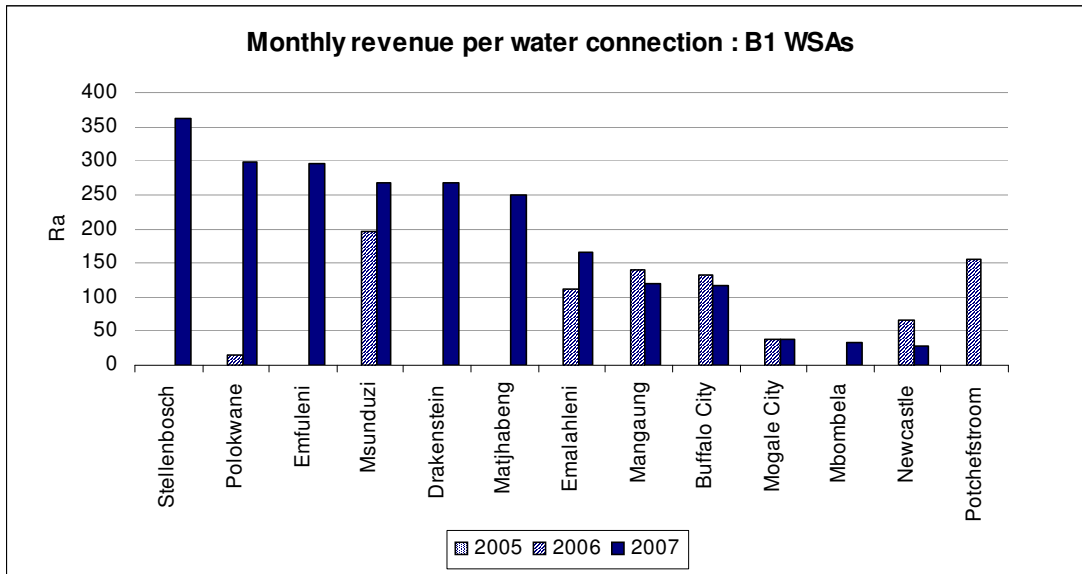


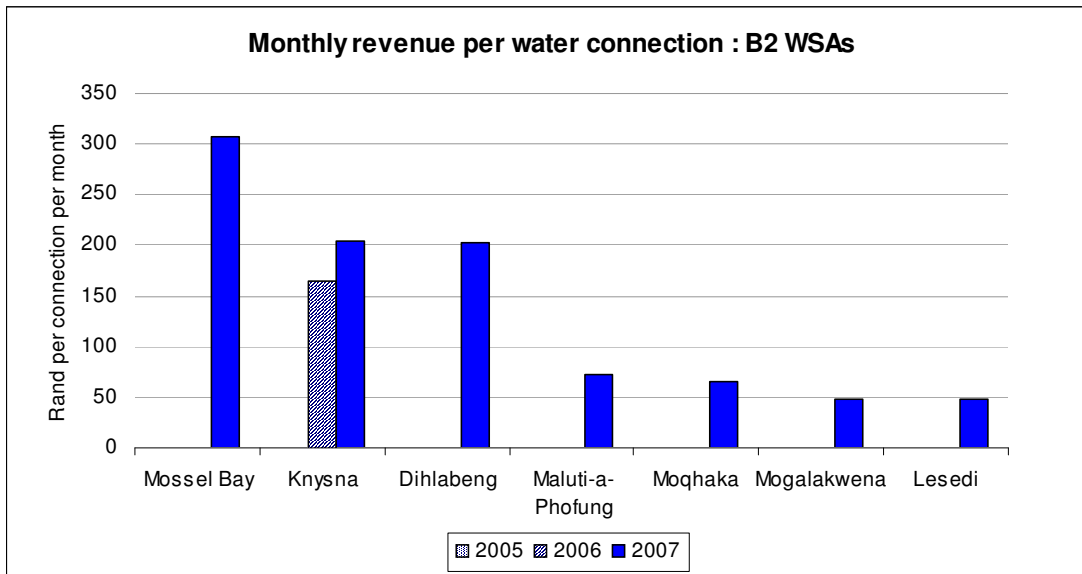
Figure 56: Total revenue (water and sanitation): B1 WSAs

Amongst the B1's, total revenue is equal to or higher than R 250 million in six of the thirteen municipalities, as depicted above. Revenue is highest in Stellenbosch, Polokwane and Emfuleni. On the opposite end of the spectrum revenue is markedly low in Newcastle and Mbombela and Mogale city. A revenue increase is noted in Emalahleni between 2006 and 2007 while decreases are observed in Mangaung and Buffalo City.



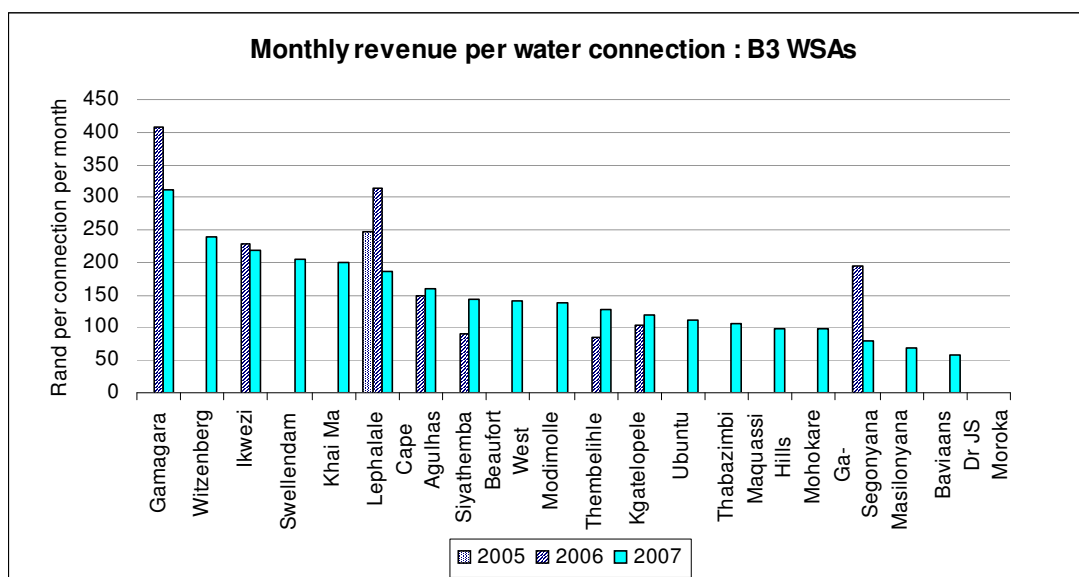
**Figure 57: Monthly revenue per water connection: B1 WSAs**

Amongst the B1 municipalities Stellenbosch reported a monthly revenue per connection of R360 and Potchefstroom R0.02. Potchefstroom could have reported incorrectly for 2007 since the monthly revenue per connection reported in 2006 was R155 making such a huge decrease inconceivable.



**Figure 58: Monthly revenue per water connection: B2 WSAs**

For the B2 municipalities the monthly revenue per water connection ranged from R310 for Mossel Bay to R50 for Lesedi. The monthly revenue per water connection increased between 2006 to 2007 in Knysna.



**Figure 59: Monthly revenue per water connection: B3 WSAs**

The revenue per water connection per month for the B3 municipalities ranged from R 310 in Gammagara to as little as R10 in Dr J S Moroka. Most of the data was located at around R100 per connection per month.

## 5 Results and Analysis

This section presents the key findings of the benchmarking process and is structured largely by the performance indicators contained in the Strategic Framework for Water Services:

1. Access to basic water supply
2. Access to basic sanitation supply
3. Quality of services: Potable water quality
4. Quality of services: Continuity of supply
5. Access to free basic services (water)
6. Access to free basic services (sanitation)
7. Financial performance: Affordability and debtor management
8. Asset management: Metering coverage and unaccounted-for water
9. Protection of the environment: Effluent discharge quality

However, the benchmarking process did not use indicators for assessing Access to Free Basic Services for Water (5) and Sanitation (6).

An additional set of indicators was used for institutional issues including reporting.

This section sets out the performance of Water Services Authorities in terms of the key performance indicators identified, and analyses them within the defined analytical categories of municipalities:

- Category A – Metropolitan Municipalities

- Category B1 – Local Municipalities that are Secondary Cities
- Category B2 – Local Municipalities that are large towns
- Category B3 – Local Municipalities that are small town including those that are mainly rural
- Category C – District Municipalities that are WSAs

Each indicator (or group of indicators) is discussed in terms of the following:

- Definition,
- Importance or significance,
- Data sources (where applicable),
- Extent of reporting and confidence levels (reliability of data),
- Performance Analysis, and
- Implications and recommendations.

## **5.1 Access to basic water supply**

### **5.1.1 Access to water services**

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**Definition:**

The percentage of households with access to at least a basic water supply as defined in the Strategic Framework.

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**Supporting definitions from the Strategic Framework:*****Facility:***

The infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections).

***Service:***

The provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water-use, hygiene and related practices

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**Formula:**

The number of households with a basic water service (functioning) divided by the total number of households in the service area.

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***Significance***

This indicator coincides with Sector Target 1 in the Strategic Framework for Water Services (All people living in South Africa have access to a functioning basic water supply by 2008).

***Data sources***

Municipalities must be able to estimate the total number of households within their municipal area, and know (or estimate) the number of households with access to a *functioning* water service which meets the definition set out above.

***Extent of Reporting and Reliability of data***

All participating municipalities except Vhembe DM were able to provide data on access.

**Table 6: Percentage of access to water supply**

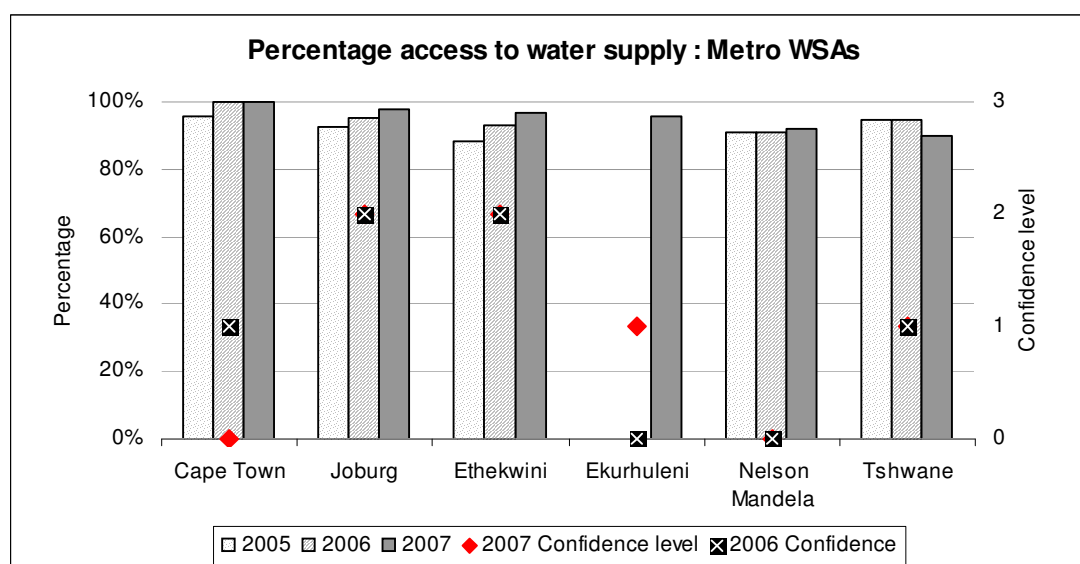
| Confidence level | A | B1         | B2         | B3         | C           | Total       |
|------------------|---|------------|------------|------------|-------------|-------------|
| Estimate         | 1 | 2          | 3          | 4          | 9           | 22          |
| Reliable         | 2 | 2          | 3          | 2          | 11          | 21          |
| Audited          | 3 | 0          | 1          | 0          | 0           | 2           |
| <b>Score</b>     |   | <b>6</b>   | <b>12</b>  | <b>8</b>   | <b>31</b>   | <b>70</b>   |
| <b>Average</b>   |   | <b>1.5</b> | <b>1.7</b> | <b>1.3</b> | <b>1.55</b> | <b>1.56</b> |

The reliability of data for access is low, with many municipalities either not stating the confidence levels or reporting their access data as estimates. It should be noted that reporting is mostly likely to relate to the availability of the infrastructure (the facility itself) and not the functioning of the facility as defined in the Strategic Framework.

There is no common definition of household. This is left to the municipality to define (and state). The intention is to harmonise on best practice over time.

**Performance Analysis**

The analysis is reported in following three figures.



**Figure 60: Access to water supply in Metros**

Access to water is good in most Metros as would be expected (all in excess of 90% of households). It is anticipated that the backlogs shown are largely housing related. An inter-year comparison shows improvement in addressing backlogs in Joburg and Ethekwini. Tshwane shows a slight drop in access possibly due to in-migration from other areas.

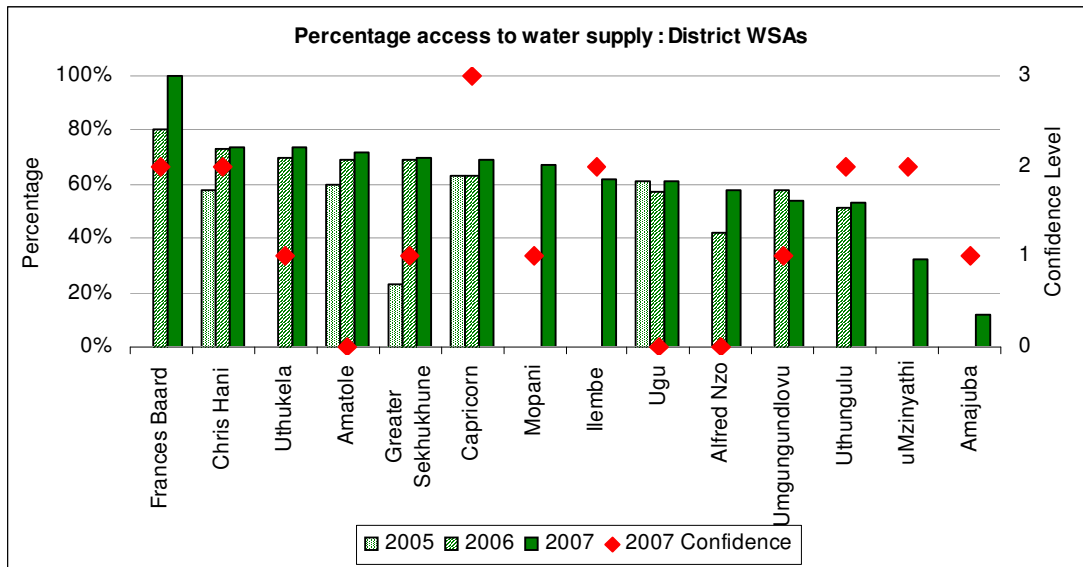


Figure 61: Access to water supply for DMs

Access to water services in the WSAs that are districts is much lower, with most reporting access of below 70% but a steady increase between 2006 and 2007. Frances Baard reports a 100% access however it must be noted that it is an authority only for its district management area (DMA). It is expected that services conditions would be most difficult in the district municipalities acting as WSAs, as these municipalities have large rural populations with low levels of access and service in the past (that is, large backlogs to catch up).

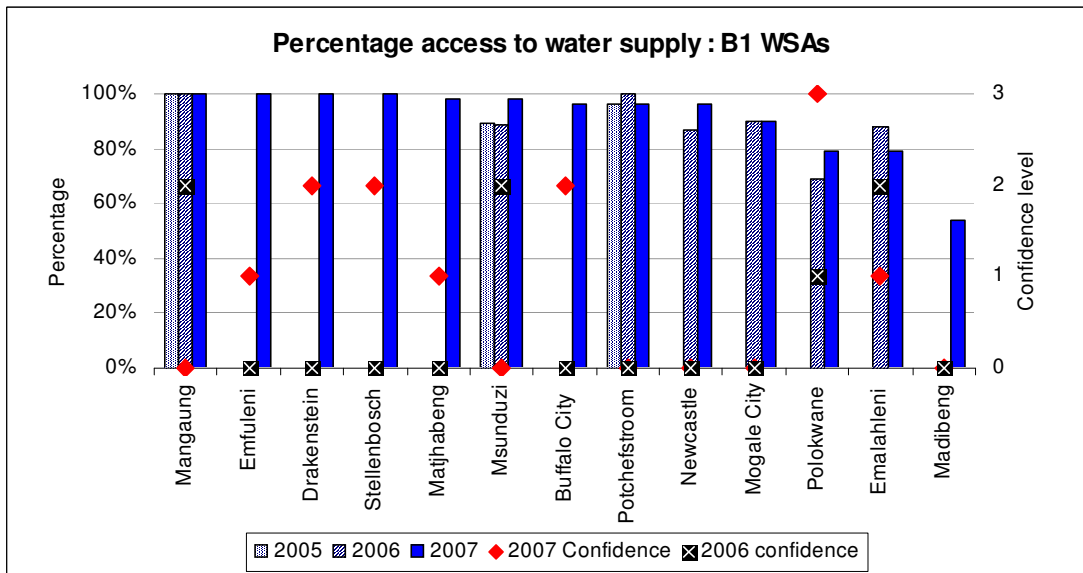


Figure 62: Access to water supply for LMs (B1 WSAs)

The percentage access to services in secondary cities is good with most of the LMs reporting an access figure in the order of 90% and a few reporting 100% from 2006. Emalahleni shows a slight decrease in access. This could be due to in-migration.

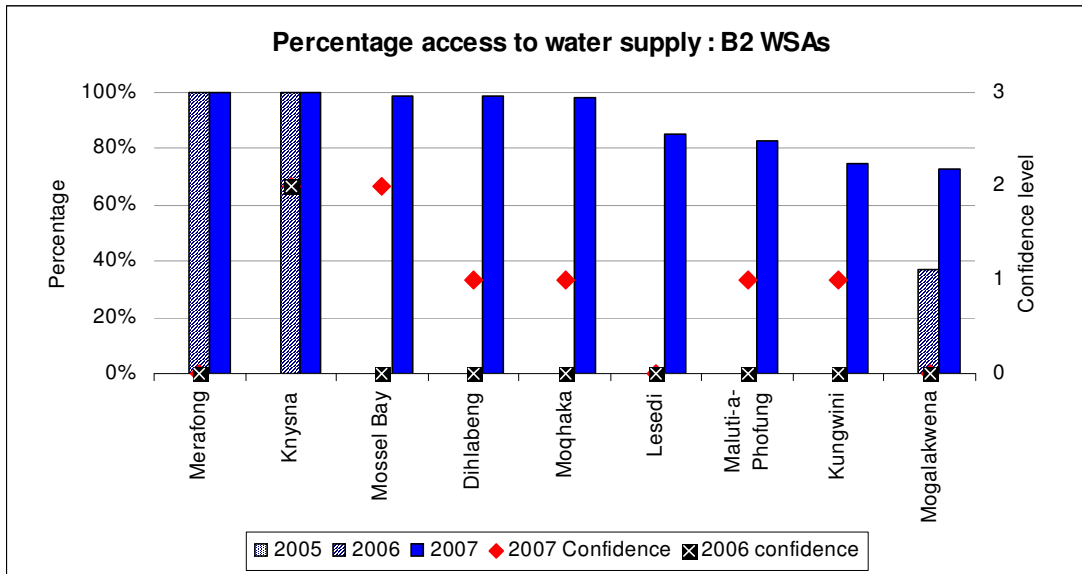


Figure 63: Access to water supply for LMs (B2 WSAs)

The large towns (B2 municipalities) are mostly reporting access of more than 80%. Mogalakwena LM shows a significant improvement from the data reported in 2006. However, the confidence level is still very low. The new participants show access of over 70% with estimated data and reliable data for Mossel Bay LM.

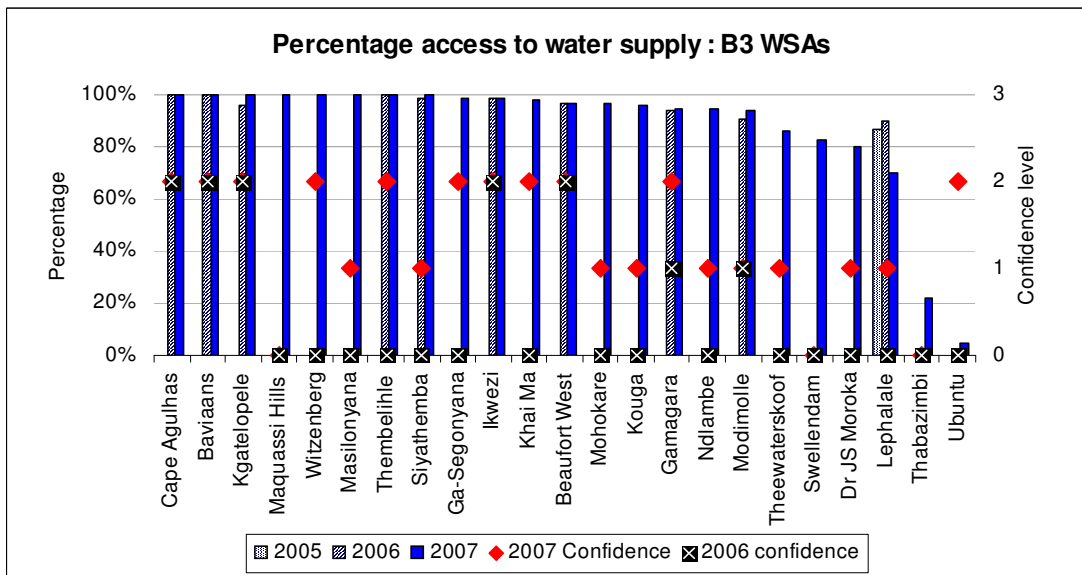


Figure 64: Access to water supply for LMs (B3 WSAs)

The majority of the participating small towns (B3 municipalities) report access above 90% with confidence levels of the 2007 data ranging from estimate to reliable. Thabazimbi and Ubuntu are performing poorly with over 70% of households with no access to water supply. Ubuntu reports that 90% of its households do not have access to water supply and its data is reliable. However, this data will need to be verified.

### 5.1.2 Absolute backlog for water

**Definition:**

The number of households without access to at least a basic supply (As defined in the Strategic Framework)

**Supporting definitions from the Strategic Framework:**
*Facility:*

The infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections).

*Service:*

The provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident) and the communication of good water-use, hygiene and related practices

**Significance**

This indicator provides insight into size of the challenge (to provide at least a basic level of water supply service to all residents) and arises from the Strategic Framework for Water Services.

**Extent of reporting and reliability of data**

Similar to the last indicator, the level of reliability of the data is low with municipalities reporting either estimates or not stating the confidence level. A breakdown of confidence levels by category of municipality is given in the table below.

*Table 7: Confidence levels for absolute backlog in water supply*

| <b>Confidence level</b> | <b>A</b>   | <b>B1</b>  | <b>B2</b>  | <b>B3</b>  | <b>C</b>   | <b>Total</b> |    |
|-------------------------|------------|------------|------------|------------|------------|--------------|----|
| Estimate                | <b>1</b>   | 2          | 2          | 4          | 11         | 4            | 23 |
| Reliable                | <b>2</b>   | 2          | 3          | 2          | 8          | 3            | 18 |
| Audited                 | <b>3</b>   | 0          | 1          | 0          | 0          | 1            | 2  |
| <b>Score</b>            | <b>6</b>   | <b>11</b>  | <b>8</b>   | <b>27</b>  | <b>13</b>  | <b>65</b>    |    |
| <b>Average</b>          | <b>1.5</b> | <b>1.8</b> | <b>1.3</b> | <b>1.4</b> | <b>1.6</b> | <b>1.5</b>   |    |

**Performance Analysis**

The number of households without access to a basic level of water supply is shown in the graphs below.

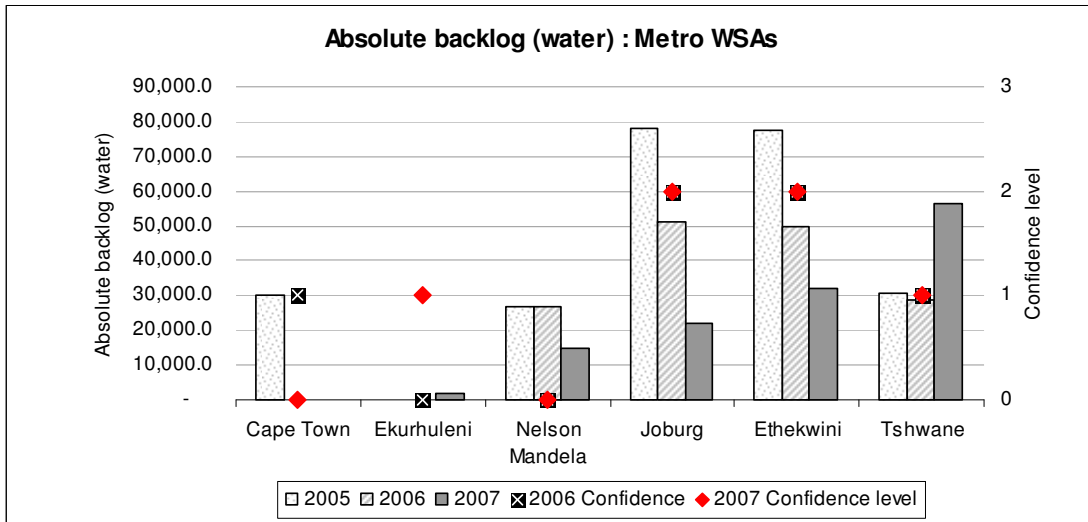


Figure 65: Absolute backlog for water in the Metros

The size of the backlog in Metro areas has been significantly reduced in 2007 with Joburg and Ethekwini both reporting a consistent decrease in their backlogs from 2005. Tshwane shows an increase in its backlogs from just under 30 000 to over 55 000 households not having access to water supply. These figures were reported as estimates and will need to be verified again. Cape Town reports that their backlogs for water services have been eliminated. Ekurhuleni reports very few backlogs and Nelson Mandela has also reported some progress on the elimination of backlogs.

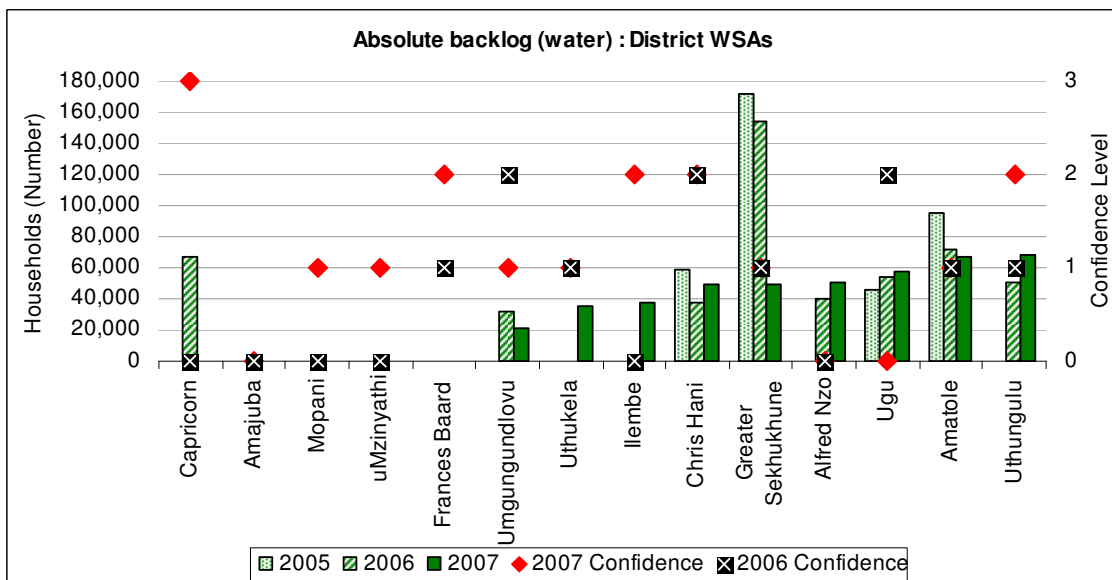
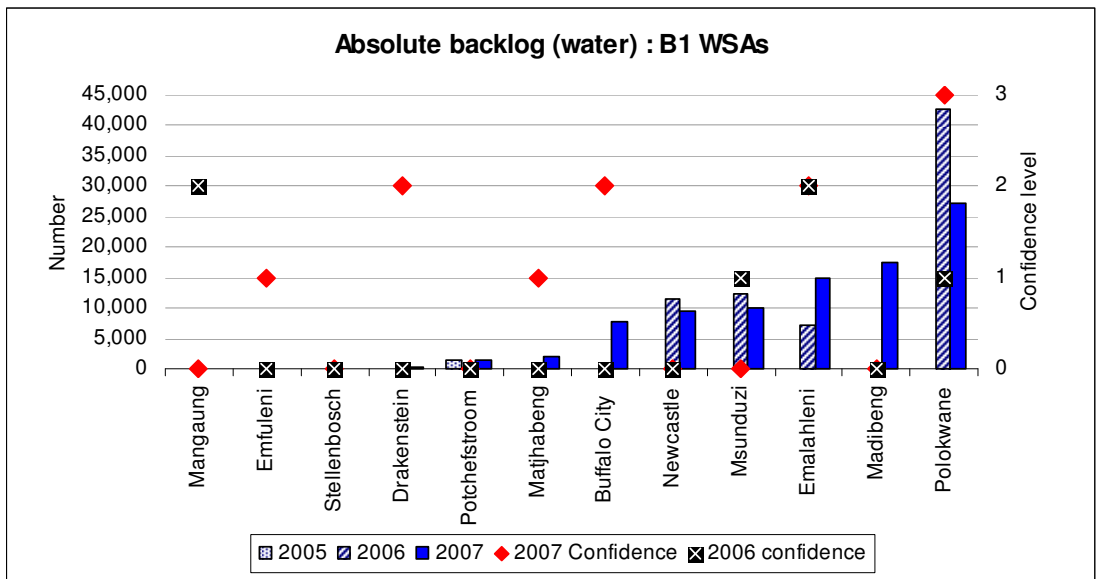


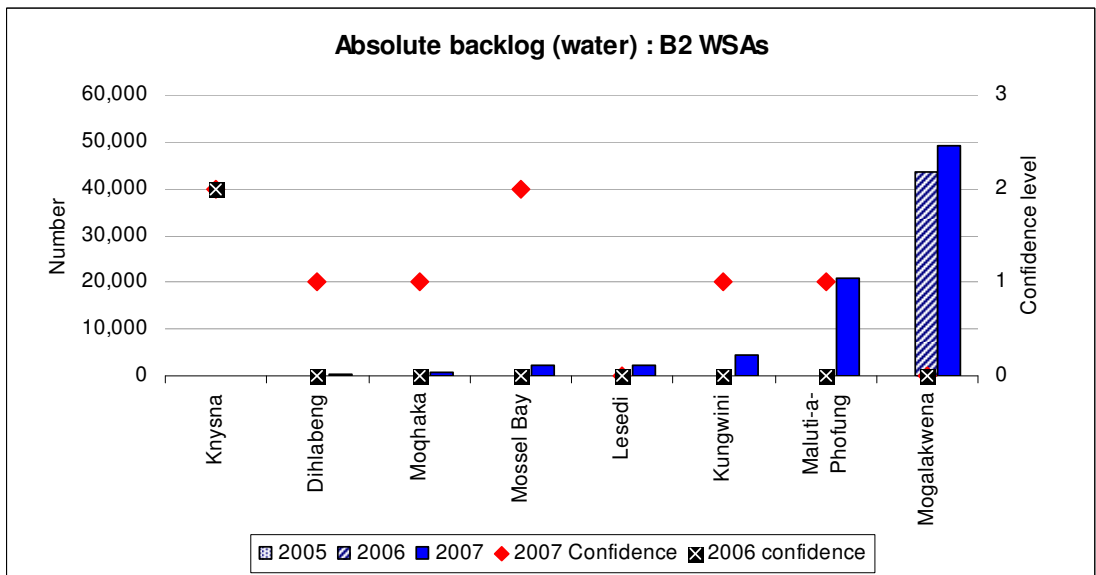
Figure 66: Absolute backlog for water in the DMs

The backlog in district municipalities is declining with the highest number of backlogs reported to be at about 65 000 households in Uthungulu and Amatole. Greater Sekhukhune DM has reduced its backlog from over 170 000 households in 2005 to about 50 000 in 2007. It is encouraging to see that the backlog in other participating DMs is either declining or has been addressed in some of the DMs.



**Figure 67: Absolute backlog for water in the LMs (B1 WSAs)**

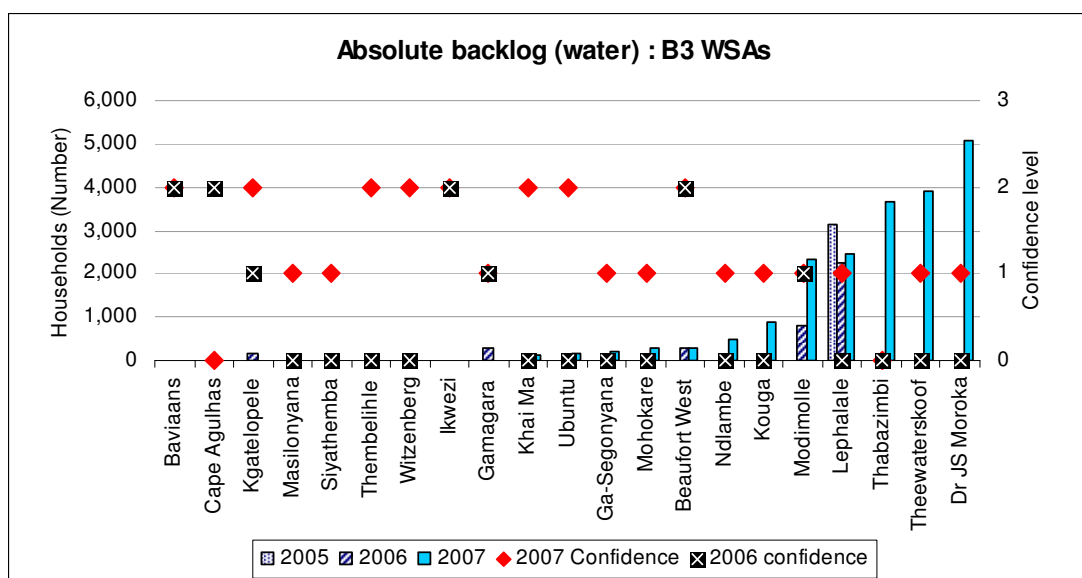
Polokwane is reporting the highest backlogs among its peers at over 25 000 households. However, it also shows a significant decrease since 2006 where it reported backlogs of over 40 000. Its data equally improved from an estimate to reliable between the two years of reporting. The backlogs in other secondary cities range from zero to about 18 000 households. It is also encouraging to see that the reliability of data has improved in many of these municipalities. Mogale City and Mbombela did not provide data for this indicator. Emalahleni reported an increase in its backlog.



**Figure 68: Absolute backlog for water in the LMs (B2 WSAs)**

Mogalakwena reports an increase in its backlog from about 44 000 households to about 49 000 households due to an influx of people. It is followed by Maluti-a-Phofung with just over 20 000 households. The rest of the large towns that participated have

reported significantly lower backlogs of 5 000 households or lower. Knysna reports that it has addressed its backlogs. Merafong did not provide data for this indicator.



**Figure 69: Absolute backlog for water in the LMs (B3 WSAs)**

The backlogs in the small towns (B3 municipalities) are generally much smaller (and in some cases close to zero) with the exceptions of a few municipalities. Dr JS Moroka is reporting the highest backlogs in this group of municipalities at above 5 000 households. Lephalale and Modimolle are both reporting an increase in backlogs in 2007 with the latter reporting an increase of more than a 1 000 households. Maquassi Hills and Swellendam did not provide any data for this indicator.

### 5.1.3 Rate of backlog reduction in water supply

#### Definition:

The percentage reduction in the number of households without access to at least a basic water supply (as defined in the Strategic Framework)

#### Formula:

$$\frac{(\text{backlog last year} - \text{backlog this year})}{(\text{backlog this year})}$$

#### Significance

This indicator shows that the rate at which the backlog is being reduced, and can indicate (albeit indirectly) the likelihood of the access target being met. For example, if the target for eradicating the backlog is 3 years away, then the rate of reduction in the backlog should be of the order of 33% if the target is to be reached. This arises from the Strategic Framework for Water Services.

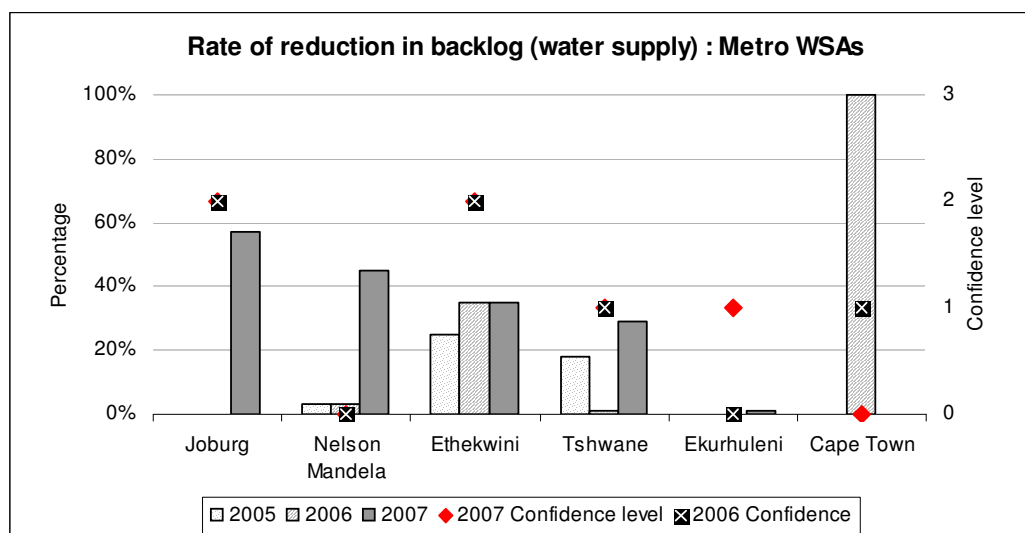
#### Extent of reporting and reliability of data

The confidence levels for the data reported against this indicator are still very low with more than half of the participating municipalities not stating the confidence level. A significant number gave an estimate, even fewer gave a reliable confidence and only one gave an audited figure. Municipalities stated a level of confidence at an average of 1.5.

**Table 8: Confidence levels on the rate of reduction in backlog (water)**

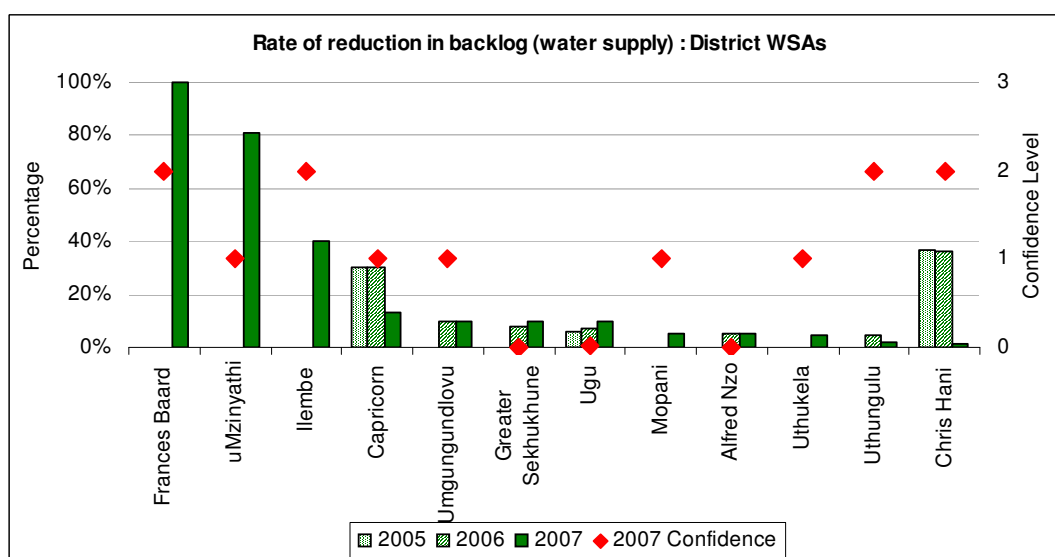
| Confidence level | A          | B1       | B2         | B3         | C          | Total      |    |
|------------------|------------|----------|------------|------------|------------|------------|----|
| Estimate         | 1          | 2        | 1          | 2          | 8          | 4          | 17 |
| Reliable         | 2          | 2        | 2          | 1          | 5          | 3          | 13 |
| Audited          | 3          | 0        | 1          | 0          | 0          | 0          | 1  |
| <b>Score</b>     | <b>6</b>   | <b>8</b> | <b>4</b>   | <b>18</b>  | <b>10</b>  | <b>46</b>  |    |
| <b>Average</b>   | <b>1.5</b> | <b>2</b> | <b>1.3</b> | <b>1.4</b> | <b>1.4</b> | <b>1.5</b> |    |

**Performance analysis**



**Figure 70: Rate of reduction in backlog (water supply) in Metros**

Cape Town has reduced its water supply backlogs by a rate of 100%. However, the confidence level of this figure is an estimate. Joburg reports that it is reducing its backlog at the rate of nearly 60% indicating that it may meet the target of 2010. Nelson Mandela, Ethekwini and Tshwane reported a rate of reduction of 45%, 35% and 30% respectively.



**Figure 71: Rate of reduction in backlog (water supply) in DMs**

Frances Baard has reduced its backlogs to zero while the rate of reduction in Chris Hani is of concern considering the difference in the number of households between the two DMs. It has been mentioned earlier that the former reports figures for only the DMA which stand at about 570 households. The rate at which Capricorn is reducing its backlog has decreased from the last two years of reporting from 30% to 10% in 2007.

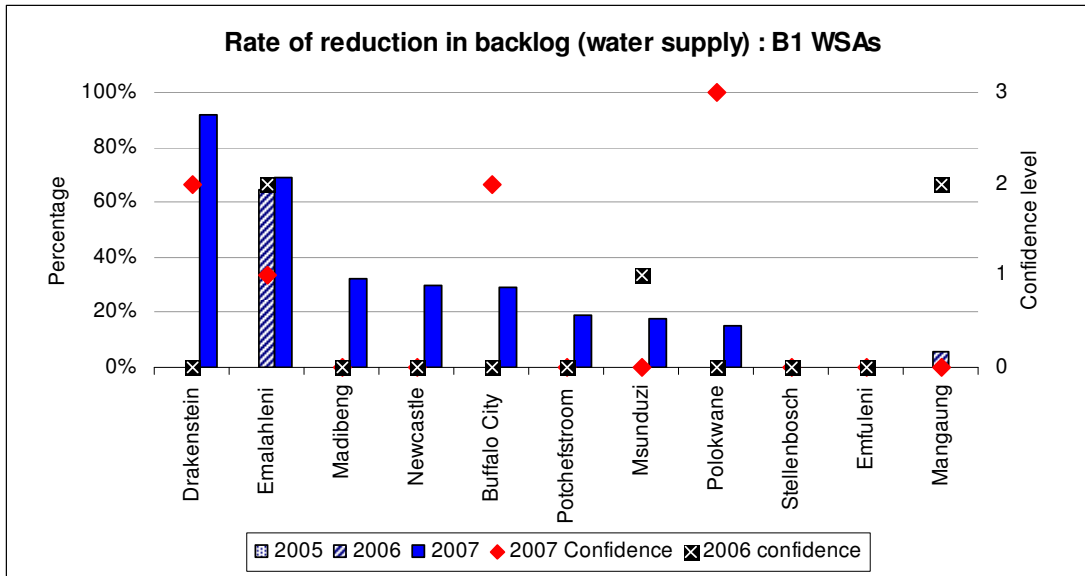


Figure 72: Rate of reduction in backlog (water supply): B1 WSAs

Drakenstein reports a rate of reduction of 90% and this figure for Emalahleni is about 70%. The rest of the secondary cities (B1 municipalities) report a rate of backlog reduction of 30% and less. Matjhabeng, Mbombela and Mogale City did not provide any data for this indicator. Mangaung, Stellenbosch and Emfuleni do not have backlogs.

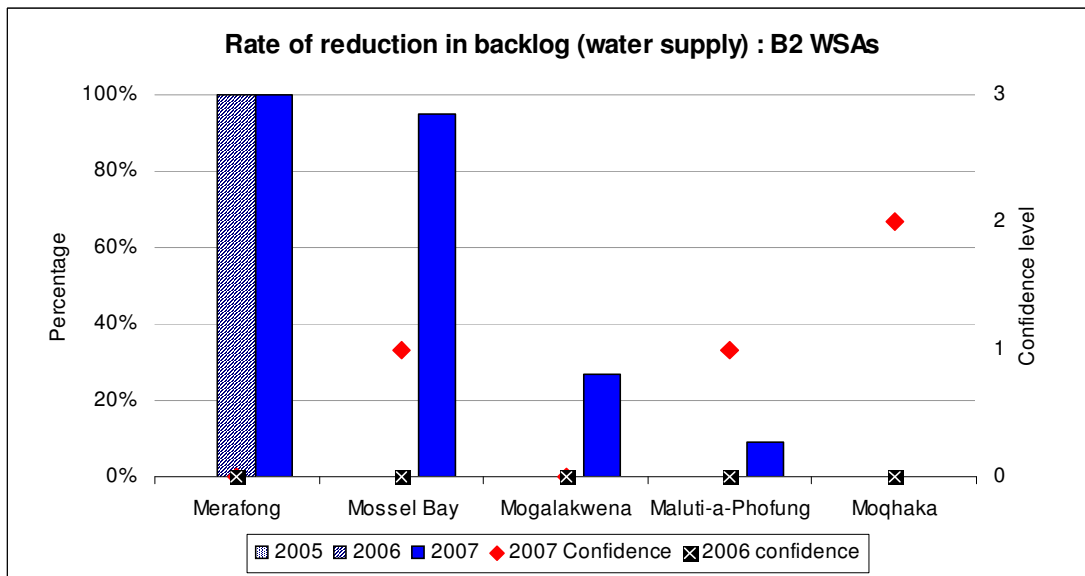


Figure 73: Rate of reduction in backlog (water supply): B2 WSAs

Merafong reported a rate of reduction of 100%, with Mossel Bay's reduction rate at over 90% and Mogalakwena and Maluti-a-Phofung reporting a figure of 25% and 10%

respectively. Dihlabeng, Knysna, Kungwini, Lesedi and Merafong did not provide data for this indicator.

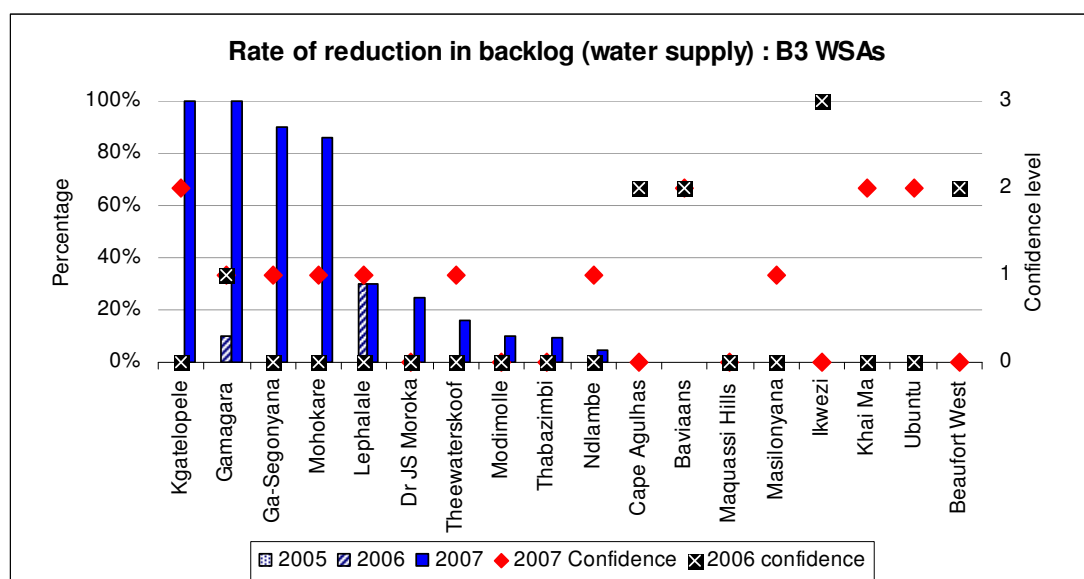


Figure 74: Rate of reduction in backlog (water supply): B3 WSAs

A number of the small towns (B3 municipalities) report low rates of reduction while some are reporting rates of 75% or above. Many of these do not have backlogs and those that have are addressing them. Earlier, this group of municipalities reported very low backlogs with the highest figure at over 2 000 households for Modimolle. This municipality shows that it is reducing its backlog at 10% per annum. Dipaleseng, Khai Ma, Kouga and Masilonyana did not provide data for this indicator. Kgatelopele and Gamagara have reduced their backlogs to zero while Ga-Segonyana and Mohokare are following closely. Of the municipalities that show the rate of 0%, Ikhwezi, Masilonyana, Thembelihle, Kgatelopele, Cape Agulhas, Baviaans and Siyathemba do not have backlogs. The others have backlogs, although insignificant, but still record a rate of reduction at 0%.

## 5.2 Access to basic sanitation supply

### 5.2.1 Access to sanitation services

**Definition:**

The percentage of households with access to at least a sanitation service as defined in the Strategic Framework

**Supporting definition from the Strategic Framework:**

*Facility:*

The infrastructure necessary to provide a sanitation service that is safe, reliable, private, protected from the weather, ventilated, keeps smells to the minimum, is easy to keep clean, minimises the risk of the spread of sanitation-related diseases by facilitating the appropriate control of disease-carrying pests, and enables safe and appropriate treatment and/or removal of human waste and wastewater in an environmentally sound manner.

*Service:*

The provision of a basic sanitation facility which is easily accessible to a household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices.

**Formula:**

The number of households with access to at least a basic sanitation service divided by the total number of households

The definition of backlog includes bucket toilets, unimproved pit latrines and chemical toilets (as the latter is regarded as only a temporary and expensive solution).

**Significance**

This indicator coincides with Sector Target 2 in the Strategic Framework for Water Services (All people living in South Africa have access to a functioning basic sanitation facility by 2010).

**Data sources**

Municipalities must be able to estimate the total number of households within their municipal area, and know (or estimate) the number of households with access to a *functioning* basic sanitation service which meets the definition set out above.

**Extent of reporting and Reliability of data (and interpretation of the definition)**

The reliability of this data is similar to that for access to water. Most data provided for this indicator was either estimated or the confidence level was not stated. It should be noted that reporting is mostly likely to relate to the availability of the infrastructure (the facility itself) and not the functioning of the facility as defined in the Strategic Framework. There is also some confusion as to whether or not the definition of a basic supply should include chemical toilets as this is a form of bucket toilet. A breakdown of confidence levels provided by municipalities in this indicator is given in the table below.

**Table 9: Confidence levels for access to sanitation**

| <b>Confidence level</b> | <b>A</b>   | <b>B1</b>  | <b>B2</b>  | <b>B3</b>  | <b>C</b>   | <b>Total</b> |    |
|-------------------------|------------|------------|------------|------------|------------|--------------|----|
| Estimate                | <b>1</b>   | 3          | 4          | 5          | 8          | 4            | 24 |
| Reliable                | <b>2</b>   | 2          | 2          | 1          | 9          | 5            | 19 |
| Audited                 | <b>3</b>   | 0          | 1          | 0          | 0          | 0            | 1  |
| <b>Score</b>            | <b>7</b>   | <b>11</b>  | <b>7</b>   | <b>26</b>  | <b>14</b>  | <b>65</b>    |    |
| <b>Average</b>          | <b>1.4</b> | <b>1.6</b> | <b>1.2</b> | <b>1.5</b> | <b>1.6</b> | <b>1.5</b>   |    |

### Performance Analysis

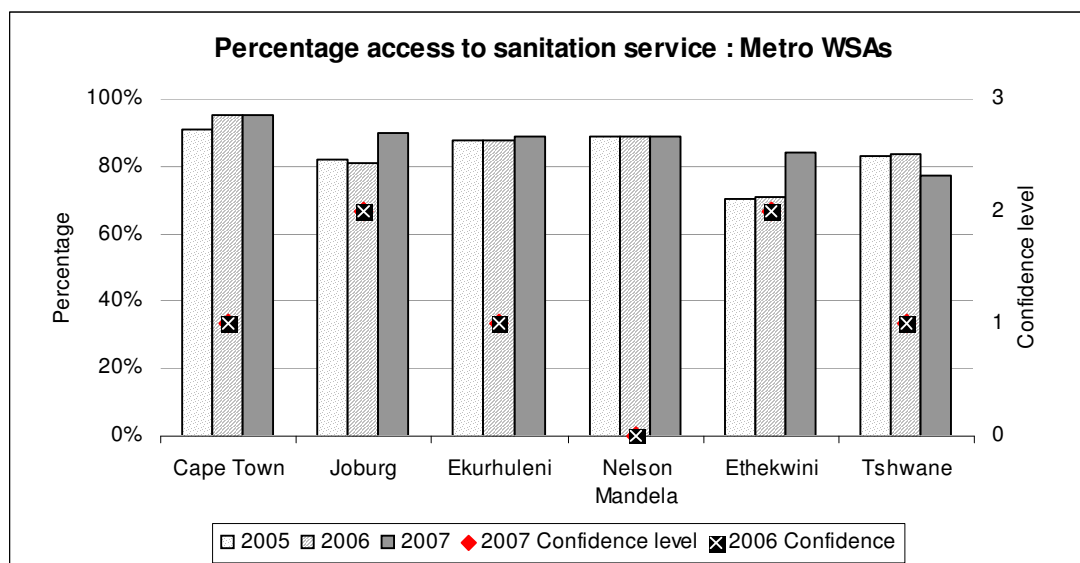


Figure 75: Access to sanitation in Metros

Cape Town is leading in the metros reporting a level of above 95% access. Joburg reports 90% access to adequate sanitation, an increase of 5% from 2006 while Ethekwini reports about 85% access which constitutes an increase of about 15% from 2006. Nelson Mandela and Ekurhuleni access figures have largely remained the same at 90% access over the three years of reporting. Tshwane shows a decrease in access from about 85% in 2006 to below 80% in 2007.

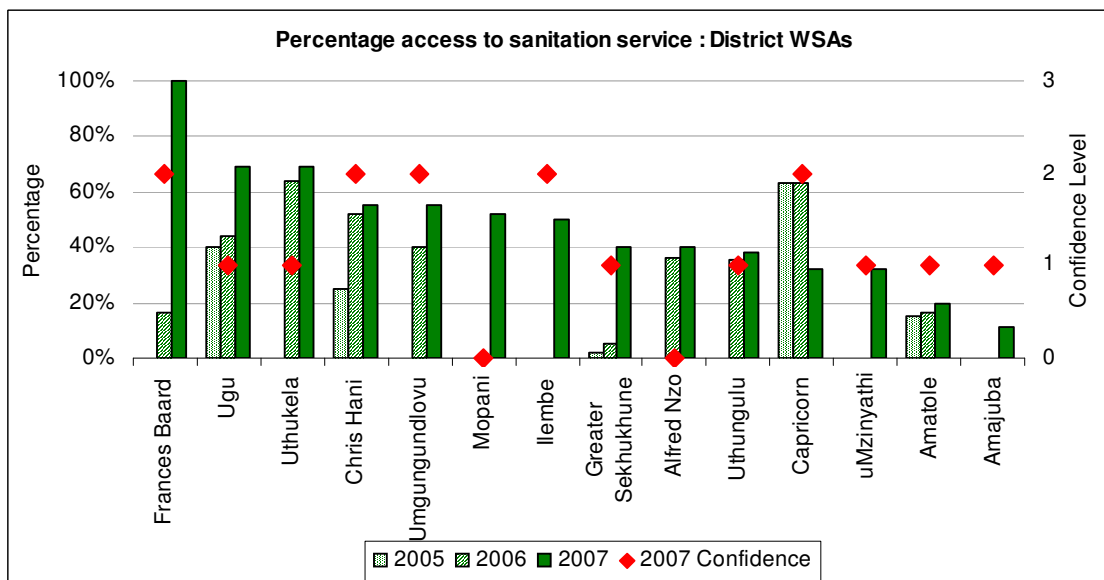
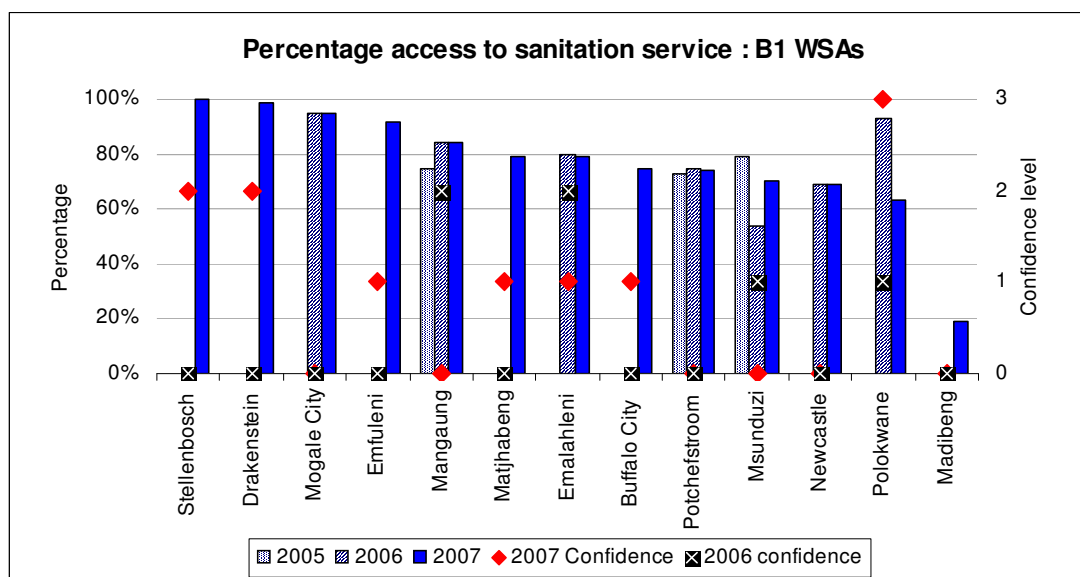


Figure 76: Access to sanitation in the DMs

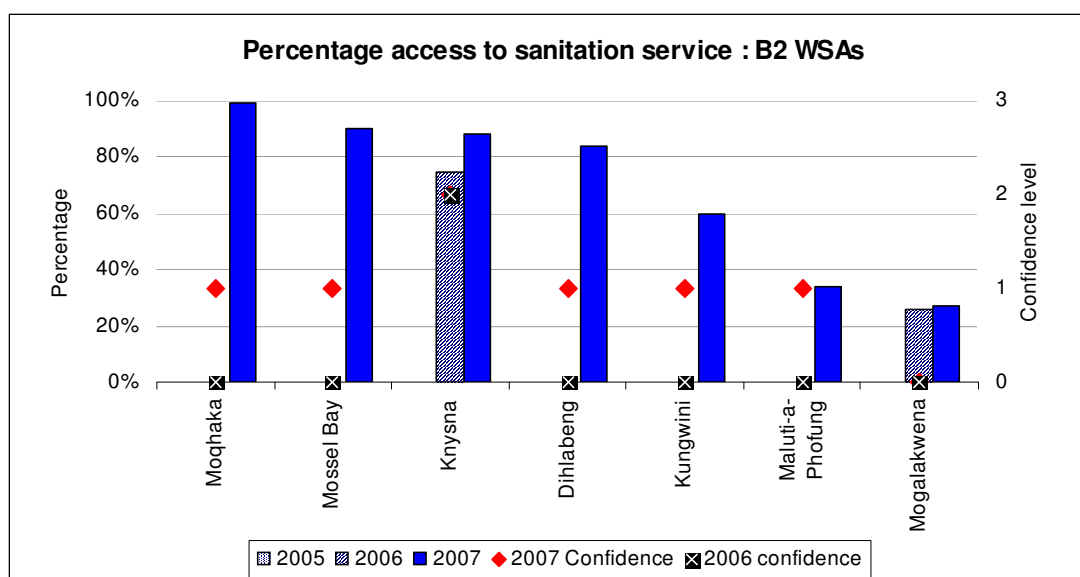
Frances Baard reports 100% access to sanitation leading the district municipalities. As mentioned in the same indicator for water, this municipality reports data only for the DMA which is much smaller than areas for other district municipalities. Ugu and Uthukela both report access levels of about 70%. Most of the district municipalities report levels of access to sanitation at 55% and below, with Amajuba at 10% access.

While all the DMs report an increase in the access to sanitation, Capricorn reports that the level of access has decreased by half. Vhembe did not report data on this indicator.



**Figure 77: Access to sanitation in the LMs (B1 WSAs)**

The secondary cities that provided data are all performing above the 60% mark in this indicator, except for Madibeng with 20% access to adequate sanitation. While all the municipalities in the group show either a slight increase or continuance of the same level of access from last year, Polokwane reports a significant decrease from about 95% in 2006 to 65% in 2007. Mbombela did not provide data for this indicator.



**Figure 78: Access to sanitation in the LMs (B2 WSAs)**

Many large towns that have reported against this indicator illustrate performance at 60% access and above. Maluti-a-Phofung and Mogalakwena both have access levels of below 40%. Mogalakwena, reported a decrease from 95% in 2006 to 65% in 2007. Merafong and Lesedi did not report against this indicator.

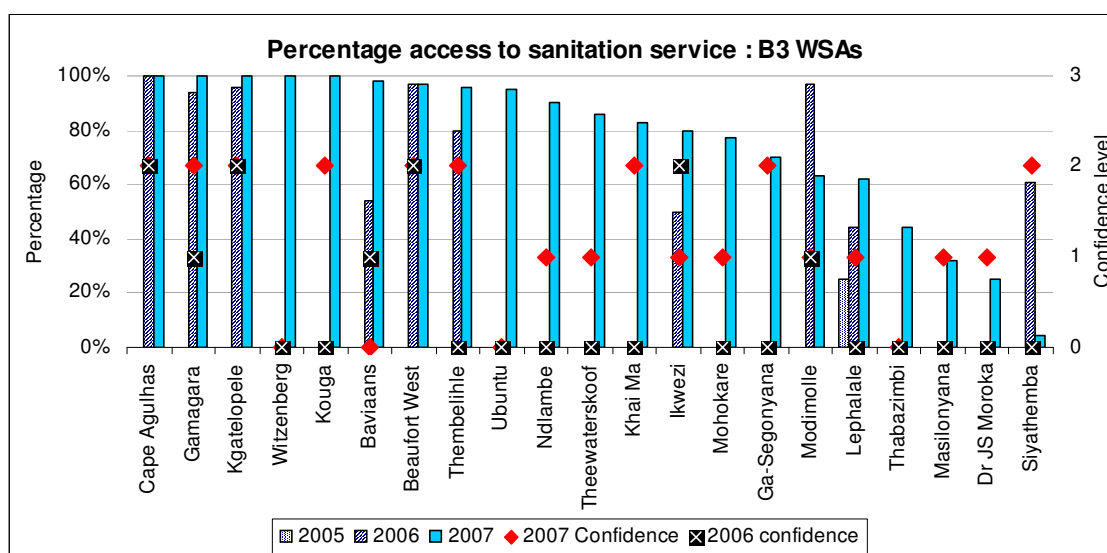


Figure 79: Access to sanitation in the LMs (B3 WSAs)

Most small towns are reporting access levels above 80% and many of those that reported in 2006 showed an improvement in 2007. Of note is the decline observed in Modimolle between 2006 and 2007 and Siyathemba reported a sharp decrease but this data may need to be verified as erroneous data captured could be responsible.

### 5.2.2 Absolute backlog with respect to sanitation services

**Definition:**

The number of households without access to at least a basic sanitation service.

**Sanitation services:**

The collection, removal, disposal or treatment of human excreta and domestic wastewater, and the collection, treatment and disposal of industrial wastewater. This includes all necessary organisational arrangements, including:

- appropriate health, hygiene and sanitation-related awareness
- monitoring quantity and quality of discharge
- billing, revenue collection, consumer care

**Significance**

This indicator provides insight into size of the challenge (to provide at least a basic level of sanitation service to all residents). This arises from the Strategic Framework for Water Services.

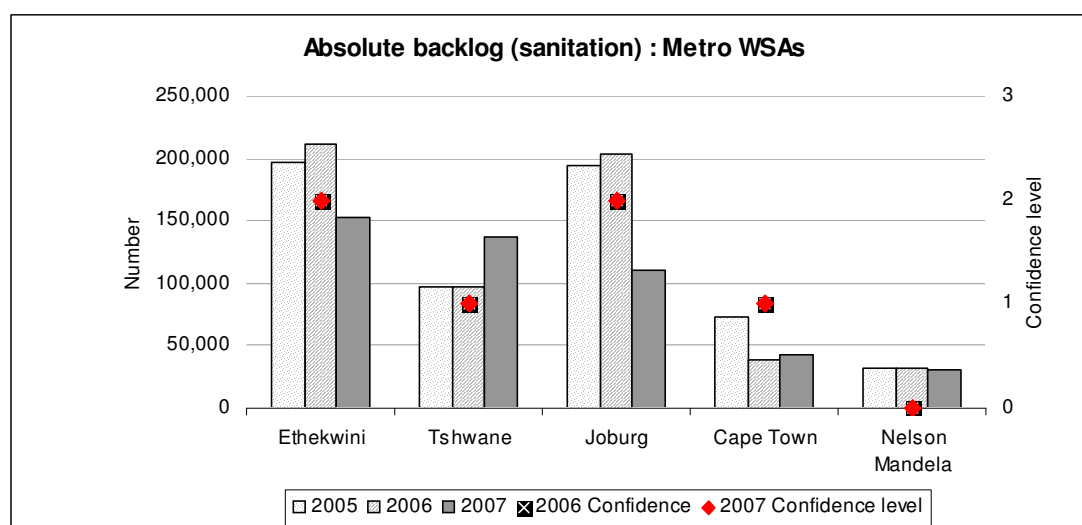
**Extent of reporting and reliability of data**

A significant number of municipalities that reported data are providing either estimates or not stating the level of confidence in this indicator. The table below gives a breakdown by category of municipality.

**Table 10: Confidence levels for absolute backlog (sanitation)**

| <b>Confidence level</b> | <b>A</b>   | <b>B1</b>  | <b>B2</b>  | <b>B3</b>  | <b>C</b>   | <b>Total</b> |
|-------------------------|------------|------------|------------|------------|------------|--------------|
| Estimate                | 1          | 3          | 3          | 5          | 7          | 24           |
| Reliable                | 2          | 2          | 3          | 1          | 8          | 16           |
| Audited                 | 3          | 0          | 1          | 0          | 0          | 2            |
| <b>Score</b>            | <b>7</b>   | <b>12</b>  | <b>7</b>   | <b>23</b>  | <b>13</b>  | <b>62</b>    |
| <b>Average</b>          | <b>1.4</b> | <b>1.7</b> | <b>1.2</b> | <b>1.5</b> | <b>1.4</b> | <b>1.5</b>   |

**Performance Analysis**



**Figure 80: Absolute sanitation backlog for the Metros**

The absolute backlog has significantly decreased in both Joburg and Ethekwini from 2006. Joburg has reduced its backlogs from about 200 000 households in 2006 to about 100 000 households in 2007 while Ethekwini reports its backlog to be 150 000 households in 2007 from over 200 000 households in 2006. Nelson Mandela Metro reported the least backlogs in the metros at about 25 000 households but these have remained reasonably unchanged over the reporting years. It is followed by Cape Town at 40 000 households. Tshwane reports an increase in backlogs in sanitation from about 95 000 households in 2006 to about 130 000 households in 2007. The reported backlog for Metros is 548 020.

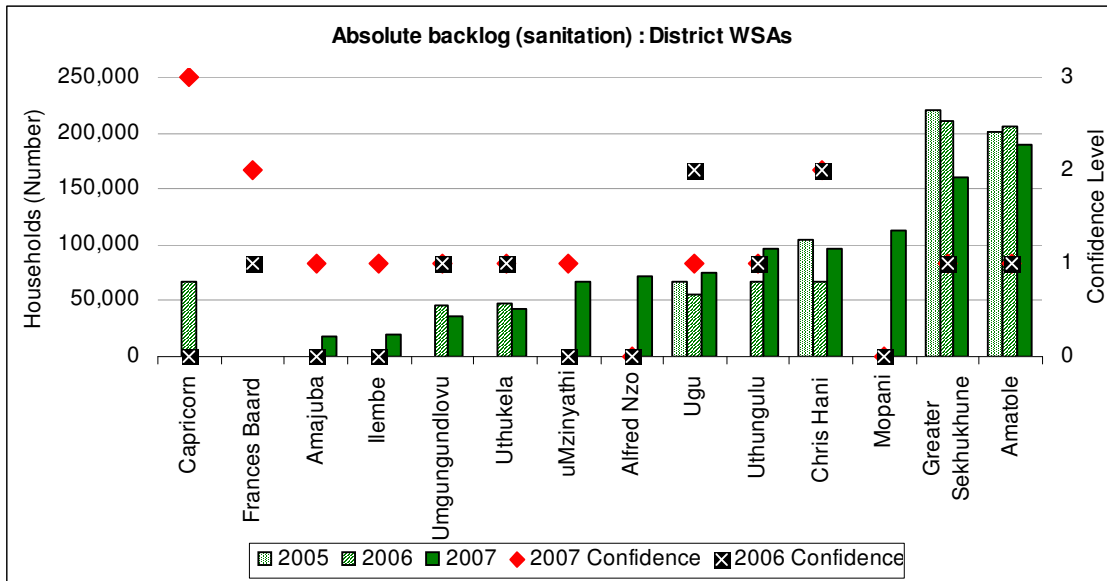


Figure 81: Absolute sanitation backlog for DMs

Amatole, Mopani and Greater Sekhukhune face significant absolute backlogs, reporting their backlogs at above 100 000 households but have shown an improvement over the last reporting years. Backlogs in some of the other districts are not as significant. Some are of the order of 60 000 households and some less. The reported backlog for district municipalities is 986 310 households.

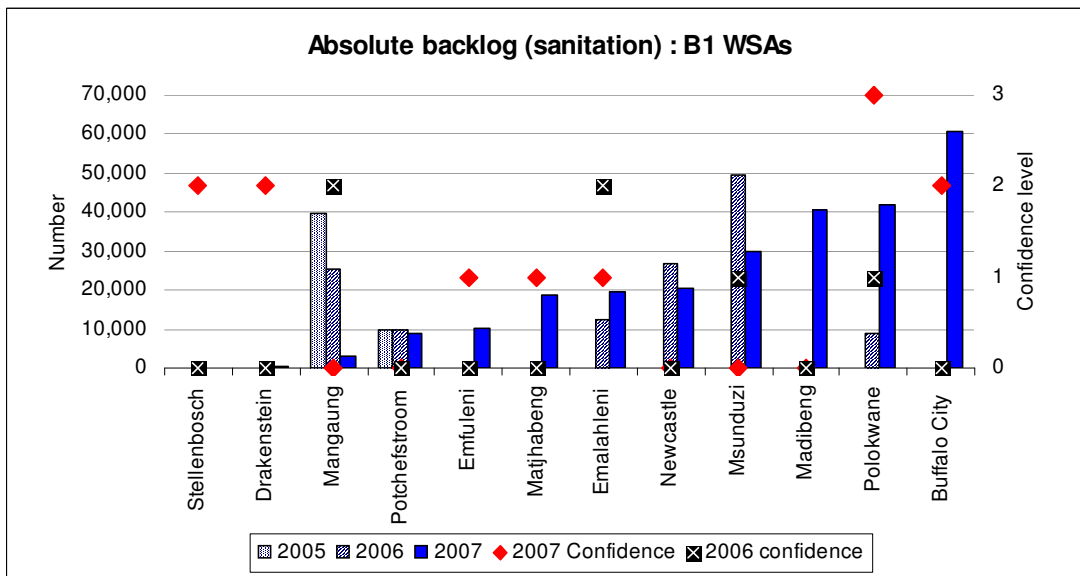


Figure 82: Absolute sanitation backlogs for LMs (B1 WSAs)

Buffalo City reports the highest number of backlogs among the secondary cities, with 60 000 households lacking adequate sanitation. Polokwane reports that its backlogs have increased from about 10 000 households in 2006 to about 41 000 in 2007. Stellenbosch reports that it has no backlog while that of Drakenstein is small. Mbombela and Mogale City did not report against this indicator. According to the

reports submitted the backlog for participating B1 municipalities is 142 014 households.

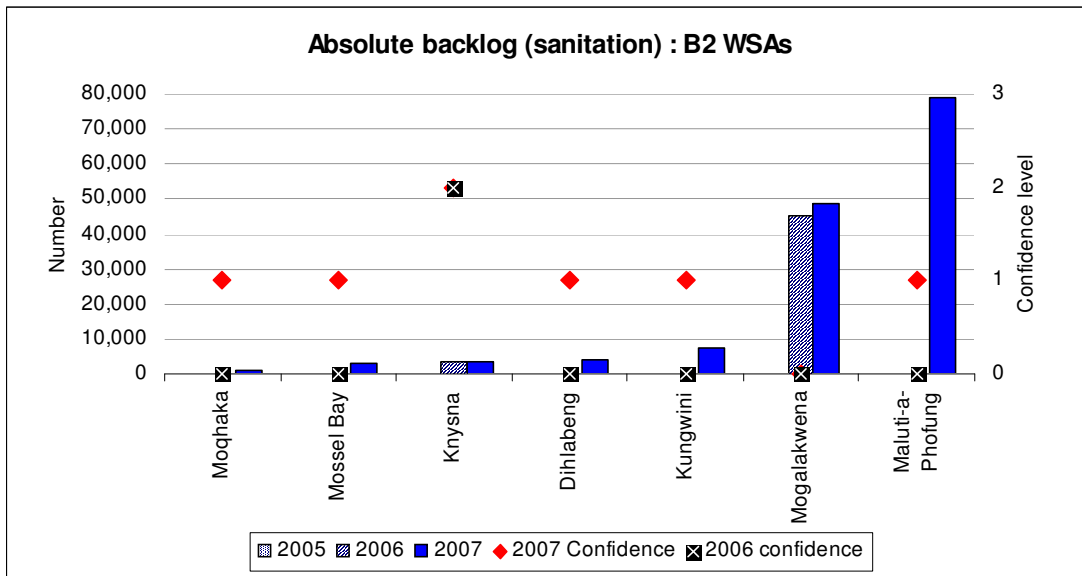


Figure 83: Absolute sanitation backlogs for LMs (B2 WSAs)

Maluti-a-Phofung report the highest backlogs at about 79 000 households. It is followed by Mogalakwena which reports sanitation backlogs at almost 50 000 households. The other five municipalities that reported show smaller backlogs. Lesedi and Merafong did not report their sanitation backlogs. Based on the reports submitted the backlog for participating B2 municipalities is 146 965 households.

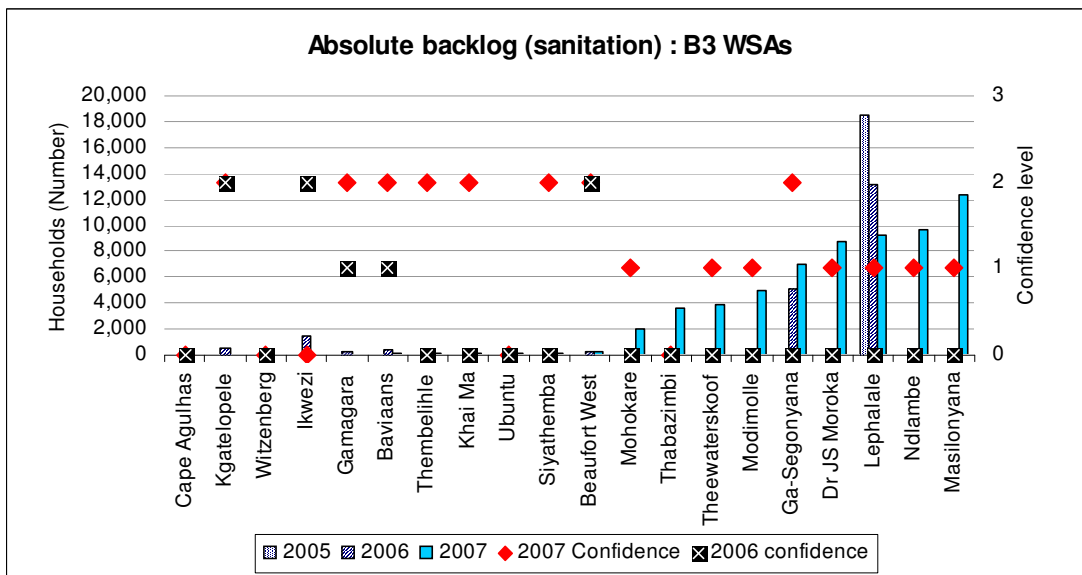


Figure 84: Absolute sanitation backlogs for LMs (B3 WSAs)

A number of the small towns report a sanitation backlog of between 0 and 200 households. However backlogs are significant for 9 of the B3 LMs that reported (as seen on the right hand side of the graph). Masilonyana reported its sanitation backlogs at about 12 000 households, and the total reported backlog across the B3s is 42 102.

### Implications

Meeting the sanitation backlog target (2010) will be a significant challenge. The total backlog reported for all municipal categories is 1 534 330 households. The provision of sanitation to informal settlements, particularly in the metropolitan areas where these settlements are growing rapidly, is a formidable challenge.

### 5.2.3 Rate of reduction of sanitation backlog

#### Definition:

The number of households without access to at least a basic sanitation service.

#### Sanitation services:

The collection, removal, disposal or treatment of human excreta and domestic wastewater, and the collection, treatment and disposal of industrial wastewater. This includes all necessary organisational arrangements, including:

- appropriate health, hygiene and sanitation-related awareness
- monitoring quantity and quality of discharge
- billing, revenue collection, consumer care

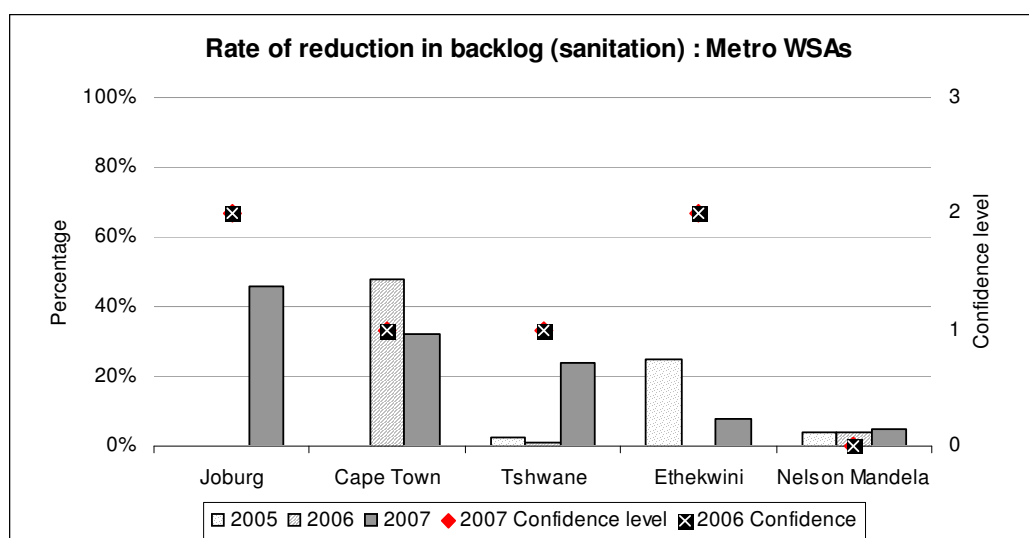
#### Significance

This indicator provides insight into size of the challenge (to provide at least a basic level of sanitation service to all residents). This arises from the Strategic Framework for Water Services.

**Table 11: Data sources, extent of reporting and reliability of data**

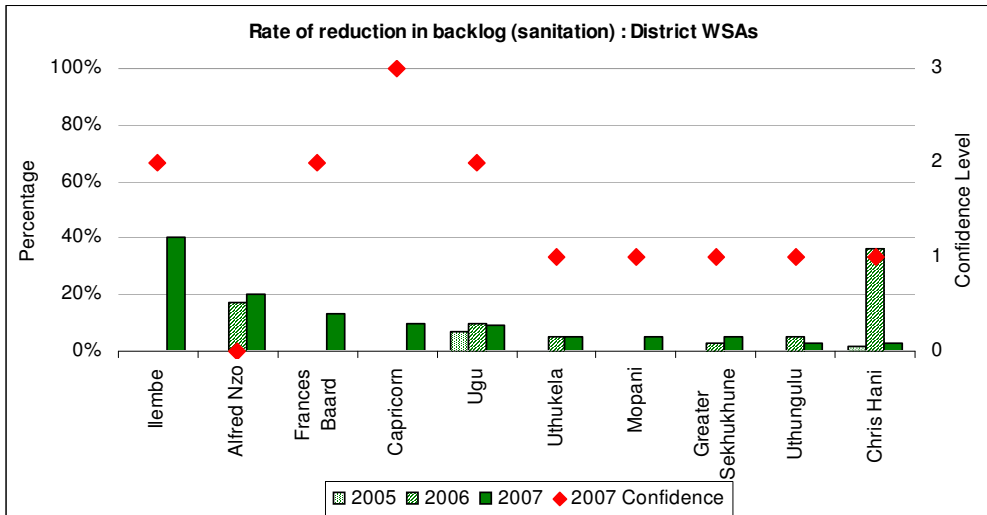
| <i>Confidence level</i> | <i>A</i>   | <i>B1</i>  | <i>B2</i> | <i>B3</i>  | <i>C</i>   | <i>Total</i> |
|-------------------------|------------|------------|-----------|------------|------------|--------------|
| Estimate                | 1          | 2          | 2         | 3          | 7          | 3            |
| Reliable                | 2          | 2          | 2         | 0          | 7          | 3            |
| Audited                 | 3          | 0          | 1         | 0          | 0          | 1            |
| <b>Score</b>            | <b>6</b>   | <b>9</b>   | <b>3</b>  | <b>21</b>  | <b>12</b>  | <b>51</b>    |
| <b>Average</b>          | <b>1.5</b> | <b>1.8</b> | <b>1</b>  | <b>1.5</b> | <b>1.7</b> | <b>1.5</b>   |

### Performance Analysis & Trends



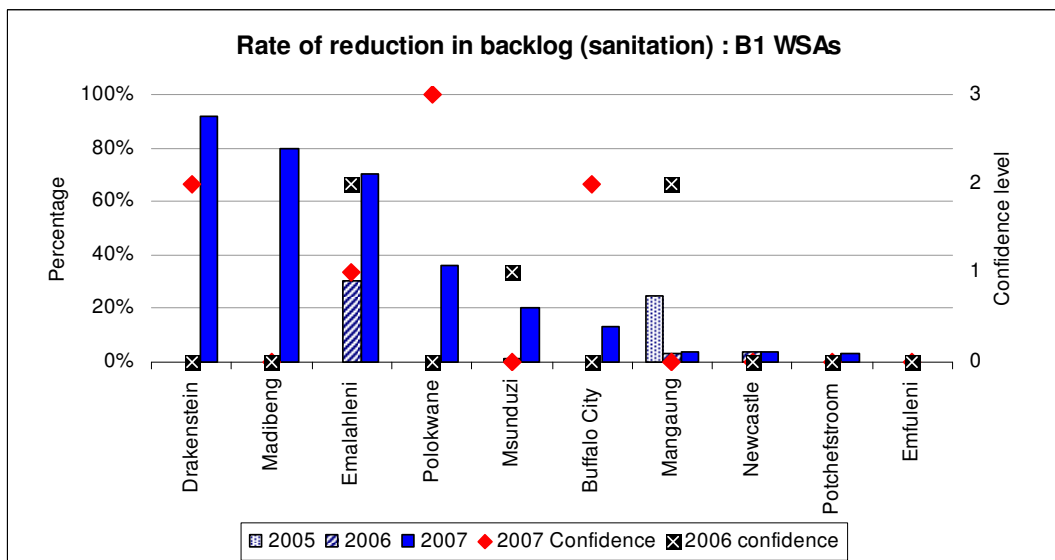
**Figure 85: Rate of reduction in backlog (sanitation) in Metros**

The metros report a sanitation backlog rate of reduction of between 5% in Nelson Mandela Metro to 45% in Joburg. The rate at which Joburg is reducing its backlogs is encouraging considering that its backlogs are high, at about 110 000 households. While Ethekewini's backlogs are also high at 150 000 households, its rate of reduction is only about 10%.



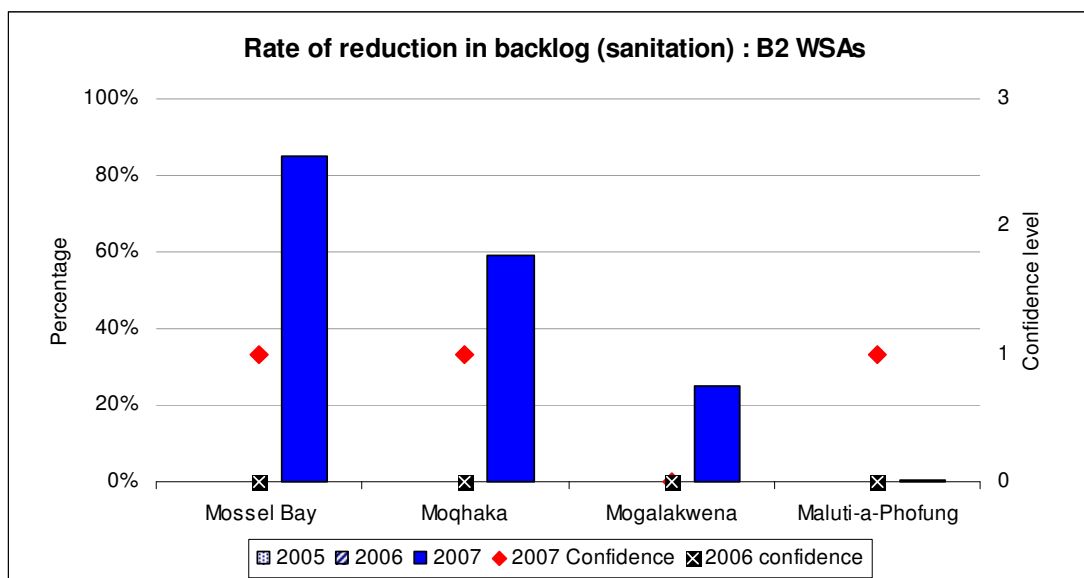
**Figure 86: Rate of reduction in backlog (sanitation) in DMs**

Ilembe reports that it has the highest rate of reduction among the DMs that have reported backlogs. This is encouraging considering that Ilembe reported backlogs of about 20 000 households, among the lowest of the DMs. It is however a concern that Chris Hani is reporting a rate of reduction of about 5% with backlogs of about 90 000 households, although a sharp decline between 2006 and 2007 suggests that this data may need to be further verified. The results reported in Uthungulu, Mopani and Greater Sekhukhune also indicate high backlogs and very low rates of reduction. Amatole, Amajuba, uMgungundlovu, uMzinyathi and Vhembe did not report against this indicator.



**Figure 87: Rate of reduction in backlog (sanitation): B1 WSAs**

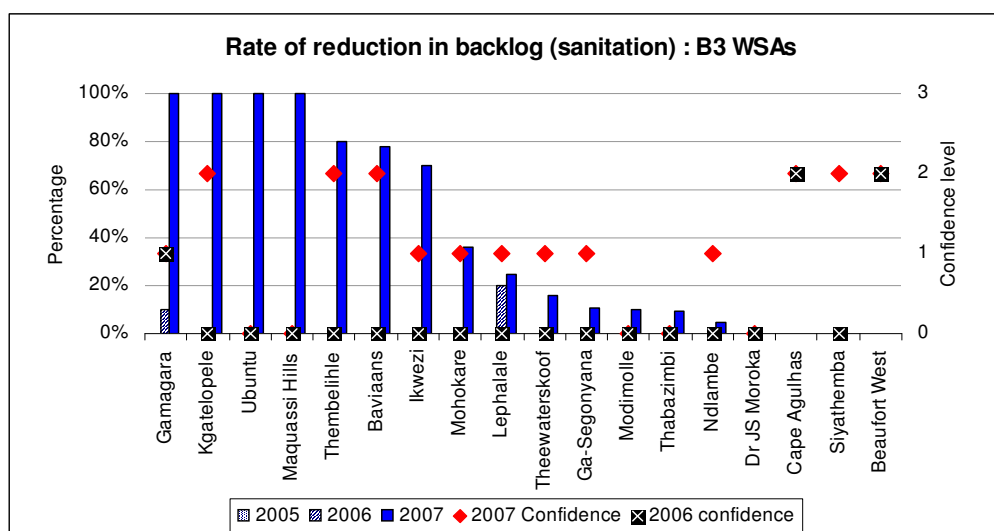
Drakenstein reports a rate of reduction of about 90% and this is against a sanitation backlog of 315 households. Buffalo City reported the highest backlog in the secondary cities and reports that it is addressing this backlog at a reduction rate of about 15%. Emalahleni has, according to its reports, increased its rate of reduction from about 30% in 2006 to about 70% in 2007. Mangaung and Potchefstroom have almost addressed their sanitation backlogs. Newcastle has reported a rate of reduction of about 5%, similar to that of Mangaung but against backlog of about 20 000 households. Matjhabeng, Mbombela, Mogale City and Stellenbosch did not report against this indicator.



**Figure 88: Rate of reduction in backlog (sanitation): B2 WSAs**

Maluti-a-Phofung has reported the highest backlog and, as shown above it also reports that it is not addressing this backlog, with a zero reduction rate evident. The fact that so few large towns have reported against this indicator is an area of concern. Municipalities that did not report are:

- Dhlabeng
- Knysna
- Kungwini
- Lesedi
- Merafong



**Figure 89: Rate of reduction in backlog (sanitation): B3 WSAs**

The rate of reduction of the sanitation backlog among the small towns is encouraging. Cape Agulhas has addressed its backlog while Beaufort West and Siyathemba reported insignificant backlogs. Both Ndlambe and Dr JS Moroka have reported backlogs but do not seem to be addressing them. Maquassi Hills did not provide any backlog data but has reported a rate of reduction of 100%. This could be a mistake in reporting. The backlogs in Gamagara, Ubuntu and Kgatelopele were either insignificant or addressed, hence the high rate of reduction.

### **Implications**

The rate of reduction across all the categories of municipalities is encouraging. However, some local municipalities are showing signs that are concerning in the target of addressing sanitation backlogs by 2010 being met. Based on the relationship between backlog and reduction it would appear to be almost impossible for several municipalities, especially those with backlogs of around 100 000 households, to reach the 2010 target for eradication of the backlog in sanitation.

## **5.3 Quality of services: Potable water quality**

### **5.3.1 Choice and significance of indicators**

The following indicators are used for the assessment of performance in terms of the quality of potable water provided:

- Program for water quality monitoring;
- Incidence of E-coli; and
- Incidence of Turbidity

#### **Program for water quality monitoring:**

WSA's are required in terms of legislation to implement or to ensure that effective programs to monitor the quality of water provided to consumers is implemented. The standards to be used are defined by the SABS and include chemical and microbiological determinants. The quality of water should meet the requirements at the point of delivery and not only after treatment.

***Incidence of E-coli:***

The presence of E-Coliform bacteria is generally a result of contamination by human or animal waste products, which may cause diarrhoea and other disorders. The removal or absence of E-Coli is normally a good indicator of properly functioning purification processes and of acceptable water quality.

***Incidence of Turbidity:***

High turbidity does not necessarily indicate harmful elements or any safety hazard in itself, as it may only have aesthetic impact. It can however affect the purification process negatively, render chlorination ineffective or provide a medium for bacterial growth.

**5.3.2 Water quality monitoring program**

**Definition:**

Every WSA is obliged to ensure that water quality meets the standards as determined in terms of SANS 241 and have to develop and implement a program to monitor water quality.

***Program Requirements:***

Water supplied at endpoints in the distribution network must be sampled and tested:  
Standards are clearly defined per source and supply area;

The number and frequency of samples is determined in accordance with requirements;

- Tests are done by an accredited laboratory;
- Results are interpreted, recorded and stored; and
- Results are reported.

***Formula:***

Each municipality must indicate whether it has implemented a monitoring program in full, whether it has partially implemented a program, or whether it has no water quality monitoring program.

***Importance:***

It is not possible to be confident that water supplied to consumers meet quality standards without an effective monitoring program and this indicator is highly significant.

***Extent of Reporting and Reliability:***

Altogether 57 of the 67 participating municipalities returned information regarding the implementation of water quality monitoring programs. The tables below indicate the status of monitoring in the Metro's, District municipalities and Local municipalities:

**Table 12: Implementation of water quality monitoring programs by Metros**

| <i>WSA</i>     | <i>Response</i> | <i>Status</i> |           |           |
|----------------|-----------------|---------------|-----------|-----------|
| Joburg         | Full program    | ●             |           |           |
| Cape Town      | Full program    | ●             |           |           |
| Tshwane        | Full program    | ●             |           |           |
| Nelson Mandela | Full program    | ●             |           |           |
| Ekurhuleni     | Full program    | ●             |           |           |
| Total          |                 | 5             | 0         | 0         |
|                |                 | <b>100%</b>   | <b>0%</b> | <b>0%</b> |

**Table 13: Implementation of water quality monitoring programs by district municipalities**

| <i>WSA</i>         | <i>Response</i> | <i>Status</i> |            |           |
|--------------------|-----------------|---------------|------------|-----------|
| Uthukela           | Full program    | ●             |            |           |
| Ugu                | Full program    | ●             |            |           |
| Chris Hani         | Full program    | ●             |            |           |
| Amajuba            | Full program    | ●             |            |           |
| Ilembe             | Full program    | ●             |            |           |
| Uthungulu          | Full program    | ●             |            |           |
| uMzinyathi         | Full program    | ●             |            |           |
| Mopani             | Full program    | ●             |            |           |
| Umgungundlovu      | Full program    | ●             |            |           |
| Greater Sekhukhune | Partial program |               | ●          |           |
| Frances Baard      | Partial program |               | ●          |           |
| Alfred Nzo         | Partial program |               | ●          |           |
| Capricorn          | no program      |               |            | ●         |
| Total              |                 | <b>9</b>      | <b>3</b>   | <b>1</b>  |
|                    |                 | <b>69%</b>    | <b>23%</b> | <b>8%</b> |

**Table 14: Implementation of water quality monitoring programs by Local municipalities (B1 & B2 & B3)**

| <i>WSA</i>       | <i>Response</i> | <i>Status</i> |  |  |
|------------------|-----------------|---------------|--|--|
| Maluti-a-Phofung | Full program    | ●             |  |  |
| Mangaung         | Full program    | ●             |  |  |
| Ubuntu           | Full program    | ●             |  |  |
| Beaufort West    | Full program    | ●             |  |  |

| <b>WSA</b>     | <b>Response</b> | <b>Status</b> |            |           |
|----------------|-----------------|---------------|------------|-----------|
| Cape Agulhas   | Full program    | ●             |            |           |
| Drakenstein    | Full program    | ●             |            |           |
| Khai Ma        | Full program    | ●             |            |           |
| Msunduzi       | Full program    | ●             |            |           |
| Theewaterskoof | Full program    | ●             |            |           |
| Baviaans       | Full program    | ●             |            |           |
| Buffalo City   | Full program    | ●             |            |           |
| Emalahleni     | Full program    | ●             |            |           |
| Emfuleni       | Full program    | ●             |            |           |
| Gamagara       | Full program    | ●             |            |           |
| Knysna         | Full program    | ●             |            |           |
| Kungwini       | Full program    | ●             |            |           |
| Mossel Bay     | Full program    | ●             |            |           |
| Kouga          | Full program    | ●             |            |           |
| Newcastle      | Full program    | ●             |            |           |
| Stellenbosch   | Full program    | ●             |            |           |
| Mogalakwena    | Partial program |               | ●          |           |
| Lephalale      | Partial program |               | ●          |           |
| Dr JS Moroka   | Partial program |               | ●          |           |
| Modimolle      | Partial program |               | ●          |           |
| Thabazimbi     | Partial program |               | ●          |           |
| Thembelihle    | Partial program |               | ●          |           |
| Dihlabeng      | Partial program |               | ●          |           |
| Masilonyana    | Partial program |               | ●          |           |
| Matjhabeng     | Partial program |               | ●          |           |
| Mogale City    | Partial program |               | ●          |           |
| Mohokare       | Partial program |               | ●          |           |
| Moqhaka        | Partial program |               | ●          |           |
| Polokwane      | Partial program |               | ●          |           |
| Witzenberg     | Partial program |               | ●          |           |
| Maquassi Hills | Partial program |               | ●          |           |
| Ndlambe        | Partial program |               | ●          |           |
| Merafong       | Partial program |               | ●          |           |
| Siyathemba     | no program      |               |            | ●         |
| Ga-Segonyana   | no program      |               |            | ●         |
| Kgatelopele    | no program      |               |            | ●         |
| <b>Total</b>   |                 | <b>20</b>     | <b>17</b>  | <b>3</b>  |
|                |                 | <b>50%</b>    | <b>42%</b> | <b>8%</b> |

The level of confidence (2.3) attached to the data returned was high in the Metro's for the three cities that did state the level of confidence. In the Districts associated confidence levels were moderate (average 1.5), and in local municipalities slightly poorer (1.3).

The following municipalities did not supply information for this indicator:

**Table 15: Municipalities that did not provide information for the water quality monitoring indicator**

| <b>Metro</b> | <b>District municipality</b> | <b>Local municipality (LM Category)</b> |
|--------------|------------------------------|---|
| Ethekwini    | Vhembe                       | Madibeng (B1)                           |
|              | Amatole                      | Mbombela (B1)                           |
|              |                              | Potchefstroom (B1)                      |
|              |                              | Lesedi (B2)                             |
|              |                              | Ikwezi (B3)                             |
|              |                              | Swellendam (B3)                         |

**Table 16: Confidence levels**

| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 3             | 4                | 7         | 2         | 6         | 22             |
| <b>1</b>                | 0             | 1                | 0         | 1         | 2         | 4              |
| <b>2</b>                | 2             | 8                | 7         | 5         | 15        | 37             |
| <b>3</b>                | 1             | 2                | 0         | 1         | 0         | 4              |
| <b>Average</b>          | 1.5           | 1.5              | 1.0       | 1.5       | 1.0       | 1.33           |

### Confidence levels for data

Confidence levels for those municipalities that did state a confidence level averaged almost 1.6, which is higher than the overall average of 1.33. Considering the information required the confidence should however still be considered as very low.

### Performance Analysis:

Regarding compliance with this performance indicator, all metropolitan areas 69 % of districts and 50 % of local municipalities reported having full programs in place. In the districts the number with programs in place have increased from 6 in the previous year to 9 while for LM's the number has increased from 12 (of 26) to 20 (out of 46). For both district and local municipalities 8 % of respondents have reported having no program implemented, while 1 metro, 2 DM's and 6 LM's have not provided information. Several of these municipalities will probably have programs developed and implemented, however the information was not provided. Although performance in the

DM's has improved significantly, overall the situation (as indicated in the reporting by municipalities) has not changed to any great extent.

***Implications and Recommendations:***

Considering the importance of water quality and the potential adverse consequences if potable water quality is not be maintained, the results are not encouraging. A health risk to water consumers in some areas is implied. The ongoing implementation of the DWQF by DWAF is however expected to lead to an improvement in the implementing of water quality monitoring. Although the actual level of compliance may be higher than the data received indicates, a very high priority towards full compliance should be given by all WSA's, and especially those that do not have a full monitoring program in effect.

**5.3.3 Incidence of E-coli**

***Definition:***

The indicator reflects the percentage of total samples taken by a municipality over the 12 month period which failed the E-coli standard.

***Program Requirements:***

A zero count for the number of Escheri coliform bacteria per 100 ml sample.

***Formula:***

Compliance is measured by the ratio of failed samples to total number of samples taken over the 12 month period reported on.

***Importance:***

The presence of E-Coliform bacteria is generally a result of contamination by human or animal waste products, which may cause diarrhoea and other disorders. Positive results therefore indicate a definite risk to human health. The removal or absence of E-Coli is a good indicator of properly functioning purification processes and of acceptable water quality.

***Extent of Reporting and Data Reliability:***

1 Metro, 2 district municipalities and 13 local municipalities did not provide information regarding both the number of samples being taken and the number of samples failing the test for absence of E-coli. This amounts to almost 24 % of participating WSA's. The level of confidence for the data provided was not stated in 30 instances which include the 16 municipalities' not providing data, as can be seen in the table below. The average data confidence where stated was 'reliable'.

**Table 17: Average level of confidence for the incidence of E-Coli indicator**

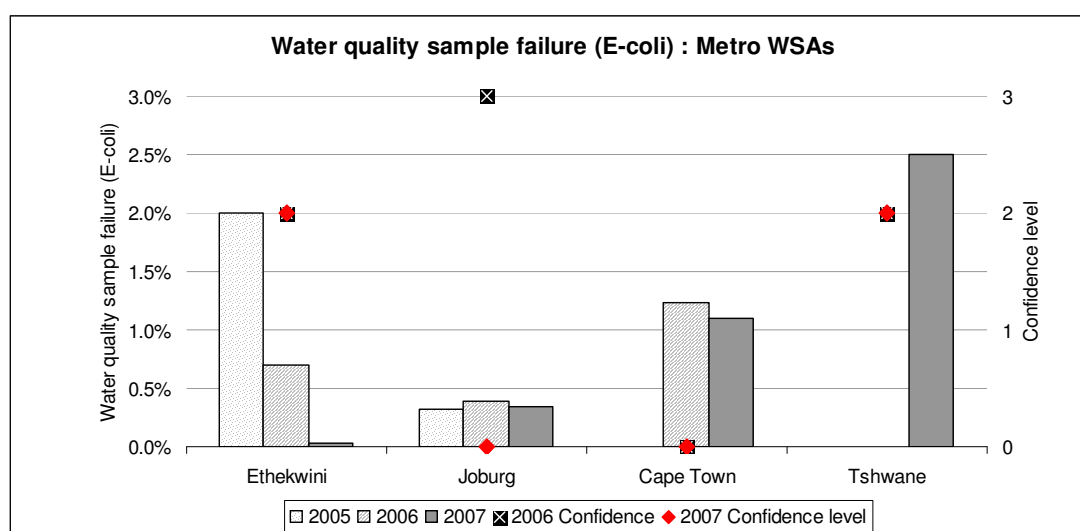
| Confidence level | Metro | District | Local municipalities |     |     | Overall |
|------------------|-------|----------|----------------------|-----|-----|---------|
|                  |       |          | B1                   | B2  | B3  |         |
| 0                | 3     | 2        | 4                    | 2   | 4   | 15      |
| 1                | 0     | 2        | 1                    | 0   | 4   | 7       |
| 2                | 2     | 8        | 6                    | 5   | 7   | 28      |
| 3                | 0     | 1        | 0                    | 0   | 0   | 1       |
| Average          | 0.8   | 1.6      | 1.2                  | 1.4 | 1.2 | 1.3     |

**Confidence levels for data**

In the main confidence levels indicated were at 'reliable' which is good, considering the fact that these results would not be audited normally. Confidence levels across all categories were also considerably higher than that for 2006, which is encouraging. The numbers of responses not stating confidence levels are however still too high and improvement in this regard is required.

**Performance Analysis:**

The data provided by municipalities is captured below, indicated by category for the metropolitan, district and local municipalities. The results are ranked from best performance to worst. Best performance would be the lowest percentage or number of failure counts, and the highest compliance.



**Figure 90: Water quality sample failure (e-coli) in Metros**

Results for the number of failed samples in Ekurhuleni and Nelson Mandela could not be ascertained, and is therefore not included. The quality of water in the rest of the metropolitan areas as represented by E-coli readings is good, with the worst result still

at 97.5 % compliance. In the case of Ethekwini the results illustrate remarkable and continuous improvement over the period.

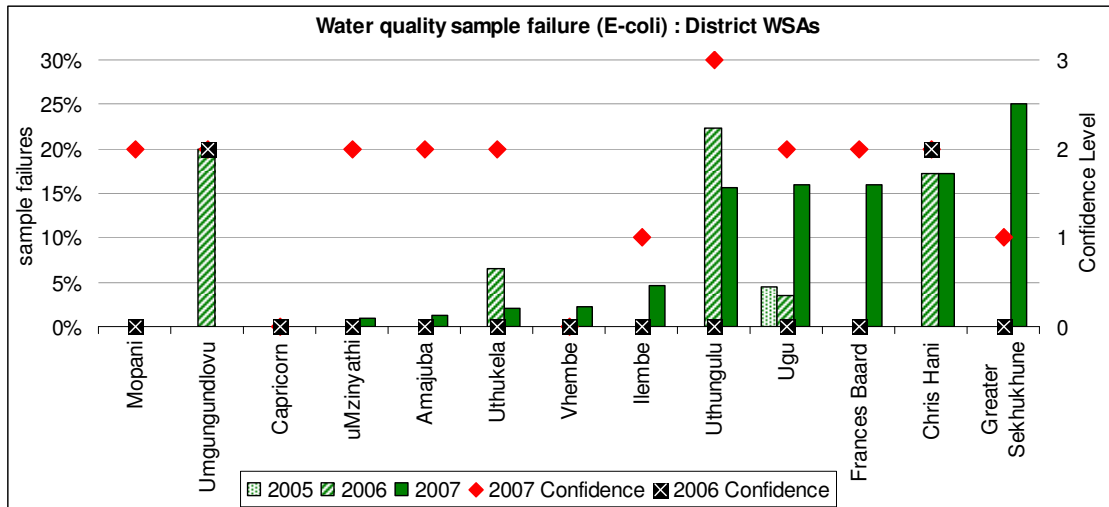


Figure 91: Water quality sample failure (e-coli) in DMs

For the district municipalities E-coli failure of more than 10 % can be observed in the case of 5 DM's, while for 7 municipalities, or almost half the number of participating municipalities' failures are below 2.5%. For the previous year four valid returns for district municipalities were received of which three were above 10% while one reported a 6.5 % failure rate. Although results show an improvement, it still indicates a significant performance gap in terms of quality of water supplied.

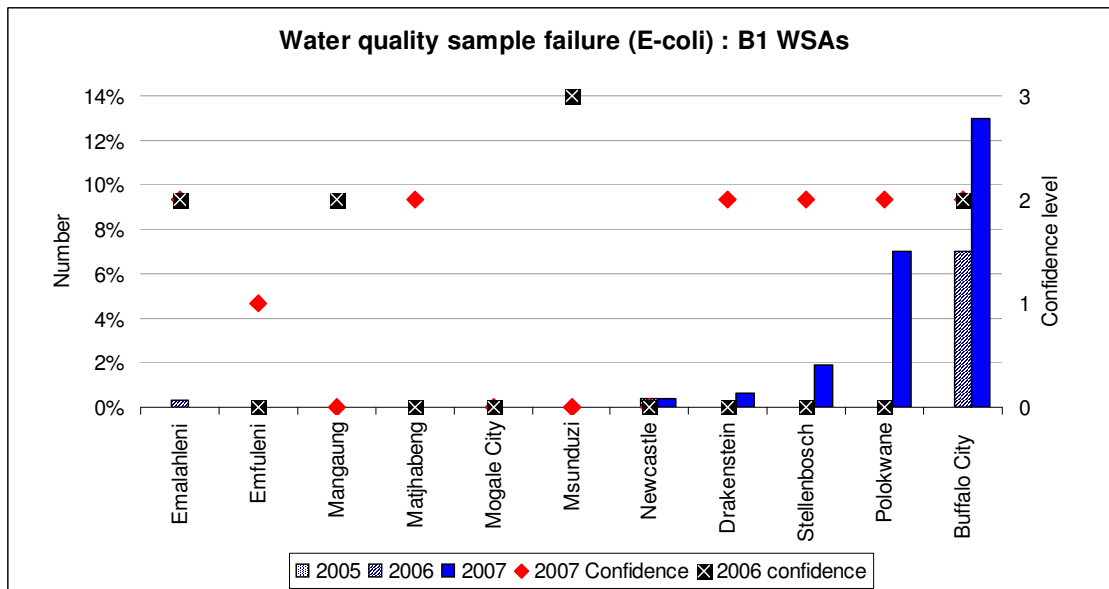


Figure 92: Ecoli sample failure: category B1 municipalities

The results for B1 municipalities as well as in category B2 are encouraging in that the rate of sample failures for E-coli exceeded 2 % in only 2 municipalities in category B1, and only 1 municipality in B2 exceeded 2.5 % failure rate, this out of 11 responses from 14 category B1, and 7 responses from 11 category B2 municipalities.

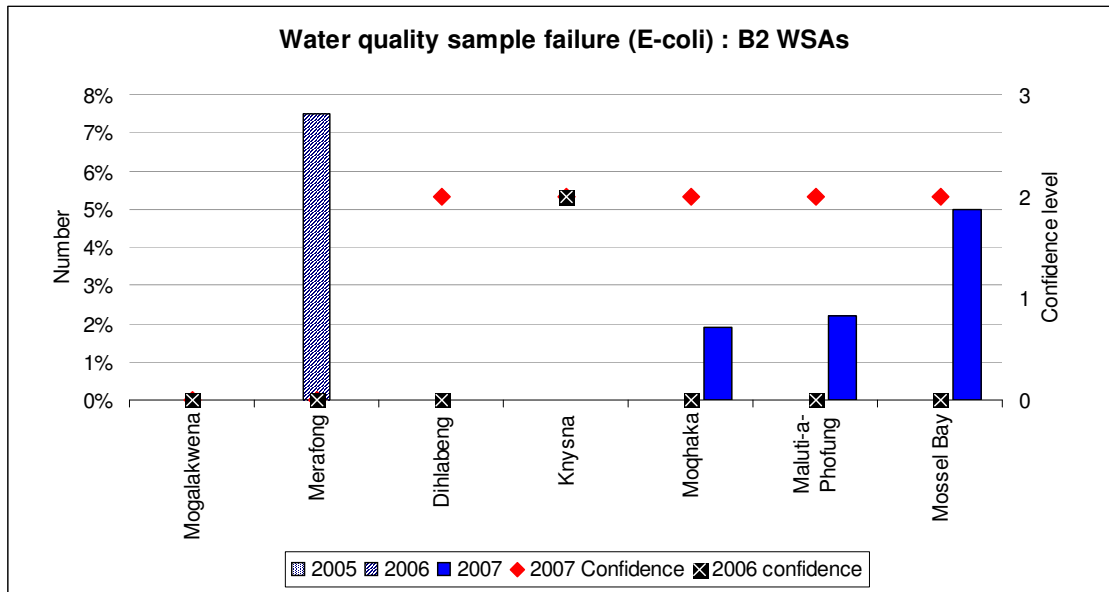


Figure 93: E-coli sample failure: category B2 municipalities

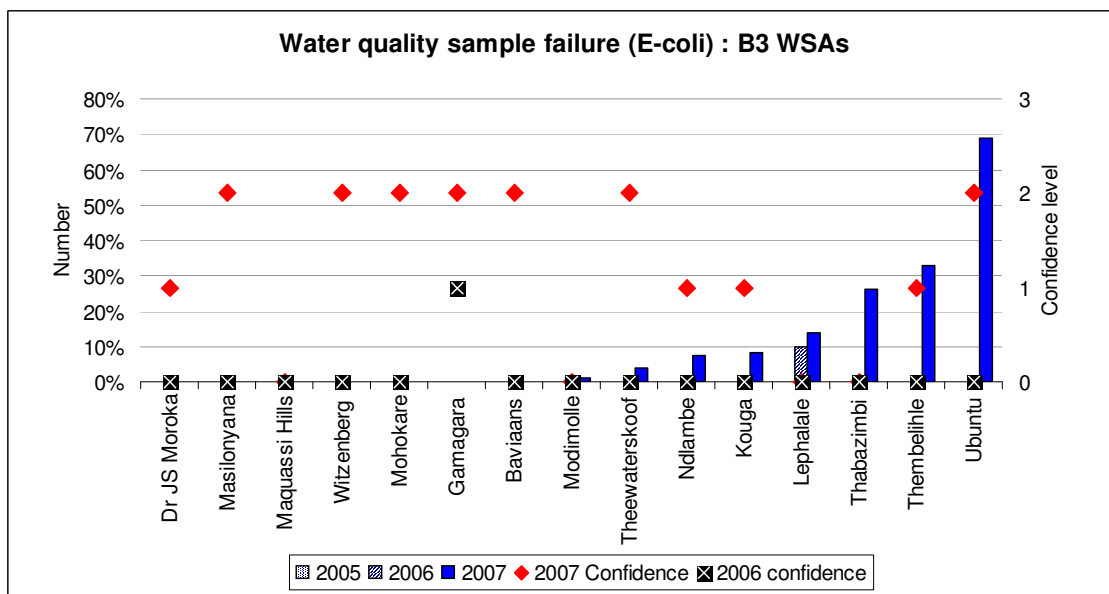


Figure 94: E-coli sample failure: category B3 municipalities

For local municipalities a substantial difference in water quality recorded can be observed between the B1 category (secondary cities) and the B2 category (big towns) as opposed to the B3 category which are the smaller towns, often with large populations in rural areas and villages. In the B3 category 4 out of 15 municipalities reported results in excess of 10 % sample failure while 7 out of 15 reported results in excess of 4%. An assumption can be made that even as monitoring programs are being developed and improved, monitoring of water quality and the determination and reporting of E-coli for many rural water supplies and smaller communities would frequently still be inadequate. The results above may therefore be regarded as a reflection of conditions in other less effectively monitored areas.

A factor to be taken into account is the high number of ad hoc rural water schemes in both district WSA's and some of the category B local municipalities. Many of these schemes (often supplied from boreholes) have either, rarely or never, been monitored before. In a large number of these municipalities sources are also in the process of being provided, replaced, upgraded or chlorinators being installed.

### 5.3.4 Incidence of turbidity

**Definition:**

The percentage of samples tested which failed the turbidity test.

The standard for turbidity is as follows:

- <1 NTU : Class 1 water (Acceptable for potable use)
- 1 – 5 : Class 2 water (Not acceptable for long term use)

**Formula:**

The number of samples failing to meet the standard divided by the total number of samples.

**Importance:**

Turbidity monitoring does not have the same significance as E-coli. It does however have a direct influence on the potential for increased bacterial presence. It also represents a visible aspect of the water which can be observed by consumers and indicates possible pollution.

**Extent of Reporting and Data Reliability:**

Sufficient data was provided for analysis in terms of this performance area, whereas during 2006 insufficient data prevented an analysis to be conducted. Data was returned by 3 metros (50%), by 10 district municipalities (67%) and by 30 local municipalities (65%).

*Table 18: Data confidence levels for the turbidity indicator*

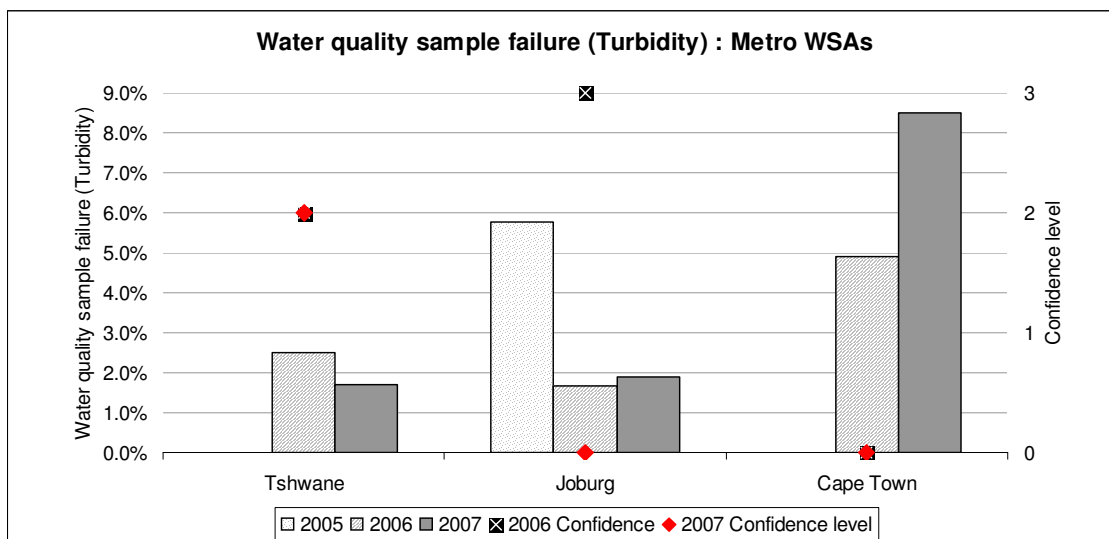
| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 2             | 1                | 3         | 1         | 3         | 10             |
| <b>1</b>                | 0             | 1                | 2         | 0         | 5         | 8              |
| <b>2</b>                | 1             | 8                | 5         | 4         | 6         | 24             |
| <b>3</b>                | 0             | 0                | 0         | 1         | 0         | 1              |
| <b>Average</b>          | 0.7           | 1.7              | 1.2       | 1.8       | 1.2       | 1.37           |

**Confidence levels for data**

As was observed in the results for E-coli testing, the level of confidence in the majority of instances was stated as 'reliable'. A higher percentage of returns were not stated or given as 'estimates'. The average level of confidence is less than 1.4 which once again leaves room for improvement.

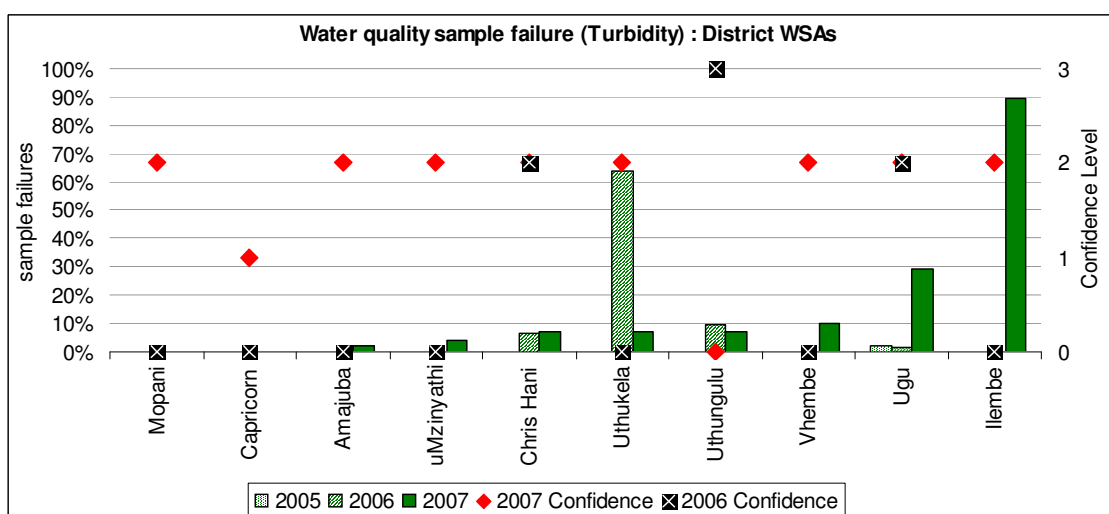
**Performance Analysis:**

The data provided has been captured in the figures which follow:



**Figure 95: Turbidity sample failures for Metros**

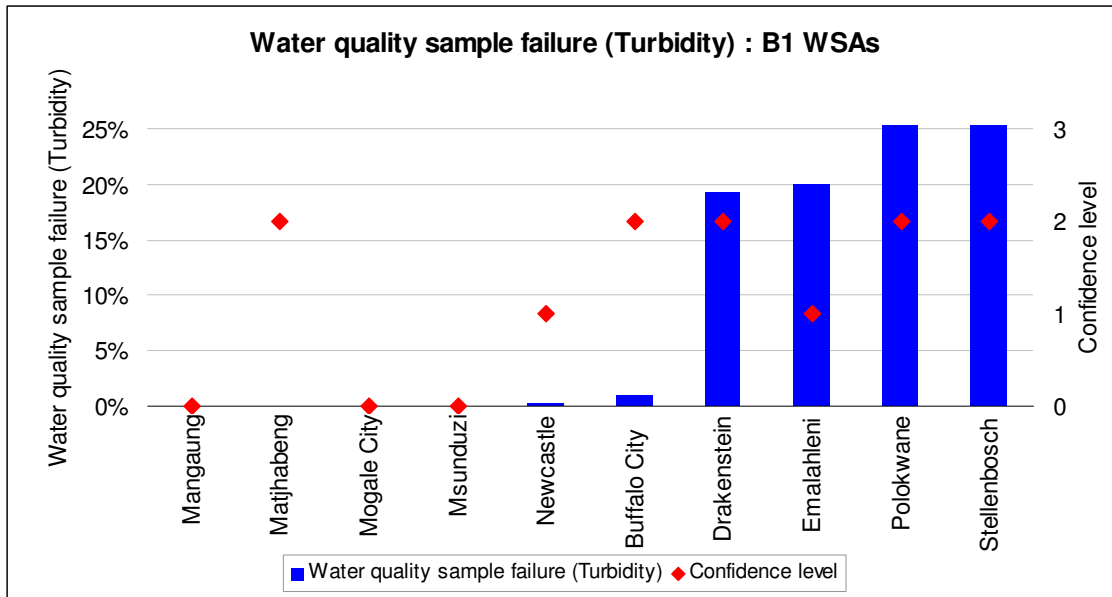
For the three metros which provided data, an improvement over the period reported can be observed in the case of Tshwane only, with a slight deterioration in Joburg. Performance in Cape Town has deteriorated from almost 5.5% to 8.5%.



**Figure 96: Turbidity sample failures for District municipalities**

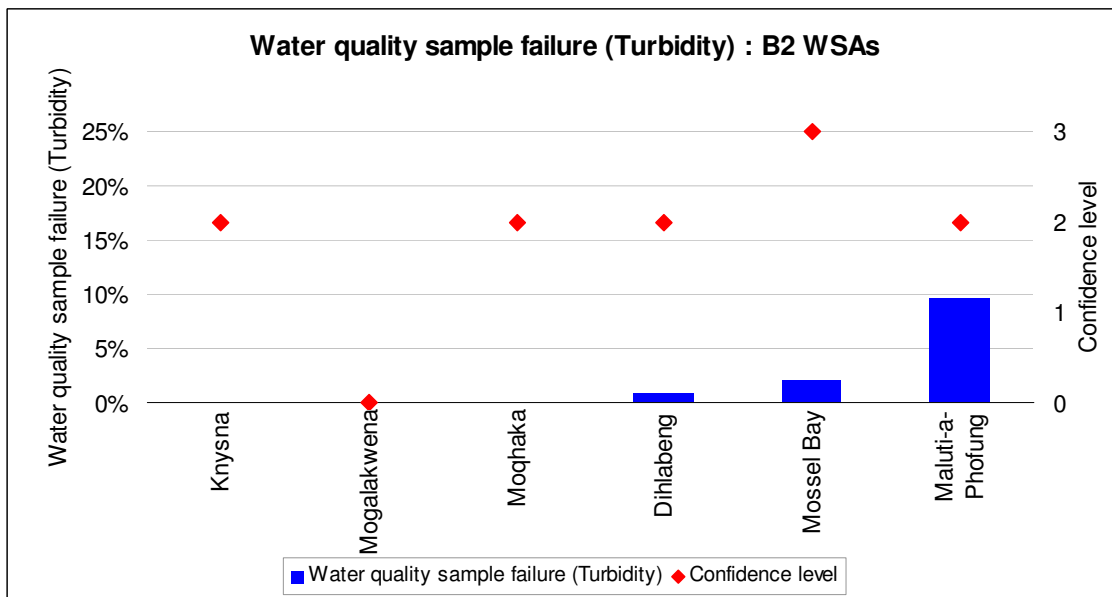
Out of 15 district municipalities 10 provided information regarding the results of turbidity sample testing. For six of these respondents the results showed failure rates of 7 % or more, with the worst case results of 90% failure. It is therefore clear that in 60% of district municipalities level of turbidity is problematic.

For local municipalities virtually no information on turbidity testing is available for prior years and therefore only data for the present (third year) round is presented and analysed.



**Figure 97: Turbidity sample failures for Local municipalities: B1 WSA's**

Failure rates were very low indicating good quality water and a high level of consistency in 6 of the 10 municipalities in category B1 which submitted data. It is interesting to note that in this instance there is no 'middle ground', with the remainder of B1 municipalities indicating failure rates of almost, or more than 20%.



**Figure 98: Turbidity sample failures for Local municipalities: B2 WSA's**

Out of 6 municipalities in category B2 which reported, only one exceeded failure rates of 2%, with results of 10 % failures. The results correspond well with the results for E-coli failures, and are a sign of effective purification in the majority of medium sized towns.

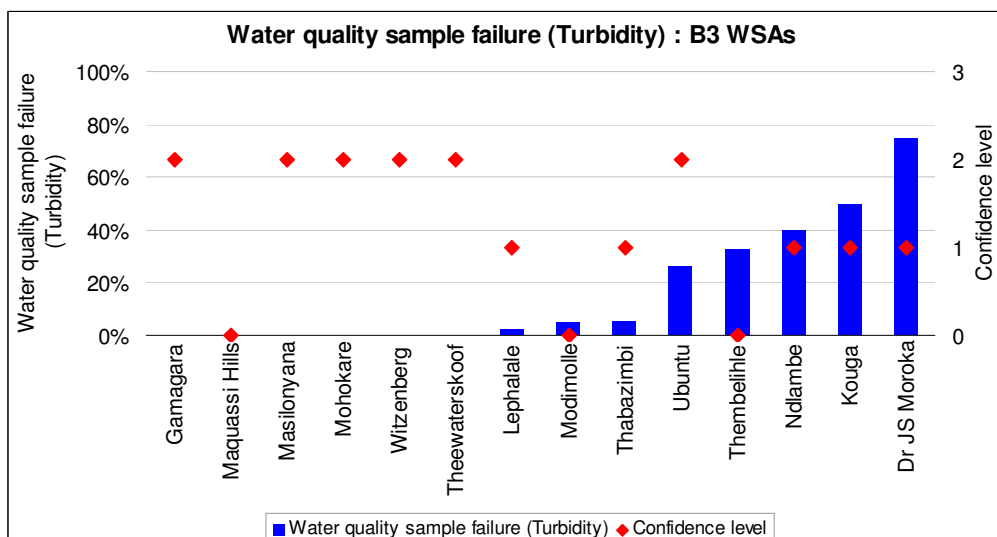


Figure 99: Turbidity sample failures for Local municipalities: B3 WSA's

Results were obtained from only 14 of 23 category B3 municipalities, which is low. The percentage of municipalities with results ranging from almost 20% to 75 % amounts to 28.5 % of the respondents. This is worse than the results for E-coli, and suggests that poor water quality, and possibly health problems, might be common in the future, if measures are not implemented to improve the situation.

## 5.4 Quality of services: Continuity of supply

### 5.4.1 Customer service standards: Service interruptions greater than 48 hours for a single incident

**Definition:**

The number of interruptions in continuous service to consumers per annum, where interruptions for a single incident was greater than 48 hours.

**Importance or significance**

This indicator gives a measure of the responsiveness of the municipality to service delivery interruptions and hence measures its capacity to respond to interruptions, its institutional capability in terms of customer care and the ability to monitor internal performance. This measure is also a requirement of the Strategic Framework for Water Services.

**Extent of Reporting and Reliability**

The following municipalities did not provide any data

Table 19: Municipalities that did not provide data for the continuity of supply indicator

| <b>Metros</b> | <b>Districts</b> | <b>Locals</b> |
|---------------|------------------|---------------|
| Cape Town     | Alfred Nzo       | Baviaans      |
| Ekurhuleni    | Amatole          | Lesedi        |
| Tshwane       | Bophirima        | Moretele      |

|  |               |                |
|--|---------------|----------------|
|  | Capricorn     | Dipaleseng     |
|  | Central       | Kungwini       |
|  | Frances Baard | Masilonyana    |
|  | Mopani        | Moses Kotane   |
|  | Sisonke       | Gamagara       |
|  | Ukhahlamba    | Baviaans       |
|  | Umgungundlovu | Ga-Segonyana   |
|  | Uthungulu     | Ikwezi         |
|  |               | Maquassi Hills |
|  |               | Swellendam     |

As indicated below, the confidence levels are generally low, even for Metros and B1s.

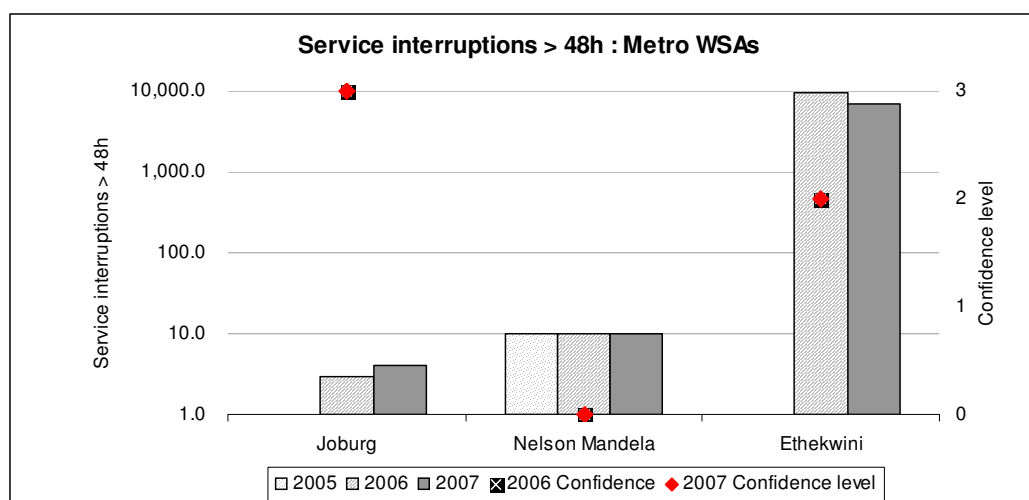
**Table 20: Confidence Levels for Service Interruptions > 48hrs**

| <b>Confidence level</b> | <b>A</b> | <b>B1</b>   | <b>B2</b>   | <b>B3</b>   | <b>C</b>    | <b>Total</b> |             |
|-------------------------|----------|-------------|-------------|-------------|-------------|--------------|-------------|
| Not Stated              | <b>0</b> | 4           | 8           | 5           | 13          | 7            | 37          |
| Estimate                | <b>1</b> | 0           | 1           | 2           | 6           | 4            | 13          |
| Reliable                | <b>2</b> | 1           | 3           | 2           | 7           | 4            | 17          |
| Audited                 | <b>3</b> | 1           | 0           | 0           | 0           | 0            | 1           |
| Average                 |          | <b>0.83</b> | <b>0.58</b> | <b>0.67</b> | <b>0.77</b> | <b>0.80</b>  | <b>0.74</b> |

The low extent of reporting and confidence levels alludes to the fact that municipalities do not have good management information on the continuity of supply and interruptions to services. However there was a marked increase in reporting and confidence in this indicator between this year and last year, particularly for districts.

### **Performance Analysis & Trends**

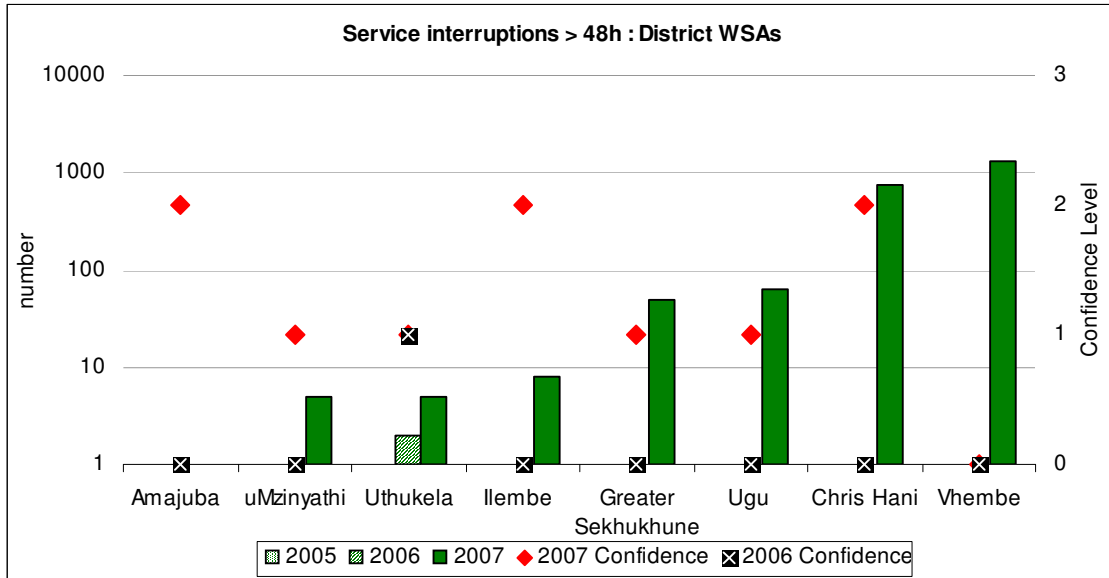
For WSAs able to provide data, their performance is reflected below.



**Figure 100: Service interruptions > 48h in Metros**

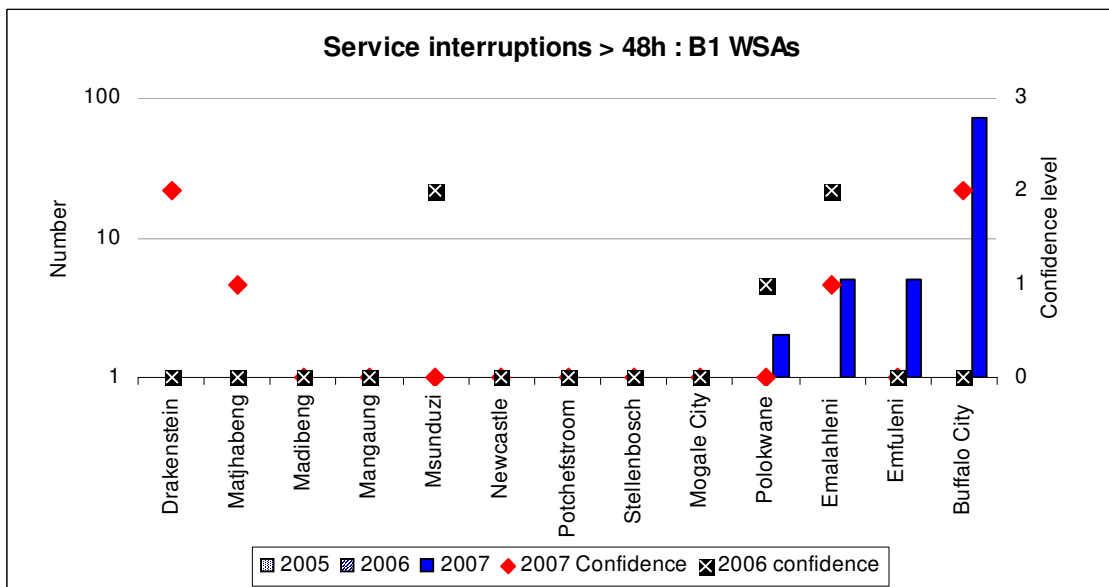
Joburg has been able to provide good data with high confidence on this indicator, followed by Ethekewini. However, it is likely that this indicator is being interpreted differently by Ethekewini on one hand and Joburg and Nelson Mandela on the other hand. It is likely that Ethekewini is quite correctly reporting on the number of households where supply was interrupted for more than 48 hours for each incident. The others are likely to be reporting on each network incident.

For metros the median was 10 and average 2,358.3 interruptions lasting longer than 48 hours.



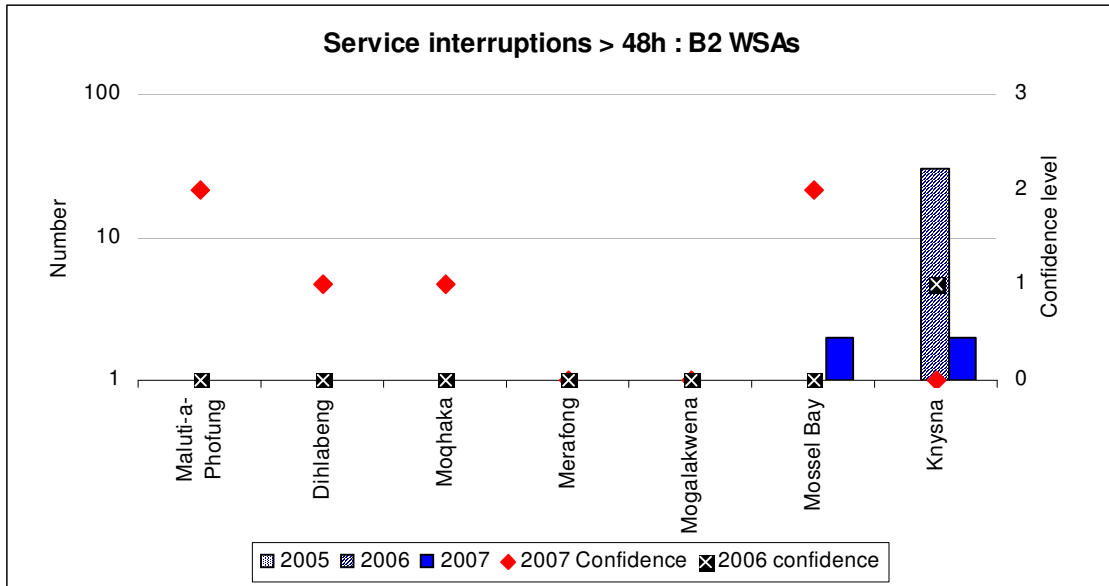
**Figure 101: Service interruptions > 48h in DMs**

Amongst district WSAs that reported data, Amajuba reported 1 interruption, with a data confidence of 2 (reliable) and three others reported less than 10 interruptions, two others in the range of <100 and Chris Hani reported 752 interruptions and Vhembe 1320 interruptions. Only Vhembe reported a confidence of 0. There is a marked increase in reporting and data confidence as compared to the last round.



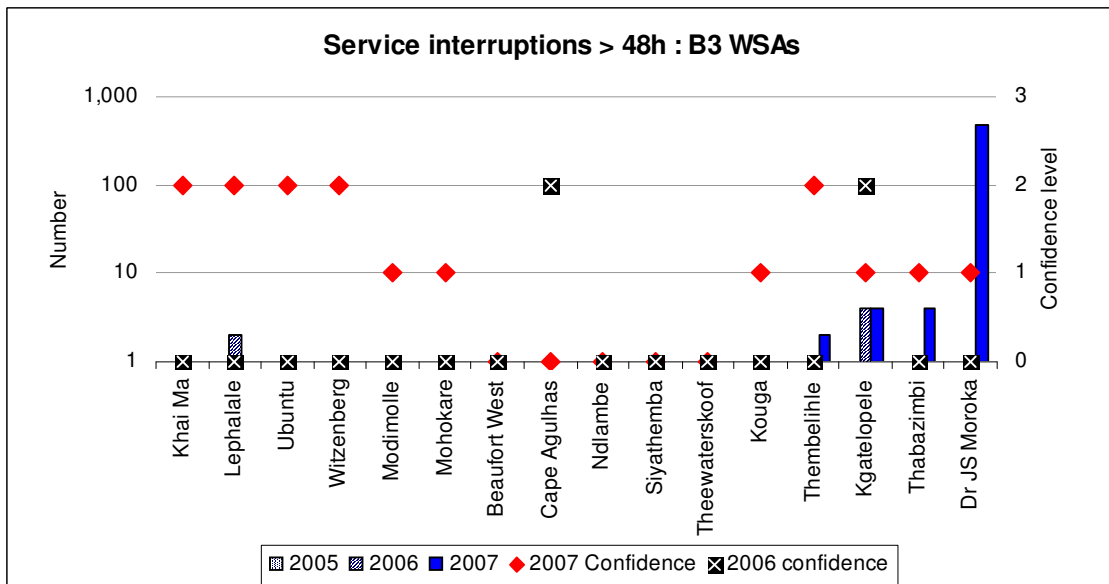
**Figure 102: Service interruptions >48h: B1 WSAs**

Amongst B1 municipalities, 9 of the 13 municipalities providing data reported no interruptions greater than 48 hours. 7 of these 9 had a data confidence of 0 (not stated). Of those reporting interruptions, they mainly reported less than 10, except for Buffalo City, reporting 72. It is unclear whether these municipalities are reporting in terms of households affected by each incident or number of incidents.



**Figure 103: Service interruptions >48h: B2 WSAs**

Five of the 7 B2s providing data, reported no interruptions greater than 48 hours. Mossel Bay and Knysna reported 2 interruptions (assumed to be interpreted as incidents rather than households). This is a significant reduction for Knysna who reported 30 in the last round.



**Figure 104: Service interruptions >48h: B3 WSAs**

For B3s, 11 of the 16 providing data, reported no interruptions more than 48 hours for this year. However 5 of these had a data confidence of 0 (not stated), with the others being 2 estimates and 4 reported as reliable. Those reporting interruptions were

generally less than 5 (assumed to be incidents rather than households), with Dr JS Moroka as an exception with interruptions in the order of 500. Because of poor reporting in the last round, it is difficult to establish historical trends on this indicator.

### ***Implications and recommendations***

The ability to measure this KPI is dependent on the municipality having a customer care facility and sophisticated reporting systems. As there has been notable progress made by districts in reporting on this indicator, there is a strong argument for maintaining this indicator until municipalities have the necessary systems to enable reporting on this.

However, the indicator is probably being misinterpreted, in terms of units of measurement (households or incidents). The indicators would thus benefit from greater refinement and specification.

## **5.4.2 Service Interruptions – Pipe bursts**

### **Definition:**

The recorded number of pipe bursts per annum as a ratio of the length of the pipe network (both bulk and retail) in km

*This is a new indicator introduced in this round.*

### ***Importance or significance***

This indicator provides a measure of the state of the water supply network and is a function of how well maintained and rehabilitated the network is. Particularly given historical trends in not providing sufficiently for maintenance and rehabilitation of existing infrastructure, this indicator becomes an important indicator of sustainable performance.

### ***Extent of Reporting and Reliability***

For a new indicator that requires good record keeping or management information systems, reporting on this indicator was satisfactory. Four of the six metros were able to report on this and the data confidence was 1.17.

**Table 21: Extent of reporting and reliability for the service interruptions indicator**

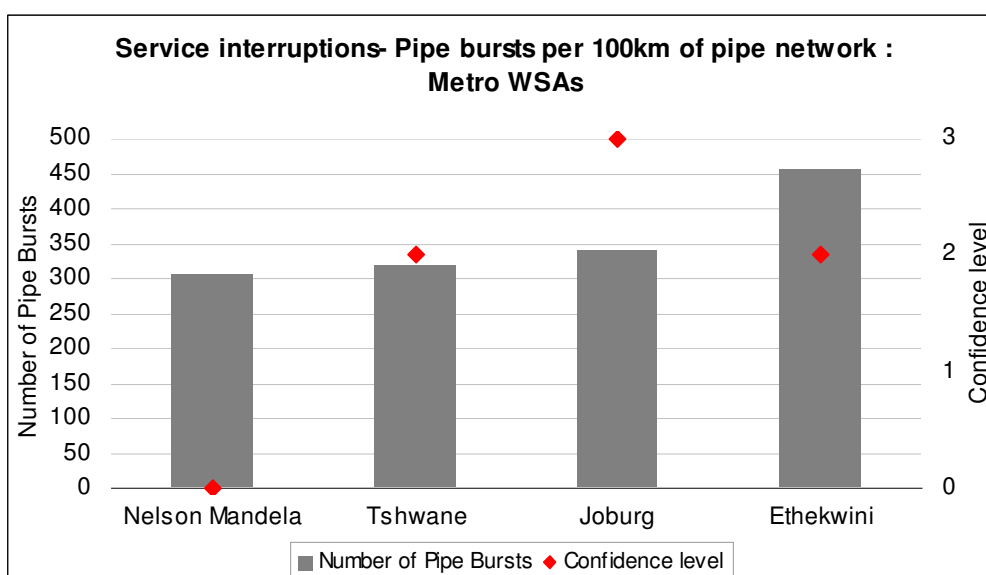
| <b><i>Confidence level</i></b> | <b><i>A</i></b> | <b><i>B1</i></b> | <b><i>B2</i></b> | <b><i>B3</i></b> | <b><i>C</i></b> | <b><i>Total</i></b> |             |
|--------------------------------|-----------------|------------------|------------------|------------------|-----------------|---------------------|-------------|
| Not Stated                     | <b>0</b>        | 3                | 9                | 6                | 8               | 7                   | 33          |
| Estimate                       | <b>1</b>        | 0                | 1                | 2                | 11              | 5                   | 19          |
| Reliable                       | <b>2</b>        | 2                | 2                | 1                | 7               | 3                   | 15          |
| Audited                        | <b>3</b>        | 1                | 0                | 0                | 0               | 0                   | 1           |
| Average                        |                 | <b>1.17</b>      | <b>0.42</b>      | <b>0.44</b>      | <b>0.96</b>     | <b>0.73</b>         | <b>0.76</b> |

The following municipalities did not provide any data.

**Table 22: Municipalities that did not provide data for the service interruptions indicator**

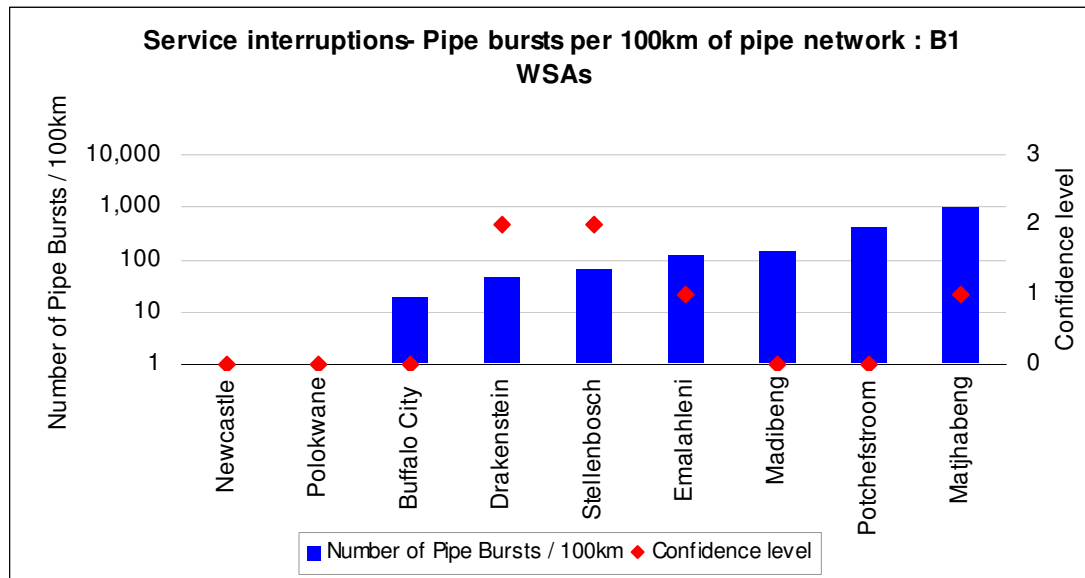
| <b><i>Metros</i></b> | <b><i>Districts</i></b> | <b><i>Locals</i></b> |
|----------------------|-------------------------|----------------------|
| Cape Town            | Alfred Nzo              | Beaufort West        |
| Ekurhuleni           | Amatole                 | Mogale City          |
|                      | Bophirima               | Msunduzi             |
|                      | Capricorn               | Lesedi               |
|                      | Central                 | Moretele             |
|                      | Mopani                  | Dipaleseng           |
|                      | Sisonke                 | Kouga                |
|                      | Ukhahlamba              | Kungwini             |
|                      | Umgungundlovu           | Knysna               |
|                      | Uthungulu               | Moses Kotane         |
|                      |                         | Beaufort West        |
|                      |                         | Gamagara             |
|                      |                         | Emfuleni             |
|                      |                         | Ga-Segonyana         |
|                      |                         | Ikwezi               |
|                      |                         | Swellendam           |

**Performance Analysis**



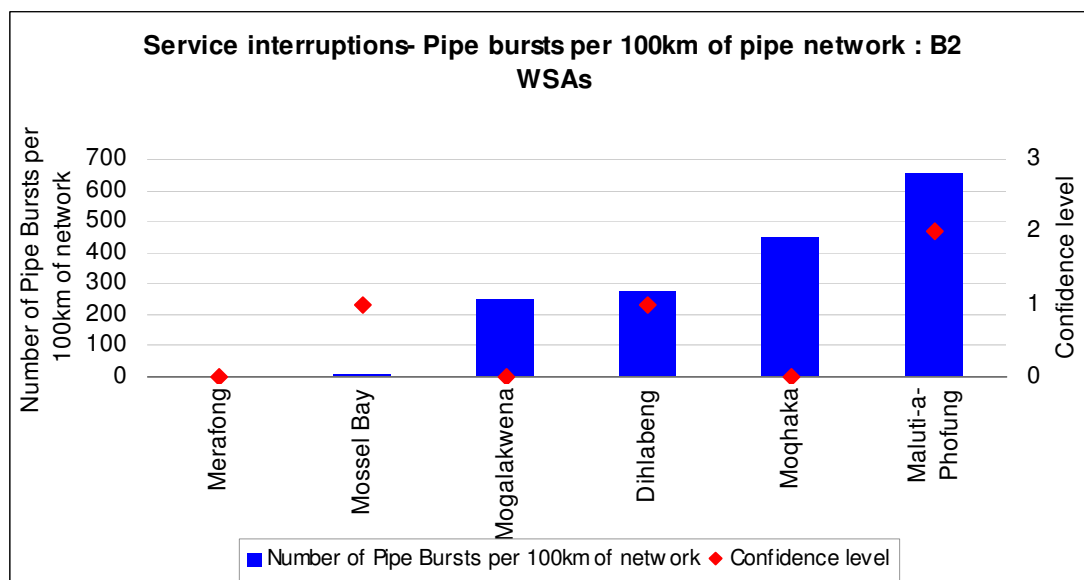
**Figure 105: Service interruptions-pipe bursts per 100km in Metros**

Pipe bursts per 100km of network, ranged between 300 and 350 for all reporting metros, except for Ethekwini which reported in excess of 450. While Nelson Mandela was lowest, it did not state data confidence for this.



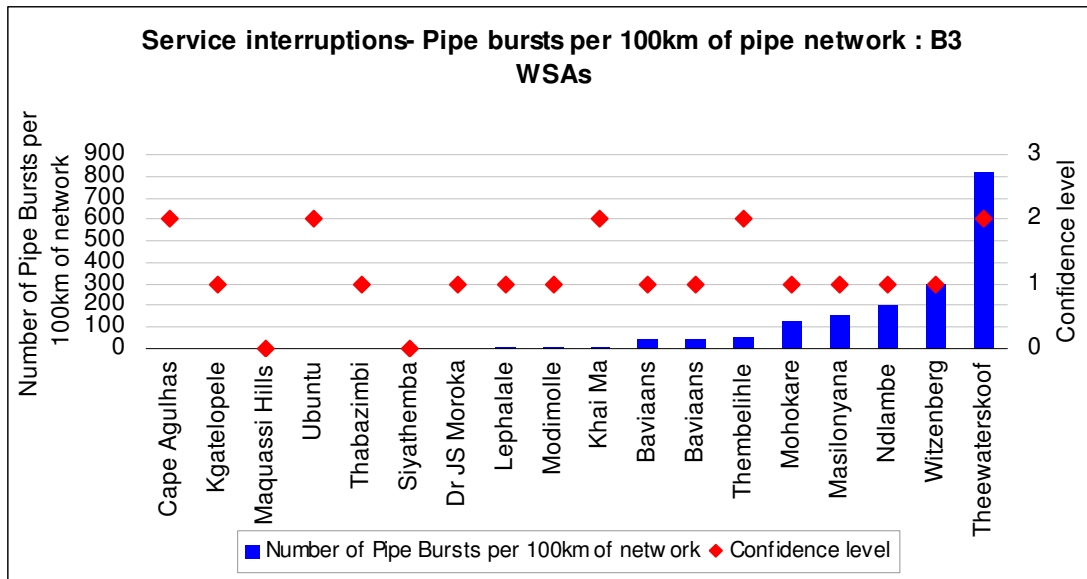
**Figure 106: Service interruptions-pipe bursts per 100km : B1 WSAs**

Amongst B1 municipalities, only Newcastle has claimed no pipe bursts, however with a data confidence of 0 (not stated). Others range between 1 burst per 100km for Polokwane and 1036 bursts per 100km in Matjhabeng.



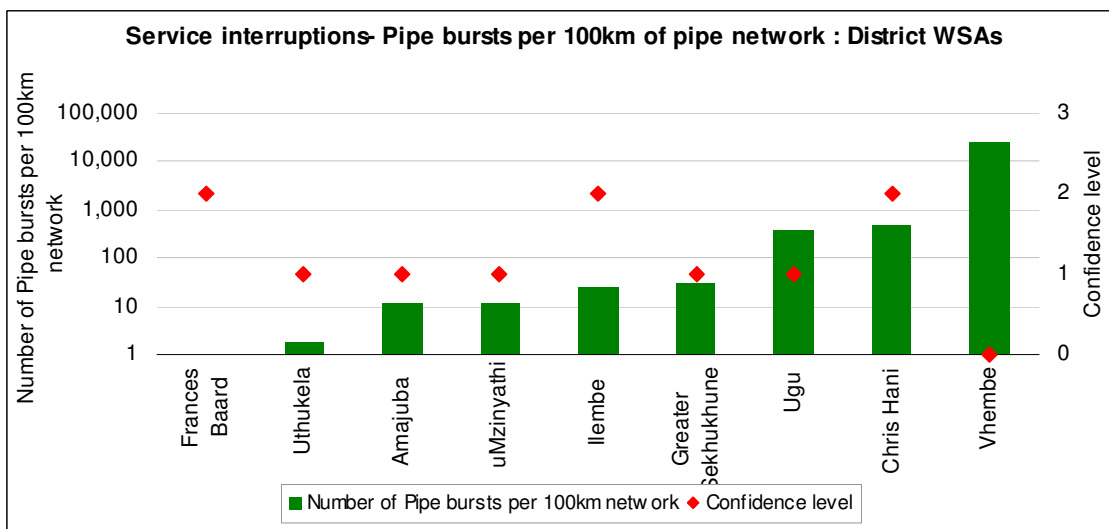
**Figure 107: Service interruptions-pipe bursts per 100km: B2 WSAs**

B2 municipalities range from 0.04 (Merafong) to 656 (Maluti-a-Phofung) bursts per 100km of network.



**Figure 108: Service interruptions-pipe bursts per 100km: B3 WSAs**

For B3 municipalities, only Cape Agulhas had 0 pipe bursts, with a stated data confidence of 2 (reliable). Others ranged from 0.18 (Kgatelopele) to 820 bursts per 100 km in Theewaterskloof.



**Figure 109: Service interruptions-pipe bursts per 100km in Districts**

For districts, Frances Baard had 0 pipe bursts, with a data confidence of 2 (reliable). Others ranged from 1.8 (Uthukela) to 23,760 (Vhembe) pipe bursts per 100km. Vhembe was the only district that provided data with a data confidence of 0.

**Implications and recommendations**

This is a new indicator. Despite this there has been significant reporting on this indicator and acceptable levels of data confidence. It is a particularly useful indicator for assessing the state of the network and hence the maintenance and rehabilitation of infrastructure. WSA’s should be encouraged to continue reporting on these, as trends over time will be particularly important.

For future years, the data for this indicator should be collected in its constituent parts and calculated thereafter.

## 5.5 Financial performance

### 5.5.1 Domestic water tariff

**Definition:**

The average tariff for a non-indigent domestic consumer using 10 kl (30 kl) of water per month, including a fixed fee component and VAT

**Formula:**

The actual cost to consumer (Rands per month) for consumption of 10 kl (30 kl) divided by 10 (30)

**Significance**

Care should be taken when interpreting this data. Price can vary for many reasons, for example, raw and/or bulk water costs may vary due to physical arrangements, economies of scale and/or local conditions.

This indicator is drawn from the Strategic Framework for Water Services.

**Extent of reporting and reliability**

11 District WSAs provided information on tariffs, in addition to 10 of the B1s, 6 of the B2s and 20 of the B3's also provided data. Combined with a full set of information for metro's, this amounts to 79% completeness for this indicator across all WSAs.

The following WSAs did not provide data for this indicator:

**Table 23: Municipalities that did not provide data for the domestic water tariff indicator**

| <b>Metro</b> | <b>Districts</b>   | <b>B1</b>    | <b>B2</b>  | <b>B3</b>     |
|--------------|--------------------|--------------|------------|---------------|
| -            | Alfred Nzo         | Emfuleni     | Lesedi     | Beaufort West |
|              | Amatole            | Madibeng     | Merafong   | Dipaleseng    |
|              | Greater Sekhukhune | Polokwane    | Mossel Bay | Ikwezi        |
|              | Mopani             | Stellenbosch |            | Kouga         |
|              | Vhembe             |              |            |               |

It is also one of the indicators with a higher level of reliability, as indicated by the table below. With the exception of B1's, the level of reliability is fairly high, as would be expected for this indicator.

**Table 24: Average level of data confidence for the domestic tariff indicator**

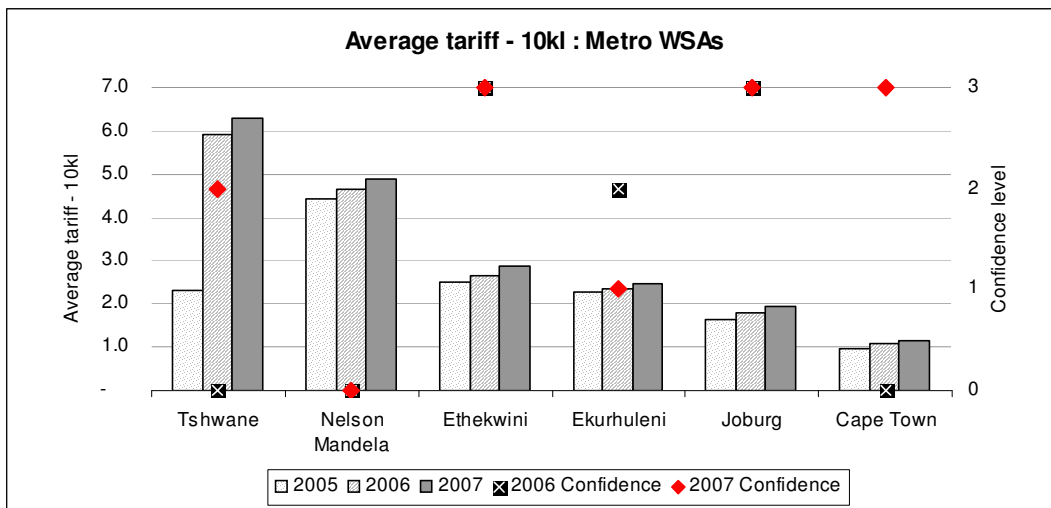
| <b>Average level of confidence</b> | <b>Metro</b> | <b>District</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> |
|------------------------------------|--------------|-----------------|-----------|-----------|-----------|
| Average tariff - 10kl              | 2.0          | 1.6             | 0.6       | 1.8       | 1.5       |
| Average tariff - 30kl              | 1.8          | 1.7             | 0.5       | 1.8       | 1.5       |

**Performance Analysis and Trends**

Average per kl tariffs for non-indigent residential consumers consuming 10kl and 30 kl per month respectively are given below. Each of the municipal categories is considered in turn.

It has not been possible to verify that WSAs have calculated average tariffs in a consistent way. Care should therefore be taken in drawing conclusions based on the data presented below.

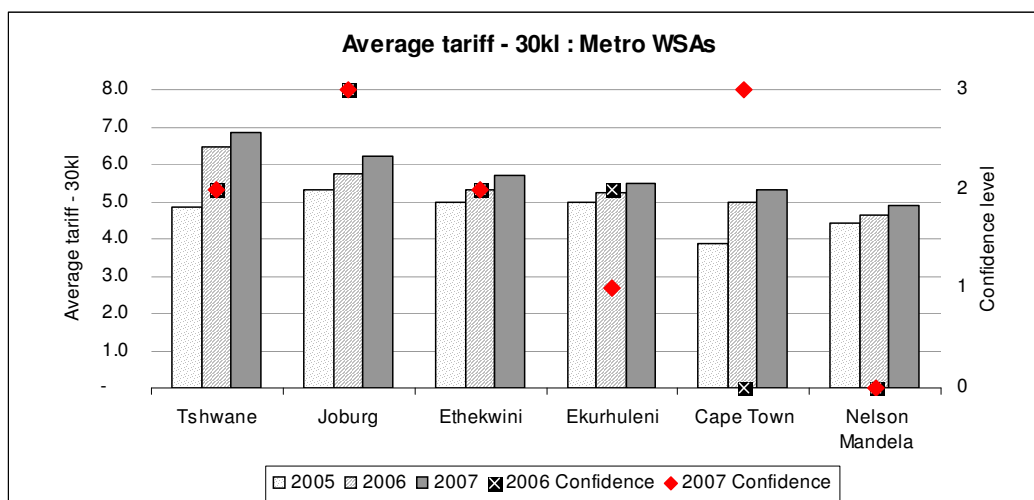
The average tariff at consumption levels of 10kl per month varies significantly between the metros, ranging from a high of R6.28/kl in Tshwane, to R1.17/kl in Cape Town.



**Figure 110: Average tariffs for Metros – 10kl**

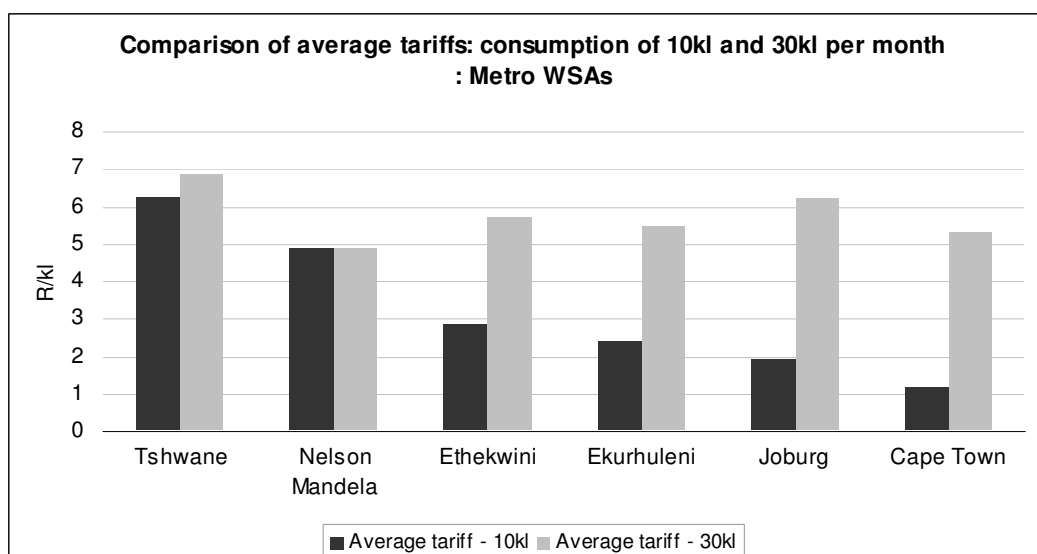
There is much less variation between metros for monthly consumption levels of 30kl. The average tariffs range from R6.85 to R4.88.

In terms of inter-year trends, there appears to have been no major change in tariff structure over the past 3 years, with minimal jumps in tariffs between years for consumption levels of 30kl per month.



**Figure 111: Average tariffs for Metros – 30kl**

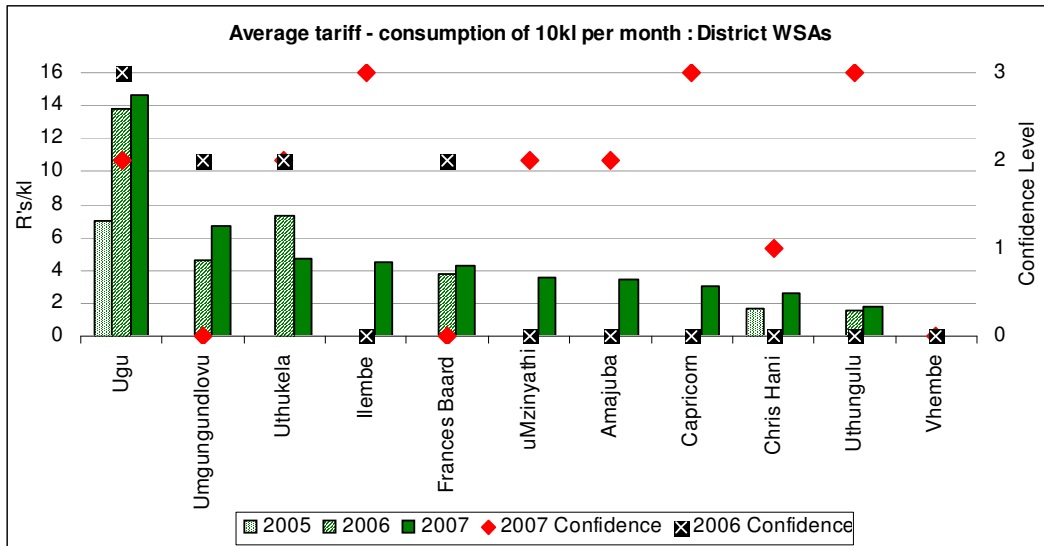
A comparison of the average tariffs for consumption of 10kl and 30kl shows differing patterns between the metros. In most cases, households consuming at 30kl are paying more for their water (Nelson Mandela is an exception in that their tariff remains the same at this level – the next step only begins at above 30kl). Consumers in Tshwane pay only marginally more for water at 30kl, compared to 10kl. This differs from the remaining 4 metros, where there is a minimum difference of R3 per kl between the average tariff for 10kl and for 30kl per month.



**Figure 112: Comparison of average tariffs for Metros**

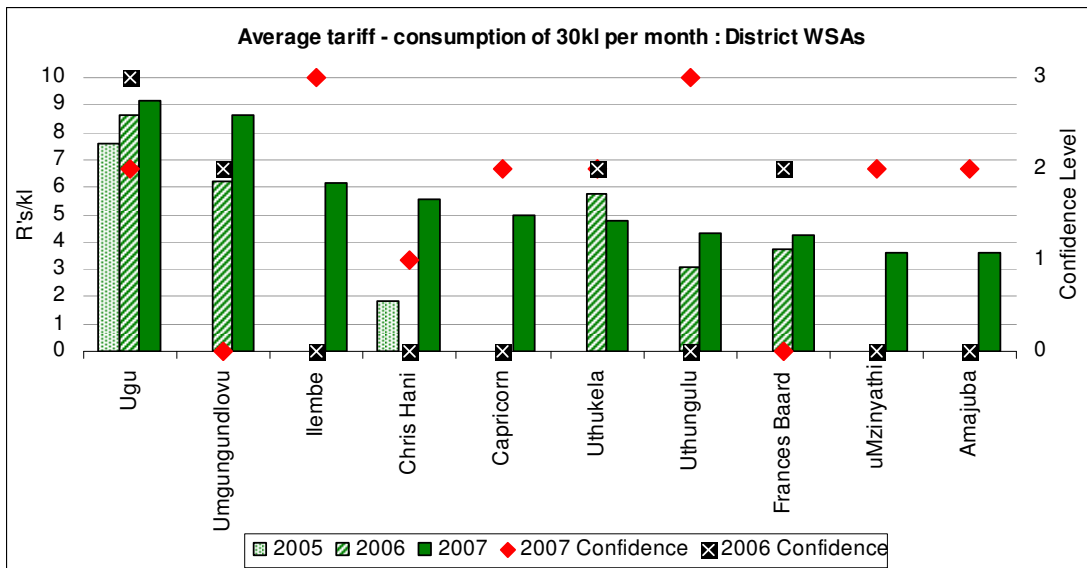
As can be seen in the graph below, there are significant discrepancies between the average tariffs charged between the different District WSAs. Non-indigent households in Ugu are paying an average of R14/kl at the 10kl level, compared to R1.80/kl in Uthungulu. The average tariff is R4.48, with a median of R3.52. It should be noted that Vhembe does not levy a water tariff at all, irrespective of consumption level.

The high charge in Ugu appears to include the availability charge which is levied on all non-indigent properties in the municipality. This is to cater for providing services to a high number of holiday properties which are vacant for much of the year.



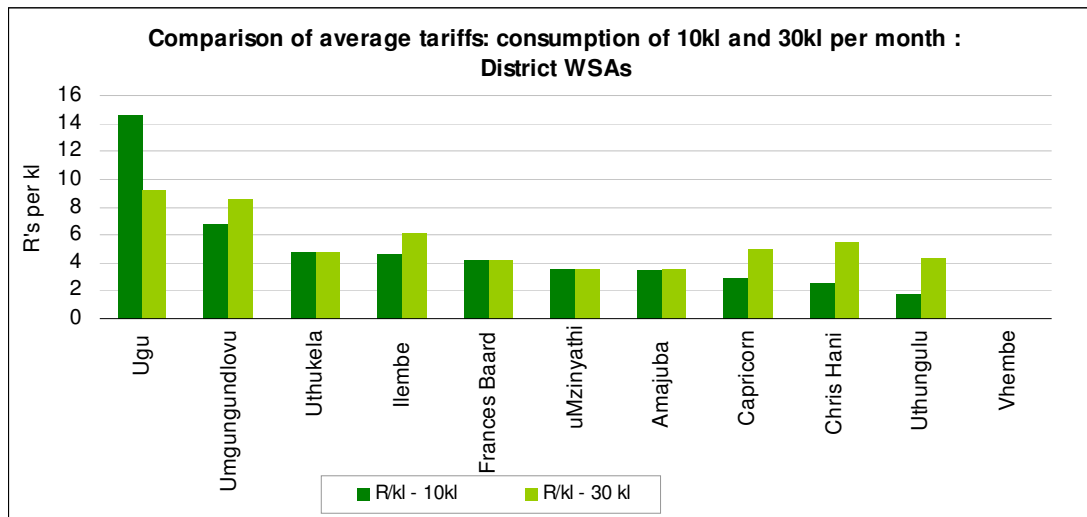
**Figure 113: Average tariffs for District WSAs – 10kl**

As with the metro's, there is less variation between Districts at a consumption level of 30kl per month. Average tariffs range between R9.20 and R3.60, with an overall average of R5.51 and median of R4.88.



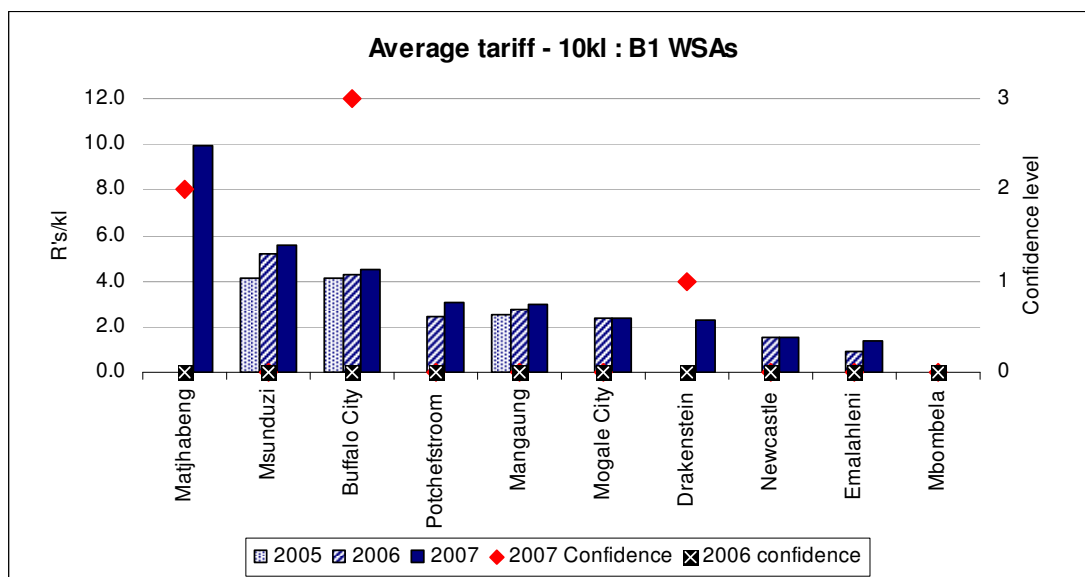
**Figure 114: Average tariffs for District WSAs – 30kl**

With the exception of Ugu, the general trend between districts is to levy higher average tariffs for higher levels of consumption. Three of the districts have the same average tariff at both levels of consumption, while 6 (60% of the sample) have rising block tariffs in place at these consumption levels.



**Figure 115: Comparison of average tariffs for District WSAs**

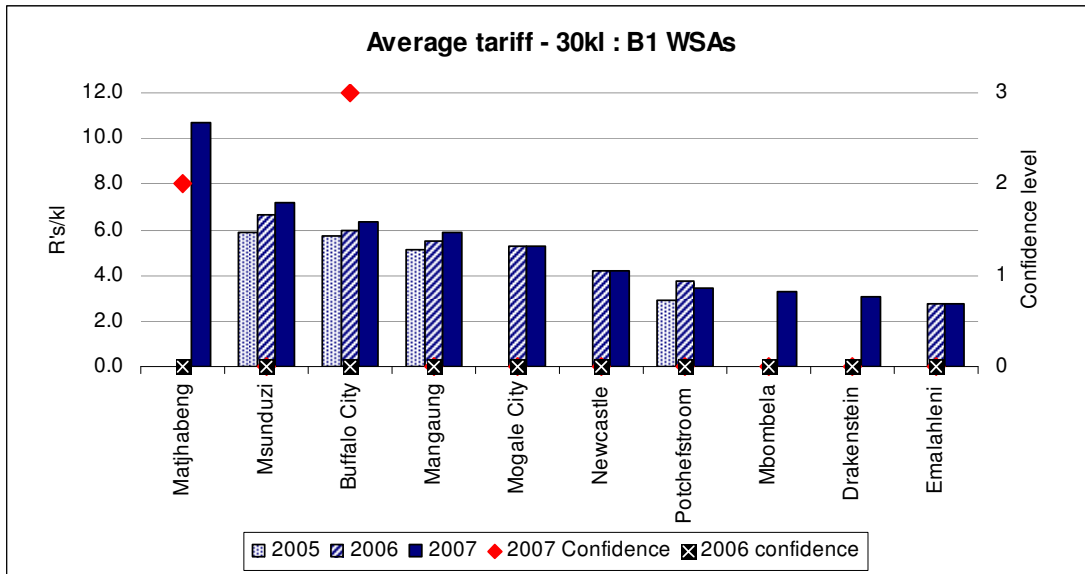
The next set of graphs illustrates the trends in tariffs in the B1s, or the secondary cities.



**Figure 116: Average tariffs for B1s – 10kl**

Average tariffs at the 10kl level vary from R9.90 to R1.40, with an average of R3.35 and median of R2.89. In all WSAs with data for multiple years, average tariffs have increased at or below inflation, or remained the same between years.

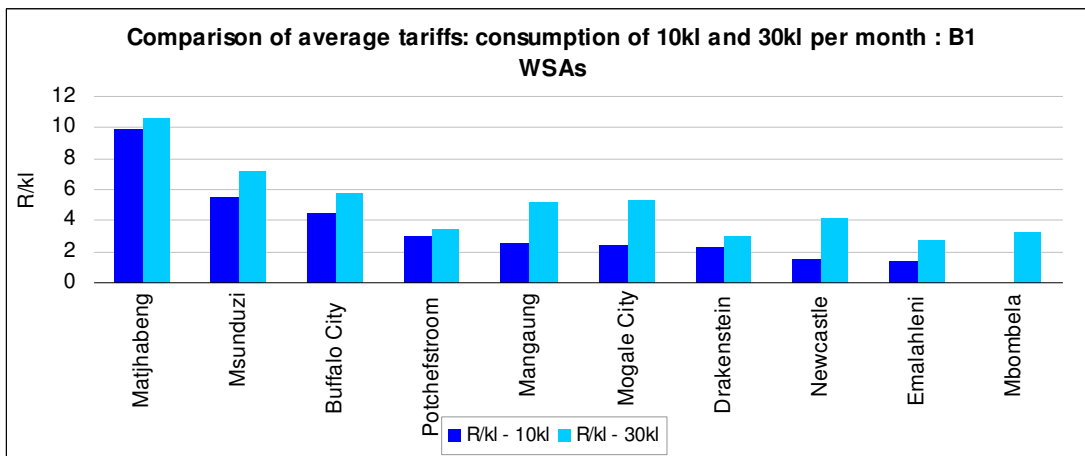
It appears that in Mbombela, all households receive up to 10kl free of charge per month.



**Figure 117: Average tariffs for B1s – 30kl**

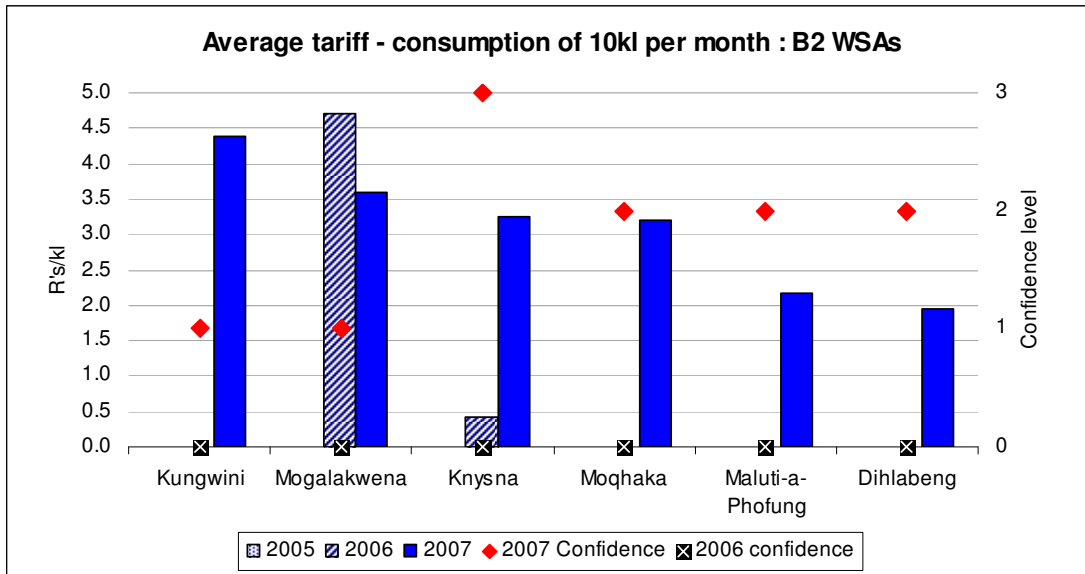
Tariffs at the 30kl level range from R10.67 in Matjhabeng to R2.72 in Emalaheni, with an average value of R5.20/kl.

At both levels of consumption, Matjhabeng is an outlier, with the median tariff at R2.89 for 10kl, and R4.74 for 30kl.



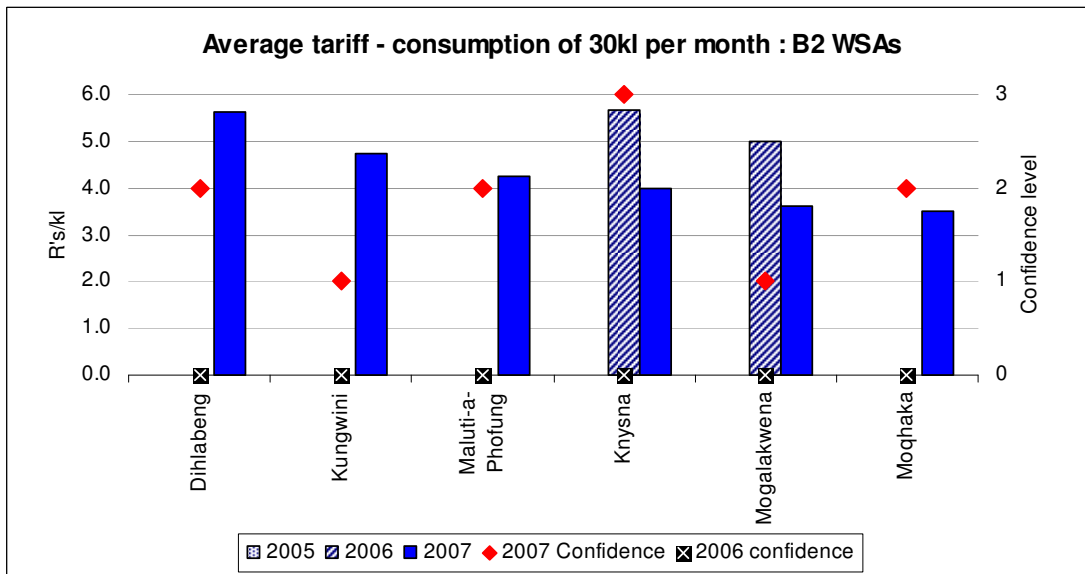
**Figure 118: Comparison of average tariffs for B1s**

In the case of all B1s, consumers pay higher tariffs for higher levels of consumption.



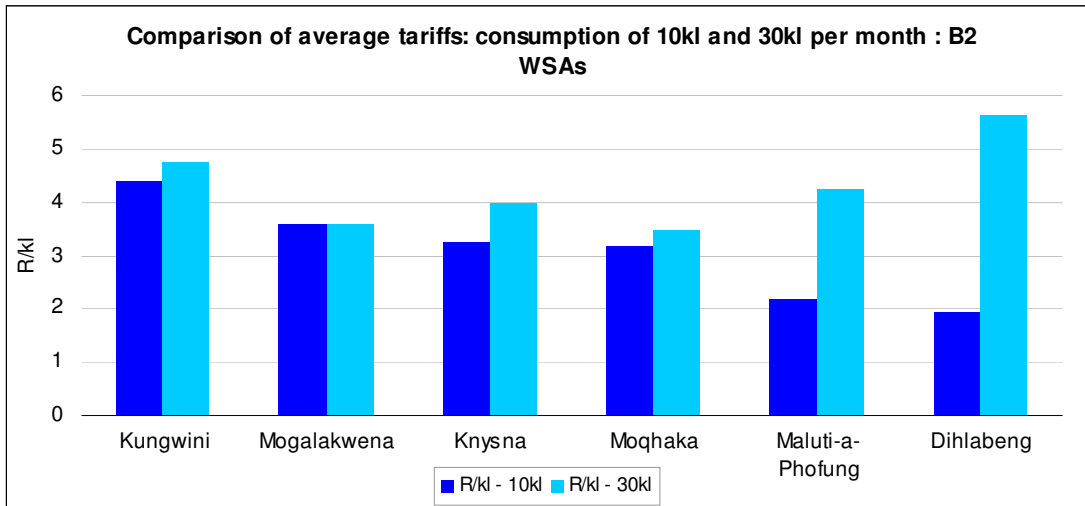
**Figure 119: Average tariffs for Large Towns – 10kl**

There is much less variation between B2 WSAs, ranging from R4.38 to R1.94. The overall average tariff is R3.09/kl, with a median value of R2.89.



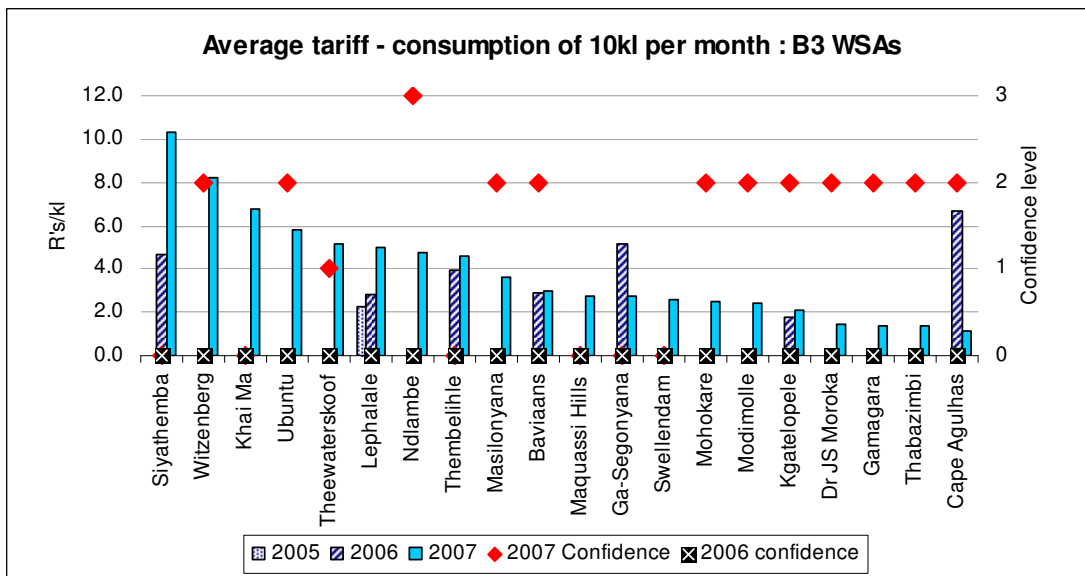
**Figure 120: Average tariffs for Large Towns – 30kl**

A similar trend is evident at consumption levels of 30kl, with average tariffs ranging from R5.62 to R3.50. The overall average is R4.29 average at the 30kl consumption level.



**Figure 121: Comparison of average tariffs for Large Towns**

With the exception of Mogalakwena which levies the same tariff at both levels of consumption, all municipalities have rising block tariffs in place. However the degree of difference between these tariffs varies significantly between B2 WSAs. While Kungwini, Knysna and Moqhaka have only slightly higher tariffs at the 30kl level, Maluti-a-Phofung and Dihlabeng have much more steeply rising tariffs.



**Figure 122: Average tariffs for Small Towns – 10kl**

For small town WSAs, average tariffs at the 10kl consumption level range from R10.34 to R1.14 per kl. This can be compared to an overall average of R3.89 and median of R2.89/kl.

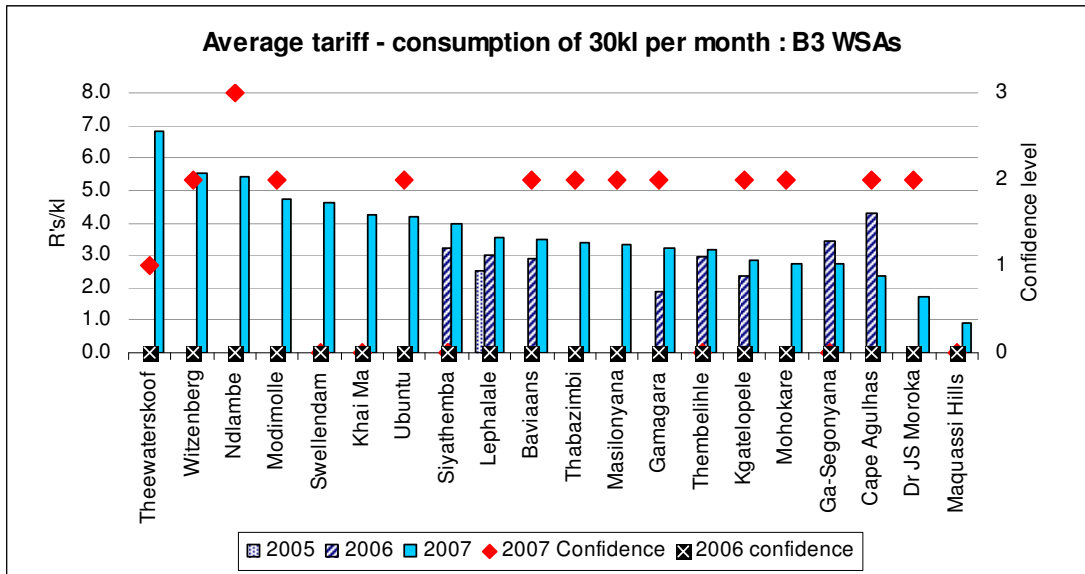


Figure 123: Average tariffs for Small Towns – 30kl

There is also a high degree of variability in tariffs at the 30kl level, ranging from R6.84 to a low of R0.92. The average tariffs for all B3s are also slightly lower than for 10kl, at R3.65/kl for 30kl of water.

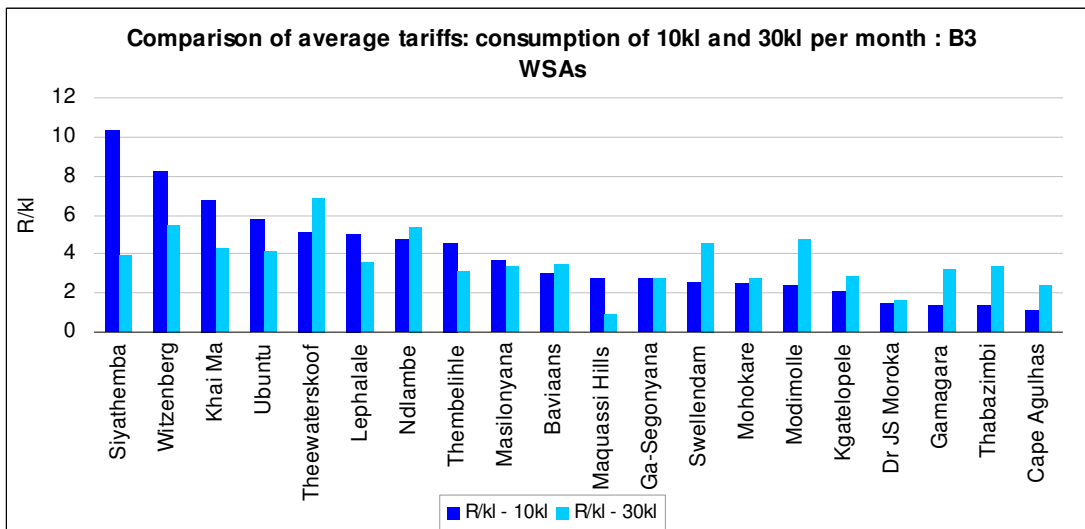


Figure 124: Comparison of average tariffs for Small Towns

Unlike the other WSA types that participated in this round, rising block tariffs do not appear to be widely used in the B3 WSAs. In 40% of the WSAs, consumers are paying less per kl for consumption at 30kl than at 10kl. Considering the effect of basic charges being a bigger factor at 10 kl/ month than at 30 kl/month, this is to be expected.

**Implications**

More detailed analysis at a municipal level on a case by case basis is required before being able to draw any conclusions in relation to this exercise. These detailed studies could assess the following:

- The degree to which all costs required to run a sustainable service are taken into account (including depreciation, provisions for rehabilitation, adequate funds for maintenance)
- The degree to which costs are efficient
- The degree to which revenues meet the required sustainable, efficient expenses.

### ***Comment on tariff indicator***

A view was expressed at the conference that it is more appropriate to look at the average tariff for 20 kl per month rather than 30 kl per month.

### ***Other tariff studies***

It should be noted that DWAF undertakes an annual tariff analysis of water tariffs across the value chain (including water boards and all municipalities). This provides a more comprehensive view of tariffs than is possible in this benchmarking exercise.

## **5.5.2 Accounting practise**

### **Definition:**

The WSAs water services finances are ring-fenced according to one of the listed arrangements;

Options:

Fully ring fenced #1: separate legal entity

Fully ring fenced #2: separate accounting entity

Partially ring fenced

Not ring fenced

### ***Interpretation***

A definition of ring-fencing is provided in the Draft National Water Services Regulation Strategy. It is not clear to what extent this definition was consistently applied when answering the question on ring-fencing. The concept of partial ring-fencing is somewhat vague.

The conference noted that the "partially ring-fenced" definition was somewhat vague and needed greater explanation to be useful.

It was also noted at the conference that emphasis should not only be placed on financial ring-fencing, but on ring-fencing the business activities (such as recruitment, procurement etc.).

### ***Extent of reporting and reliability***

All 15 Districts reported on this indicator, up from 10 the previous year. Of the 46 LM's who participated, only 15 responded on this indicator, marginally up from 14 in the previous round.

The following WSAs did not provide information for this indicator in 2007:

**Table 25: Municipalities that did not provide information for the accounting practise indicator**

| <b>Metro</b> | <b>Districts</b> | <b>B1</b>     | <b>B2</b> | <b>B3</b> |
|--------------|------------------|---------------|-----------|-----------|
| Ethekwini    | Amajuba          | Madibeng      | Lesedi    | Kouga     |
|              | Amatole          | Mbombela      | Merafong  |           |
|              | Capricorn        | Newcastle     |           |           |
|              | Mopani           | Potchefstroom |           |           |
|              | Umgungundlovu    | Stellenbosch  |           |           |
|              | uMzinyathi       |               |           |           |
|              | Amajuba          |               |           |           |

**Performance Analysis and Trends**

Within the constraints of interpretation identified above, the following reporting was obtained.

Of the Metro WSAs, only Joburg and Nelson Mandela are fully ring-fenced.

**Table 26: Metro WSA reporting on accounting practice**

| <i>WSA</i>     | <i>Response</i>                                | <i>Status</i> |            |            |
|----------------|--|---------------|------------|------------|
| Joburg         | Fully ring fenced (separate legal entity)      | ●             |            |            |
| Nelson Mandela | fully ring fenced (separate accounting entity) | ●             |            |            |
| Cape Town      | partially ring fenced                          |               | ●          |            |
| Ekurhuleni     | not ring fenced                                |               |            | ●          |
| Tshwane        | not ring fenced                                |               |            | ●          |
| <b>Total</b>   | <b>Number</b>                                  | <b>2</b>      | <b>1</b>   | <b>2</b>   |
|                | <b>Percentage</b>                              | <b>40%</b>    | <b>20%</b> | <b>40%</b> |

Of the DM WSAs, only 3 (Ilembe, Uthukela and Vhembe) have fully ring-fenced accounting, or 33% of those who responded to this indicator. However it should be noted that Vhembe has no cost-recovery or water tariffs.

**Table 27: District WSA reporting on accounting practice**

| <i>WSA</i>    | <i>Response</i>                                | <i>Status</i> |   |  |
|---------------|--|---------------|---|--|
| Ilembe        | Fully ring fenced (separate legal entity)      | ●             |   |  |
| Uthukela      | fully ring fenced (separate accounting entity) | ●             |   |  |
| Vhembe        | fully ring fenced (separate accounting entity) | ●             |   |  |
| Frances Baard | partially ring fenced                          |               | ● |  |
| Ugu           | partially ring fenced                          |               | ● |  |

|                    |                       |            |            |            |
|--------------------|-----------------------|------------|------------|------------|
| Uthungulu          | partially ring fenced |            | ●          |            |
| Alfred Nzo         | not ring fenced       |            |            | ●          |
| Chris Hani         | not ring fenced       |            |            | ●          |
| Greater Sekhukhune | not ring fenced       |            |            | ●          |
| <b>Total</b>       | <b>number</b>         | <b>3</b>   | <b>3</b>   | <b>3</b>   |
|                    | <b>%</b>              | <b>33%</b> | <b>33%</b> | <b>33%</b> |

Of the Category B WSA's, only 3 report having fully ring fenced water operations, namely Maluti a Phofung, Manguang and Mogalakwena. Over half of the LM's (58%) are not ring-fenced at all.

**Table 28: Local WSA reporting on accounting practice**

| <i>WSA</i>       | <i>Response</i>                                | <i>Status</i> |   |   |
|------------------|--|---------------|---|---|
| Maluti-a-Phofung | Fully ring fenced (separate legal entity)      | ●             |   |   |
| Mangaung         | fully ring fenced (separate accounting entity) | ●             |   |   |
| Mogalakwena      | Fully ring fenced (separate legal entity)      | ●             |   |   |
| Ubuntu           | partially ring fenced                          |               | ● |   |
| Lephalale        | partially ring fenced                          |               | ● |   |
| Beaufort West    | partially ring fenced                          |               | ● |   |
| Cape Agulhas     | partially ring fenced                          |               | ● |   |
| Drakenstein      | partially ring fenced                          |               | ● |   |
| Khai Ma          | partially ring fenced                          |               | ● |   |
| Msunduzi         | partially ring fenced                          |               | ● |   |
| Dr JS Moroka     | partially ring fenced                          |               | ● |   |
| Modimolle        | partially ring fenced                          |               | ● |   |
| Thabazimbi       | partially ring fenced                          |               | ● |   |
| Thembelihle      | partially ring fenced                          |               | ● |   |
| Siyathemba       | partially ring fenced                          |               | ● |   |
| Theewaterskoof   | partially ring fenced                          |               | ● |   |
| Baviaans         | not ring fenced                                |               |   | ● |
| Buffalo City     | not ring fenced                                |               |   | ● |
| Emalahleni       | not ring fenced                                |               |   | ● |
| Emfuleni         | not ring fenced                                |               |   | ● |
| Gamagara         | not ring fenced                                |               |   | ● |
| Knysna           | not ring fenced                                |               |   | ● |
| Kungwini         | not ring fenced                                |               |   | ● |
| Mossel Bay       | not ring fenced                                |               |   | ● |
| Dihlabeng        | not ring fenced                                |               |   | ● |
| Masilonyana      | not ring fenced                                |               |   | ● |
| Matjhabeng       | not ring fenced                                |               |   | ● |

|                |                 |           |            |            |
|----------------|-----------------|-----------|------------|------------|
| Mogale City    | not ring fenced |           |            | •          |
| Mohokare       | not ring fenced |           |            | •          |
| Moghaka        | not ring fenced |           |            | •          |
| Polokwane      | not ring fenced |           |            | •          |
| Witzenberg     | not ring fenced |           |            | •          |
| Ga-Segonyana   | not ring fenced |           |            | •          |
| Kgatelopele    | not ring fenced |           |            | •          |
| Maquassi Hills | not ring fenced |           |            | •          |
| Ndlambe        | not ring fenced |           |            | •          |
| Ikwezi         | not ring fenced |           |            | •          |
| Swellendam     | not ring fenced |           |            | •          |
| <b>Total</b>   |                 | <b>3</b>  | <b>13</b>  | <b>22</b>  |
|                |                 | <b>8%</b> | <b>34%</b> | <b>58%</b> |

### ***Implications***

More concerted effort to promote the financial ring-fencing of water services is warranted.

### **5.5.3 Cash collection efficiency**

#### **Definition:**

Percentage of total amount billed for water that has been collected from consumers

#### **Formula:**

Cash collected for water sales for the year divided by the total amount billed for the sale of water for the year

### ***Importance or significance***

This KPI is an indicator of how well the municipality manages its revenue from water services.

### ***Interpretation***

The definition should emphasize that cash collected should be that cash which corresponds to the "in-year" billings, and that old debt collected should not be included. However, it was noted that it is sometimes difficult for municipalities to distinguish between the two sources of cash.

### ***Extent of reporting and reliability***

Only 3 or 50% of the metro municipalities provided info for this indicator in 2007: Tshwane, Nelson Mandela and Ethekwini did not respond on this indicator.

10 DMs (66%) responded, together with 33 (72%) of the LMs responded on this indicator, with an average collection rate of 72% for those who did.

The following WSAs did not provide information for this indicator in 2007.

**Table 29: Municipalities that did provide data on the cash collection efficiency indicator**

| <b>Metro</b>   | <b>Districts</b>   | <b>B1</b>    | <b>B2</b> | <b>B3</b>      |
|----------------|--------------------|--------------|-----------|----------------|
| Tshwane        | Alfred Nzo         | Buffalo City | Kungwini  | Dipaleseng     |
| Nelson Mandela | Amatole            | Madibeng     | Lesedi    | Ikwezi         |
| Ethekwini      | Greater Sekhukhune | Mbombela     | Merafong  | Thabazimbi     |
|                | Mopani             | Msunduzi     | Moqhaka   | Theewaterskoof |
|                | Vhembe             | Polokwane    |           |                |

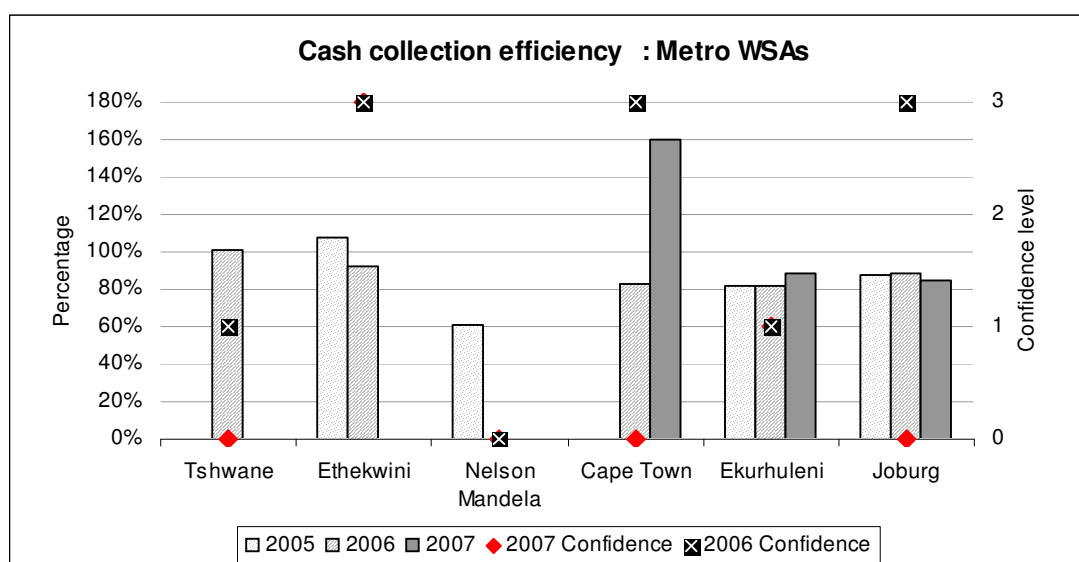
There is a high degree of variability with regard to confidence levels and reliability for this indicator.

**Table 30: Average levels of data confidence for the cash collection efficiency indicator**

| <b>Average levels of confidence</b> | <b>Metro</b> | <b>District</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> |
|-------------------------------------|--------------|-----------------|-----------|-----------|-----------|
| Cash collection efficiency          | 0.3          | 1.9             | 0.8       | 1.4       | 1.0       |

### Performance Analysis and Trends

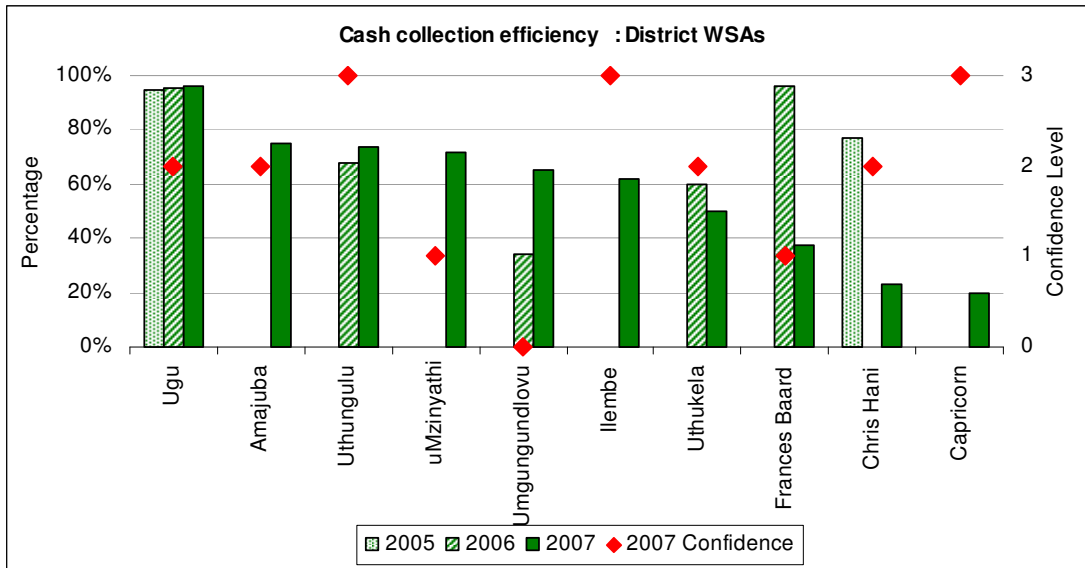
Cape Town appears to have undertaken a major cash-collection drive in the 2006/07 financial year, resulting in a cash collection ratio of 160%. The median cash collection ratio is 89% for metro's, indicating a generally good ability to recover revenue from consumers.



**Figure 125: Cash collection efficiency in the Metros**

The reality in district WSAs appears to differ significantly from that of metros, with an average cash-collection ratio of 57% and a median of 64%. This reflects the lower rate of cash-collection experienced by most District WSAs.

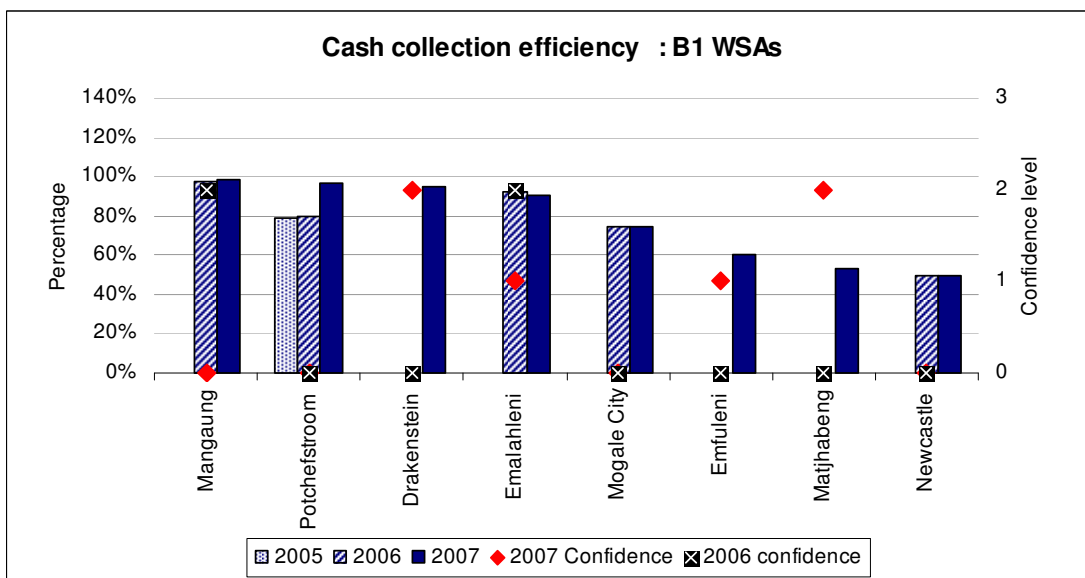
Ugu is a notable exception, as they have reported consistently high levels of cash-recovery over the past 3 years, at 95% and higher.



**Figure 126: Cash collection efficiency in DMs**

The average rate of cash-collection for the secondary cities is 77%, with a median of 82%. This is higher than the average for all Local WSAs of 72%. However there is a significant amount of variation, ranging from a high of 98% to a low of 53%.

With the exception of Potchefstroom, which shows a significant improvement on previous years, cash-collection efficiency is very similar to previous years.



**Figure 127: Cash collection efficiency in B1s**

There is a similar amount of variability among B2s, with 95% for both Knysna and Maluti-a-Phofung, and 40% for Mogalakwena.

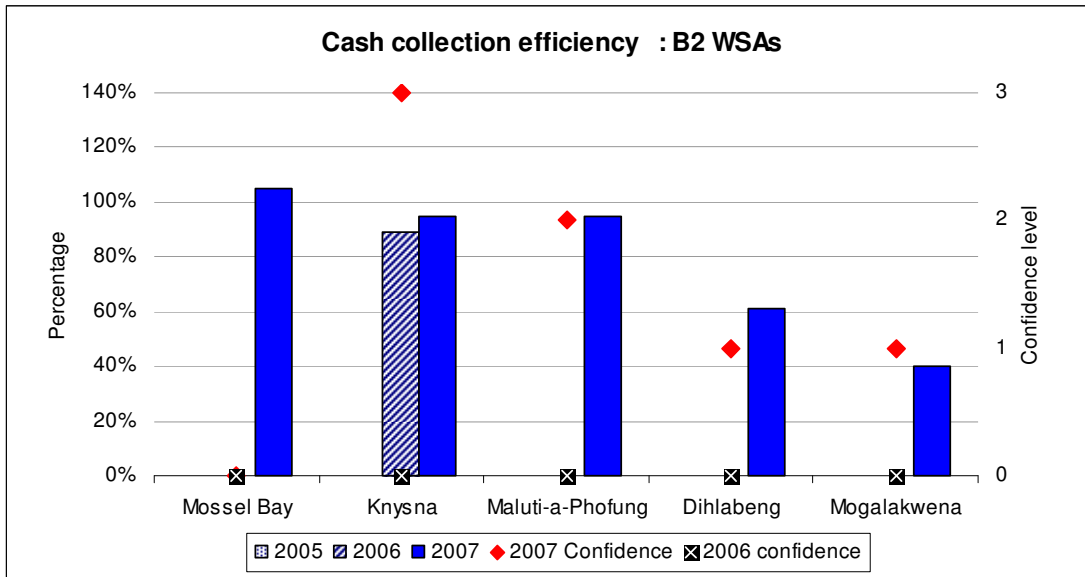


Figure 128: Cash collection efficiency in B2s

Cash-collection for B3s ranges from 97% to 43% for Maquassi Hills. Against an average of 69% and median of 73%, Dr JS Moroka is a significant outlier. (However, it should be noted that Dr JS Moroka is the only B4 participating in this round of the benchmarking process, and one of the few who are WSAs – in the absence of other B4’s, they have been included with the B3s for the purpose of analysis.)

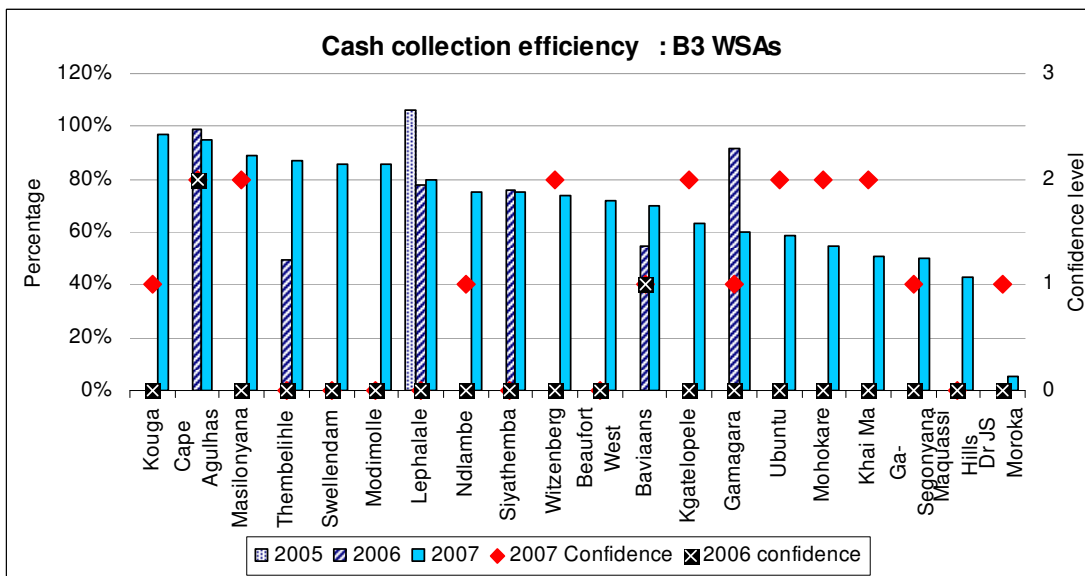


Figure 129: Cash collection efficiency in B3s

**Implications**

Municipalities should aim for, and achieve a cash collection efficiency of 95% or more. Lower levels than this threaten sustainability and/or indicate that the indigent’s or pro-poor policy is not appropriate or effective. The frequently low collection rates, lack of improvement (with a few exceptions) and decrease in several instances is a serious cause for concern.

Only 8 WSAs managed to achieve this benchmark in 2007, none of which were metro's (excluding Cape Town's 160%).

In some cases where cash-collection efficiency exceeds 100%, it is unclear if this is due to improved collections, or a misinterpretation of this indicator to include the write-off of bad debt.

#### 5.5.4 Debtor days

##### **Definition:**

The outstanding debt (after provisions) expressed as debtor days based on the billed water sales for the year

##### **Formula:**

The total customer debt (after provisions) divided by sales billed for the year multiplied by 365

##### ***Importance or significance***

This is a measure of the financial management performance of the municipality in recovering water services debt.

##### ***Extent of reporting and reliability***

There was a poor response to this indicator overall. Only 50% of the metros provided information for this indicator in 2007, in addition to 47% of LMs and DMs respectively.

The following WSAs did not provide information for this indicator:

***Table 31: Municipalities that did not provide information for the debtors day indicator***

| <b><i>Metro</i></b> | <b><i>Districts</i></b> | <b><i>B1</i></b> | <b><i>B2</i></b> | <b><i>B3</i></b> |
|---------------------|-------------------------|------------------|------------------|------------------|
| Ekurhuleni          | Alfred Nzo              | Buffalo City     | Kungwini         | Dipaleseng       |
| Nelson Mandela      | Amatole                 | Madibeng         | Lesedi           | Ikwezi           |
| Ethekwini           | Greater Sekhukhune      | Mbombela         | Merafong         | Theewaterskoof   |
|                     | Mopani                  | Msunduzi         | Moqhaka          | Kouga            |
|                     | Vhembe                  | Polokwane        | Mossel Bay       | Swellendam       |
|                     |                         | Stellenbosch     |                  | Beaufort West    |
|                     |                         | Emalahleni       |                  | Baviaans         |
|                     |                         | Mogale City      |                  | Kgatelopele      |
|                     |                         | Emfuleni         |                  | Ga-Segonyana     |
|                     |                         | Matjhabeng       |                  |                  |
|                     |                         | Newcastle        |                  |                  |

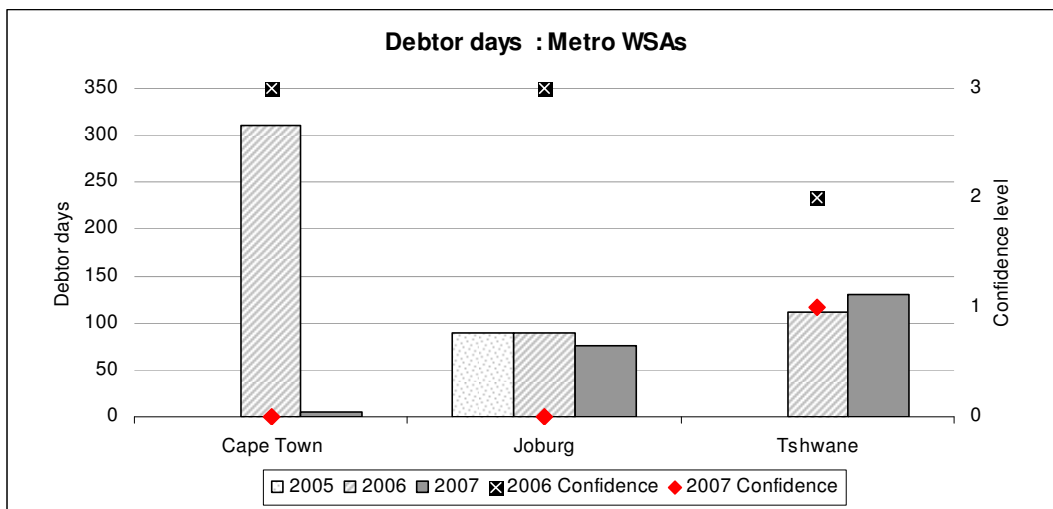
Confidence levels are lower than expected, as much of this information should be easily available from current financial reporting. It is hoped that the levels of confidence will improve as understanding of this indicator improves.

| <b>Average Confidence Levels</b> | <b>Metro</b> | <b>District</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> |
|----------------------------------|--------------|-----------------|-----------|-----------|-----------|
| Debtor days                      | 0.3          | 2.1             | 0.3       | 2.0       | 1.1       |

**Performance Analysis and Trends**

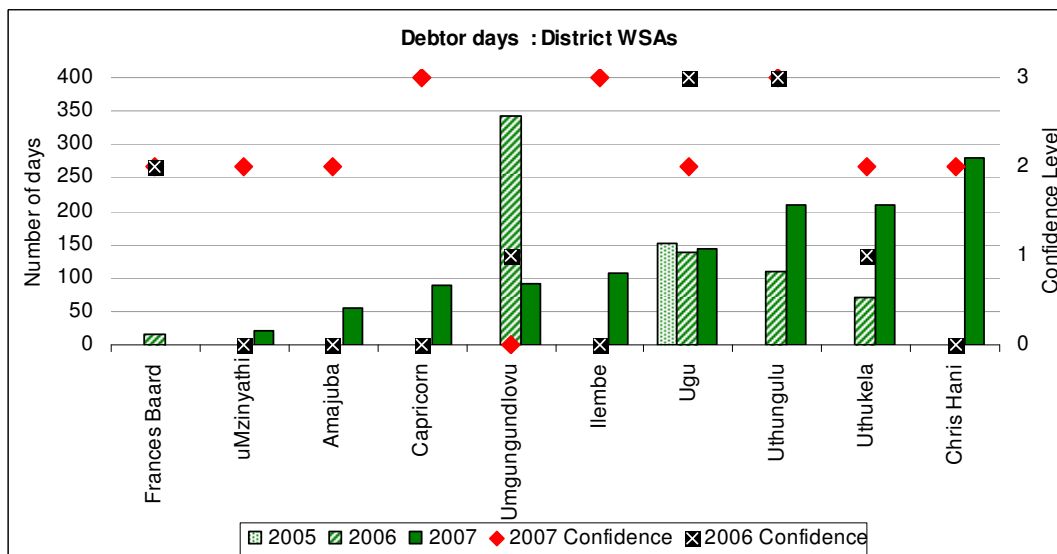
Of the 3 metro’s who have provided information for this indicator, only 2 appear to have reliable data (Cape Town’s figure of 5 days is highly suspect, despite the improved cash-collection remarked on above).

Tshwane has debtor days of 130, slightly above the municipal benchmark of 120 days. Joburg has the best performance, with debtor days of 75, well within the range of best-practice for this indicator in the municipal sector.



**Figure 130: Debtor days for Metro WSAs**

The number of debtor days for DMs varies significantly, ranging from 280 for Chris Hani to 0 for Frances Baard. The median value is 99, with an average of 121 days.



**Figure 131: Debtor days for DM WSAs**

Due to the poor reporting for this indicator across all LMs, only an overall average has been calculated for this indicator. The median number of debtor days is 141, with an average of 270, indicating that there is significant room for improvement in cost-recovery across all Local WSAs.

Only 3 secondary cities provided data for this indicator. Mangaung's debtor days have remained the same as the previous year's, and is above recommended levels at 164 days. Drakenstein is performing well, with 90 debtor days. Potchefstroom's figure of 10 days appears to be too low, but as noted above, they also reported improved cash collection efficiency for the same year.

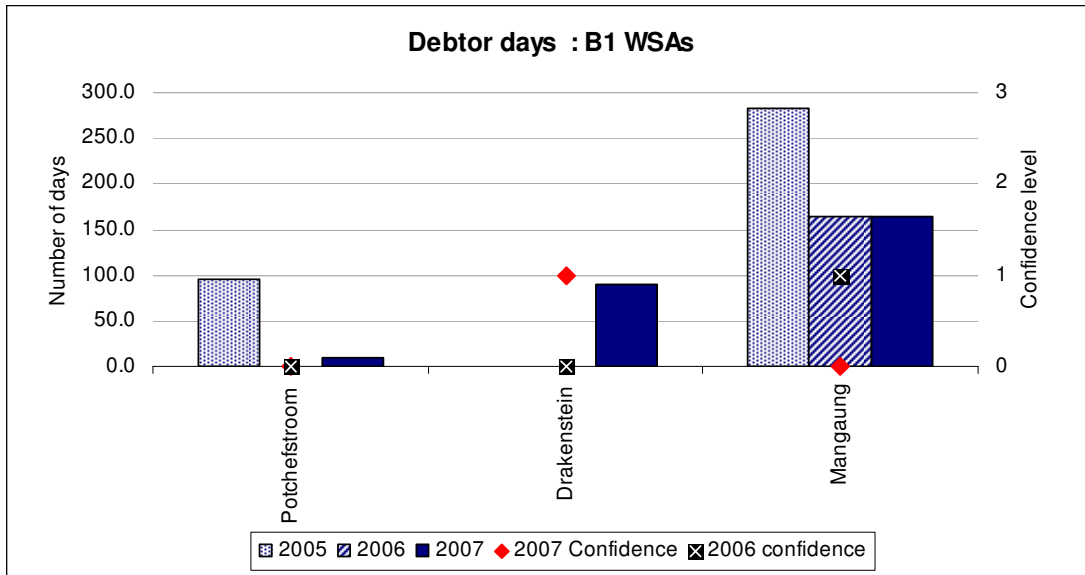


Figure 132: Debtor days for B1 WSAs

Of the B2s reporting on this indicator, Knysna has the lowest number of debtor days at 20. While Dihlabeng falls within the recommended range with 104 debtor days, Maluti-a-Phofung has the greatest amount of outstanding debt, equivalent to 253 debtor days.

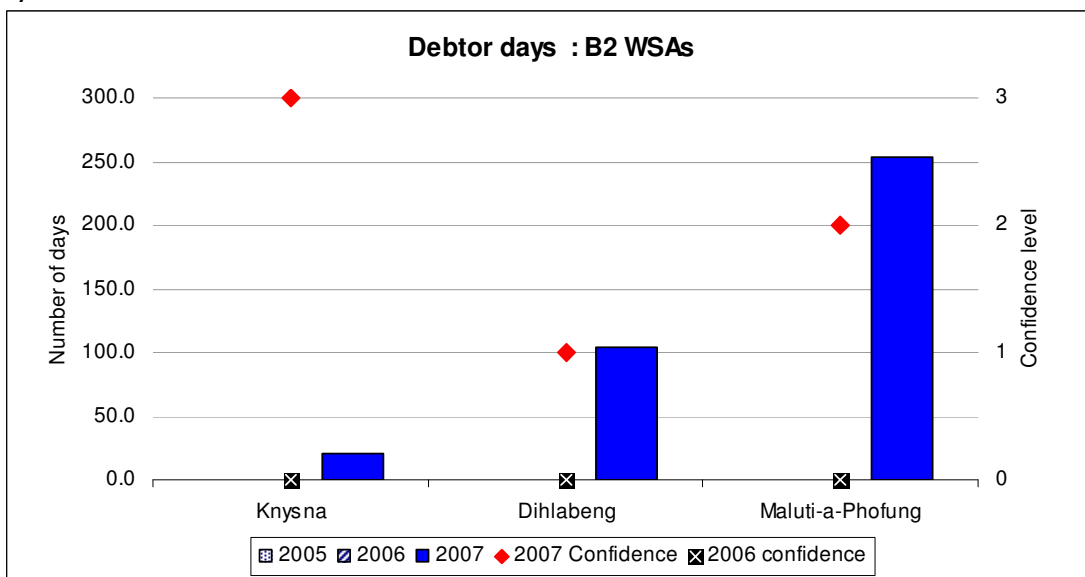


Figure 133: Debtor days for B2 WSAs

Of the B3's, 3 have excessive levels of outstanding debt, equivalent to over 2 years worth of outstanding debt. Of the remaining WSAs, debtor days range from 309 in Khai Ma to 30 in Cape Agulhas.

It is interesting to note that the 4 best-performing WSAs on this indicator, also report relatively high levels of confidence in their information.

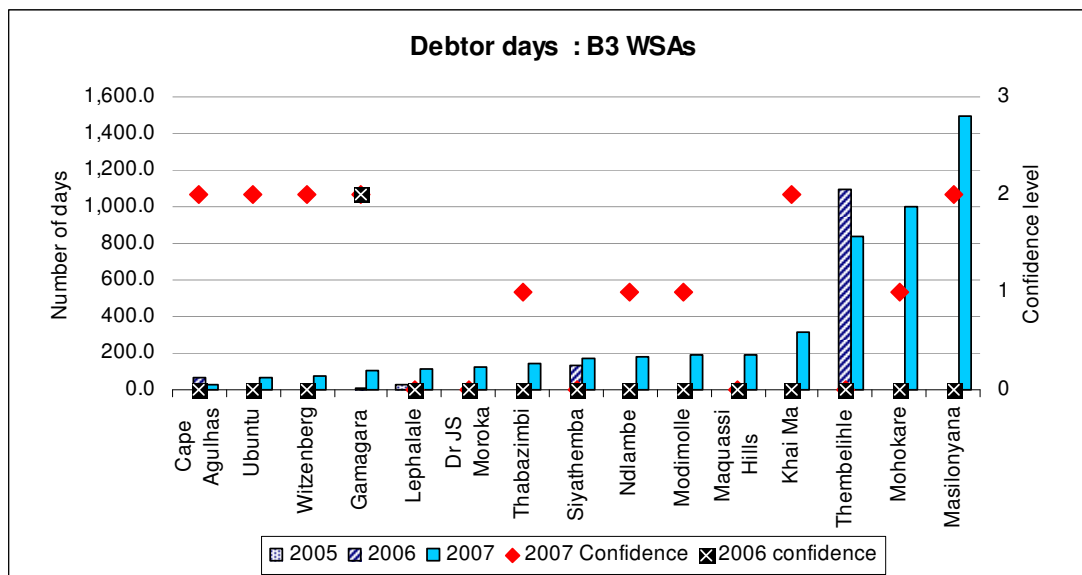


Figure 134: Debtor days for B3 WSAs

### Implications

Good performance in the municipal environment for this indicator requires that the number of debtor days is less than 120 days. Municipalities should however aim for debtor days of 90 days or less.

Conversely, very low debtor days (less than 30) are highly suspect.

Performance on this indicator is currently highly variable between WSAs, with a low level of reporting. Debt recovery needs to be improved across the sector, and understanding of the indicator improved to enable better reporting.

### 5.5.5 Self reliance

#### Definition:

The ratio of income from the sale of water to consumers to total operating expenses for water (including depreciation)

#### Formula:

The accrued income from water sales to consumers divided by the total operating expenditure for water including interest and depreciation

#### Importance or significance

This indicator also tests the financial viability and sustainability of the municipality as it measures the ratio of non-grant income to expenditure for the delivery of water services.

**Extent of reporting and reliability**

There was a good response for this indicator, with an 88% response rate overall.

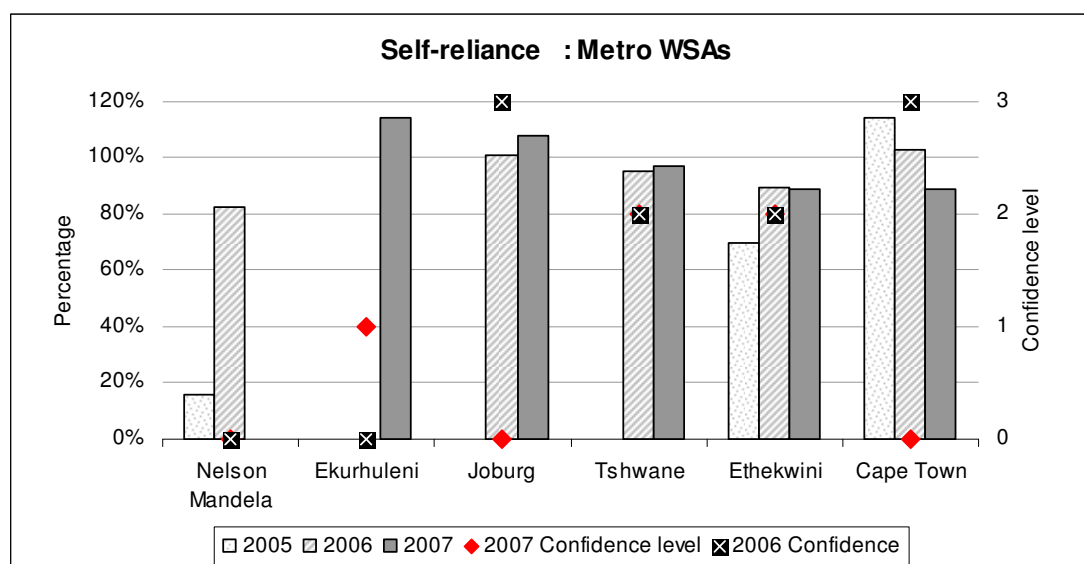
The following WSAs did not provide data for this indicator:

**Table 32: Metro WSA reporting on accounting practice**

| <b>Metro</b>   | <b>Districts</b>   | <b>B1</b>    | <b>B2</b> | <b>B3</b>    |
|----------------|--------------------|--------------|-----------|--------------|
| Nelson Mandela | Greater Sekhukhune | Buffalo City | Kungwini  | Dipaleseng   |
|                |                    | Newcastle    | Merafong  | Ga-Segonyana |

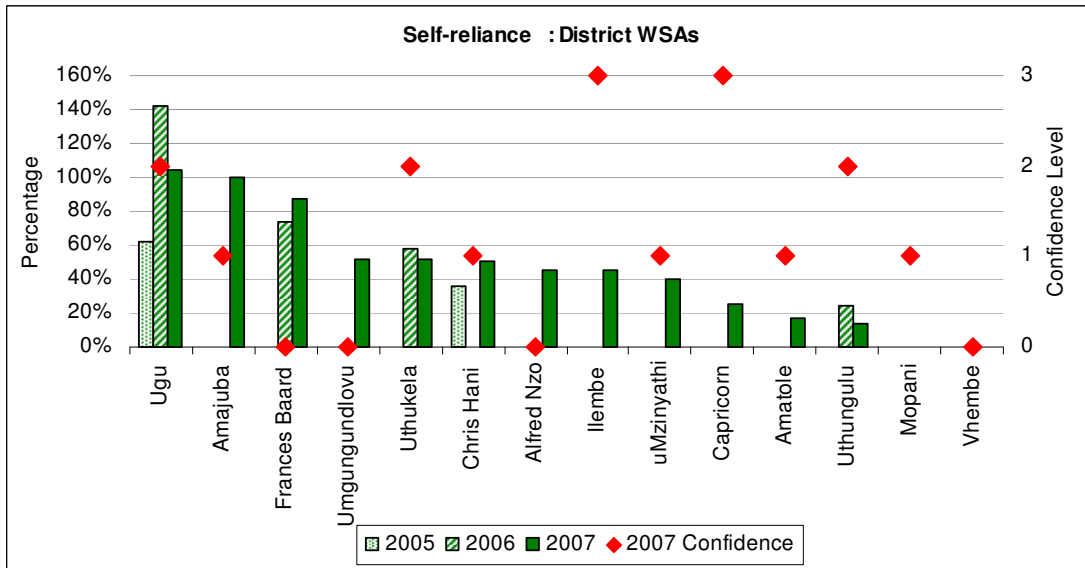
**Performance Analysis and Trends**

Ekurhuleni had the highest ratio of non-grant income to expenditure of all the metro WSAs , with a ratio of 114%, indicating that income exceeded expenditure in 2007. The median value for all metros was 97%, with Cape Town and Ethekwini both at 89%.



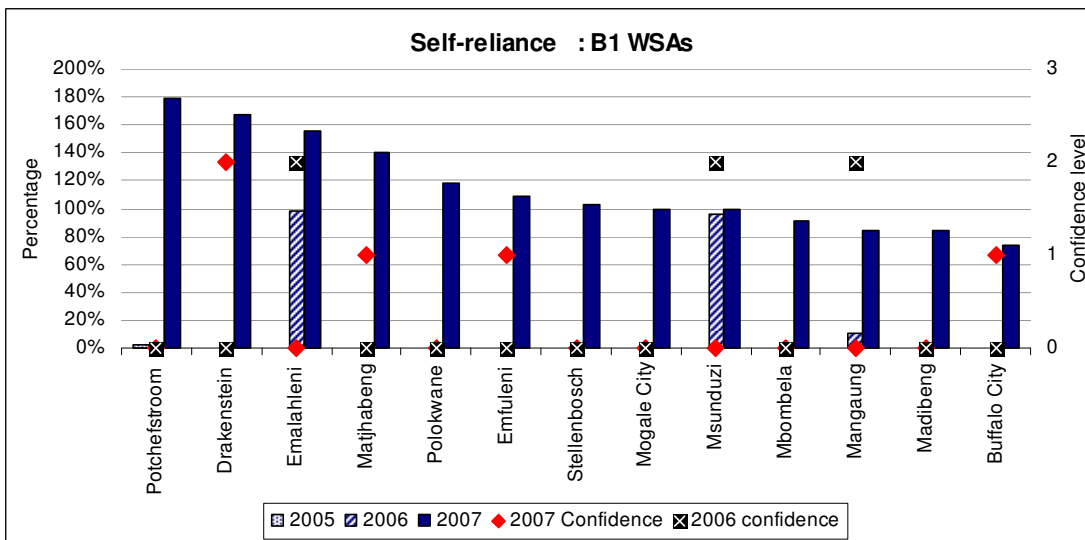
**Figure 135: Ratio of non-grant income to operating expenses for the Metros**

As expected, the ratio of income to operating expenses is significantly lower for District WSAs, with an average ratio of 42%. Only Ugu and Amajuba have ratios which approach 100%, while 73% of DMs rely on grant income for a minimum of 50% of their expenditure. Both Mopani and Vhembe are completely reliant on grant income to cover operating expenditure.



**Figure 136: Ratio of non-grant income to operating expenses – DM WSAs**

Among B1s (secondary cities), the average ratio is 116%, with a median of 103%. Approximately half of the B1s are generating a surplus from water income, while the others depend on grants for a portion of their income. Buffalo City currently has the lowest ratio with 74%.



**Figure 137: Ratio of non-grant income to operating expenses – B1 WSAs**

The average ratio for B2's is 82%, with a median of 89%, indicating that there is a limited reliance on grant income among B2s. Mogalakwena is most dependent on grant income, with a ratio of 40% in 2007.

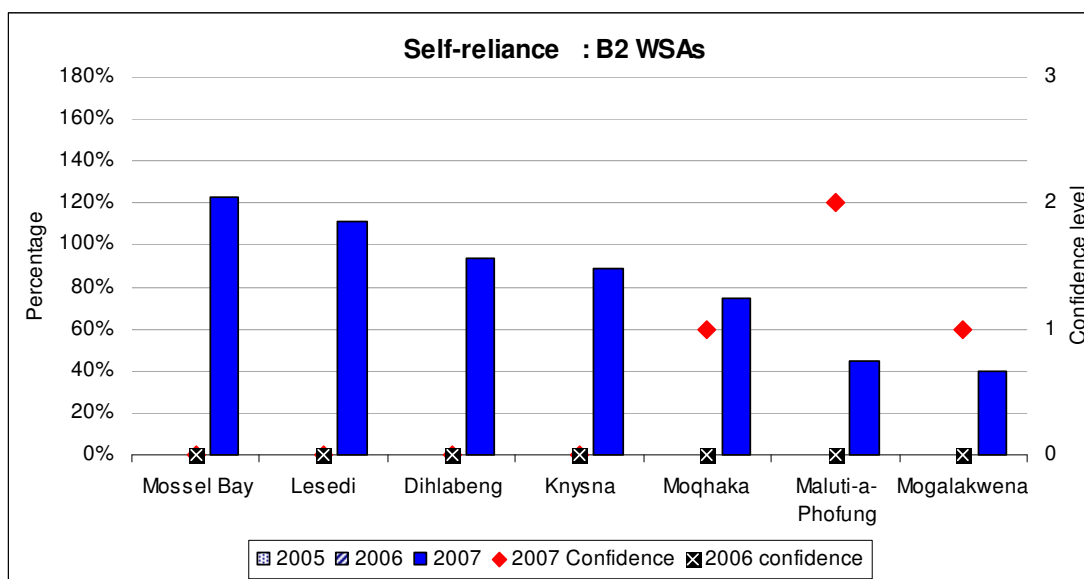


Figure 138: Ratio of non-grant income to operating expenses – B2 WSAs

B3 WSAs have an average ratio of 90%, and a median value of 87%. A quarter of the WSAs are generating a surplus from water sales. Dr JS Moroka is an exception in this category – with a ratio of 1% they are almost completely reliant on grant income.

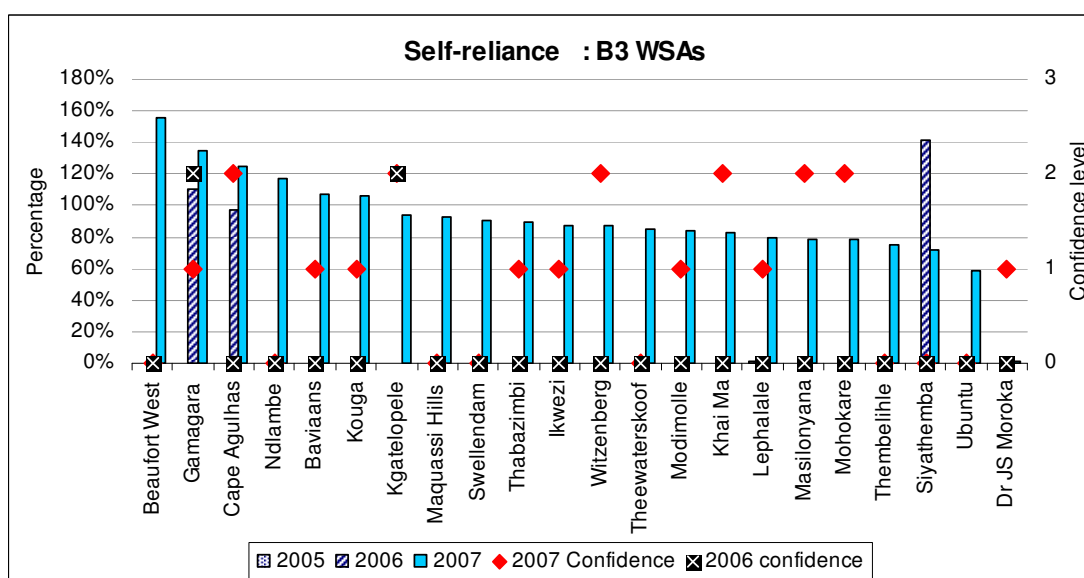


Figure 139: Ratio of non-grant income to operating expenses – B3 WSAs

### Implications

The calculated ratio and the underlying data supplied by the WSAs did not always match, thus it is unclear how accurate the information presented above is.

More attention needs to be given to the financial data to ensure more robust and consistent reporting.

### 5.5.6 Additional financial indicators

Proposals for additional financial indicators were made at the conference. These are discussed in section 7.4.

## 5.6 Asset management

The rationale behind focussing on Assets as a group of indicators lies in the fact that water services is generally capital intensive and sound management of assets is a fundamental prerequisite for good management of water services from both a service delivery perspective as well as from a sustainability perspective.

### 5.6.1 Audited water services asset register

#### Definition:

A water service asset register has been compiled, is up to date and has been audited. The requirements for the asset register are set out in the MFMA.

#### Formula:

A municipality must indicate the status of their asset register:

- Not developed
- In process
- Developed
- Up to date
- Audited

#### *Importance or Significance*

This indicator supports the Sector Targets in the Strategic Framework for Water Services, is a requirement of the MFMA and is a measure of good management practice.

All WSAs must have an asset register to enable them to manage and account for the assets.

#### *Extent of reporting and reliability*

Four of the metro's responded to this indicator, which is down from the previous year, when all metros provided information.

11 Districts provided information this year, which is an improvement from the previous year's 8. There has been a significant increase in reporting from LM's, up from 12 last year to 29 this year.

The following WSAs have not provided information for this indicator:

*Table 33: Metro WSA reporting on accounting practice*

| <b>Metro</b> | <b>Districts</b> | <b>B1</b>     | <b>B2</b>   | <b>B3</b>      |
|--------------|------------------|---------------|-------------|----------------|
| Tshwane      | Vhembe           | Mogale City   | Mogalakwena | Theewaterskoof |
| Ethekwini    | Frances Baard    | Polokwane     | Lesedi      | Gamagara       |
|              | Amatole          | Madibeng      | Merafong    | Ga-Segonyana   |
|              | Umgungundlovu    | Mbombela      |             | Ikwezi         |
|              |                  | Newcastle     |             | Maquassi Hills |
|              |                  | Potchefstroom |             | Ndlambe        |
|              |                  | Stellenbosch  |             | Swellendam     |

#### *Performance Analysis and Trends*

In general, very few WSAs currently have an approved or finalised asset register in place. Only half (2 of the group that have responded) of the Metro's have asset registers in place currently.

**Table 34: Status of asset registers for Metros**

| <i>WSA</i>     | <i>Response</i> | <i>Status</i> |            |            |
|----------------|-----------------|---------------|------------|------------|
| Johannesburg   | approved        | ●             |            |            |
| Nelson Mandela | developed       |               | ●          |            |
| Cape Town      | in process      |               |            | ●          |
| Ekurhuleni     | in process      |               |            | ●          |
| <b>Total</b>   |                 | <b>1</b>      | <b>1</b>   | <b>2</b>   |
|                |                 | <b>25%</b>    | <b>25%</b> | <b>50%</b> |

Similarly, only 27% of Districts, and 38% of Local WSAs have asset registers either approved or developed in place currently.

The situation is even worse looking at only approved and audited asset registers – only 25% of metro's, 9% of Districts and 7% of Local WSA have approved asset register in place for the current reporting period.

**Table 35: Status of asset registers in the DMs**

| <i>WSA</i>         | <i>Response</i> | <i>Status</i> |            |            |
|--------------------|-----------------|---------------|------------|------------|
| Uthukela           | approved        | ●             |            |            |
| Uthungulu          | developed       |               | ●          |            |
| Chris Hani         | developed       |               | ●          |            |
| Greater Sekhukhune | in process      |               |            | ●          |
| Amajuba            | in process      |               |            | ●          |
| uMzinyathi         | in process      |               |            | ●          |
| Ilembe             | not developed   |               |            | ●          |
| Ugu                | not developed   |               |            | ●          |
| Alfred Nzo         | not developed   |               |            | ●          |
| Capricorn          | not developed   |               |            | ●          |
| Mopani             | not developed   |               |            | ●          |
| <b>Total</b>       | <b>number</b>   | <b>1</b>      | <b>2</b>   | <b>8</b>   |
|                    | <b>%</b>        | <b>9%</b>     | <b>18%</b> | <b>73%</b> |

**Table 36: Status of asset registers in the LMs**

| <i>WSA</i>   | <i>Response</i> | <i>Status</i> |   |  |
|--------------|-----------------|---------------|---|--|
| Khai Ma      | approved        | ●             |   |  |
| Kouga        | approved        | ●             |   |  |
| Dr JS Moroka | developed       |               | ● |  |
| Drakenstein  | developed       |               | ● |  |
| Lephalale    | developed       |               | ● |  |

|                  |               |           |            |            |
|------------------|---------------|-----------|------------|------------|
| Maluti-a-Phofung | developed     |           | ●          |            |
| Matjhabeng       | developed     |           | ●          |            |
| Moqhaka          | developed     |           | ●          |            |
| Siyathemba       | developed     |           | ●          |            |
| Ubuntu           | developed     |           | ●          |            |
| Witzenberg       | developed     |           | ●          |            |
| Baviaans         | not developed |           |            | ●          |
| Beaufort West    | in process    |           |            | ●          |
| Buffalo City     | in process    |           |            | ●          |
| Cape Agulhas     | not developed |           |            | ●          |
| Dihlabeng        | not developed |           |            | ●          |
| Emalaheni        | not developed |           |            | ●          |
| Emfuleni         | not developed |           |            | ●          |
| Kgatelopele      | in process    |           |            | ●          |
| Knysna           | in process    |           |            | ●          |
| Kungwini         | in process    |           |            | ●          |
| Mangaung         | not developed |           |            | ●          |
| Masilonyana      | not developed |           |            | ●          |
| Modimolle        | not developed |           |            | ●          |
| Mohokare         | not developed |           |            | ●          |
| Mossel Bay       | in process    |           |            | ●          |
| Msunduzi         | in process    |           |            | ●          |
| Thabazimbi       | not developed |           |            | ●          |
| Thembelihle      | not developed |           |            | ●          |
| <b>Total</b>     |               | <b>2</b>  | <b>9</b>   | <b>18</b>  |
|                  |               | <b>7%</b> | <b>31%</b> | <b>62%</b> |

### ***Implications and recommendations***

All WSAs must have a Council approved and audited asset register to support the sector goals of sustainable service delivery. To achieve this measure both DWAF, as the sector custodian, and National Treasury as the regulator of the MFMA must insist that all WSAs have Council approved and audited asset registers in place as a matter of urgency.

### **5.6.2 Asset management plan**

#### **Definition:**

An asset management plan that has been developed and approved by the WSA (Council)

#### **Formula:**

A municipality must indicate the status of their asset management plan:

- Not developed
- In process
- Developed
- Approved

**Importance or Significance**

A Council approved asset management plan is an indicator of good management practices in the WSA. (Of course, a plan on its own is not sufficient. The plan must also be appropriate and be implemented.)

An asset management plan helps the WSA to manage its assets in a sustainable and financially efficient manner by indicating when assets need to be refurbished and when assets need to be replaced, ensuring that the maximum benefit is obtained from any infrastructure investment.

**Extent of reporting and reliability**

The following WSAs did not provide information for this indicator:

**Table 37: Municipalities that did not provide data for the AMP indicator**

| <b>Metro</b> | <b>Districts</b> | <b>B1</b>     | <b>B2</b>   | <b>B3</b>      |
|--------------|------------------|---------------|-------------|----------------|
| Tshwane      | Amatole          | Madibeng      | Mogalakwena | Theewaterskoof |
| Ethekwini    | Umgungundlovu    | Mbombela      | Lesedi      | Ikwezi         |
|              |                  | Potchefstroom | Merafong    | Maquassi Hills |
|              |                  | Stellenbosch  |             | Ndlambe        |
|              |                  |               |             | Swellendam     |

**Performance Analysis and Trends**

None of the Metro's have developed asset management plans, while 75% are in the process of developing them.

**Table 38: Status of asset management plans in the Metros**

| <i>WSA</i>     | <i>Response</i> | <i>Status</i> |           |             |
|----------------|-----------------|---------------|-----------|-------------|
| Joburg         | in process      |               |           | ●           |
| Cape Town      | in process      |               |           | ●           |
| Ekurhuleni     | in process      |               |           | ●           |
| Nelson Mandela | not developed   |               |           | ●           |
| <b>Total</b>   |                 | <b>0</b>      | <b>0</b>  | <b>4</b>    |
|                |                 | <b>0%</b>     | <b>0%</b> | <b>100%</b> |

Only 1 (9%) of the DMs have an approved asset management plan in place, while 5 (33% of respondents) are in the process of developing an asset management plan.

**Table 39: Status of asset management plans in the DMs**

| <i>WSA</i> | <i>Response</i> | <i>Status</i> |  |   |
|------------|-----------------|---------------|--|---|
| Uthukela   | approved        | ●             |  |   |
| Uthungulu  | in process      |               |  | ● |
| Amajuba    | in process      |               |  | ● |
| uMzinyathi | in process      |               |  | ● |

|               |               |           |           |            |
|---------------|---------------|-----------|-----------|------------|
| Alfred Nzo    | in process    |           |           | ●          |
| Capricorn     | in process    |           |           | ●          |
| Chris Hani    | not developed |           |           | ●          |
| Ilembe        | not developed |           |           | ●          |
| Ugu           | not developed |           |           | ●          |
| Mopani        | not developed |           |           | ●          |
| Frances Baard | not developed |           |           | ●          |
| <b>Total</b>  | <b>number</b> | <b>1</b>  | <b>0</b>  | <b>10</b>  |
|               | <b>%</b>      | <b>9%</b> | <b>0%</b> | <b>91%</b> |

Similarly, only 3 LMs have developed asset management plans, while the bulk (91%) is in various stages of developing them.

**Table 40: Status of asset management plans in the LMs**

| <i>WSA</i>       | <i>Response</i> | <i>Status</i> |   |   |
|------------------|-----------------|---------------|---|---|
| Kouga            | approved        | ●             |   |   |
| Lephalale        | developed       |               | ● |   |
| Ubuntu           | developed       |               | ● |   |
| Beaufort West    | in process      |               |   | ● |
| Buffalo City     | in process      |               |   | ● |
| Cape Agulhas     | in process      |               |   | ● |
| Dr JS Moroka     | in process      |               |   | ● |
| Drakenstein      | in process      |               |   | ● |
| Kgatelopele      | in process      |               |   | ● |
| Khai Ma          | in process      |               |   | ● |
| Knysna           | in process      |               |   | ● |
| Mangaung         | in process      |               |   | ● |
| Mogale City      | in process      |               |   | ● |
| Msunduzi         | in process      |               |   | ● |
| Newcastle        | in process      |               |   | ● |
| Witzenberg       | in process      |               |   | ● |
| Baviaans         | not developed   |               |   | ● |
| Dihlabeng        | not developed   |               |   | ● |
| Emalahleni       | not developed   |               |   | ● |
| Emfuleni         | not developed   |               |   | ● |
| Gamagara         | not developed   |               |   | ● |
| Ga-Segonyana     | not developed   |               |   | ● |
| Kungwini         | not developed   |               |   | ● |
| Maluti-a-Phofung | not developed   |               |   | ● |
| Masilonyana      | not developed   |               |   | ● |

| <i>WSA</i>   | <i>Response</i> | <i>Status</i> |           |            |
|--------------|-----------------|---------------|-----------|------------|
| Matjhabeng   | not developed   |               |           | ●          |
| Modimolle    | not developed   |               |           | ●          |
| Mohokare     | not developed   |               |           | ●          |
| Moqhaka      | not developed   |               |           | ●          |
| Mossel Bay   | not developed   |               |           | ●          |
| Polokwane    | not developed   |               |           | ●          |
| Siyathemba   | not developed   |               |           | ●          |
| Thabazimbi   | not developed   |               |           | ●          |
| Thembelihle  | not developed   |               |           | ●          |
| <b>Total</b> |                 | <b>1</b>      | <b>2</b>  | <b>31</b>  |
|              |                 | <b>3%</b>     | <b>6%</b> | <b>91%</b> |

### ***Implications and recommendations***

The lack of performance on these indicators need not mean that asset management planning is not taking place but does pose the question as to the status and priority of asset management planning within the WSA.

A request was made at the conference to circulate best practice asset management plans.

### **5.6.3 Meter coverage**

#### **Definition:**

The percentage of metered end-use connections in relation to the total number of end-use connections which should be metered (volume unrestricted connections).

#### **Formula:**

Total retail meters divided by the total number of volume unrestricted connections

*Unrestricted connections:*

Full pressure connections with or without meters including yard taps and connections with prepaid meters

#### ***Importance or Significance***

Metering is essential in order to manage a network effectively. Without metering it is not possible to undertake water balances, to manage water losses and to provide accurate billing. This indicator arises out of a requirement in the Waters Services Act.

#### ***Data sources***

Each municipality should maintain records of the number of water connections, the number of meters installed, and the status of the meters.

#### ***Extent of reporting and reliability***

Reporting was good for this indicator, with all but 1 metro providing data, along with 73% of Districts and 80% of Local WSAs.

The following WSAs did not provide information for this indicator:

**Table 41: Municipalities that did not provide information on the meter coverage indicator**

| <b>Metro</b> | <b>Districts</b>   | <b>B1</b>     | <b>B2</b> | <b>B3</b>   |
|--------------|--------------------|---------------|-----------|-------------|
| Ethekwini    | Amatole            | Mbombela      | Lesedi    | Dipaleseng  |
|              | Greater Sekhukhune | Potchefstroom |           | Masilonyana |
|              | Mopani             |               |           | Ndlambe     |
|              | Vhembe             |               |           | Swellendam  |
|              |                    |               |           | Thembelihle |
|              |                    |               |           | Witzenberg  |

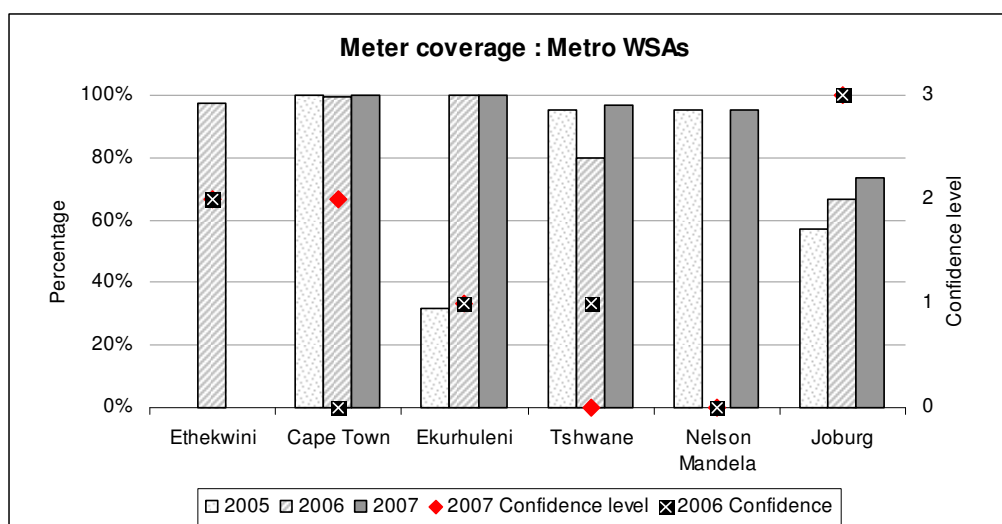
The average levels of confidence for the indicator were as follows:

**Table 42: Average levels of confidence for the meter coverage indicator**

| <b>Average levels of confidence</b> | <b>Metro</b> | <b>District</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> |
|-------------------------------------|--------------|-----------------|-----------|-----------|-----------|
| Meter coverage                      | 1.2          | 1.3             | 0.8       | 1.0       | 1.4       |

**Performance Analysis and Trends**

Meter coverage is fairly high for metro’s, with a median coverage of 97%. Johannesburg currently faces the biggest challenge, with 27% of full-pressure connections lacking a water meter. It has however also steadily improved coverage over the past 3 years. It’s unclear why Tshwane’s coverage has been so erratic over the same period.



**Figure 140: Meter coverage in the Metros**

Meter coverage is much lower in District WSAs as a rule, with a median value of 35%, and an average of 40%. It should be noted that Frances Baard, which has the highest meter coverage, has a very small number of consumers.

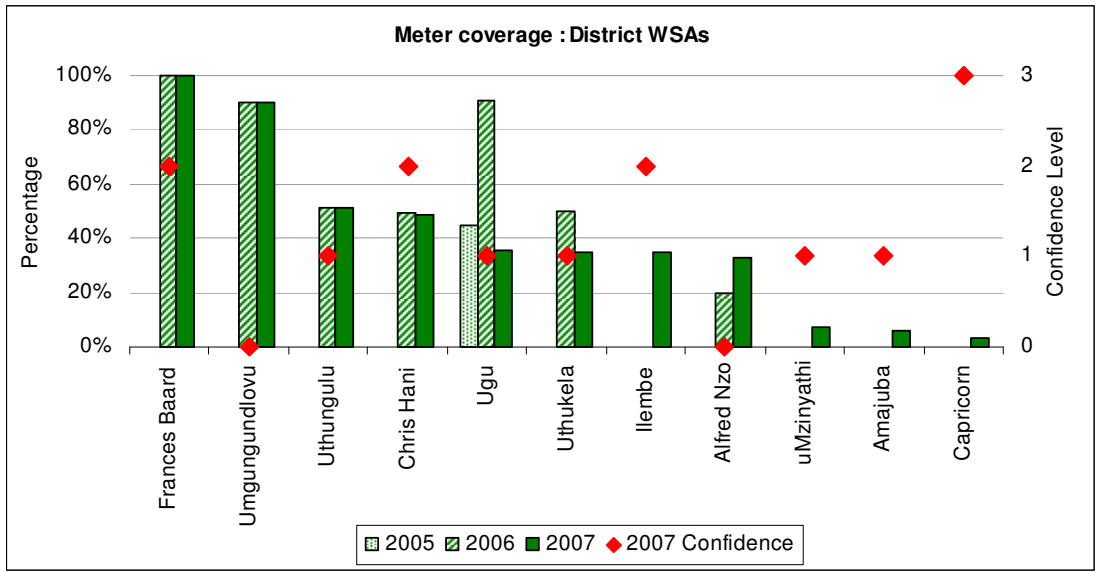


Figure 141: Meter coverage in the DMs

Meter coverage in the Secondary Cities (B1s), ranges from 100% to 51%, with an average of 80%. Msunduzi and Mangaung show an increase in coverage over time. It is unclear why the situation in Emalahleni has declined from 2006 to 2007.

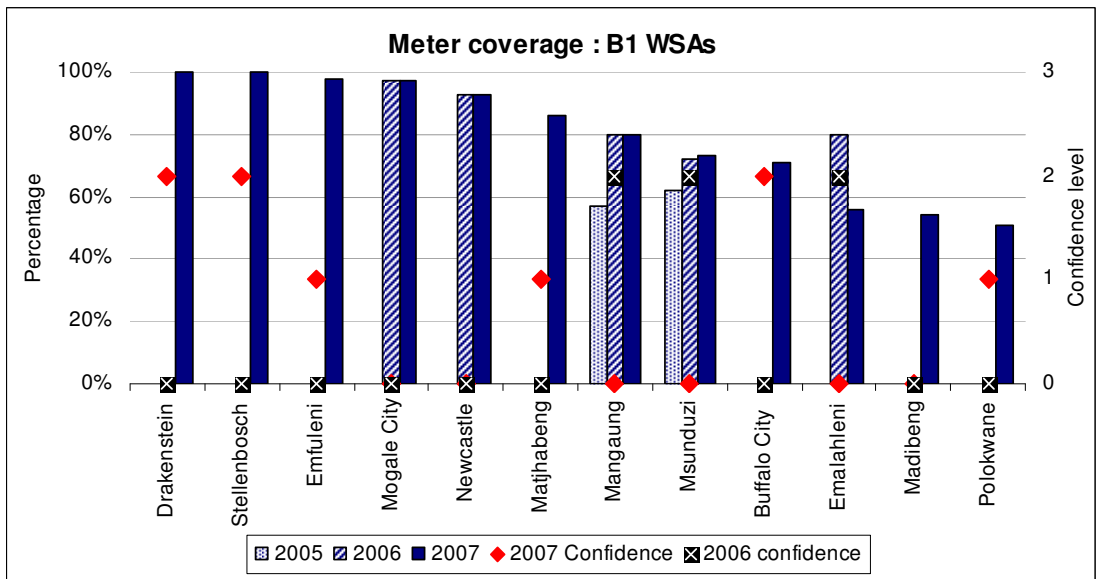


Figure 142: Meter coverage - B1 WSAs

The average meter coverage in B2's is very similar at 82%. Maluti-a-Phofung has the lowest coverage at 39%. Merafong's data for 2006 appears to be incorrect, as the base data supports meter coverage of 100%.

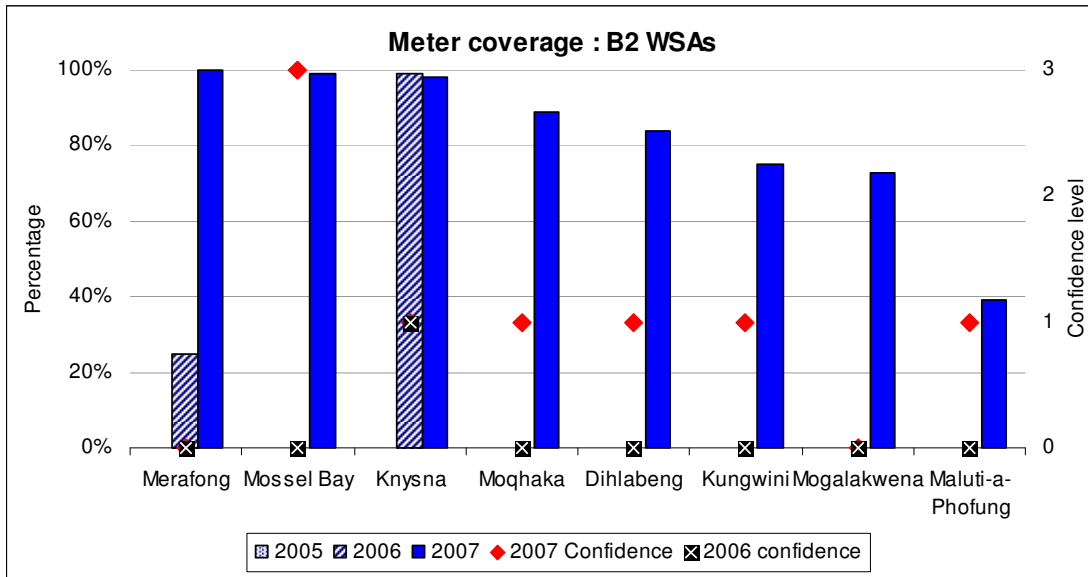


Figure 143: Meter coverage – B2 WSAs

B3's tend to have smaller populations – as a result, meter coverage is 10% higher than for other local WSAs with an average of 90%, and median of 100%. Ga-Segonyana and Ikwezi are outliers with coverage of less than 50%.

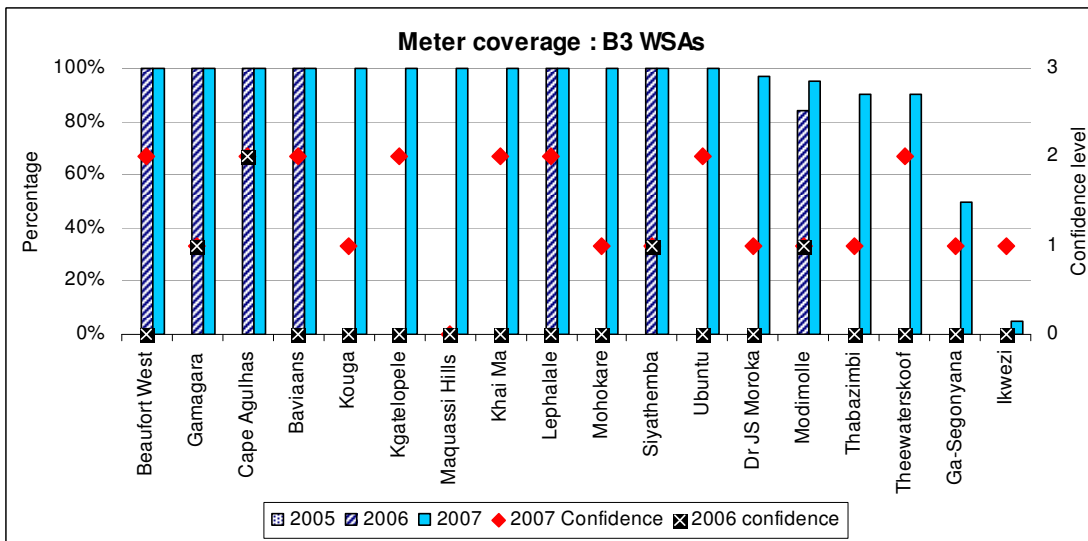


Figure 144: Meter coverage – B3 WSAs

**Implications and recommendations**

Metering is a critical element of managing the service delivery of water and emphasis must be placed on the investment and maintenance of meters, for both bulk and domestic services.

### 5.6.4 Unaccounted-for water

**Definition:**

The volume of water supplied into the network less the volume of water accounted for divided by the volume of water supplied in to the network

It was suggested at the National Conference that the internationally accepted ILI methodology should be used as the current measure is simplistic and does not differentiate between actual losses and management losses. However, it is felt that not all municipalities are in a position to measure this indicator in a sophisticated way.

**Importance or significance**

Unaccounted-for water (UAW) is a measure of the efficiency of the service delivery network as well as the effectiveness of the municipalities' measurements, accounting and administrative systems and processes. The Water Services Act requires water service authorities to measure unaccounted for water and do water audits.

**Data sources**

To manage the water sector business a municipality must know how much water is being put into the network and how much it can account for.

**Extent of reporting and reliability**

73% of District WSAs provided data for this indicator, along with 67% of Local WSAs.

The following WSAs did not provide information for this indicator:

**Table 43: Municipalities that did not provide information on the UAW indicator**

| <b>Metro</b> | <b>Districts</b>   | <b>B1</b> | <b>B2</b>        | <b>B3</b>   |
|--------------|--------------------|-----------|------------------|-------------|
| -            | Amatole            | Emfuleni  | Kungwini         | Dipaleseng  |
|              | Greater Sekhukhune | Madibeng  | Lesedi           | Kouga       |
|              | Mopani             |           | Maluti-a-Phofung | Masilonyana |
|              | Frances Baard      |           | Merafong         | Ndlambe     |
|              |                    |           | Moqhaka          | Siyathemba  |
|              |                    |           |                  | Swellendam  |
|              |                    |           |                  | Thembelihle |
|              |                    |           |                  | Ubuntu      |

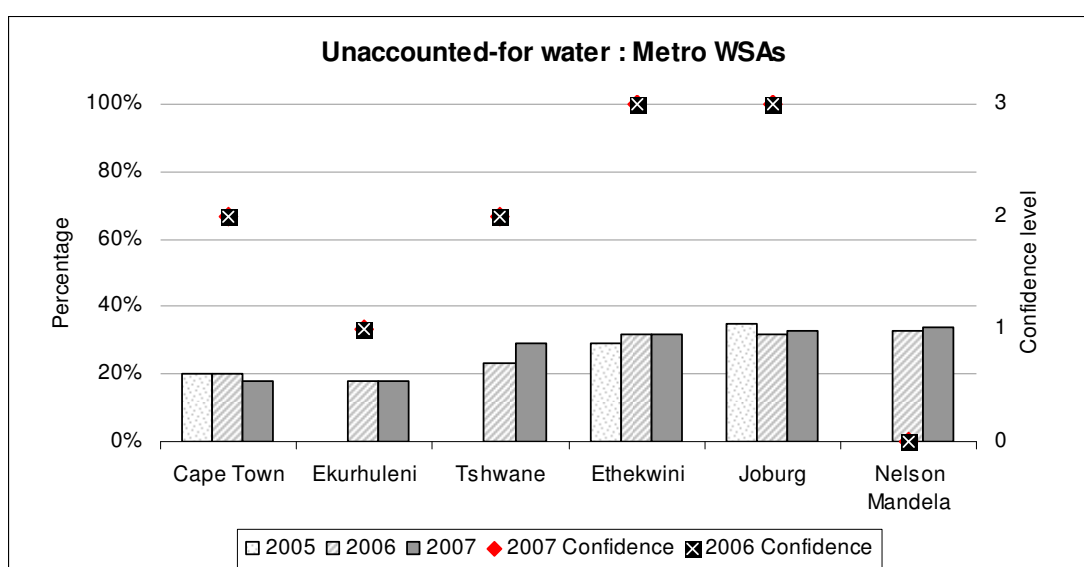
The average levels of confidence for the indicator were as follows:

**Table 44: Status of asset registers in the DMs**

| <b>Average levels of confidence</b> | <b>Metro</b> | <b>District</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> |
|-------------------------------------|--------------|-----------------|-----------|-----------|-----------|
| UAW                                 | 1.8          | 0.9             | 1.0       | 1.3       | 1.0       |

**Performance Analysis and Trends**

The average for unaccounted-for water for metro WSAs is 27%, with a median of 31%. While Ekurhuleni and Cape Town report the lowest amount of UAW, their level of confidence in the data is not as high as for Ethekwini and Joburg, with UAW of 32%. Confidence levels have remained the same as in 2006.



**Figure 145: Unaccounted for water in the Metros**

The amount of UAW varies tremendously between the District WSAs, ranging from 90% to 0%, with an average of 39%. Such values are both implausible and undesirable, and attention must be paid to improving reporting on this indicator.

Ugu shows a significant improvement since the previous rounds, with a reduction in UAW from 34% in 2006 to 17% in 2007.

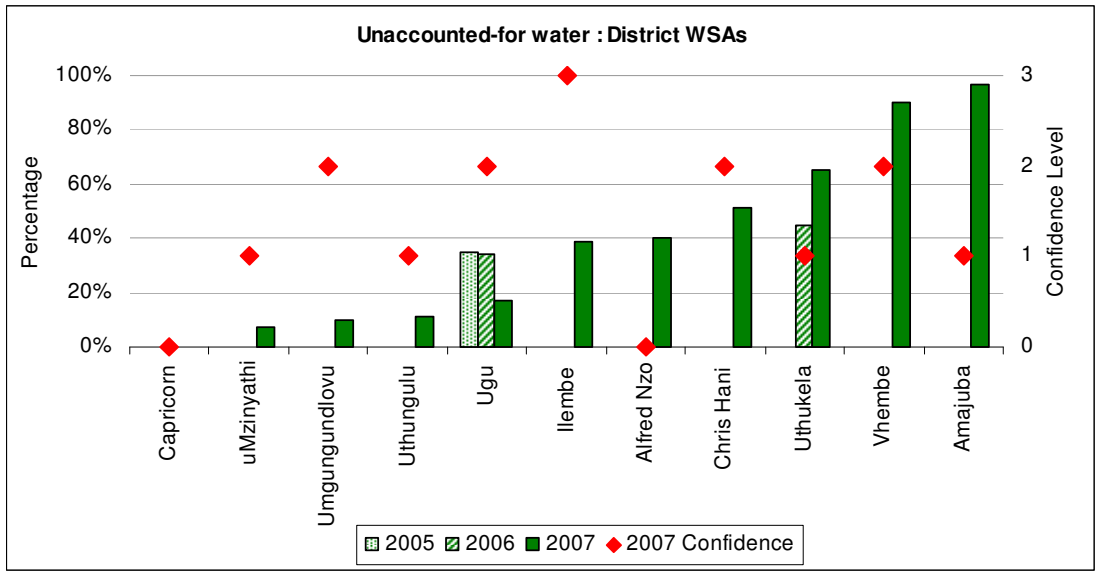


Figure 146: Unaccounted for water in the DMs

The average UAW for B1s is 29%, ranging from a high of 62% in Newcastle, to 3% in Potchefstroom. Levels of UAW have remained fairly consistent in most cases, with a slight worsening (increase of UAW) in 3 of the WSAs.

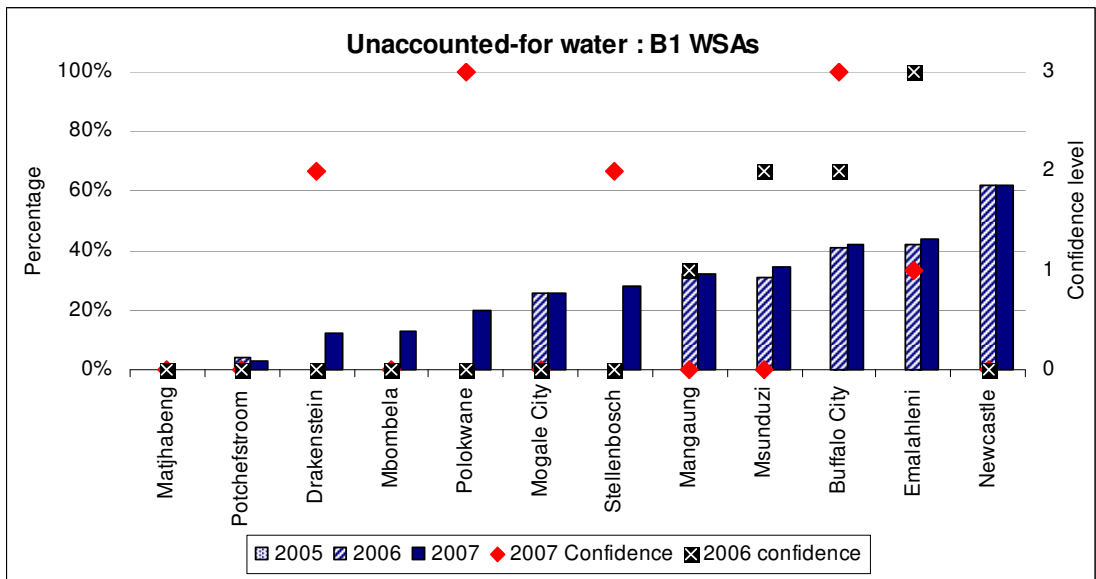
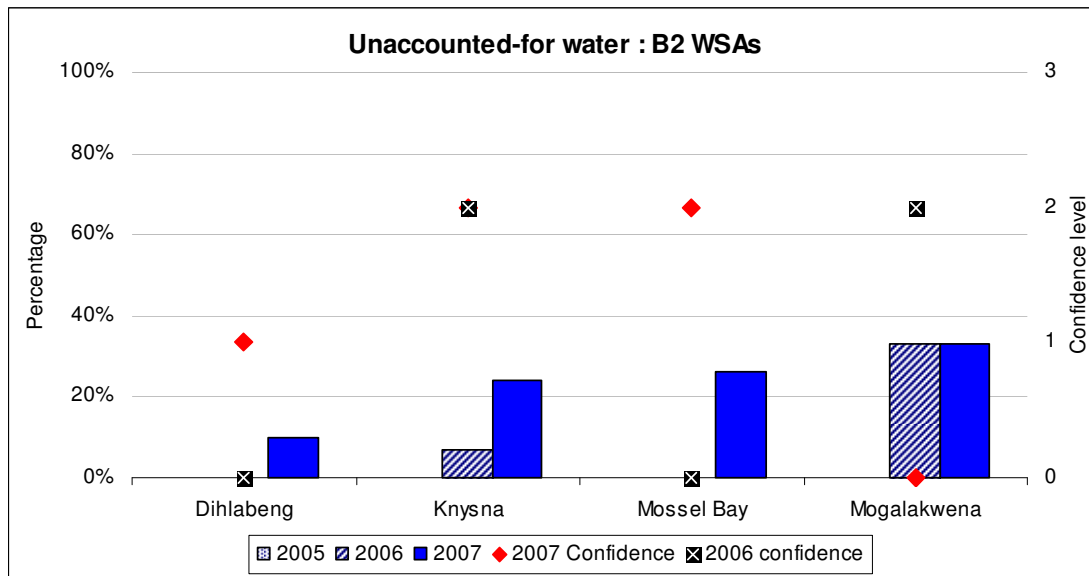


Figure 147: Unaccounted for water – B1 WSAs

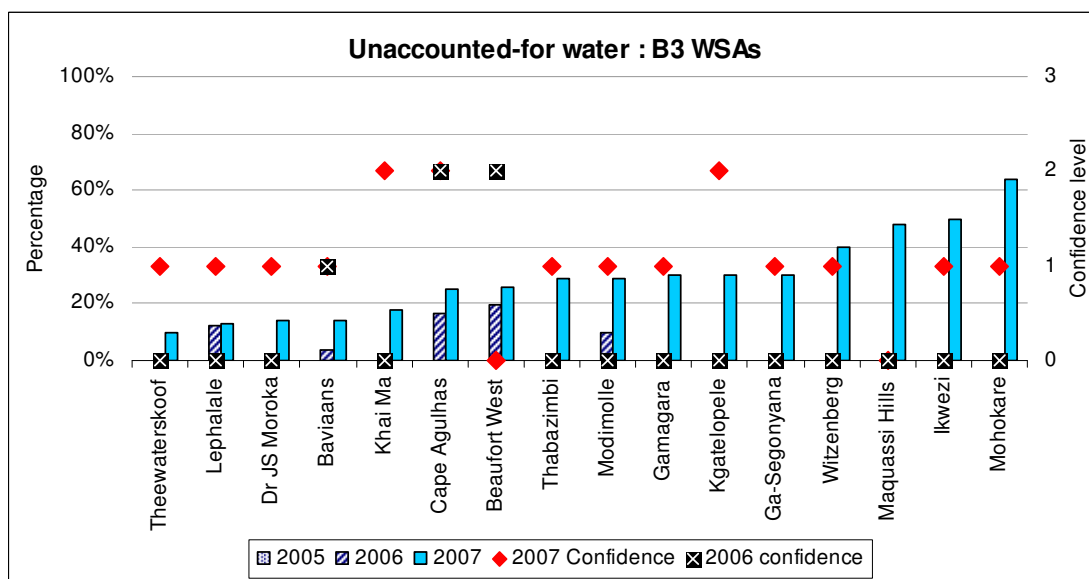
The average UAW in B2's is lower, at 23%, with a smaller range of values from 10 % to 33% in Mogalakwena. There is also a much higher level of confidence in this data, with 75% of the WSAs reporting a confidence of 2.



**Figure 148: Unaccounted for water – B2 WSAs**

The range and pattern of UAW in B3's is similar to that of B1s – ranging from 10% in Theewaterskloof to 64% in Mohakare, with an average of 29%.

However the level of confidence in the data for B3s is lower than for the other Local WSAs, with 76% of B3 WSAs providing estimates for this indicator.



**Figure 149: Unaccounted for water – B3 WSAs**

**Implications and recommendations**

The basis of measurement of this indicator must be improved over time as it is a critical indicator in terms of determining the viability and sustainability of service delivery. The reported level for unaccounted-for water is above levels associated with effective management for approximately 70 % of municipalities.

It will be preferable to move to a more sophisticated indicator such as the Infrastructure Leakage index (ILI) when municipalities are in a position to be able to report on this indicator.

## 5.7 Protection of the environment: effluent discharge quality

### 5.7.1 Choice and significance of indicators

The following indicators relating to performance of waste water treatment and environmental impact were selected:

- The number of waste water treatment plants licensed compared to the number of treatment plants being operated;
- The compliance of treatment works with license conditions compared to the number of treatment plans the municipality is responsible for;
- Implementation of an effluent monitoring system for a municipality to measure and record the compliance of discharge; and
- Waste water treatment compliance. The flow-weighted percentage of compliance for effluent samples with discharge standards.

### 5.7.2 Licensed treatment works

#### **Definition:**

The percentage of waste water treatment works under jurisdiction of the municipality with a valid operating license.

#### **Formula:**

The percentage is calculated by dividing the number of treatment plants which are licensed by the total number of waste water treatment plants.

#### **Importance:**

The Water Service Act requires that a waste water treatment facility with a capacity of more than 2 MI/day has to be licensed by DWAF and operated in accordance with the conditions determined in terms of the license and appropriate regulations. For plants smaller than 2 MI/day permits have to be obtained.

#### **Data submitted:**

With regard to the percentage of plants licensed, data have been received from the majority of municipalities but not all, and the number of municipalities not reporting is considered high. On the actual number of waste water treatment plants within each municipality the data provided has been limited.

For the Metros a level of confidence was not provided or stated for more than half the data elements. The average level of confidence was 1.8 which indicates that the data is reliable. From the district municipalities confidence levels of more than 0 were provided for 10 of the 18 data elements, with an average level of confidence of 1.5. For the local municipalities confidence levels were stated for 56% of the 76 data elements provided, with an average value of 2.

**Table 45: Confidence levels for % of Waste water treatment plants licensed**

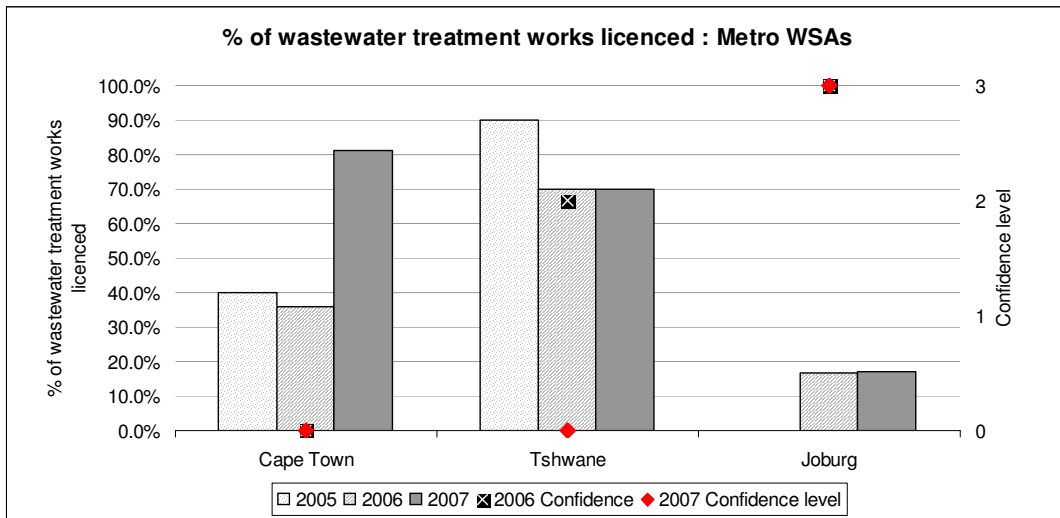
| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 3             | 2                | 4         | 1         | 6         | 16             |

|          |   |   |   |   |   |    |
|----------|---|---|---|---|---|----|
| <b>1</b> | 1 | 1 | 2 | 2 | 5 | 11 |
| <b>2</b> | 1 | 5 | 3 | 4 | 8 | 21 |
| <b>3</b> | 1 | 1 | 1 | 1 | 0 | 4  |

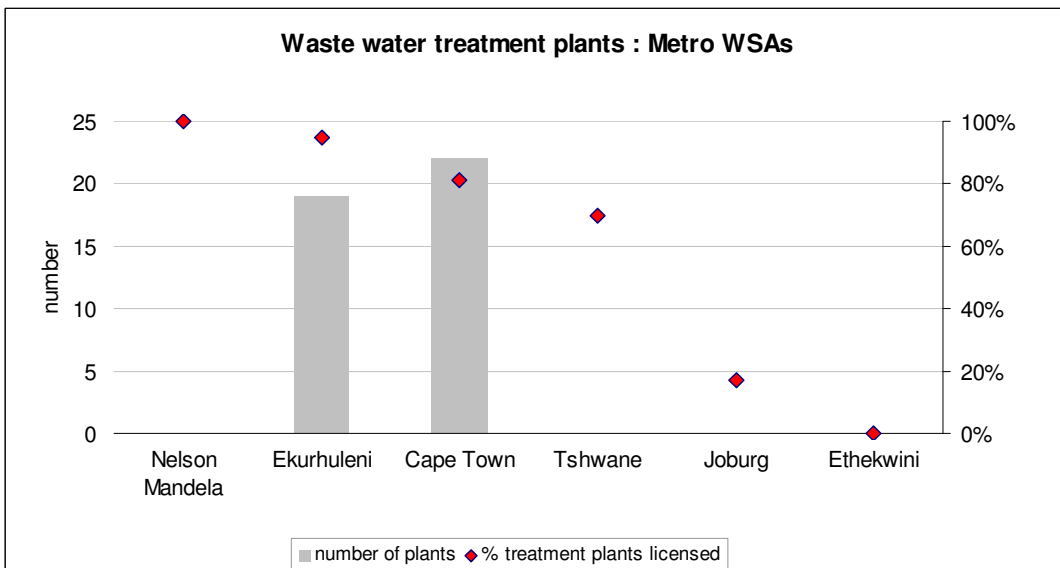
On average a confidence level of 1.25 was associated with data for this indicator. This would have to be regarded as very low considering the fact that the data required should be readily available for most WSA's .

**Performance Analysis:**

The percentage of waste water treatment works which are currently licensed as well as the number of plants, are indicated in the figures which follows below:



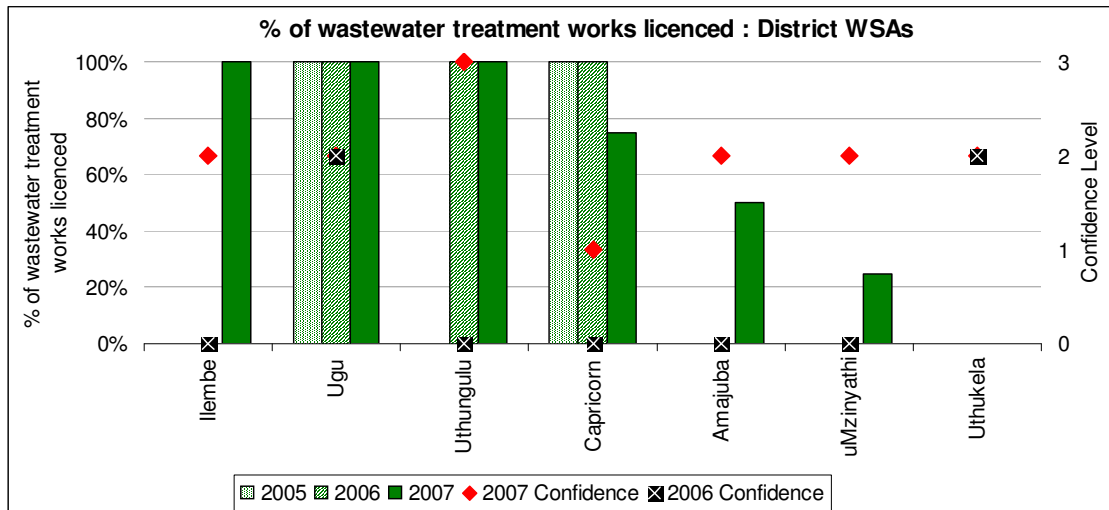
**Figure 150: Waste water treatment plants number and % licensed: Metros**



**Figure 151: Percentage waste water treatment plants licensed: Metros**

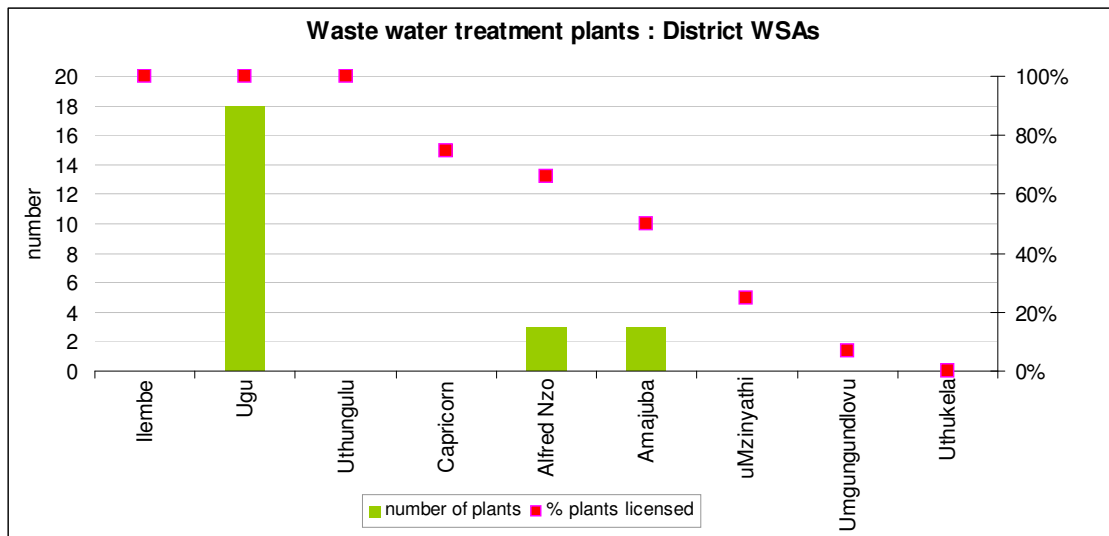
The average for the number of waste water plants licensed in metros is 60 % and the median 80%. It is however not certain that all plants in the Nelson Mandela Metro are licensed as indicated, and if this is the case the average would be lower. It is however

known that the processing of applications for new licences, and renewal of existing licences by DWAF can be lengthy, and this may affect the percentages across all municipal categories.



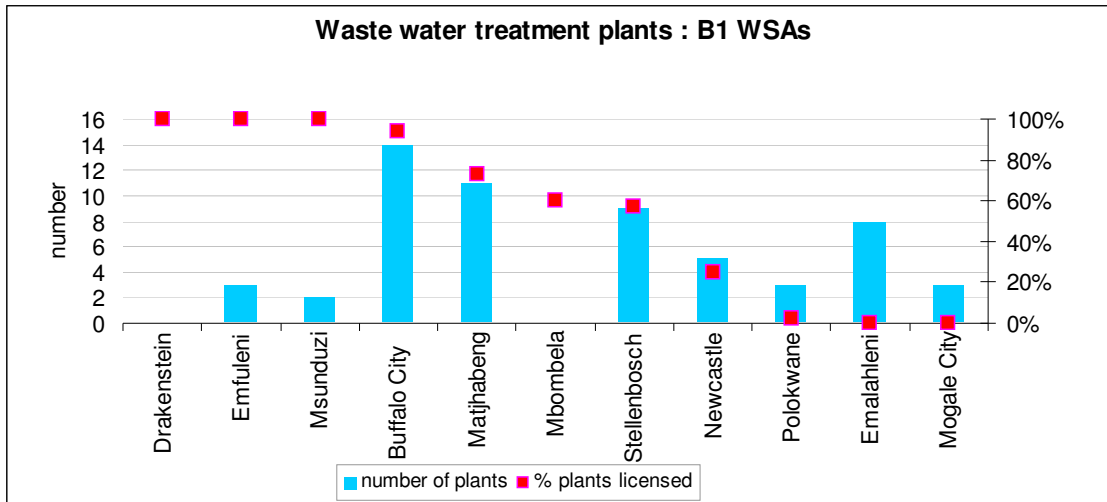
**Figure 152: Waste water treatment plants number and % licensed: District municipalities**

Information on the number of waste water treatment plants was largely incomplete:



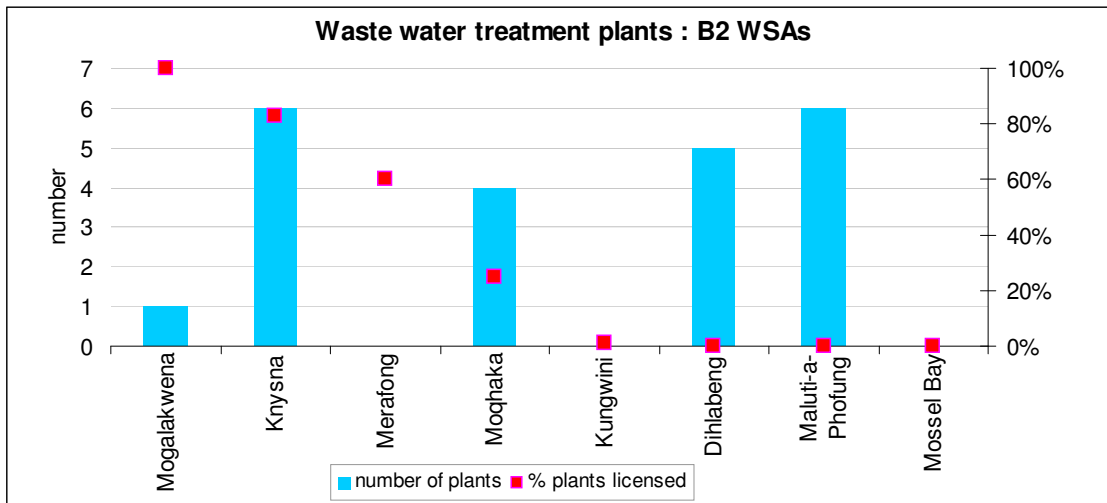
**Figure 153: Percentage waste water treatment plants licensed: District municipalities**

Three district municipalities have reported all waste water treatment plants being licensed. The fact that 9 district municipalities have either not reported or indicated percentages below 50 % clearly indicates that compliance with licensing requirements, and probably with applicable conditions, should be addressed and improved urgently.



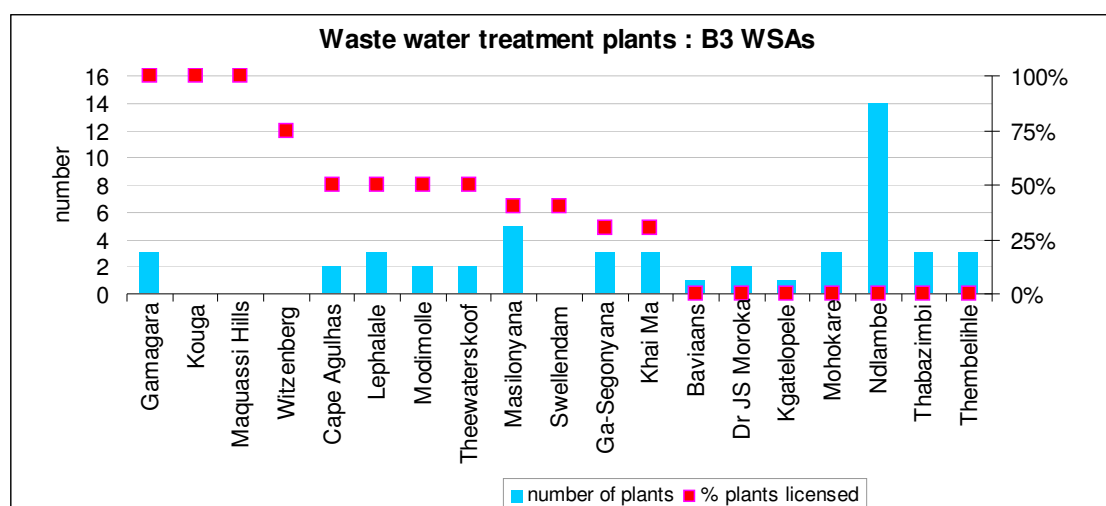
**Figure 154: Percentage waste water treatment plants licensed: B1 municipalities**

Of the 11 category B1 municipalities which reported data for this indicator 7 indicated that more than 50 % of plants are licensed. In this instance information received and the level of compliance is significantly better than for district municipalities. Comparable information for previous years is not available, and it is therefore not possible to determine any trend.



**Figure 155: Percentage waste water treatment plants licensed: B2 municipalities**

Data was returned for 8 of 9 municipalities in this category. Altogether 70% of category B2 municipalities have either failed to report, or have reported less than 30% of plants being currently licensed.



**Figure 156: Percentage waste water treatment plants licensed: B3 municipalities**

Although more than 80% of category B3 municipalities did report on the percentage of waste water works licensed, the extent of municipalities with less than 50% of plants being licensed plus those municipalities not having reported is almost two thirds of the total of 23 municipalities.

### 5.7.3 Treatment works compliance

#### **Definition:**

The percentage of waste water treatment facilities in a municipality which meets the required effluent standards at least 97% of the time.

#### **Formula:**

The percentage is calculated by dividing the number of treatment plants which comply at least 97% of the time by the total number of waste water treatment plants.

#### **Importance:**

This indicator presents a ratio of compliant treatment plants and does not take into account the treatment capacity of facilities under review. The result is however still important since it gives a very direct indication of the overall performance of effluent treatment for a municipality.

#### **Data submitted:**

Data was returned by 42 of the 67 municipalities (4 metros, 7 district municipalities and 31 local municipalities). During the previous round in 2006 only 21 municipalities provided information and even though the result for round 3 is not satisfactory it still constitutes a significant improvement at least as far as data submission is concerned.

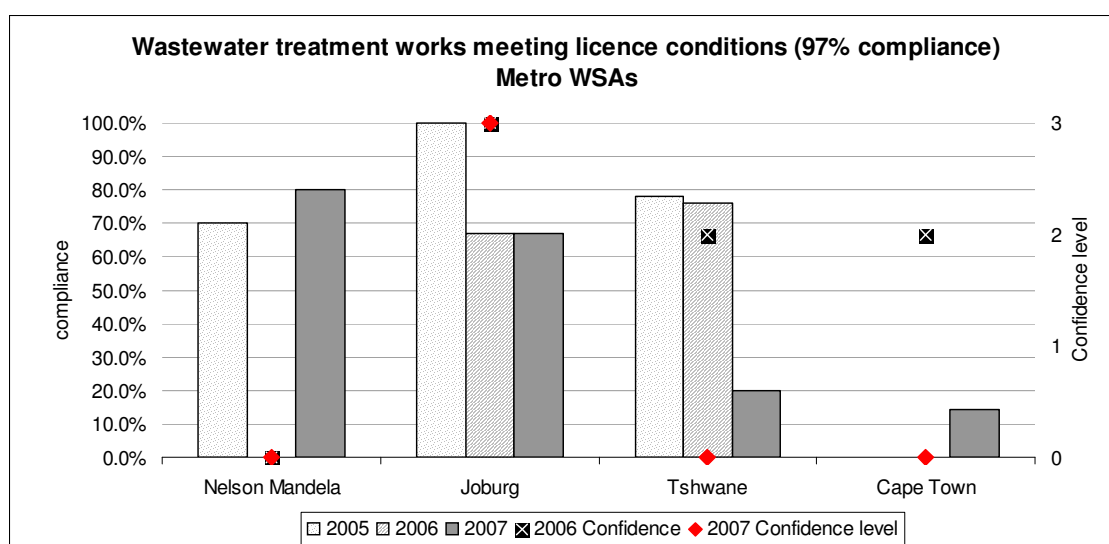
**Table 46: Confidence levels for % of Waste water treatment works meeting compliance**

| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 3             | 1                | 5         | 1         | 2         | 12             |
| <b>1</b>                | 0             | 3                | 5         | 0         | 1         | 9              |
| <b>2</b>                | 0             | 4                | 2         | 5         | 10        | 21             |
| <b>3</b>                | 1             | 0                | 0         | 0         | 0         | 1              |
| <b>Average</b>          | 0.8           | 1.3              | 0.8       | 1.8       | 1.6       | 1.25           |

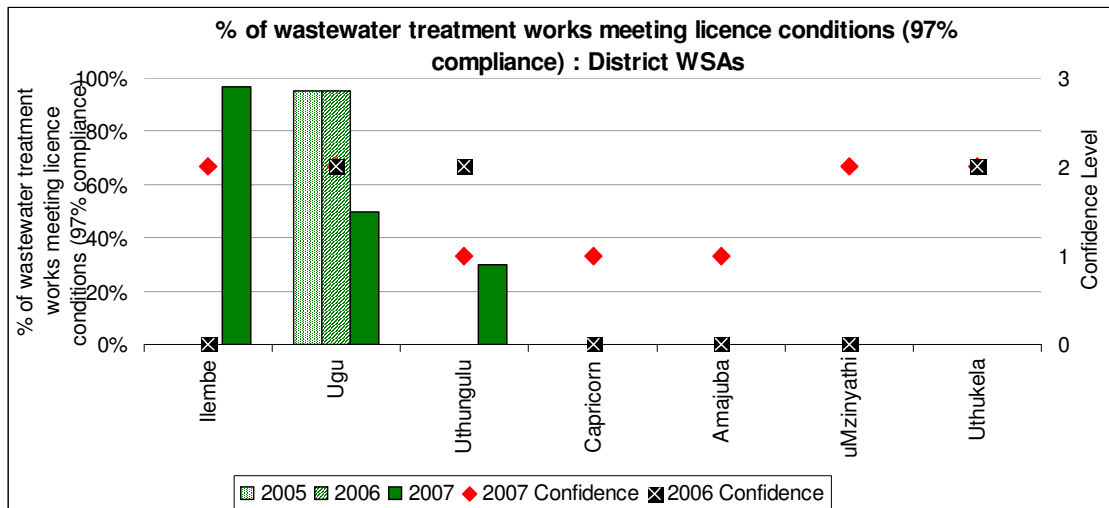
The confidence levels for metros is 0.75 compared to the average confidence level across all categories of 1.25 . The low confidence level may be an indication that this performance indicator is not properly understood or interpreted, and attention should be given to this aspect during future data collection initiatives. The high levels of confidence for category B1 and B2 are noticeable if somewhat unexpected.

### **Performance Analysis:**

The percentage of waste water treatment plants which are licensed was found to be very low across all municipal categories, as will be addressed in more detail below:

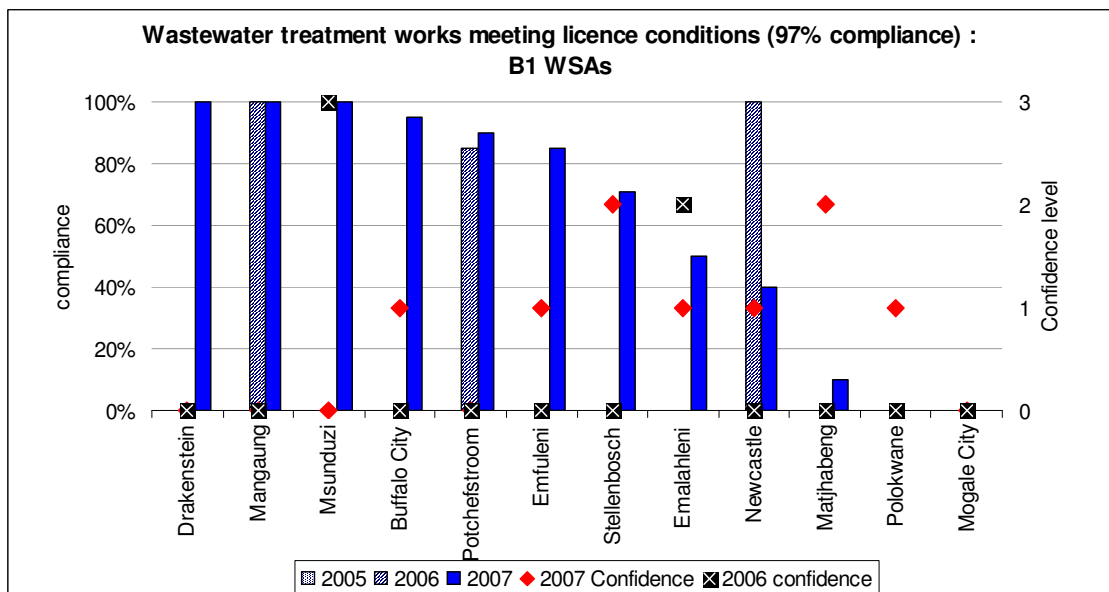
**Figure 157: Waste water treatment plants compliance with conditions: Metros**

For Joburg it was reported that two thirds of waste water treatment plants are at least 97% compliant with license conditions. This was done with the highest level of confidence, where as for Nelson Mandela 80 % compliance was reported, but no level of confidence stated. The average level of compliance for the 4 metros that did report is less than 50%.



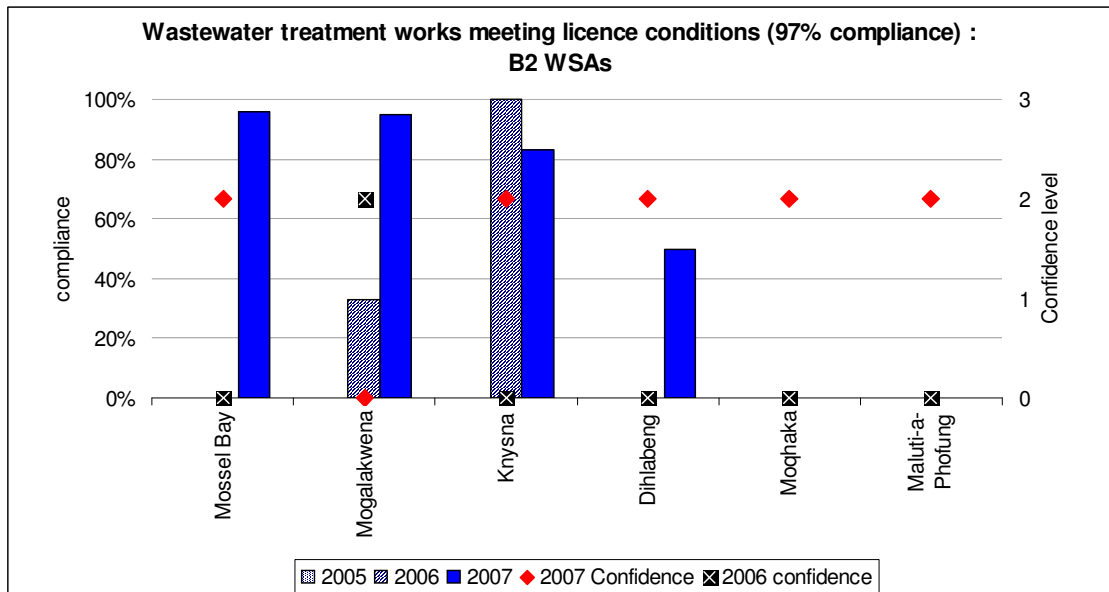
**Figure 158: Waste water treatment plants compliance with conditions: District municipalities**

The level of compliance for only 2 of the 7 municipalities which provided data is 50% or higher, with levels of 0 (zero) stated, or no returns received for 12 district municipalities. This result accentuates problems experienced with effluent treatment and pollution and the need for assistance and possibly intervention.



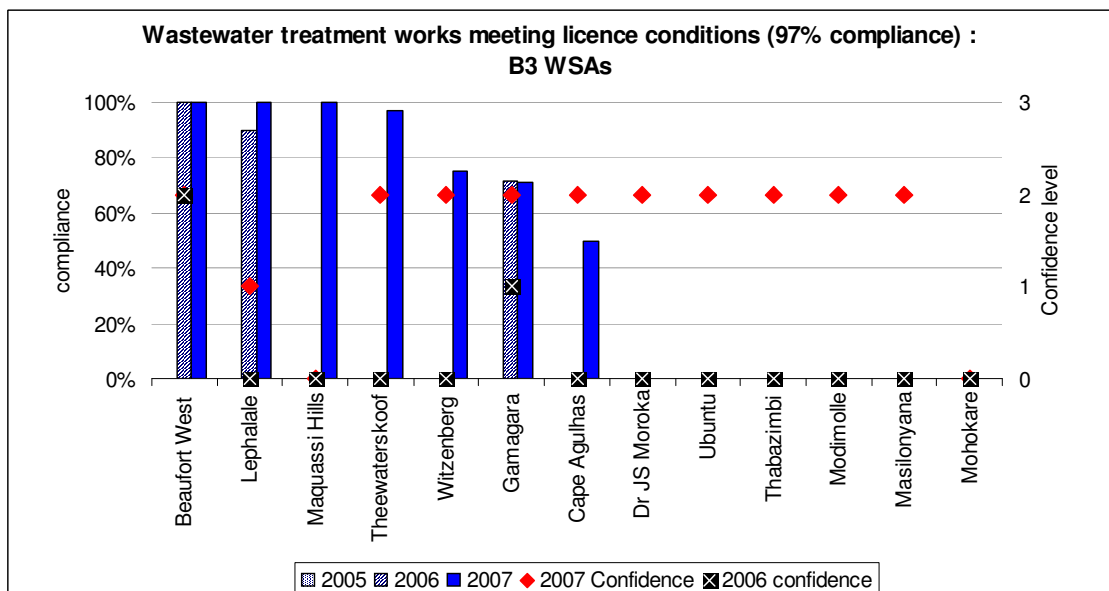
**Figure 159: Waste water treatment plants compliance with conditions: District municipalities: B1**

There are 14 category B1 municipalities that participated, and results for 12 shows 50% having been in compliance for the 2006/07 year at a level of 80% or better.



**Figure 160: Waste water treatment plants compliance with conditions: Local municipalities: B2**

Almost half the municipalities have reported achieving 50% or better compliance, with an average for these municipalities of almost 85%. Unfortunately conversely just more than 50% have therefore indicated o (zero) compliance or have not stated the compliance level. The absence of effective monitoring programs would have contributed to this result. Considering the low likelihood of achieving acceptable performance in the absence of effective monitoring, the actual level of compliance should be cause for serious concern.



**Figure 161: Waste water treatment plants compliance with conditions: Local municipalities: B3**

The compliance levels for half the municipalities in category B3 which have returned data for this indicator are at 50% and higher, with an average of approximately 85%. This accounts however for only 7 out of 23 municipalities (that is 30%), and once

again indicates a serious measure of under performance by municipalities, which may have disastrous results.

#### 5.7.4 Effluent monitoring system

##### **Definition:**

The municipality as WSA has developed and implemented an effective program to ensure that quality of effluent treated and disposed of meets nationally defined minimum standards, or has ensured that its WSP has done so.

- The criteria below must be satisfied:
- Effluent standards are clearly defined for each facility;
- Samples are taken according to relevant standards;
- Samples are tested in an accredited laboratory;
- Sample test results are recorded and stored; and
- Results are reported.

##### **Formula:**

The participating municipality must indicate whether it has a full, a partial or no monitoring program implemented.

##### **Importance:**

The importance of an effective monitoring program is evident, since without knowing the performance of the facility and proper records, failures will not be detected and remedial steps not undertaken if and when required.

##### **Data submitted:**

A total of 55 municipalities provided the required information for this indicator, giving a response rate of 82 %. Considering that this information is elementary and should be readily available for each municipality, a higher response rate and high level of confidence should prevail.

**Table 47: Data quantity and reliability of the effluent monitoring system indicator**

| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 3             | 5                | 8         | 4         | 7         | 27             |
| <b>1</b>                | 0             | 2                | 3         | 2         | 0         | 7              |
| <b>2</b>                | 2             | 7                | 3         | 3         | 16        | 31             |
| <b>3</b>                | 1             | 1                | 0         | 0         | 0         | 2              |
| <b>Average</b>          | 1.2           | 1.3              | 0.8       | 0.9       | 1.4       | 1.1            |

##### **Confidence levels for data**

The average level of confidence returned was 1.1, or almost half way between 'estimate' and 'reliable'. The highest confidence level was found in the category B3.

The status for each municipality, as reported during round 3 as submitted by each municipality would reflect the situation as at the end of the 2006/07 financial year. The table below represents the implementation status in metros, district- and local municipalities:

**Table 48: Implementation of effluent monitoring programs: Metros**

| <i>WSA</i>     | <i>Response</i> | <i>Status</i> |    |    |
|----------------|-----------------|---------------|----|----|
| Joburg         | Full program    | ●             |    |    |
| Nelson Mandela | Full program    | ●             |    |    |
| Cape Town      | Full program    | ●             |    |    |
| Ekurhuleni     | Full program    | ●             |    |    |
| Tshwane        | Full program    | ●             |    |    |
| Ethekwini      | Full program    | ●             |    |    |
| Total          |                 | 6             | 0  | 0  |
|                |                 | 100%          | 0% | 0% |

All of the Metros have full effluent monitoring programs implemented.

**Table 49: Implementation of effluent monitoring programs: District municipalities**

| <i>WSA</i>         | <i>Response</i> | <i>Status</i> |            |            |
|--------------------|-----------------|---------------|------------|------------|
| Ilembe             | Full program    | ●             |            |            |
| Uthukela           | Full program    | ●             |            |            |
| Ugu                | Full program    | ●             |            |            |
| Amajuba            | Full program    | ●             |            |            |
| uMzinyathi         | Full program    | ●             |            |            |
| Uthungulu          | Partial program |               | ●          |            |
| Alfred Nzo         | Partial program |               | ●          |            |
| Greater Sekhukhune | Partial program |               | ●          |            |
| Mopani             | Partial program |               | ●          |            |
| Frances Baard      | no program      |               |            | ●          |
| Capricorn          | no program      |               |            | ●          |
| <b>Total</b>       | <b>number</b>   | <b>5</b>      | <b>4</b>   | <b>2</b>   |
|                    |                 | <b>45%</b>    | <b>36%</b> | <b>18%</b> |

In the district municipalities full programs have only been implemented in 5 instances or 33% of municipalities while for 6 municipalities representing 40 % of the number no program has either been implemented, or nothing was stated.

**Table 50: Implementation of effluent monitoring programs by Local municipalities (B1 & B2 & B3)**

| <i>WSA</i>       | <i>Response</i> | <i>Status</i> |  |  |
|------------------|-----------------|---------------|--|--|
| Maluti-a-Phofung | Full program    | ●             |  |  |
| Mangaung         | Full program    | ●             |  |  |
| Lephalale        | Full program    | ●             |  |  |

| <i>WSA</i>     | <i>Response</i> | <i>Status</i> |            |            |
|----------------|-----------------|---------------|------------|------------|
| Beaufort West  | Full program    | ●             |            |            |
| Drakenstein    | Full program    | ●             |            |            |
| Msunduzi       | Full program    | ●             |            |            |
| Theewaterskoof | Full program    | ●             |            |            |
| Buffalo City   | Full program    | ●             |            |            |
| Emfuleni       | Full program    | ●             |            |            |
| Mogale City    | Full program    | ●             |            |            |
| Gamagara       | Full program    | ●             |            |            |
| Knysna         | Full program    | ●             |            |            |
| Mossel Bay     | Full program    | ●             |            |            |
| Newcastle      | Full program    | ●             |            |            |
| Stellenbosch   | Full program    | ●             |            |            |
| Witzenberg     | Full program    | ●             |            |            |
| Kouga          | Full program    | ●             |            |            |
| Mogalakwena    | Partial program |               | ●          |            |
| Cape Agulhas   | Partial program |               | ●          |            |
| Dr JS Moroka   | Partial program |               | ●          |            |
| Modimolle      | Partial program |               | ●          |            |
| Thabazimbi     | Partial program |               | ●          |            |
| Dihlabeng      | Partial program |               | ●          |            |
| Masilonyana    | Partial program |               | ●          |            |
| Mohokare       | Partial program |               | ●          |            |
| Moqhaka        | Partial program |               | ●          |            |
| Emalahleni     | Partial program |               | ●          |            |
| Maquassi Hills | Partial program |               | ●          |            |
| Matjhabeng     | Partial program |               | ●          |            |
| Polokwane      | Partial program |               | ●          |            |
| Ubuntu         | no program      |               |            | ●          |
| Khai Ma        | no program      |               |            | ●          |
| Thembelihle    | no program      |               |            | ●          |
| Siyathemba     | no program      |               |            | ●          |
| Kungwini       | no program      |               |            | ●          |
| Ga-Segonyana   | no program      |               |            | ●          |
| Kgatelopele    | no program      |               |            | ●          |
| Ndlambe        | no program      |               |            | ●          |
| <b>Total</b>   |                 | <b>17</b>     | <b>13</b>  | <b>8</b>   |
|                |                 | <b>45%</b>    | <b>34%</b> | <b>21%</b> |

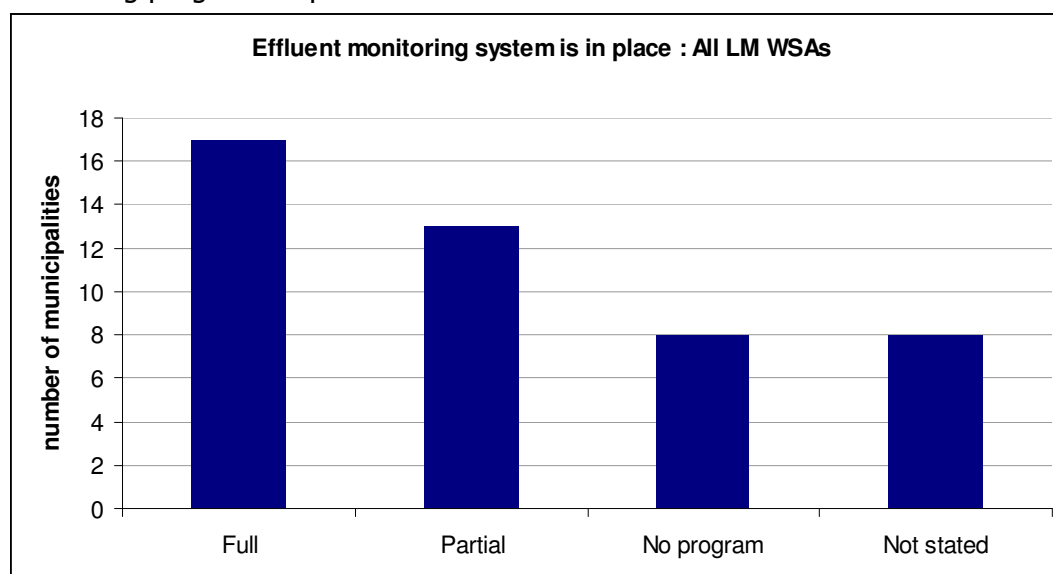
A total of 4 district municipalities and 8 local municipalities which did not state whether an effluent monitoring program has been implemented are listed in the table below:

**Table 51: Municipalities not providing status of effluent monitoring**

| <b>Metro</b> | <b>District municipality</b> | <b>Local municipality (LM Category)</b> |
|--------------|------------------------------|---|
| none         | Vhembe                       | Madibeng (B1)                           |
|              | Chris Hani                   | Mbombela (B1)                           |
|              | Amatole                      | Potchefstroom (B1)                      |
|              | Umgungundlovu                | Lesedi (B2)                             |
|              |                              | Merafong (B2)                           |
|              |                              | Baviaans (B3)                           |
|              |                              | Ikwezi (B3)                             |
|              |                              | Swellendam (B3)                         |

**Performance Analysis:**

In the figure below the overall situation with regard to the implementation of effluent monitoring programs is presented:

**Figure 162: Effluent monitoring system in place for all LMs**

For local municipalities 35% of the participating WSA's have either reported no program being implemented or did not state whether any program has been implemented. This represents a high proportion of the municipalities, and the absence of full and effective effluent monitoring programs in fully two thirds of the district and local municipalities raises a concern with regard to resultant risks to both human health and the environment. Considering the importance of this indicator, a high priority should urgently be given to improvements in this regard.

### 5.7.5 Incidence of sample compliance

**Definition:**

The indicator reflects the percentage of total samples taken by a municipality over the 12 month period which met or exceeded the minimum quality standard.

**Supporting standards:**

License conditions for each waste water treatment facility determines which of the general and/or special standards apply for every waste water treatment plant.

**Formula:**

The indicator is calculated by: the number of samples meeting the standard divided by the total number of samples taken over the 12 month period, multiplied by the flow volume for which samples met the standard divided by the total flow.

**Importance:**

The compliance of effluent standard with the applicable standards comprises the acid test for performance of the facilities. Non compliance indicates the pollution of water sources which are sometimes already compromised by industrial and other activities.

**Data submitted:**

Data was provided by only 39 municipalities, which is only 58 % of the participating municipalities. The response rate for metros was 5 returns compared to 4 in 2006, for the district municipalities 7 compared to 8 for the previous year. For local municipalities the number of responses in 2006 was 50% of participants, and for round 3 a total of 28 returns were received which amounts to more than 60 %.

Confidence levels were indicated as follows:

**Table 52: Confidence with Status of asset registers in the DMs**

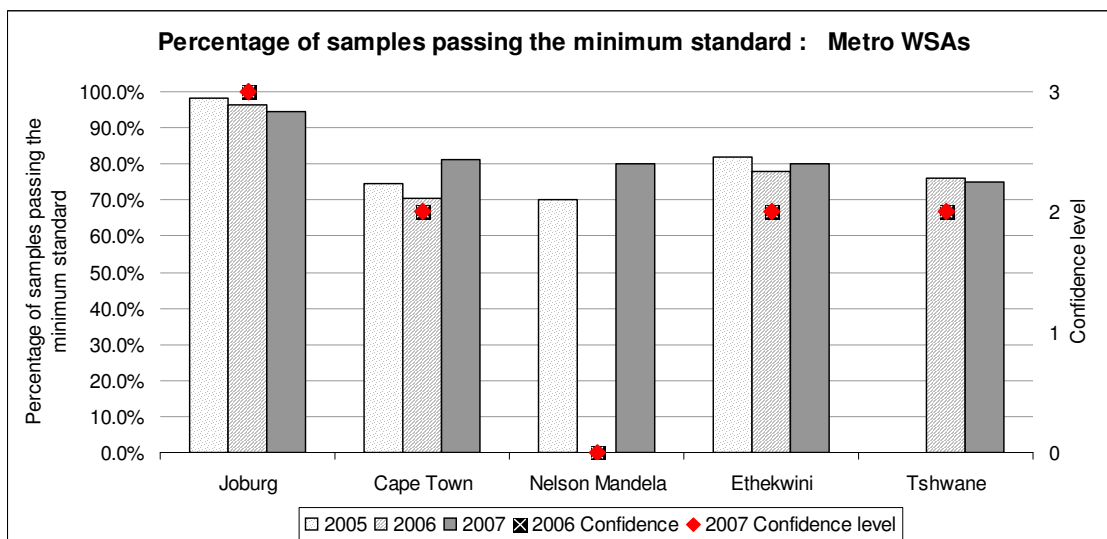
| <b>Confidence level</b> | <b>Metros</b> | <b>Districts</b> | <b>B1</b> | <b>B2</b> | <b>B3</b> | <b>Overall</b> |
|-------------------------|---------------|------------------|-----------|-----------|-----------|----------------|
| <b>0</b>                | 1             | 0                | 4         | 1         | 3         | 8              |
| <b>1</b>                | 0             | 2                | 4         | 2         | 4         | 11             |
| <b>2</b>                | 3             | 5                | 2         | 3         | 5         | 19             |
| <b>3</b>                | 1             | 0                | 0         | 0         | 0         | 1              |
|                         | 1.5           | 1.4              | 0.8       | 1.3       | 1.2       | 1.3            |

**Confidence levels for data**

Confidence levels were provided for 39 data elements submitted with an average level of confidence of 1.28. A high level of confidence was found to be associated with returns from the metros, with the exception once again of Nelson Mandela City.

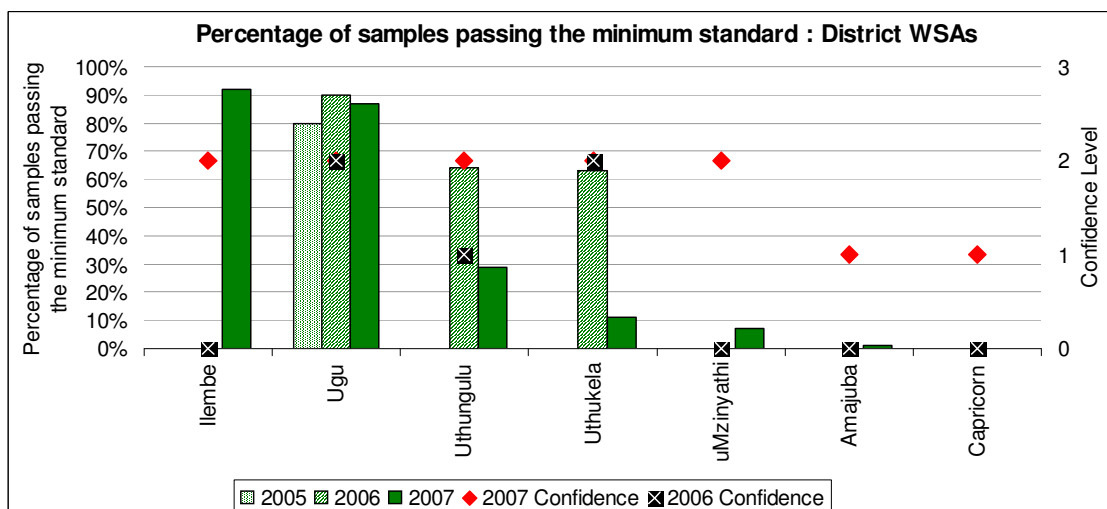
**Performance Analysis:**

Analysis of this performance indicator shows that the level of compliance of effluent quality with the standards that apply is significantly higher than the percentage of waste water treatment plants being operated with current licences. The situation is further analysed per municipal category:



**Figure 163: Effluent sample compliance (waste water): Metros**

Compliance with the minimum standard was found to be more or less consistent, with noticeable improvements over previously available performance figures for Cape Town and Nelson Mandela. The results for Joburg were significantly higher than for other metropolitan municipalities. There were 4 metros which reported compliance of 80% or better, which equates to 67% of the metros.



**Figure 164: Effluent sample compliance (waste water):: District municipalities**

Limited results regarding the number of samples taken and the number failing were submitted by participating municipalities and more than half the district municipalities did not submit returns. Out of the 7 municipalities providing information, only 2 exceeded an 80% compliance level, and 13 out of 15 participating district municipalities have reported compliance ranging between less than 30 % and not stated. For the previous round (during 2006) only three municipalities submitted information. Based on this very limited sample a decreasing trend in compliance is however discernable.

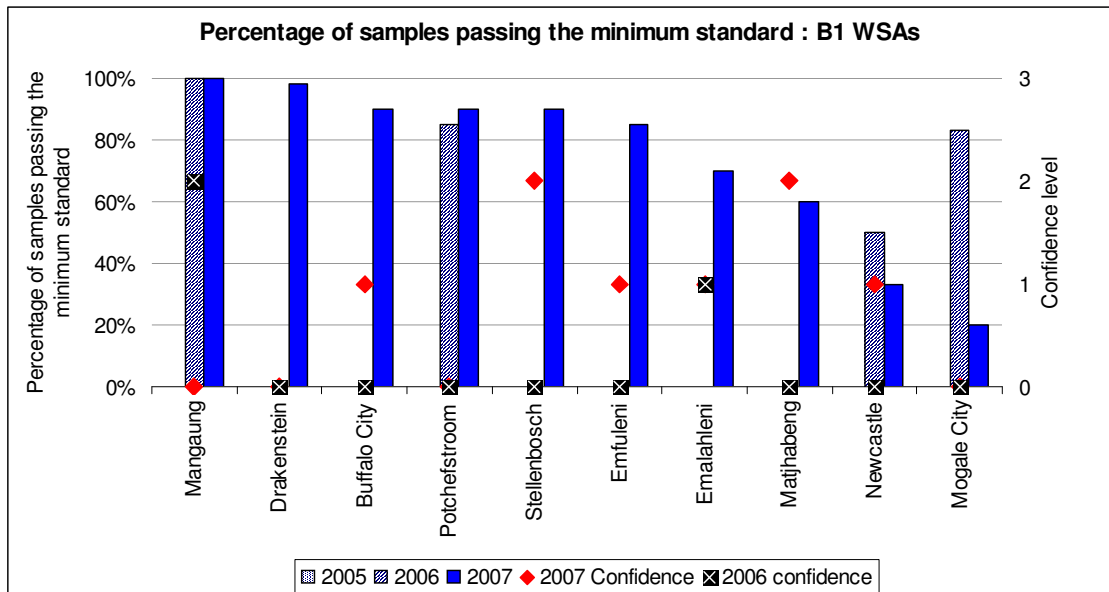


Figure 165: Effluent sample compliance (waste water):: Local municipalities (B1 WSA's)

The results for Polokwane municipality had to be excluded because it was inconclusive. Of the 13 remaining category B1 municipalities, 10 submitted results. Out of these 10 municipalities 6 indicated compliance of 80% or better which compares very well with results for the metros.

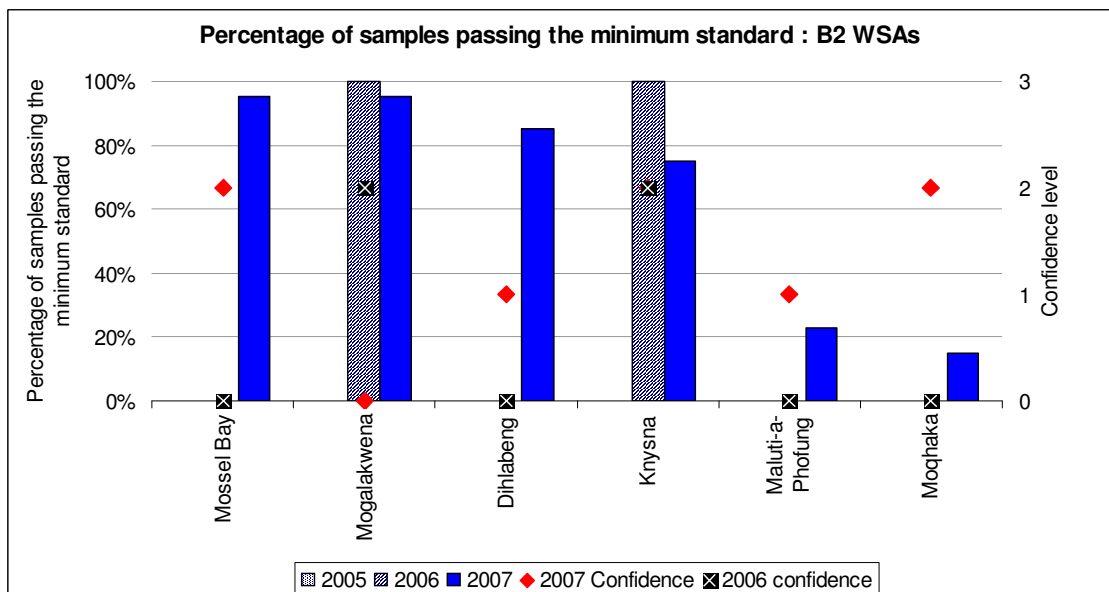
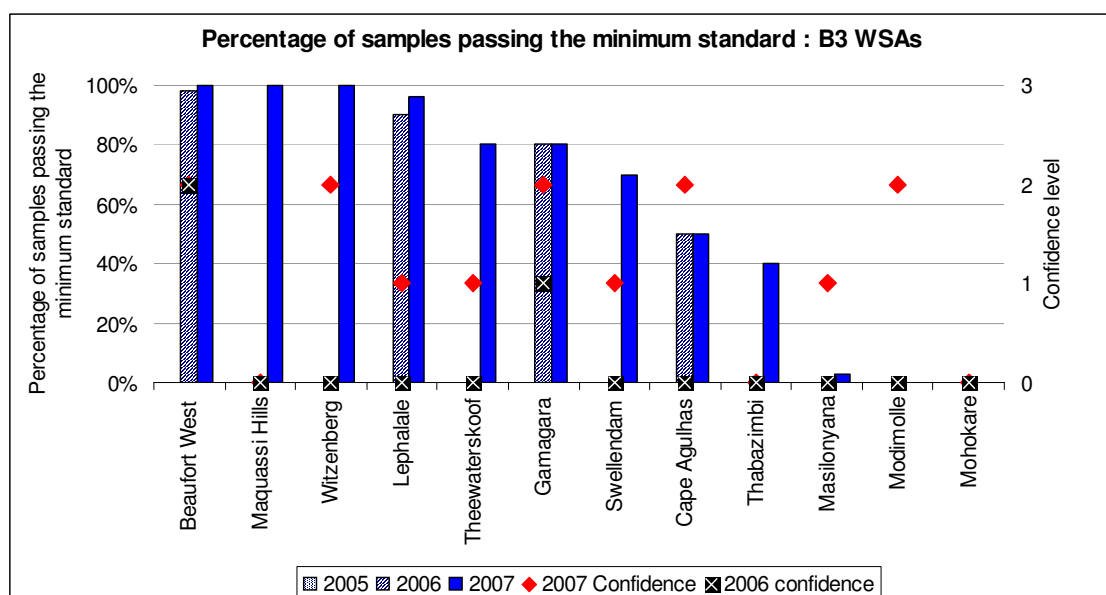


Figure 166: Effluent sample compliance (waste water):: Local municipalities (B2 WSA's)

Out of the 9 B2 municipalities 6 reported for this indicator and of these results for 4 municipalities approach or exceed 80%. This amounts to 67% of the municipalities which reported, but only 44% of the total number.



**Figure 167: Effluent sample compliance (waste water):: Local municipalities (B3 WSA's)**

With only 6 of the 24 municipalities (25%) reporting a level of compliance of 80% or more, the performance of category B3 municipalities is substantially poorer than for all other categories. It is possible that actual results may be compromised by the large number of municipalities not submitting results for this indicator. As was observed for other categories, only a few results were available from 2006. In this instance the results for the last round were slightly better than the previous year, but the small sample can not serve as basis for establishing any trend.

In conclusion the results obtained for the level of compliance with effluent standard for participating municipalities are not encouraging. Seen in the context of results for the registration of waste water treatment plants, the compliance of plants with conditions and the huge number of municipalities with partial or no effluent monitoring programs, a severe, widespread and apparently growing threat to health and the environment should be assumed.

The root cause or causes of the above poor performance need to be identified and corrective measures implemented to ensure that the necessary infrastructure is provided where insufficient, and effectively maintained and operated in all instances to prevent harm and damage which may prove difficult to reverse.

## 5.8 Institutional Issues

### 5.8.1 WSA annual report

#### **Definition:**

The WSA reports annually on performance and a copy is submitted to the Minister

#### **Importance or significance**

A requirement of the WSA and a target stated in the Strategic Framework for Water Services is that all WSAs will report annually on progress against their WSDPs by 2005.

#### **Extent of Reporting & Reliability**

Those that did not report on this indicator are:

**Table 53: Municipalities not providing information on the WSA indicator**

| <b><i>Metros</i></b> | <b><i>Districts</i></b> | <b><i>Locals</i></b> |
|----------------------|-------------------------|----------------------|
| Nelson Mandela       | Capricorn               | Mangaung             |
| Ekurhuleni           | Vhembe                  | Beaufort West        |
| Ethekwini            | Alfred Nzo              | Cape Agulhas         |
|                      | Amatole                 | Emalaheni            |
|                      | Mopani                  | Kungwini             |
|                      | Umgungundlovu           | Maquassi Hills       |
|                      | uMzinyathi              | Swellendam           |
|                      | Bophirima               | Kouga                |
|                      | Central                 | Stellenbosch         |
|                      | Sisonke                 | Lesedi               |
|                      | Ukhahlamba              | Madibeng             |
|                      |                         | Mbombela             |
|                      |                         | Potchefstroom        |
|                      |                         | Dipaleseng           |
|                      |                         | Moretele             |
|                      |                         | Moses Kotane         |

**Performance Analysis****Table 54: Metro compliance with submitting WSA Annual Report**

| <b><i>WSA</i></b> | <b><i>Response</i></b> | <b><i>Status</i></b> |    |    |
|-------------------|------------------------|----------------------|----|----|
| Tshwane           | report submitted       | ●                    |    |    |
| Joburg            | report submitted       | ●                    |    |    |
| Cape Town         | report submitted       | ●                    |    |    |
| Total             |                        | 3                    | 0  | 0  |
|                   |                        | 100%                 | 0% | 0% |

The metros that have responded to this indicator have all submitted their WSA annual report.

**Table 55: LM compliance with submitting WSA Annual Report**

| <b>WSA</b>       | <b>Response</b>      | <b>Status</b> |            |           |
|------------------|----------------------|---------------|------------|-----------|
| Theewaterskoof   | report submitted     | ●             |            |           |
| Buffalo City     | report submitted     | ●             |            |           |
| Knysna           | report submitted     | ●             |            |           |
| Mossel Bay       | report submitted     | ●             |            |           |
| Polokwane        | report submitted     | ●             |            |           |
| Witzenberg       | report submitted     | ●             |            |           |
| Mogalakwena      | report submitted     | ●             |            |           |
| Emfuleni         | report submitted     | ●             |            |           |
| Msunduzi         | report submitted     | ●             |            |           |
| Maluti-a-Phofung | report not submitted |               | ●          |           |
| Ubuntu           | report not submitted |               | ●          |           |
| Lephalale        | report not submitted |               | ●          |           |
| Modimolle        | report not submitted |               | ●          |           |
| Thabazimbi       | report not submitted |               | ●          |           |
| Gamagara         | report not submitted |               | ●          |           |
| Dihlabeng        | report not submitted |               | ●          |           |
| Masilonyana      | report not submitted |               | ●          |           |
| Mohokare         | report not submitted |               | ●          |           |
| Moghaka          | report not submitted |               | ●          |           |
| Ga-Segonyana     | report not submitted |               | ●          |           |
| Kgatelopele      | report not submitted |               | ●          |           |
| Baviaans         | report not submitted |               | ●          |           |
| Matjhabeng       | report not submitted |               | ●          |           |
| Ikwezi           | report not submitted |               | ●          |           |
| Drakenstein      | report not submitted |               | ●          |           |
| Khai Ma          | report not submitted |               | ●          |           |
| Dr JS Moroka     | report not submitted |               | ●          |           |
| Thembelihle      | report not submitted |               | ●          |           |
| Siyathemba       | report not submitted |               | ●          |           |
| Mogale City      | report not submitted |               | ●          |           |
| Newcastle        | report not submitted |               | ●          |           |
| Merafong         | report not submitted |               | ●          |           |
| Ndlambe          | report in process    |               |            | ●         |
| <b>Total</b>     |                      | <b>9</b>      | <b>23</b>  | <b>1</b>  |
|                  |                      | <b>27%</b>    | <b>70%</b> | <b>3%</b> |

Just more than one in four local municipalities, responding to this indicator, have submitted their annual reports.

**Table 56: DM compliance with submitting WSA Annual Report**

| <b>WSA</b>         | <b>Response</b>      | <b>Score</b> |            |            |
|--------------------|----------------------|--------------|------------|------------|
| Uthukela           | report submitted     | ●            |            |            |
| Ugu                | report submitted     | ●            |            |            |
| Chris Hani         | report submitted     | ●            |            |            |
| Frances Baard      | report not submitted |              | ●          |            |
| Greater Sekhukhune | report not submitted |              | ●          |            |
| Amajuba            | report not submitted |              | ●          |            |
| Uthungulu          | report in process    |              |            | ●          |
| Ilembe             | report in process    |              |            | ●          |
| <b>Total</b>       | <b>number</b>        | <b>3</b>     | <b>3</b>   | <b>2</b>   |
|                    | <b>%</b>             | <b>38%</b>   | <b>38%</b> | <b>25%</b> |

Amongst districts less than 40 % of those providing data, have submitted their annual reports.

Submission has been low for districts and locals. However, if it can be assumed that those not responding to the indicator have at least not submitted their WSA annual report, then the picture is much worse for districts, locals and metros.

### ***Implications and Recommendations***

It is clear that there are many municipalities not submitting their WSA annual reports, despite a legal requirement to do so.

Greater clarity is required with respect to the annual reporting required of WSAs.

### **5.8.2 Staff per 1000 connections**

#### **Definition:**

Staff employed or contracted by the WSA in the execution of the water and sanitation services business per 1000 water service connections.

#### **Formula:**

Number of staff divided by (number of connections over 1000).

#### ***Importance or significance***

An international measure of institutional capacity is the measure of dedicated water services staff per 1000 connections. However, it is arguable whether this constitutes a good indicator as it is not always clear what would be good performance on this indicator. An efficiency argument would promote lower staff figures per 1000 connections, while a capacity and effectiveness argument may promote higher ratios of staff per 1000 connections, particularly in an 'understaffed' climate.

At this stage it is argued that an indicator such as this is more suitable for providing context than indicating performance.

**Extent of reporting**

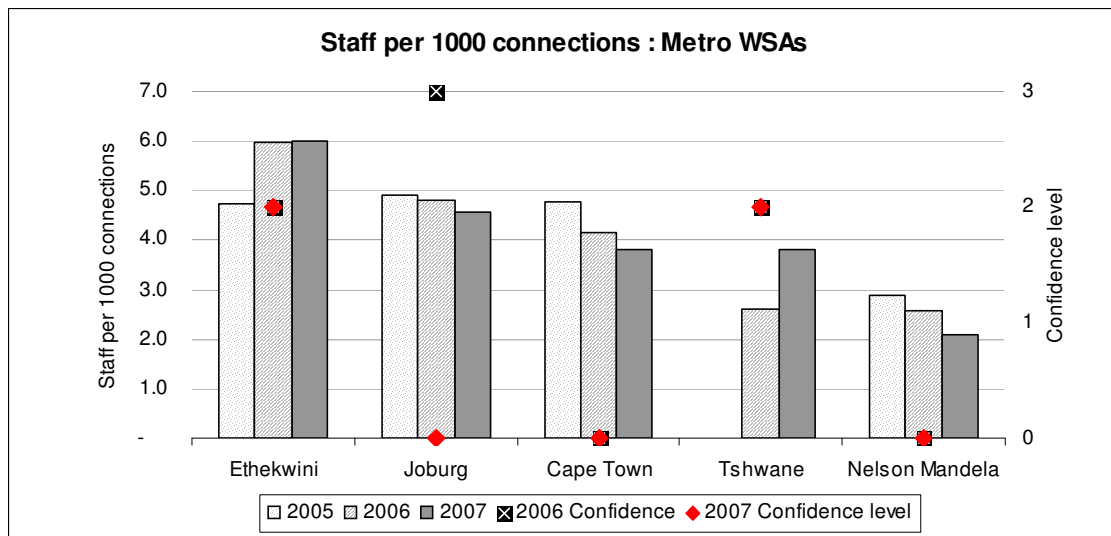
For metros, Ekurhuleni did not provide data. Furthermore, four of the metros had a data confidence of 0 for an indicator that relates to staffing.

All except 5 local municipalities were able to provide staffing data. However 15 out of 47 did not state data confidence. 8 had estimates and only 9 had reliable data.

7 of the 15 districts did not provide staffing data and 10 stated a confidence of 0 (not stated) for this indicator. Only 2 districts out of 15 had reliable data.

The ability of metros and districts to accurately report on staffing is an issue of concern.

**Performance Analysis**



**Figure 168: Staff per 1000 connections in the Metros**

Staff per 1000 connections ranges from 6 in Ethekweni to just more than 2 in Nelson Mandela. It is notable that staff per 1000 connections has effectively decreased steadily in Joburg, Cape Town and Nelson Mandela. This is deemed to be a function of staff losses for Cape Town and a roll-out of new connections for Nelson Mandela Bay. Ethekweni’s staff numbers declined, yet its staff per 1000 connections increased significantly, implying a slow rate of new connections. The median is 3.8 and average is 4.1 for Metros.

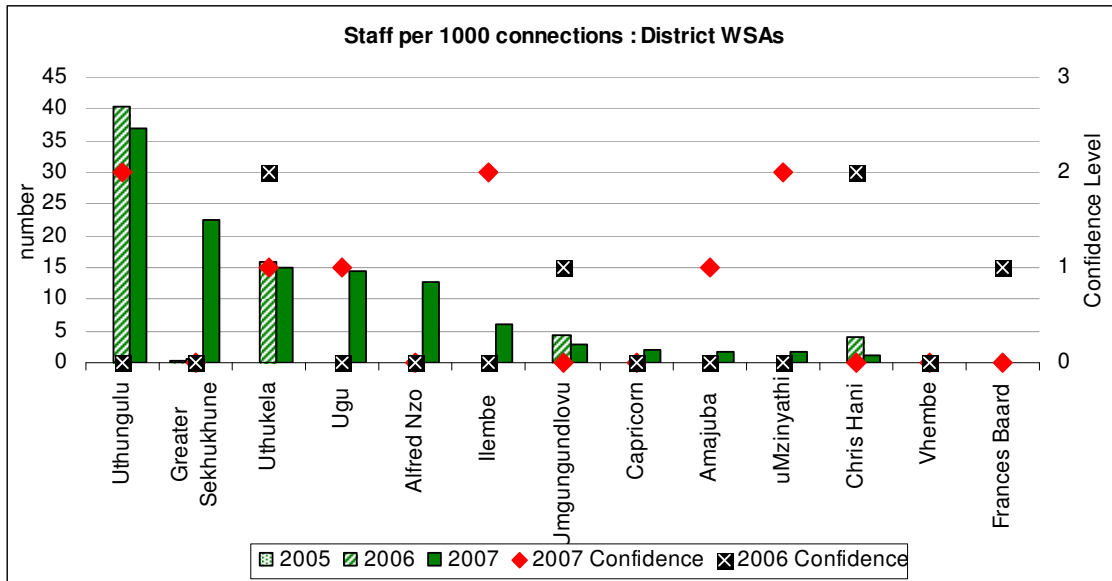


Figure 169: Staff per 1000 connections in the DMs

Amongst District municipalities staff numbers per 1000 connection range from 37 staff in Uthungulu to 0.1 in Vhembe. The median is 3 and the average is 9 staff per 1000 connections.

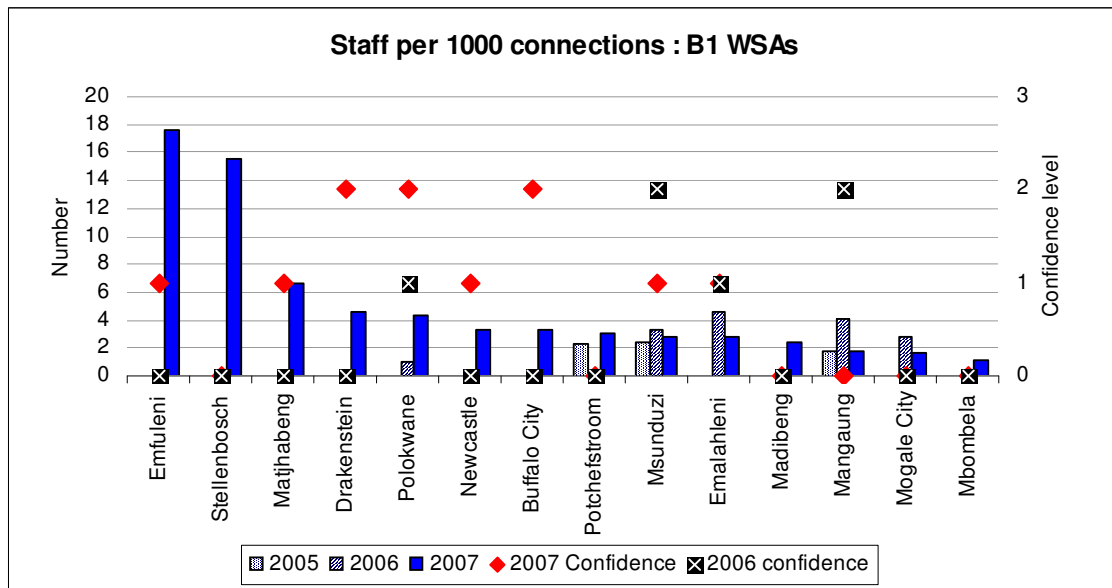
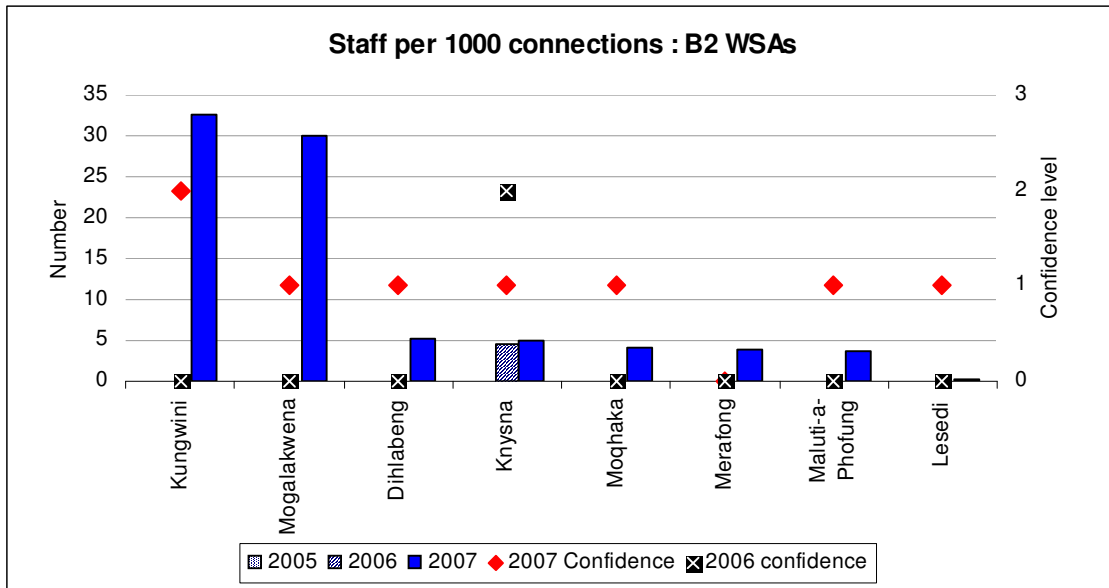
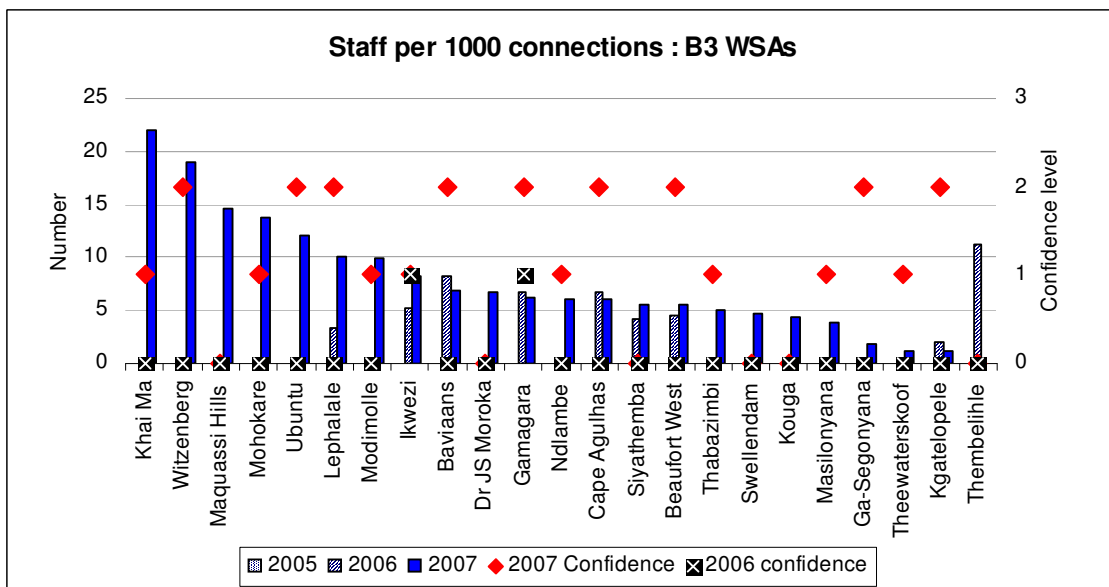


Figure 170: Staff per 1000 connections: B1 WSA



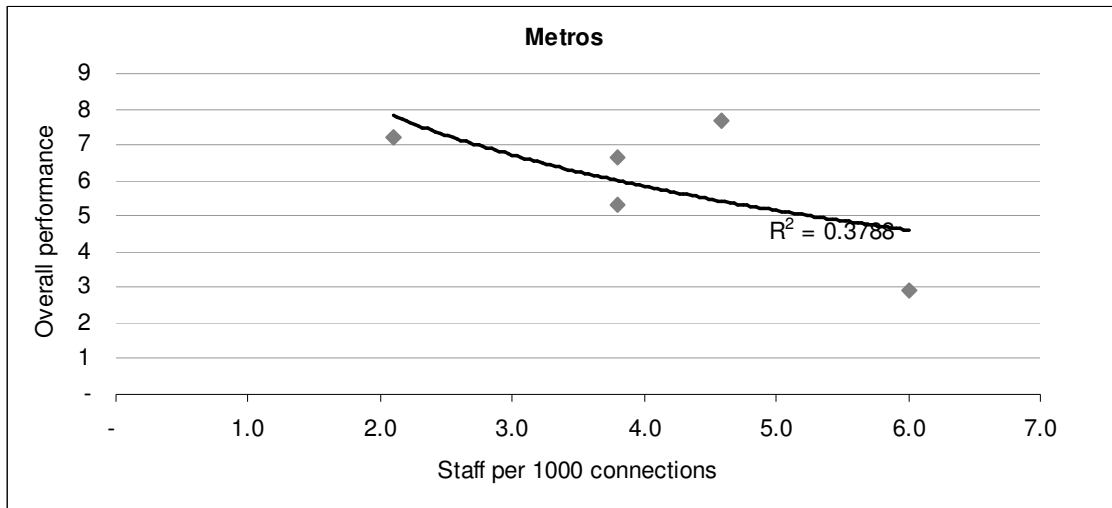
**Figure 171: Staff per 1000 connections: B2 WSAs**



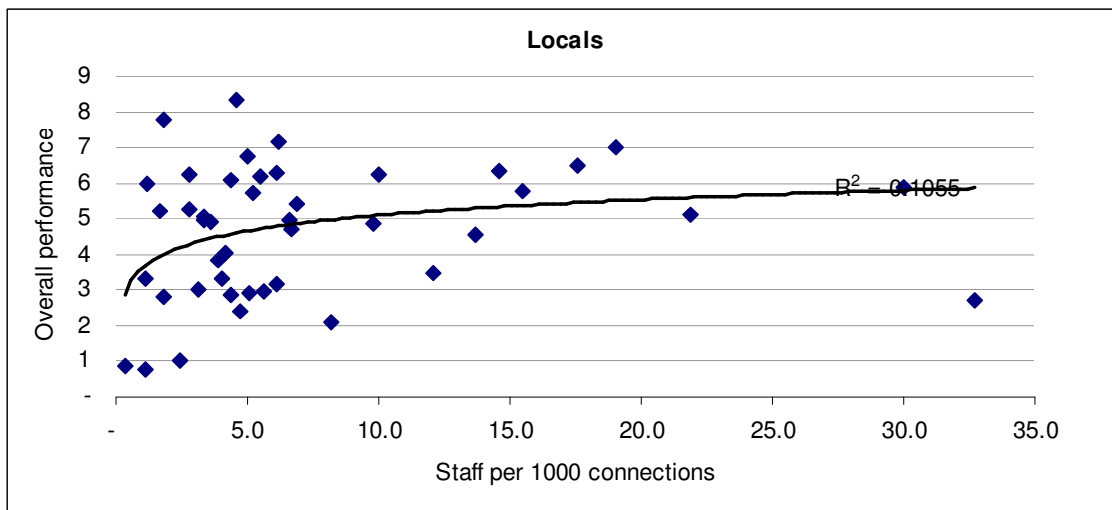
**Figure 172: Staff per 1000 connections in LMs**

Amongst Local municipalities, there is an average of 7.35 and a median of 5 staff per 1000 connections.

Following the argument that additional staff per 1000 connections will contribute to better capacity and hence performance, the following analysis was done to seek a correlation between staff per 1000 connections and overall performance on all indicators that have been weighted and scored.



**Figure 173: Staff per 1000 connections in Metros**



The graphs above do not provide any evidence for a correlation between staff per 1000 connections and overall performance. It can be firmly concluded that staffing ratios are not a determining factor in terms of overall performance.

### ***Implications & recommendations***

When collected, data for this indicator also needs to be specific that the staff numbers should include all WSPs operating within the WSA area.

As suggested earlier, this indicator does not constitute a good indicator of performance. Other indicators need to be explored as indicators of building effective and sustainable institutions.

The indicators used for assessing institutional performance are very limited. Future development of the benchmarking system should develop better institutional indicators to balance the performance of service delivery with performance associated with building sustainable and effective institutions.

## **6 Overall Performance**

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Preceding sections of this report have presented results pertaining to the array of performance indicators reported on by the WSAs that participated in the benchmarking study. This has provided an illustration of how these WSAs are performing with respect to specific indicators. The indicators were viewed independently and this section collates them into an overall picture through a system of scoring and weighting. In this vein the overall assessment of WSA performance is gauged from a combination of the following indicator sets:

- Access to water services.
- Drinking water quality.
- Wastewater treatment.
- Asset management.
- Financial performance.

The next section explains the process of how data for the individual indicators are used to calculate the overall score. The subsequent section presents the overall scores for the Metro, Districts and Local Municipalities.

### **6.1 Scoring rules**

The overall score was calculated as the average of of the scores for

- access to water services,
- drinking water quality,
- wastewater treatment,
- asset management and
- financial management.

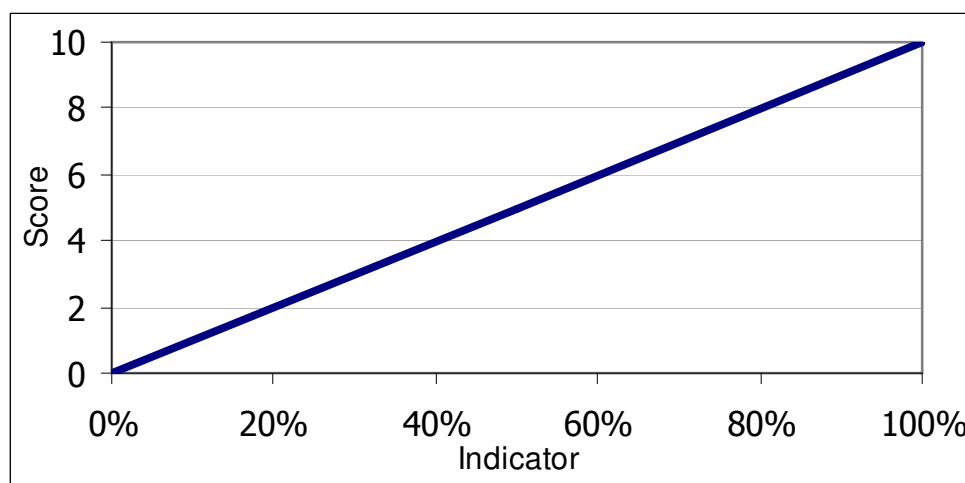
The score for access to water services was calculated as the average of the scores for access to water supply and access to sanitation services. An average of the monitoring

and compliance indicators for drinking water provided the drinking water quality score. The asset management score was an average of the scores for metering, unaccounted for water, asset management plan and asset register indicators. Financial management was scored by taking an average of the scores for WSA ring-fencing, cash collection efficiency and debtor days.

The individual indicators that constitute the access to water and sanitation services, drinking water quality, wastewater treatment, asset management and the financial performance areas were scored according to a set of scoring rules. These scoring rules are explained below (from Section 6.1.1 onwards) as pertaining to each performance indicator area.

### 6.1.1 Access to water and sanitation services

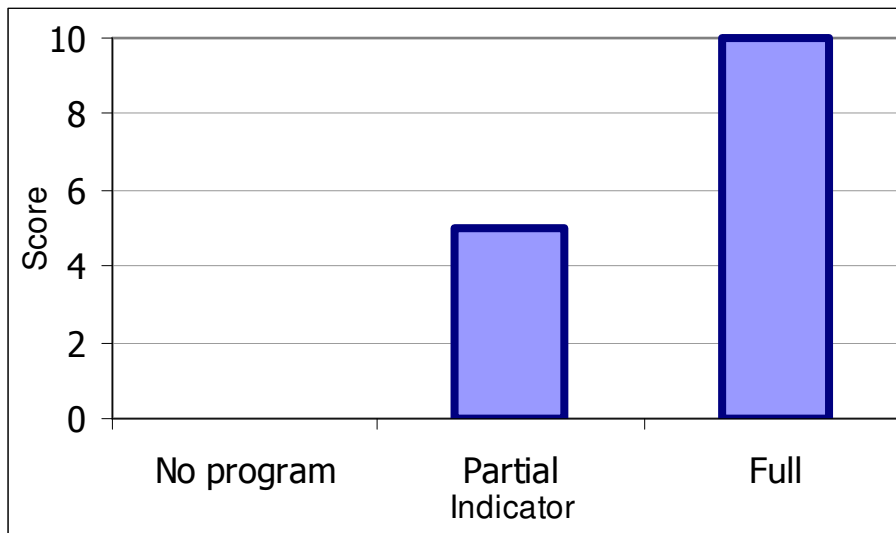
Both access to water and sanitation were scored in a linear manner as indicated in Figure 176 below. This translates into the following: when the data for the percentage access to water or sanitation was 0%, 50% and 100% the associated score was 0, 5 and 10 respectively.



*Figure 176: Scoring rule access to water and sanitation services*

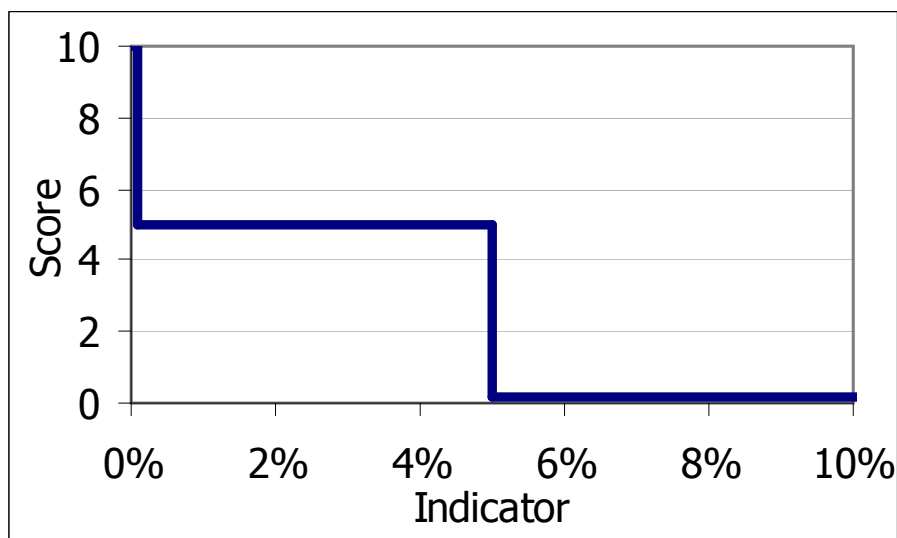
### 6.1.2 Drinking water quality

The drinking water quality score was made up, in equal parts, of the drinking water quality monitoring and the compliance indicator. The score for the drinking water quality reporting indicator (is there a programme for water quality monitoring in place?) was based on a discrete assessment of the indicator as shown in Figure 177 below. In cases where 'no program' was reported the score was zero. When the response was 'partial' the score was 5 and when the response was 'full' the score was 10.



**Figure 177: Scoring rule for the drinking water quality monitoring indicator**

The drinking water quality compliance indicator, water quality sample failure (*E-coli*), was scored in an inverse intermittent manner as shown in Figure 178 below. When the reported *E-Coli* sample failure was between 0% and 0.1% the score was 10. For *E-Coli* sample failure reported between 0.1% and 5% a score of 5 was given and a score of zero for data reported above 5%.



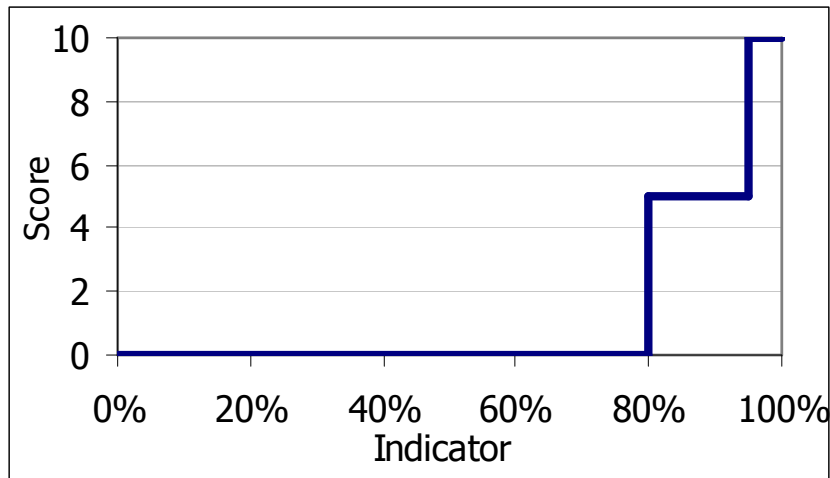
**Figure 178: Scoring rules for the drinking water quality compliance indicator**

### 6.1.3 Wastewater treatment

The wastewater treatment indicators comprised of wastewater treatment works compliance and monitoring indicators. The percentage of wastewater treatment works having licences was scored in a linear manner as indicated in Figure 176 above. If no wastewater treatment works were licensed a score of zero was apportioned and if 100% of the wastewater treatment works were licensed the score was 10.

The effluent monitoring indicator was scored in a discrete manner as indicated in Figure 177 above. If an effluent monitoring programme was in place the score was 10, if a partial programme was in place the score was 5 and zero if no programme was in place.

The effluent compliance indicator, percentage of samples passing the minimum standard, was scored in intermittent ranges as shown in Figure 179 below. When the response to this indicator was between 0% and 80% the score was zero, for a response between 80% and 95% the score was 5 and above 95% the score was 10.



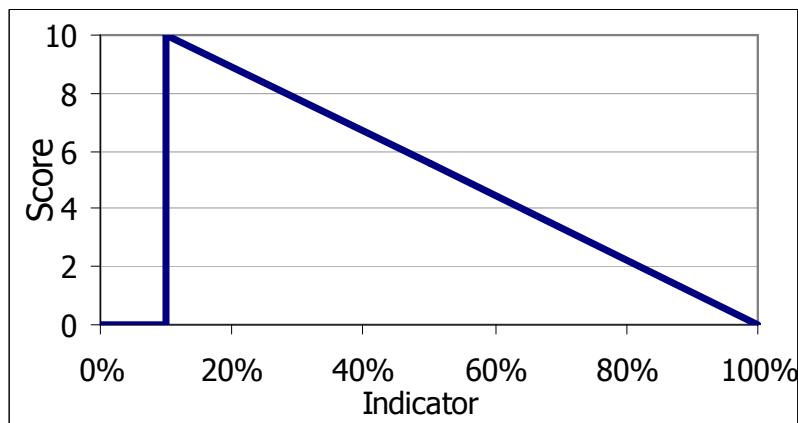
**Figure 179: Scoring rule for the effluent compliance indicator**

The percentage of wastewater treatment works meeting the license conditions (97% compliance) was scored linearly as shown in Figure 176 above. When the data reported was 0%, 50% and 100% the scores were 0, 5 and 10 respectively.

#### 6.1.4 Asset management

The scoring for meter coverage was dictated by a linear relationship between the data provided for this indicator and the score. When the reported meter coverage was zero the score was zero and when the meter coverage was 100% the score was 10.

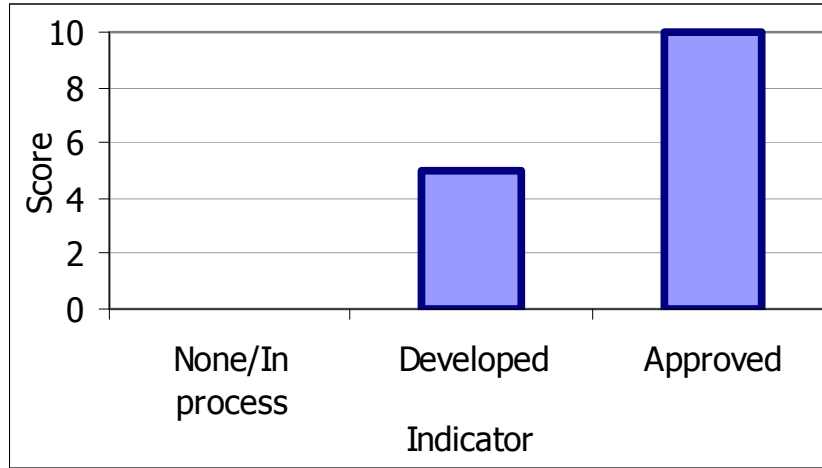
Unaccounted for water was scored by an inverse linear relationship with data less than 10% being scored at zero (unaccounted for water of less than 10% is highly unlikely) as shown in Figure 180 below. Typically if unaccounted for water was reported as 10% the score was 10 and if it was reported at 100% the score was 0.



**Figure 180: Scoring rule for the unaccounted for water indicator**

The asset management indicator was scored by whether there was a Council approved asset management plan and whether there was an audited asset management

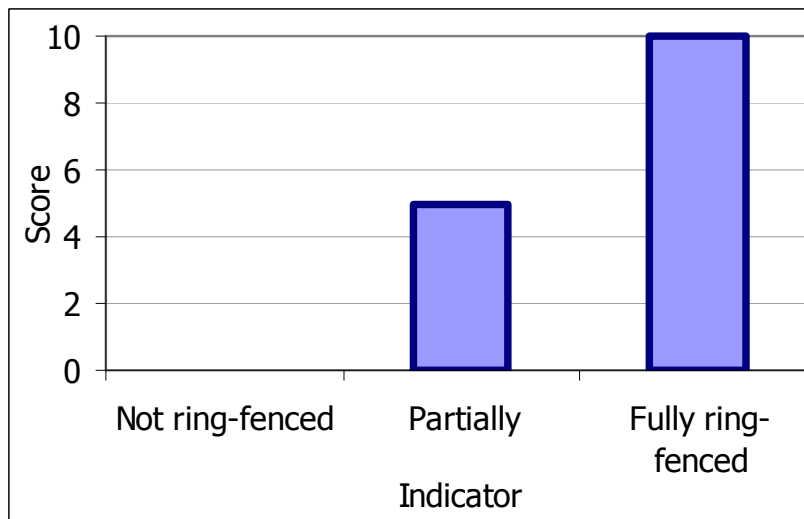
register. The scoring is shown in Figure 181 below, if there was no asset management plan the score was zero. If an asset management plan was being developed the score was 5 and if the plan was approved by council the score was 10. Similarly for no asset register, an asset register being developed and audited the score was 0, 5 and 10 respectively.



*Figure 181: Scoring rule for the asset management indicator*

### 6.1.5 Financial performance

The indicator to determine whether the WSA's finances were ring fenced or not was scored in a discrete manner as shown in Figure 182 below. If the WSA reported not ring-fenced the score was zero, the score was 5 for being partially ring-fenced and 10 for being fully ring-fenced.

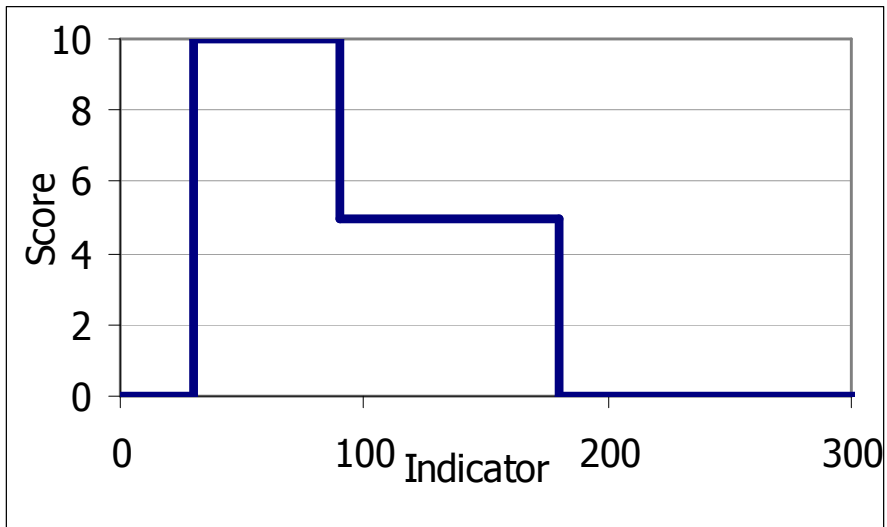


*Figure 182: Scoring rule for the ring fencing indicator*

Cash collection efficiency was scored in a traditional linear manner as shown in Figure 176 above. For cash collection reported at 0% the score was 0, while cash collection of 50% and 100% was 5 and 10 respectively.

In terms of debtors' days, data greater than 180 days was scored at 0, data between 90 and 180 was given a 5 and data less than 90 but greater than 30 was given a 10.

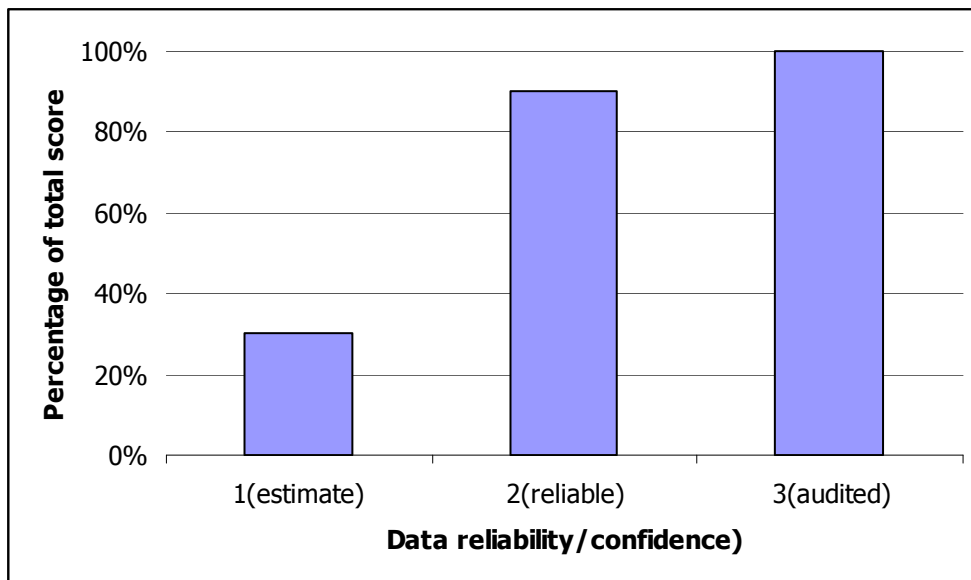
The relationship between the score and the data reported is shown in Figure 183 below.



*Figure 183: Scoring rule for the debtors' day indicator*

### 6.1.6 Score moderation

This year the score for each indicator was moderated with respect to the indicator data confidence as reported by the municipalities in completing the datasheets. The data was moderated as shown in Figure 184 below, for a data confidence of 1 the overall score was moderated to 30% of the overall score, for a data confidence of 2 the overall score was moderated to 90% and the score remained the same if the data confidence was 3.



*Figure 184: Moderation of overall score*

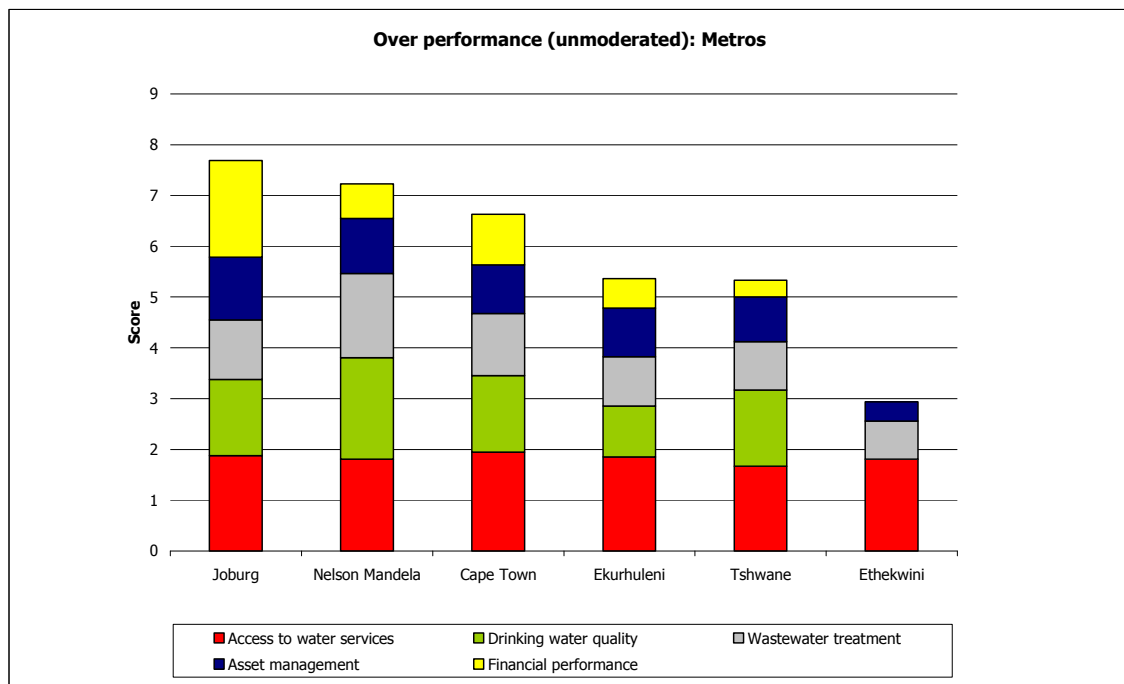
## 6.2 Overall scores

Based on the scoring and weighting rules and moderation as described above an overall score for the Metros, DMs and LMs were calculated. The results, before and after moderation, are presented for all the participating municipalities.

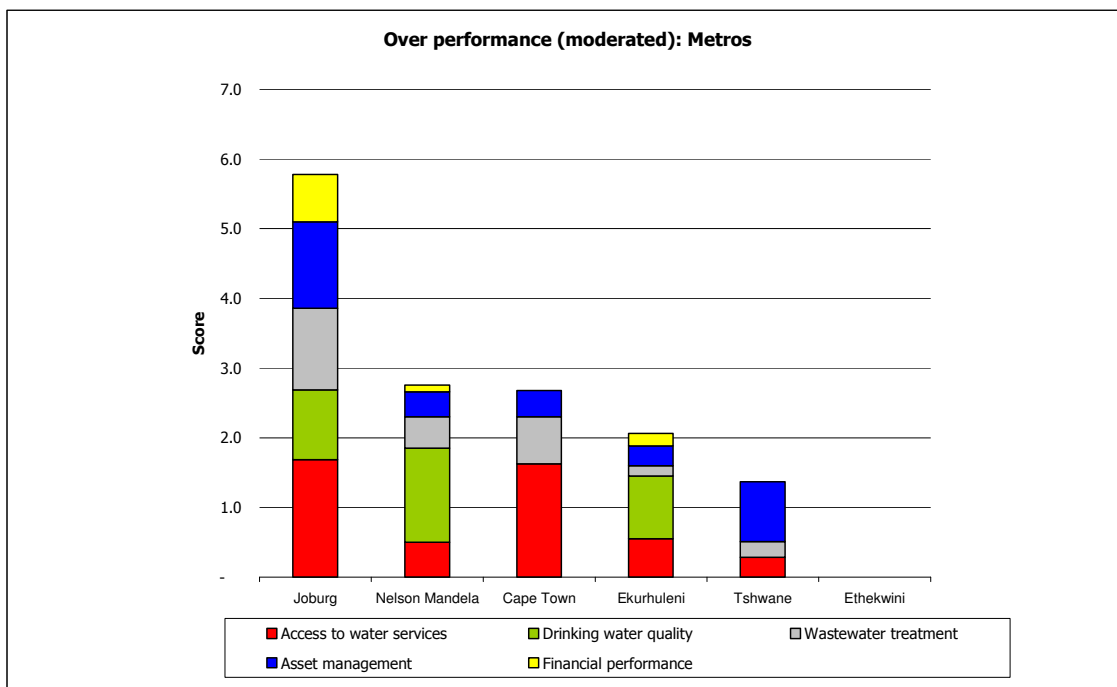
*The importance of the quality of the data submitted on overall performance is illustrated in section 6.4 with reference to Ethekwini.*

### 6.2.1 Metros

The overall unmoderated score for the Metros is presented in Figure 185 below and the moderated overall performance in Figure 186. The unmoderated scores ranged between 7.7 for Joburg Metro and 2.9 for Ethekwini. In contrast the moderated score ranged between 5.8 for Joburg Metro and 0 for Ethekwini. For both the unmoderated and moderated scores, Joburg Metro had the highest score followed by Nelson Mandela Bay, the City of Cape Town, Ekurhuleni, Tshwane and finally Ethekwini with the lowest score. When considering the moderated scores Joburg Metro had the highest score for all the categories bar one, the drinking water quality for which the City of Cape Town had the highest score.



**Figure 185: Un-moderated overall score for the Metros**



**Figure 186: Moderated overall score for the Metros**

### 6.2.2 District Municipalities

The un-moderated and moderated performance overall for the DMs is given in Figure 187 and Figure 188 below. The highest un-moderated score was 6.3 (Uthukela DM) and the highest moderated score 5.3 (Ilembe DM), indicating a decrease in data spread after moderation. The top three DMs remained the same post score moderation albeit a swap between Uthukela and Ilembe for first and second position. Prior to the scores being moderated in terms of data reliability there were three DMs with a score of zero, this increased to 5 after moderation.

After moderation of the scores, the DM with the highest score for access to water and sanitation services was Frances Baard, for drinking water quality it was Umgungindlovu, for wastewater treatment it was Ugu District, for asset management it was Uthukela and for financial performance it was Ilembe.

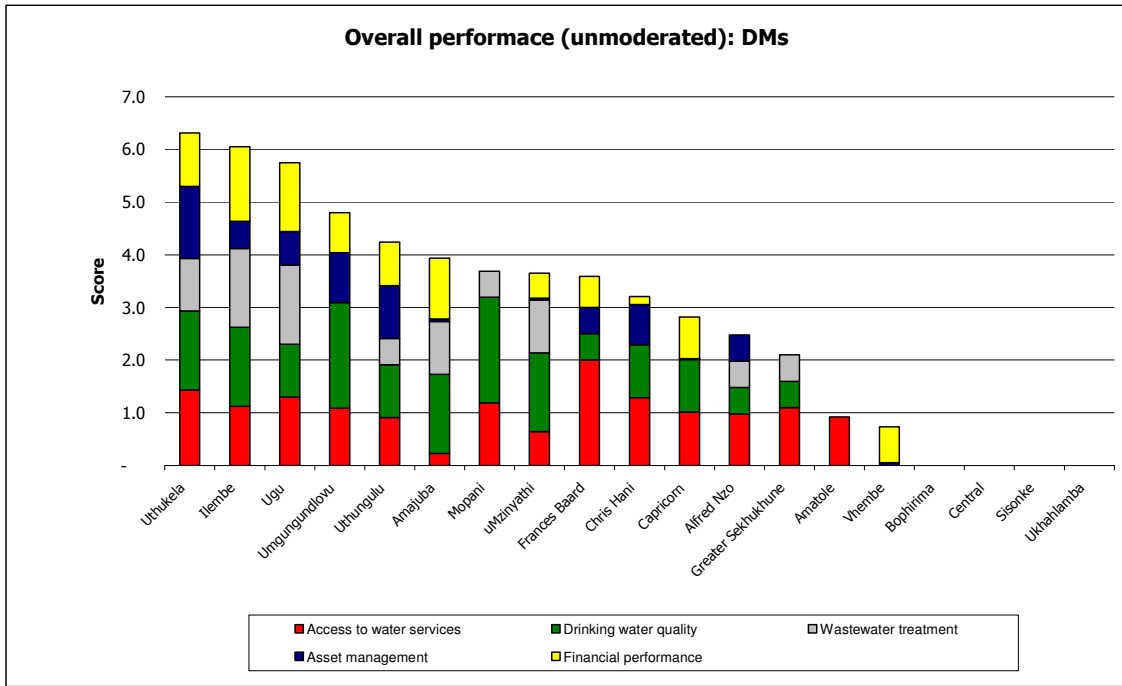


Figure 187: Un-moderated overall score for the DMs

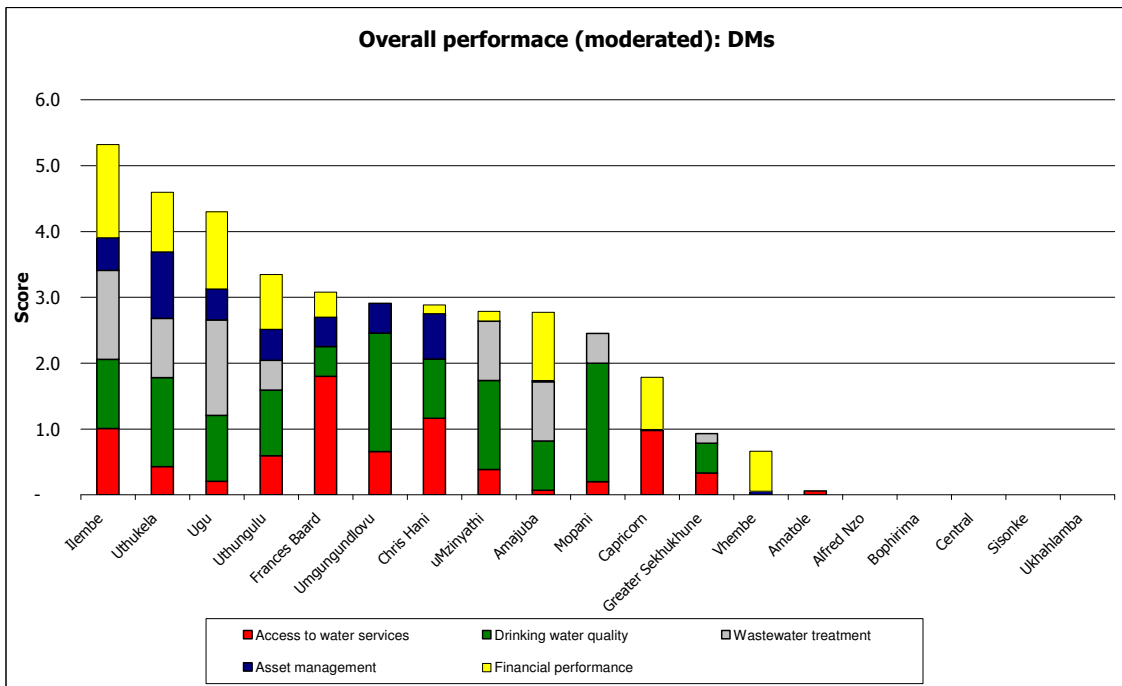


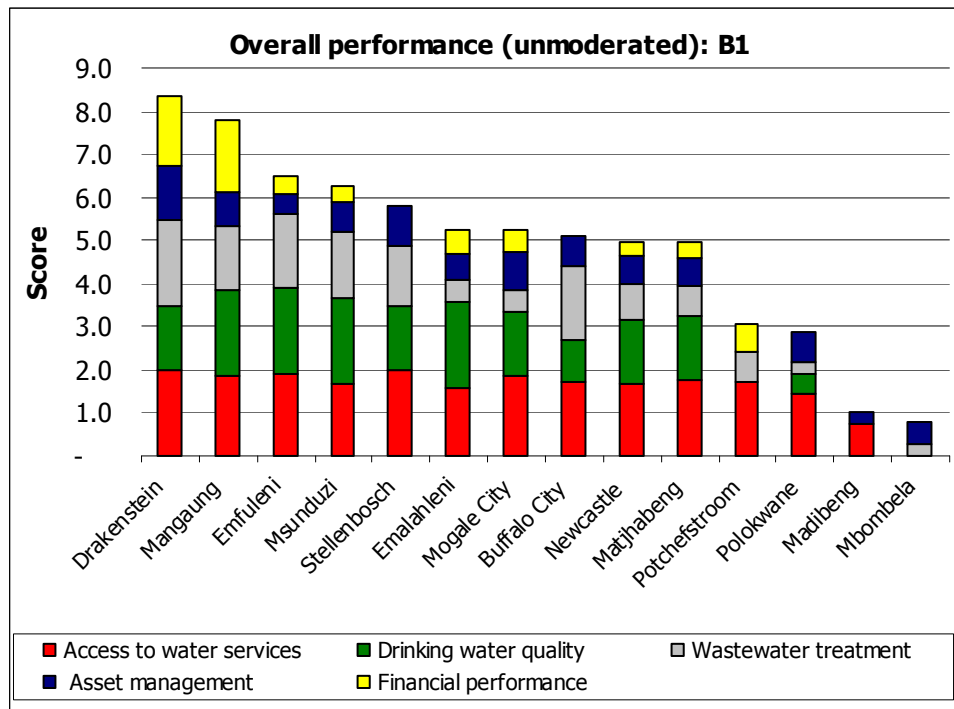
Figure 188: Moderated overall score for the DMs

### 6.2.3 Local Municipalities

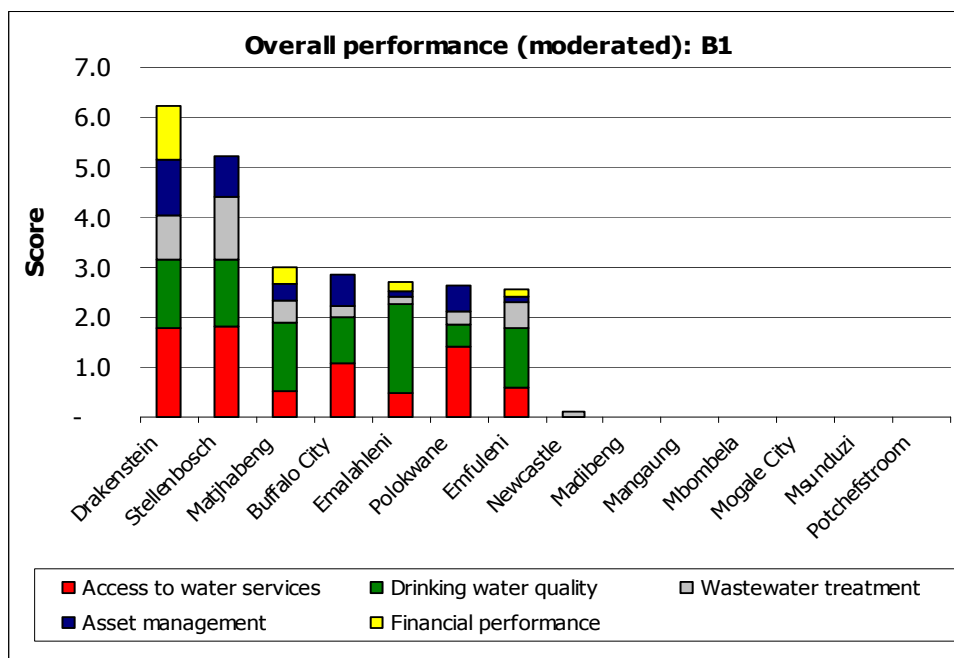
The overall un-moderated and moderated scores for the B1, B2 and B3 municipalities are presented in the graphs below.

Amongst the B1 municipalities (Figure 189 and Figure 190) the un-moderated scores ranged from 0.8 (Mbombela) to 8.4 (Drakenstein), whereas the moderated score ranged from zero to 6.2 (Drakenstein). Six, B1 municipalities did not report on data

reliability resulting in their moderated score being zero. Considering the moderated scores; Drakenstein and Stellenbosch has the highest for access to water and sanitation services; Emalahleni had the highest score for drinking water quality. For wastewater treatment Stellenbosch had the highest score and Drakenstein had the highest for asset management as well as for financial performance.



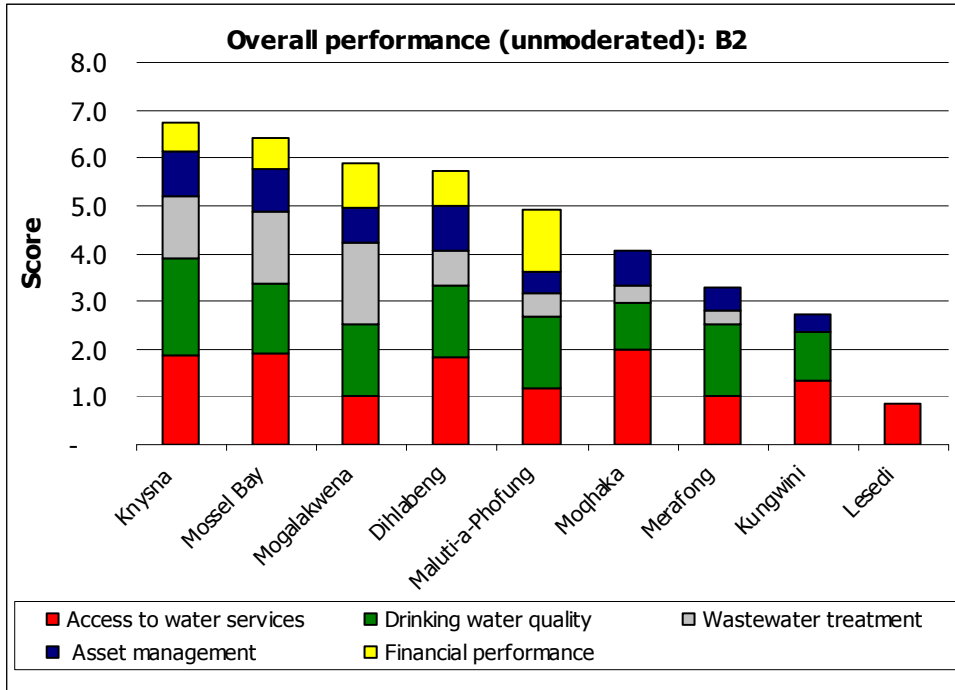
**Figure 189: Overall un-moderated score for the B1 municipalities**



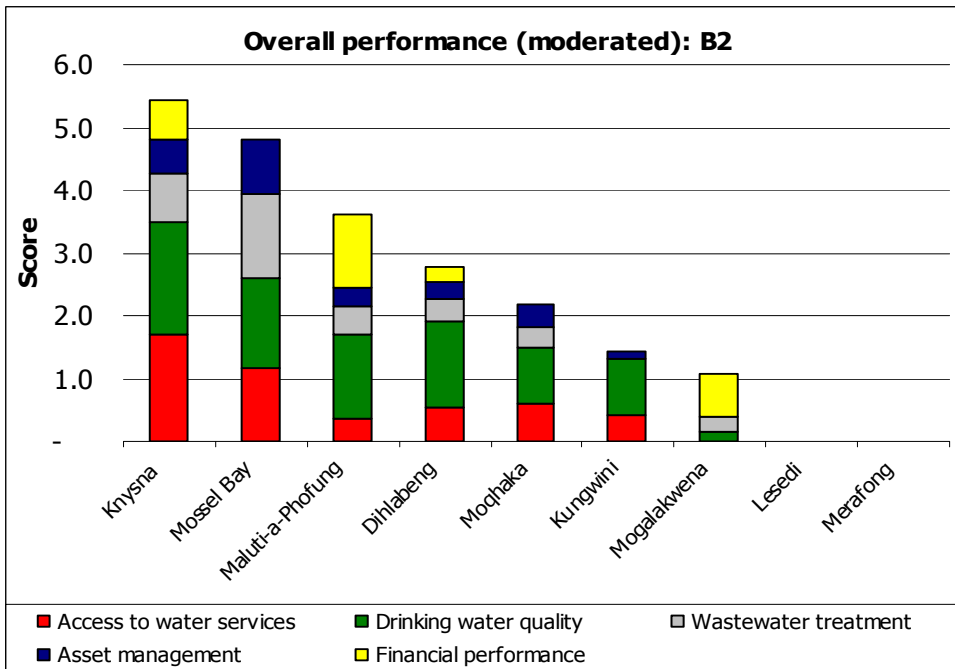
**Figure 190: Overall moderated score for the B1 municipalities**

The B2 municipalities that participated in the benchmarking study exhibited overall un-moderated scores of between 0.9 for Lesedi and 6.7 for Knysna (refer to Figure 191

below). The moderated scores (refer to Figure 192) ranged from a minimum of zero to a maximum of 5.4 for Knysna. Knysna also has the highest moderated score for the access to water and sanitation and the drinking water quality indicator. The highest score for the wastewater quality asset management indicator set was obtained by Mossel Bay. Maluti-a-Phofung had the highest score for financial performance.



**Figure 191: Overall un-moderated score for the B2 municipalities**



**Figure 192: Overall moderated score for the B2 municipalities**

The un-moderated and moderated scores for the participating B3 municipalities are given in Figure 193 and Figure 194 below. The un-moderated scores spanned from zero to 7.2 (Gamagara), while the moderated scores ranged from zero to 5.4 (Gamagara). Gamagara displayed the highest moderated score for the access to water and sanitation and the drinking water quality indicators. For the moderated wastewater treatment and financial performance indicators Witzenberg had the highest score. Khai Ma had the highest for the metering, unaccounted for water and asset management indicator.

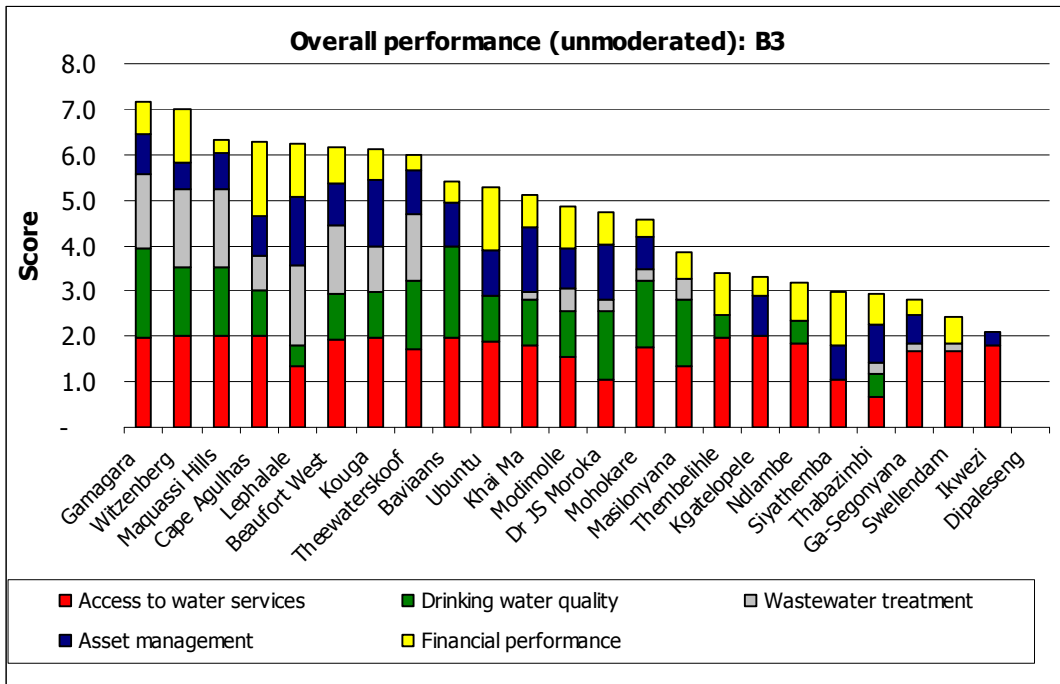


Figure 193: Overall un-moderated score for the B3 municipalities

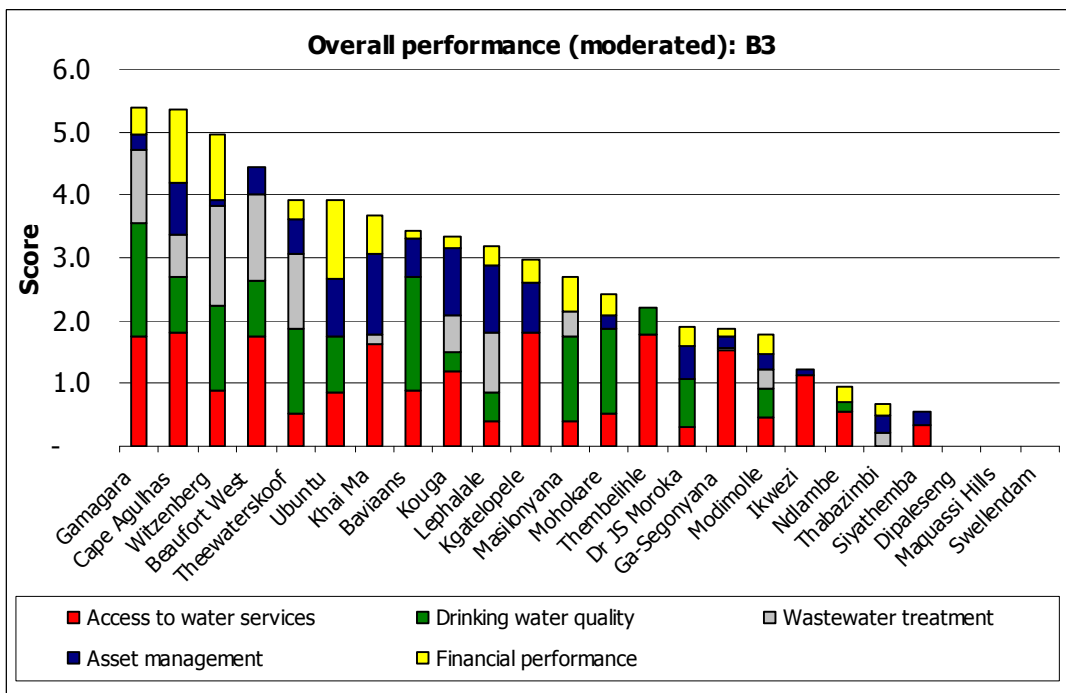


Figure 194: Overall moderated score for the B3 municipalities

These scores were used to recognise the performance of best performing municipalities in their peer group, in the form of awards. These are discussed further as part of the awards section of the benchmarking conference.

## **6.3 Awards**

Based on the performance of municipalities in the section above, the top performing municipalities amongst their peers were identified to be acknowledged through awards to be handed out during an awards ceremony as part of the benchmarking conference.

### **6.3.1 Best confidence in data provided in 2006/07**

These are the municipalities that have provided data with the best stated confidence and reliability in their categories.

- **Locals:** Buffalo City LM
- **Districts:** Ilembe DM
- **Metros:** City of Johannesburg

### **6.3.2 Most Complete Data Award**

- **Locals:** There was a tie for the most complete data award for locals:
  - Dihlabeng LM
  - Mohokare LM
- **Districts:** Ugu DM
- **Metros:** City of Johannesburg

### **6.3.3 Best Newcomer Award 2006/7**

This is the municipality that is performing best among those municipalities that are participating for the first time in 2006/07:

- Drakenstein LM

### **6.3.4 Most Improved WSA Award (2006/07)**

The Most Improved WSA in 2006/07 is for the municipality in its category, that has shown the best improvement since 2005/6:

- **Locals:** Modimolle LM
- **Districts:** Uthungulu DM
- **Metros:** Nelson Mandela Bay

### **6.3.5 Best Performing WSA Award (2006/07)**

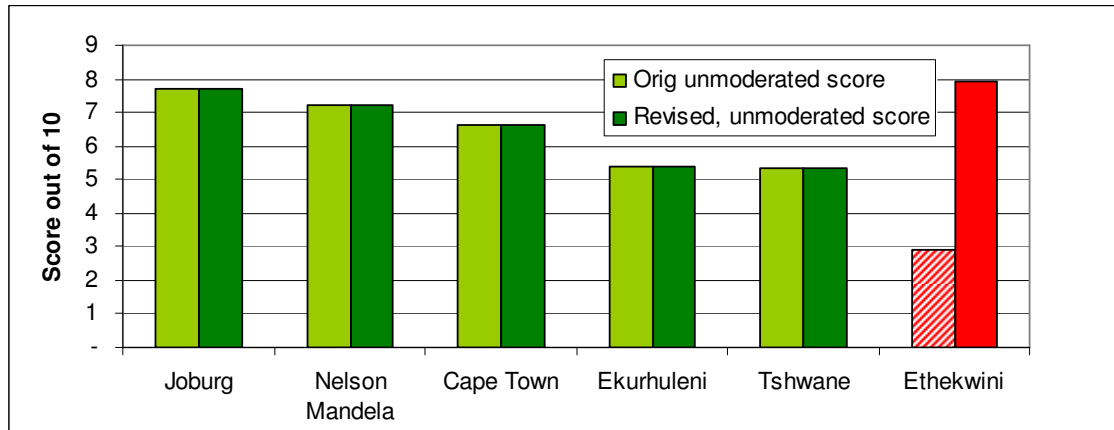
This is based on overall performance, moderated by data confidence:

- **Secondary Cities:** Drakenstein LM
- **Large Towns:** Knysna LM
- **Small Towns:** Gamagara LM
- **Districts:** Ilembe DM
- **Metros:** City of Johannesburg

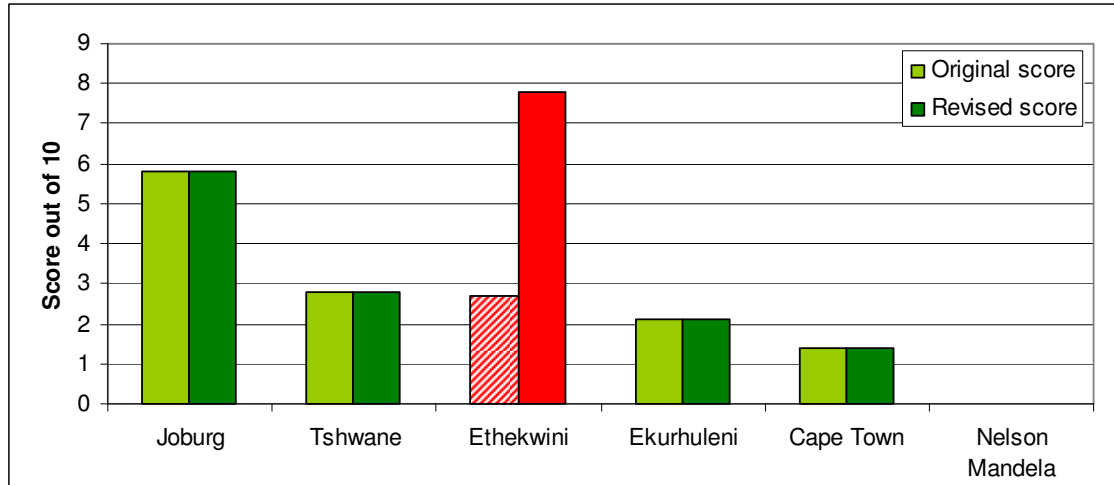
## 6.4 Revisions and Corrections of Data

Municipalities were invited to provide revised or corrected data up to a specified cut-off date. Data that was received afterward could not be taken into account in the scoring and in the analysis of this report.

Ethekwini Metro submitted a revised data set after the cut-off date, when it realised that its earlier submission had been incomplete. The “before” and “after” performance outcomes (using the respective data sets) are given here to illustrate the very significant impact that the quality of the data submission has on the overall performance outcome (as well as on the individual performance indicators).



**Figure 195: Impact of using Ethekwini's updated data before moderation**



**Figure 196: Impact of using Ethekwini's updated data after moderation**

This data has not been taken into account elsewhere in this report, as it would be unfair to other municipalities. However it is useful presenting the impact of their new data here as captured in the two figures above. This shows the importance of municipalities ensuring that their submission is as complete and accurate as possible. As can be seen, this can have a major impact on the benchmarking outcome.

## 7 Benchmarking Conference 2008

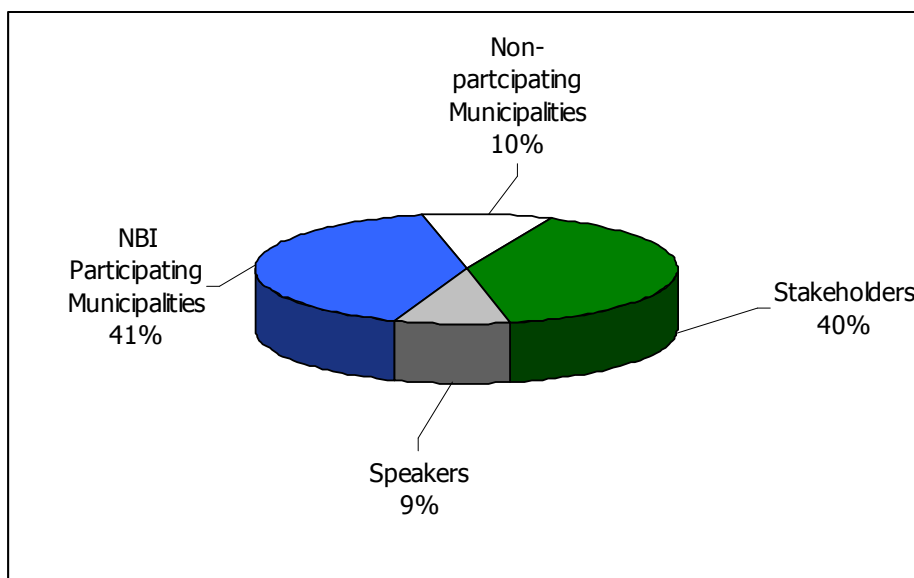
The outcomes of the 2006/07 benchmarking process, presented in detail in previous sections of this report, were presented at the NBI annual benchmarking conference. The aim of the conference was to highlight achievements and best practises and to direct learning efforts to areas where improvements can be achieved. The conference was held in Umhlanga (KwaZulu Natal) from the 26 to 28 February 2008.

The conference was held over three days. The first two days were dedicated to presentations and discussions of the outcomes of the benchmarking process as well as information and knowledge sharing between practitioners in the water services arena. The third day was a site visit.

In addition to focussing on benchmarking performance, the conference also included a separate knowledge sharing session by practitioners consisting of parallel sessions that were attended on a voluntary basis. These sessions included both practical and policy related water issues.

### 7.1 Attendance

The total number of delegates attending the conference was 97, and a breakdown by category given in Figure 197 below.



**Figure 197: Breakdown of delegates attending the annual NBI conference**

Stakeholders referred to above were typically DWAF, SALGA, WRC and SAAWU. As can be seen in the figure above, participating municipalities in the 2007 round of the benchmarking initiative only made up 41% of the attendees. Only 19 (28%) of the 67 benchmarking participants were represented at the conference.

The reasons for poor attendance of the conference by participating WSAs is not fully understood. However, it is likely that one of the most significant factors was the lead time given to municipalities to obtain the necessary approval to attend the conference. Another factor could be travel budget constraints, with the conference coming quite late in the municipal financial year.

## **7.2 Knowledge sharing seminars**

The knowledge sharing seminars were run in two parallel sessions. These sessions included both practical and policy related water issues. On the second day a presentation on "lessons learnt" about the benchmarking process was made and finally delegates were asked to evaluate the conference.

Stream 1 had the following presentations and discussion on them:

- Water safety plans
- Citizen voice: participation, assessment and change
- Impact of large consumer units on watsan delivery

Stream 2 had the following presentations made and discussed:

- VIPs & Urine Diversion Pit Latrine Additives
- When the pit latrine is full: dealing with pit latrine sludge
- Lightweight moveable VIPs

## **7.3 Performance Seminars**

A high level overview of the benchmarking outcomes was presented in the plenary session.

The detailed discussion on the performance of WSAs took place in three parallel performance seminars with delegates being free to attend whichever session they felt applied best to them:

1. Infrastructure and service delivery.
2. Institutional issues and the benchmarking process.
3. Financial performance and customer interface.

The aim of these sessions was to enrich the analysis of trends in performance, evaluate the existing sets of indicators and make recommendations for improving the indicators. The outcomes of these parallel sessions were presented to the plenary session on the second day and recommendations for new indicators were made.

On the second day a presentation on "lessons learnt" about the benchmarking process was made and delegates were asked to evaluate the conference.

### **7.3.1 Infrastructure and service delivery**

The key performance areas that were addressed in this session were:

1. Access to potable water.
2. Access to sanitation.
3. Potable water quality.
4. Effluent treatment.

From discussions, it emerged that measuring progress in the eradication of backlogs is complicated because of operational shortcomings, water quality failures or 'new backlogs' arising from urbanization or the settlement of people in areas where existing backlogs have been addressed. Participants agreed that the challenge of maintaining service levels and standards once achieved needed to be regarded as a higher priority than at present. Serious concerns were raised regarding bulk capacity relative to demand for water sources, as insufficient planning and implementation of developing new sources to meet growing demand appears to have been prevalent especially in medium to small municipalities

Meeting the 2010 target for provision of basic sanitation was regarded as a difficult target for many WSAs. The filling up of VIP pits was seen as a serious problem, although not recognized in probably the majority of WSAs since pit emptying has mostly not been planned for or initiated. Information collected should not be considered as adequate without an indication of the remaining useful life of VIP toilets. Advance planning, research and if necessary piloting and selecting the most suited methodology, collection and maintenance of relevant information was regarded as essential in this process by Alfred Nzo municipality, which made significant progress in addressing their sanitation backlog.

The importance of WSA's maintaining water quality was supported by participants. Even though quality of water supplied has improved since previous rounds, problems persist, and rural areas are often not monitored. Measures against providers which fail to take appropriate remedial action on failing to meet standards was deemed necessary and a priority.

The successes achieved with eWQMS was noted, and regarded as a basis for improved and extended monitoring and evaluation. The use of free chlorine in potable water was regarded as a possible, and a more appropriate replacement for turbidity measurements.

The poor quality of treated sewage effluent as shown by the benchmarking process indicated very poor performance of waste water treatment facilities in many WSA's. The reasons were seen as the exceeding of waste water treatment design capacity, while maintenance and operation of effluent treatment plants have been deteriorating. The problem is very serious and the results obtained clearly indicate that the causes need to be addressed without delay to prevent continued and increasing pollution and degradation of the environment.

The general consensus from this session was that there was a need to investigate the use of different sets of key performance indicators depending on the category of WSA, and with regard to differential service delivery in informal versus formal areas. The problem of accounting for the impact of the housing program on backlog eradication was also raised.

The need to access useful existing water services related information, while eliminating duplications was highlighted, together with the need to integrate information sources and information requirement systems..

### **7.3.2 Institutional issues & Introduction to Benchmarking**

This session spent most of its time taking participants through an 'Introduction to Benchmarking' training session, which was useful for many conference attendees and well attended.

In addition, this seminar also dealt with the very small set of institutional indicators.

The two indicators that are currently being used were discussed:

1. WSA annual reporting.
2. Staff per 1000 connections.

With regards to the WSA annual reporting indicator, the fact that most municipalities were not submitting an annual water services reports, despite a legal requirement to do so was discussed.

From the discussion it became apparent that the indicators used for assessing institutional performance are very limited. Particularly, it was mentioned that the 'staff per 1000 connections' was not a very useful performance indicator, particularly in a developing country context. A suite of additional indicators was discussed and these are listed in the table of recommended new indicators in the following section.

### **7.3.3 Financial performance and customer interface**

#### ***Tariffs***

Participants questioned the choice of 30 kl per month as the appropriate benchmark for normal consumption tariffs, and suggested that 20 kl per month would be more appropriate. The limitation of the information and analysis arising from the tariff indicator was noted. It was also noted that DWAF undertook a more comprehensive and detailed annual tariff survey.

A desire was expressed for more detailed financial analysis but it was accepted that this was beyond the scope of the initiative as currently conceived.

#### ***Ring-fencing***

The definition of "partial ring-fencing" was too vague and needed more clarity and explanation. It was also noted that full financial ring-fencing may not be desirable in all circumstances, especially for very small municipalities. Ring-fencing of the business functions (for example, procurement and recruitment) may be just as important as financial ring-fencing, especially for larger water services providers.

#### ***Collection efficiency***

There was a long and involved discussion on how the equitable share grant should be treated in accounting terms. Some viewed this as additional revenue to the service whereas others made use of the grant to provide for or write-down consumer debt.

It was noted that the denominator for collection efficiency should be billings from the sale of water, and not total revenue.

It was also noted that the numerator should be the cash collected which corresponds to the "in-year" billings, and not older debt. It was acknowledged that it was difficult for many municipalities to make this distinction.

#### ***Asset management***

The asset management plan process, including approvals is still vague. Is this separate to the WSDP. Does the WSDP constitute as asset management plan? A request was made for best practice asset management plans to be circulated.

#### ***Unaccounted-for water***

The categorisation of unaccounted-for water as part of asset management was discussed. It was acknowledged that this indicator could just as easily be categorised differently. The limitations of the indicator definition was noted. While it was acknowledged that it would be desirable to move to a more sophisticated indicator, it

was acknowledged that most municipalities do not have the ability to measure a more sophisticated indicator and we should stick with what we have for the time being.

### ***Customer service standards***

The service interruption indicator will be improved by requesting the number of pipe bursts experienced per annum.

## **7.4 Recommended Additional Indicators**

The conference plenary was presented recommendations by each performance seminar largely with respect to new indicators. The plenary in turn discussed these.

The additional indicators as recommended by plenary are presented in Table 57 below. The conference delegates' resolved as to whether a given indicator should be supported; rejected; or taken to the NBI steering committee for further discussions are also given in the table.

**Table 57: Additional indicators**

| <b><i>Indicator</i></b>  | <b><i>Supported</i></b> | <b><i>Reject</i></b> | <b><i>Steering Committee to Take Forward</i></b> |
|--|-------------------------|----------------------|--|
| <b>Financial performance</b>   |                         |                      | ●  |
| Tariff at 20kL instead of 30kL   |                         |                      |  |
| Surplus/deficit  | ●                       |                      |  |
| Monetary value of water losses   | ●                       |                      |  |
| Provision for bad debt (actual provisions made in the year to be declared)           | ●                       |                      |  |
| % of total budget spent on water services for WSAs having no control over allocation |                         |                      | ●  |
| <b>Customer interface</b>  |                         |                      |  |
| 24/7 customer call centre – existence and utilisation                                | ●                       |                      |  |
| Customer feedback mechanism in place (for example, a customer survey).               | ●                       |                      |  |
| Customer charter communicated and awareness campaigns                                | ●                       |                      |  |
| Operational control centre   |                         |                      | ●  |
| <b>Water demand</b>  |                         |                      |  |
| An indicator to measure the extent to which demand issues are being managed          |                         |                      | ●  |
| To what extent are assets being  | ●                       |                      |  |

| <i>Indicator</i>   | <i>Supported</i> | <i>Reject</i> | <i>Steering Committee to Take Forward</i> |
|--|------------------|---------------|---|
| maintained   |                  |               |   |
| Asset replacement per annum                                | ●                |               |   |
| What Water Demand Initiatives are in place                 | ●                |               |   |
| <b>Access</b>  |                  |               |   |
| Rely on alternative official sources for access data?      |                  |               | ●   |
| Level of service for yard connections                      | ●                |               |   |
| Make distinction between formal and informal settlements   |                  |               | ●   |
| Status of VIP pits (numbers emptied or moved because full) | ●                |               |   |
| <b>Effluent treatment</b>                                  |                  |               |   |
| Clarity on other technology/oxidation ponds                | ●                |               |   |
| Status of licence (approved/awaiting approval)             | ●                |               |   |
| <b>Institutional</b>                                       |                  |               |   |
| Number of qualified engineers                              |                  |               | ●   |
| Number of qualified technicians                            |                  |               | ●   |
| Percentage of capex spent                                  | ●                |               |   |
| Overtime worked as a % of std time                         | ●                |               |   |
| Average training days per employee                         | ●                |               |   |
| Expenditure on training as % of salaries and waged budget  | ●                |               |   |
| Post filled as % of established posts                      | ●                |               |   |
| Staff turnover rate  | ●                |               |   |
| Absenteeism rate   | ●                |               |   |

These indicators are recommendations of the conference and will need to be further explored, with recommendations made to the steering committee in finalising the indicators for the next round.

It was agreed that the steering committee needed to finalise new indicators and confirm new participants by the 31<sup>st</sup> April if the next round is to be successfully managed.

## 7.5 Awards Ceremony

An awards ceremony was held during the conference that acknowledged municipalities that had done well within their peer groups. The winners of the awards have been presented earlier in the section on overall performance.

## 7.6 Conference evaluation

Delegates were asked to evaluate the conference according to these two criteria:

1. What worked for you?
2. Please suggest one thing to improve the process next year?

The response was positive in relation to the presentations by invited speakers, knowledge sharing sessions and the best practise showcased by the City of Joburg. Typical responses from delegates are given below.

- "I found the talk by Mike Muller very valuable because he gave a different perspective particularly since he was in the sector before. This was my highlight. It is always nice to have someone from outside the sector."
- "I was happy with the whole process - no specific highlight."
- "I enjoyed the customer interface presentation."
- "My highlight was the intro to benchmarking presentation."
- "The presentation of how the City of Joburg operates its WWTW."
- "What worked for me was the process about interaction with other practitioners."
- "My highlight was to see that people were wanting to improve the way they operate."
- "My highlight was the variety of the topics that were presented rather than focusing on KPI's and the presentation of VIPs to give some practical insight"
- "The best for me was the presentation of how the City of Joburg operates its Waste Water Treatment Works."
- "Being the best WSA and interaction across WSAs" – stated a Joburg delegate
- "The fact that the process is entering into the continuous improvement stage was a highlight."
- "I learnt that we must count the number of pits that we have emptied, backlog of old pits (presentation by Partners for Development explained that if you have a full pit it is not a service hence your backlog increases)."
- "What is clear is that technical people understand benchmarking better than planners and the interaction around benchmarking was excellent."
- "I learnt that a benchmarking initiative can assist us in achieving our KPIs in water service delivery."
- "I learnt how we develop systems."
- "My highlight was the presentation of how the City of Joburg operates its Waste Water Treatment Works."
- "What worked for me was the Intro to Benchmarking presentation."
- "We must congratulate the NBI that you have gone so far."
- "The highlights was presentation of how the City of Joburg operates its Waste Water Treatment Works, we want to see sustainable water works, the selection of personal is critical"
- "From SAAWU's perspective the forum has recognised the need for bulk and water services to work together."

Potential improvements included that more focus should be placed on best practices to afford attending WSAs the opportunity to benchmark against these. Comments made by delegates included:

- "There is a need to broaden into broader discussion of what works and what does not."
- "We need to benchmark against best practises."
- "There is a need to show that we are serious in this process, I would have liked to have the award winners have more preparation and so that the guys that got awards should be here."
- "dplg was not involved yet they are doing a benchmarking study (M&E system)."
- "I would like to see a full report on presentations, got a brief description and no detail."
- "The Food was terrible we need more healthy food."
- "We go to the same places from time to time for what you call good or best practises, I have a perception that certain people have good practises, please spread the net wider."
- We want to align KPIs to performance plans, but difficult it is to do, we need assistance with this. Maybe next year we can have some of this."

## **7.7 Next conference**

It was agreed that the next conference will be held from the 25<sup>th</sup> to 27<sup>th</sup> February 2009.

## **8 Conclusions**

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Participation in the benchmarking initiative has improved each year and this is encouraging. The quality of data is also improving, but at a slower rate than participation. The context and challenges vary between WSAs and it is appropriate to benchmark the WSAs within suitable "peer groups".

In terms of performance outcomes:

- Access to water is still a challenge, especially in districts.
- Access to sanitation is a significant challenge, especially in the metro areas (informal settlements) and district WSAs (rural areas).
- Drinking water quality is a concern, especially for the districts and small towns.
- Wastewater treatment quality is a widespread concern.
- Knowledge and understanding of finances, and financial performance is a widespread concern.
- The status of asset management is a widespread concern.

We are still in the stage of data refinement (within the overall benchmarking project cycle), and so performance data is still coarse. However, the quality of the data is improving which is encouraging.

It is too early to conclude meaningfully on performance trends within the sector. However, there are examples of relatively well performing WSAs in each "peer group" representing "best practice" and it would be important for other WSAs in their group to learn how they can improve to emulate these best performers. The benefits of the

benchmarking initiative will undoubtedly grow over time provided there is continuity in the initiative.

There are still important gaps in our knowledge of performance, particularly in two areas:

- The accountability of the service provider to consumers; and
- The role of human agency (in terms of leadership, management capability and the application of the necessary skills).

Thought will be given to how indicators can be developed to monitor performance in these two areas. There is also room to improve on the indicators in some cases and detailed recommendations are made in the main report.