



**2010  
HOST CITIES  
DRINKING WATER  
QUALITY MANAGEMENT  
AUDIT REPORT**



**water affairs**

Department:  
Water Affairs  
REPUBLIC OF SOUTH AFRICA



**blue drop**  
CERTIFICATION  
drinking water quality  
REGULATION



## Introduction

This report serves to inform on the audits conducted by the Department of Water Affairs on the drinking water quality (DWQ) management practices of all 2010 FIFA Host Cities; to determine compliance levels with the current Blue Drop Certification requirements.

The Blue Drop Certification programme was introduced as an incentive-based regulation approach which seeks to ignite progressive movement from good to excellent drinking water quality management. The South African drinking water has been regarded as adequately managed for some time since high levels of compliance were generally recorded against the set national standard (SANS 241:2006). This incentive-based regulation approach was however introduced in September 2008 to ensure that sustainable improvement towards excellent management of drinking water quality was stimulated. All systems scoring 95% and more get official acknowledgment through the allocation of the prestigious Blue Drop status.

While much more effort is required to reach excellence intensities in the management of rural and smaller water supply systems, it is most encouraging to note the significant progress recorded thus far. The Department of Water Affairs endeavours to facilitate the required improvement through various forms of regulation as due respect to the constitutional right of the South African people. The supply of drinking water and management of the tap water quality remain a municipal responsibility.

This prestigious regulatory programme has been used to determine the levels of confidence the Department should have in the management of drinking water quality of the various municipalities and relevant entities. Findings are communicated to the public as a means of ensuring transparency and subsequent accountability.

With the 2010 FIFA World Cup the Department wishes to use the same vehicle to inform visitors on the quality of the South African tap water and the management excellence levels. This would be done according to the Blue Drop Certification scoring. While this report will report on the host cities alone, a more detailed national Blue Drop 2010 Report will be released shortly after.

It is important to note that failure to obtain Blue Drop status does not imply that the tap water in that specific supply system is unsafe. It implies that the management practices require improvement before it could be classified as excellent. Blue Drop Certification is based on the performance (efficacy) in the following areas:

1. Water Safety Planning
2. Process Controlling and Maintenance Skills
3. Monitoring Programmes
4. Credibility of Laboratory
5. Submission of credible Information
6. Actual Water Quality Compliance
7. Incident Management
8. Publication of Performance Information
9. Asset Management

A “My Water” webpage ([www.dwa.gov.za/bluedrop](http://www.dwa.gov.za/bluedrop)) was developed to provide for any person to verify the quality of tap water in any South African town/city. The displayed status is determined from drinking water quality compliance trends over the last 3 months.

The team audited water treatment and supply systems in the following cities in November/December 2009:

- Mbombela (Nelspruit)
- Rustenburg
- Polokwane
- City of Tshwane
- City of Joburg
- City of Cape Town
- Mangaung

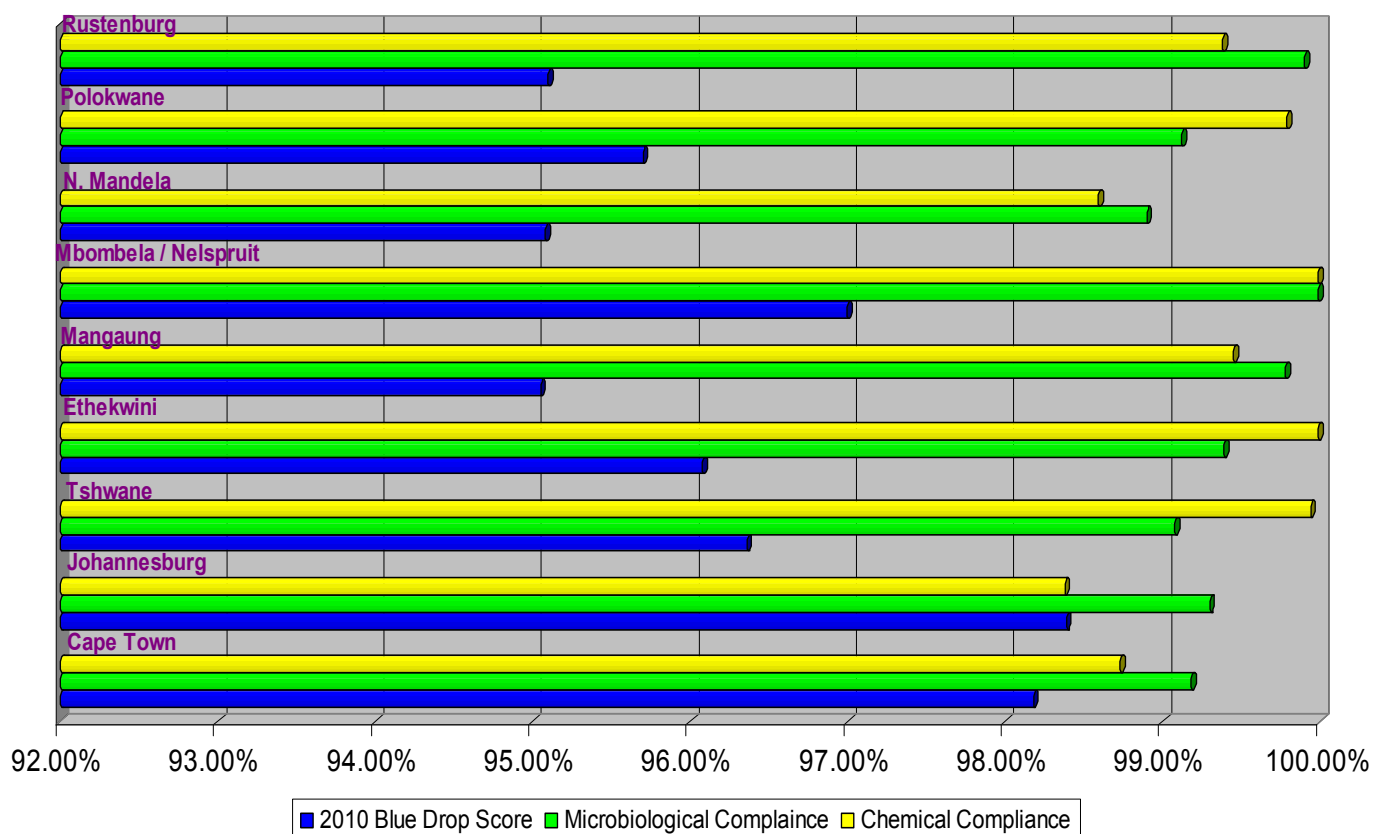
Nelson Mandela Bay was audited in October 2009 and therefore a repeat was not justified. Ethekewini Metro was audited on 19 February 2010.



Figure 1: Auditors assessing Ethekwini Treatment Works

## Summary Graph

2010 Host City Drinking Water Quality Management Performance



## Enhancing Regulatory Efficiency



**water affairs**  
Department:  
Water Affairs  
REPUBLIC OF SOUTH AFRICA



**dwi**  
guardians of drinking water quality  
DRINKING WATER INSPECTORATE



The Department is the South African water sector regulator and this includes a specialized unit which monitors municipal drinking water quality management performance. This unit established a twinning arrangement with the Drinking Water Inspectorate (DWi) that serves as regulator of tap water quality in the United Kingdom (UK) in order to enhance efficacy and subsequent regulatory credibility. This cooperative relationship was facilitated by PAWS (Partnership in Water & Sanitation) which is a British initiative to develop skills in the water sectors of developing countries. The UK Department of Environment, Food and Rural Affairs (DEFRA) provided the necessary funding for this exceptional initiative to materialize.

A core group of Blue Drop assessors were exposed to the operations and regulatory interpretations of the Drinking Water Inspectorate (DWi), as well as the Environment Agency (EA) (UK water regulators) in October 2009. This team provided extensive training to the rest of the national drinking water quality regulation team upon return prior to the commencement of the 2010 Host Cities Blue Drop audits.

A DWi inspector, Dr Steven Lambert, joined the South African audit team for a week long intensive audit cycle at the end of November 2009. This visitation presented a mutual benefit to both countries; the two regulatory entities obtained intellectual investments that will augment both regulatory capacity and credibility.

The internal departmental expertise was augmented by water scientists and process engineers who serve as specialist support to the local drinking water quality regulation team.

## Status of South African Drinking Water Quality

For the past 6 months the overall South African DWQ compliance was measured as 96% on average for both microbiological and chemical determinands (across the country including smaller towns and rural areas). This compliance figure is evident of a remarkable improvement measured in the previous Blue Drop report (2009) at 93.3% for the previous year. Even though this progress is a real encouragement, the Department will by no means rest on the laurels of this recorded regulatory success but will proceed with efforts to ensure that all South Africans and visitors consume water of the highest standard at all times.

While there remain challenges in the domain of treatment technology and process control (especially in the rural areas and smaller towns), there has been a significant increase in municipal management interest in drinking water quality management. This mindset change has been evident since the introduction of incentive-based regulation in form of the Blue Drop Certification programme.

The audits revealed certain areas of concern at specific treatment facilities which is communicated to the responsible authorities to have improvements implemented soonest. This will be closely monitored by the Department to be completed within tight timeframes to ensure complete readiness by April 2010. Specialists will be deployed to assist municipal staff through mentoring and coaching where so required. This report will reflect detail improvement requirements under each host city section.

Based on the continued performance monitoring as well as the audits, the Department can give the assurance that the responsible entities (Water Services Authorities and Providers) are sufficiently equipped to provide safe tap water for the duration of the 2010 FIFA World Cup tournament and beyond. With this in mind, where justified, municipalities (especially host cities) are being encouraged to promote their tap water as a preference to visitors since this is evidently the “green” thirst quenching option of choice.

## Blue Drop Audit 2010 Host Cities

The audit teams measured compliance and performance of water supply systems providing water to the 2010 World Cup host cities. There was a special focus on treatment and reticulation providing drinking water to the hosting soccer stadiums.

### City of Cape Town



Blue Drop 2010 Score	98.18%	
Actual Drinking Water Quality Compliance (Microbiological)	99.18%	
Actual Drinking Water Quality Compliance (Chemical)	98.73%	

### Audit Impression

The municipality was not given a very long time to prepare for the audit since the Department informed the relevant officials only a few days in advance. Yet the City of Cape Town did remarkably to prepare for the Blue Drop audit. The audit was off to a difficult start due to differences of opinions on the Water Safety Plan but fortunately agreement was reached and a commitment for an improved approach was obtained.

The audit team left Cape Town with a general impression that DWQ Management is highly efficient to the extent where it could be pronounced as commendable. The introduction of advanced technology, such as the At-Lab equipment speaks of the overall commitment to invest in improvement of drinking water quality management.

There is however a tendency to be overly dependant on the intellectual memory of individuals which could be regarded as one of the main risks to the management of drinking water in the City. It is required that the City invests in the implementation of a proper Water Safety Plan procedure according to which:

- Risks would be properly identified;
- Risk Management and control measures would be implemented; and
- Roles and Responsibilities would be clearly defined.

There has been a significant attempt to improve the Water Safety Plan but this evidently has not been adopted as the approach the entire municipality has agreed to.

## **Drinking Water Quality Performance**

According to compliance data available on the Blue Drop System, the City maintains excellent compliance with the national standard for drinking water (SANS 241:2006). Actual compliance was recorded as 99.18% for microbiological determinands while chemical complied 98.73%.

## **Treatment Technology and Infrastructure**

The Faure, Blackheath, Steenbras and Brooklands water treatment facilities as well as the Blackheath Lower reservoir were audited. All auditors were generally in unison on the excellent condition of the assets as well as management procedures set in place to ensure continuous delivery of safe drinking water.

The Department notes the need to produce water at higher pH due to aggressive water being treated and distributed. This is being done to protect the distribution infrastructure and sufficient motivation was provided to assure the team of the disinfection (chlorination) efficacy in spite of the slightly elevated pH levels.

Process controllers seem to be generally well trained and equipped, however details such as calibration of operational testing equipment as well as calibration record keeping requires improvement. It has been observed that the current calibration practices could compromise the efficacy of the highly advance At-Lab system since the process controllers on-site indicated limited understanding of this procedure. Nevertheless the introduction of this system promises to take DWQ management to the next level.

Asset Management in general is largely impressive and reassured the audit team that City of Cape Town is doing well in this discipline of the water business.

The pre-disinfection as well as filtration processes at the Steenbras Water Treatment facility was identified as an area for rapid improvement for which limited time-frames were set (22 February 2010).

Since the City is supplied from various water treatment works into one integrated system, the Department is convinced that with the current management procedures in place, there is sufficient capacity to continuously provide safe water for the duration of the World Cup and beyond.

### **2010 Blue Drop Status**

No significant shortcoming has been identified to date to suggest that the City would lose its prestigious Blue drop status. In fact the City scored an impressive 98.18% during the audit and therefore retains its Blue Drop status for the 2010 cycle.



Blue Drop 2010 Score	98.39%	
Actual DWQ Compliance (Microbiological)	99.30%	
Actual DWQ Compliance (Chemical)	98.38%	

### Audit Impression

The water supply function for the City of Joburg is delegated to Johannesburg Water (Distribution and Reticulation) and Rand Water (Treatment and Bulk Supply). Rand Water fulfills this role to another 21 municipalities; therefore it was separately assessed on 30 November 2009. Joburg Water was audited on 3 December 2009 as well as a physical audit performed by the DWi and DWA on the Rand Water Zuikerbosch treatment works the same afternoon.

Both these entities are highly professional outfits that are immensely effective in their duty to treat and supply safe drinking water to the citizens of Johannesburg and its visitors. There is sufficient evidence to suggest that these entities could be compared with the best water utilities internationally. This performance levels has however led to a perception that Rand Water should be allowed to be exempted from submitting required information to the Department (even though this is a legislated requirement). The Department will maintain equity in its regulatory approach according to which all entities will be subjected to the same rules.

The audit team was impressed with the effort made by both to thoroughly prepare for the audits, as well as the number of resources availed to answer the questions posed by the auditors.

Rand Water has a very impressive Water Safety Plan process in place which forms the basis of a training course developed by this entity and which the Department has been

recommending to many other municipalities. It is however of concern to note that limited effort has been made to ensure that Water safety Plan initiatives are integrated between Johannesburg Water and Rand Water. The Department is aware of efforts to improve this situation.

### **Drinking Water Quality Performance**

According to compliance data available on the Blue Drop System, the City maintains excellent compliance with the national standard for drinking water (SANS 241:2006). The compliance records indicate a consistent compliance of higher than 99% on average for microbiological determinands. There is a current process underway to improve the credibility of compliance information by ensuring that all compliance calculations are done from raw data. There is however no reason to believe that this exercise would cause a decrease in compliance but rather that a higher level of information confidence would prevail.

The Department noted the commendable efforts to keep the public informed in the instance of suspected and confirmed adverse drinking water quality.

### **Treatment Technology and Infrastructure**

Very good asset management is practiced at both Rand Water and Joburg Water; this can be substantiated by the large sum of R120m current expenditure for filter refurbishment at the Vereeniging water treatment facility. Just as impressive would be the complete asset register on the Hansen system for Johannesburg Water.

The Department randomly inspected the Illovo reservoir site and was impressed by the manner in which the water is being secured from external contamination. This is depicted by the special tool to open the inlet; as well as the unique filters to keep out insects and debris. However the roof drainage, valve box hinges and general housekeeping could be improved at this particular site. Nevertheless the Department's confidence in Johannesburg Water to secure the safeness of the water supply is undeterred; especially since it was indicated that special security measures would be put in place to secure the site against any malicious act.




The inspection of Zuikerbosch water treatment facility (3200 MI/day), which is the largest supplying unit to the greater Gauteng province, also proved that adequate measures are in place to continuously supply water of impeccable quality. Rand Water went to great lengths to consistently improve operations and analytical methodologies to the benefit of the consumer. The inspection was led by the UK Drinking Water Inspector who also indicated his appreciation for the work well done.

## 2010 Blue Drop Status

No significant shortcoming has been identified to date to suggest that the Rand Water dependant water systems would lose its prestigious Blue Drop status for the 2010 cycle. The performance of Johannesburg Water was equally good and therefore an impressive Blue Drop score of 98.39% was achieved for the 2010 cycle. The responsible entities ensured that the City of Johannesburg maintain its prestigious Blue Drop status for excellent drinking water quality management.





Blue Drop 2010 Score	96.36%	
Actual DWQ Compliance (Microbiological)	99.08%	
Actual DWQ Compliance (Chemical)	99.94%	

**Audit Impression**

City of Tshwane is also dependant on Rand Water supply to a large extent but augment supply from water treatment facilities at Rietvlei, Roodeplaat and Temba. Sub-surface water is used to augment the city centre supply. The Department audited the 3 responsible institutions to formulate an impression on the drinking water quality management of City of Tshwane’s tap water (City of Tshwane, Rand Water and Magalies Water). Magalies Water operates the Temba and Roodeplaat water treatment works.

**See City of Joburg Audit Report for Rand Water Performance.**

The City of Tshwane once again impressed with the professional manner in which the quality of water supply is being managed. Preparation for the 2010 Blue Drop Assessment Cycle started as early as June 2009, shortly after the release of the first Blue Drop report. This preparation included various communiqué between officials of the City and the Department to have adequate and credible DWQ information in place at the time of the audit. It has therefore placed the City of Tshwane in an unassailable lead regarding data credibility in South Africa for the 2010 cycle.

There is however a need to ensure for integration between the various disciplines of the municipality and its water providers to enable the implementation of an effective Water Safety Plan process.

Magalies Water did not disappoint the auditing team either even though not all information was ready at the time of assessment. While the general management of drinking water quality is regarded as sufficient, there is need for improvement in areas such as Asset Management and preparedness to deal swiftly with suspected and confirmed water quality incidents.

Overall the audit team is confident that the water supply of City of Tshwane can readily be marketed as the preferred thirst quencher in its area of jurisdiction.

### **Drinking Water Quality Compliance**

According to compliance data available on the Blue Drop System, the municipality maintains excellent compliance with the national standard for drinking water (SANS 241:2006). The compliance records indicate a consistent compliance of higher than 99% (99.08%) on average for both microbiological and chemical determinands.

The Department notes the efforts to keep the wider public informed on the general water quality management through print and electronic media.

### **Treatment Technology and Infrastructure**

The Rietvlei works remain one of the neatest treatment facilities in its class and this is indicative of the impressive asset management practices employed in the City. It is the second time that this feature was commended on by a visiting inspector from the United Kingdom.

The internal monthly audits performed at treatment facilities as well as the external auditing of the complete asset register; add to the effective asset management impression.

It has been detected that a variety of reservoirs are feeding the area in which the soccer stadium is situated and therefore it was impossible to assess all within the set timeframe. However, reservoirs in Elardus Park, Findly and Salvokop were inspected. This resulted in a mixture of bad and good impressions made. The auditing team sited evident measures to improve the security of the reservoirs but was disappointed in the general lack of housekeeping at some of these storage areas.




The growth of larger vegetation on the soil covered reservoir roofs and subsequent creation of insect-invested ecosystems are certainly not desired. Even though this might not have an immediate adverse implication on the drinking water quality, the inverse is possible as time progresses.

The Department noted the major effort to replace mains in the north of the city over the past two years.

### **2010 Blue Drop Status**

To date no significant shortcomings have been detected to suggest that the City should lose its prestigious Blue Drop status in 2010. A very good score of 96.36% was obtained which implies that the water supply system in the City of Tshwane should retain its Blue Drop status for the 2010 cycle.



Blue Drop 2010 Score	96.08%	
Actual DWQ Compliance (Microbiological)	99.39%	
Actual DWQ Compliance (Chemical)	>99.9%	

### Audit Impression

The audit team visited the following facilities during the audit:

- Pinetown Laboratory
- Kloof Water Treatment Facility
- Durban Height Water Treatment Facility
- Main Reservoir at Montille
- Durban Call Centre

The visit to the Call Centre and a quick survey on customer satisfaction revealed that most prominent complaints would be about incidents such as pipe bursts and account queries. The quality of water is not generally seen as an issue of complaint creating the impression that the community has not been given any reason to complain about the quality of water supplied. Yet the absence of a proper Incident Management protocol compromises the entity’s preparedness to deal with water quality incidence.

The SANAS accredited laboratory was also visited and certain observations were made which will require a follow-up discussion with the authority. Nevertheless the Department notes Ethekwini’s efforts to adhere to the requirements of SANS 17025 and regard this to be commendable.

The integrated monitoring programme between Umgeni Water and Ethekwini might need to be improved to ensure that the auditors’ concern of possible risk of corrosive water distribution is well managed.

The preparation of municipal officials for the assessment was not on par with what is generally expected, however the performance instilled confidence in the manner drinking water quality is being managed by Ethekwini Metro and Umgeni Water.

### **Drinking Water Quality Compliance**

According to compliance data available on the Blue Drop System, the City and Water Board maintains excellent compliance with the national standard for drinking water (SANS 241:2006). The compliance records indicate a consistent compliance of higher than 99% (99.39%) on average for both microbiological and more than 99.9% for chemical determinands.



**Figure 2: Dosing process at Ethekwini Treatment**

### **Work Treatment Technology and Infrastructure**

The Kloof water treatment facility is providing 3.5 MI/d with a design capacity of 5MI/d. This is indicative of good asset management and is reflected in the general appearance of this works. The audit team was impressed with the knowledge levels of the process controllers on duty; who answered questions and performed a backwash procedure according to expectations.




The Durban Heights water treatment facility can still be regarded as one of the most presentable works in South Africa. It is managed and operated by staff that is very well versed on different procedures and processes in the plant. They impressed the audit team with a level of enthusiasm which portrays them as professional and highly committed.

The Montille Reservoir was inspected and was found to be in a good condition with no visible leaks. Yet questions were raised with regards to the cleaning procedures and access control to this facility. The auditor could not find a schedule on when reservoir was last cleaned of sediment nor could any trace be found of such an activity taking place recently. There certainly is room for improvement with the general management and maintenance of this reservoir.

### **2010 Blue Drop Status**

No significant shortcoming has been identified to date to suggest that the Ethekwini water supply system would lose its prestigious Blue Drop status for the 2010 cycle. The performance of Umgeni Water was equally impressive and therefore an inspiring Blue Drop score of 96.08% was achieved for the 2010 cycle. The responsible entities ensured that the City of Ethekwini maintain its prestigious Blue Drop status for excellent drinking water quality management.



Blue Drop 2010 Score	95.05%	
Actual DWQ Compliance (Microbiological)	99.78%	
Actual DWQ Compliance (Chemical)	99.45%	

### Audit Impression

The Mangaung audit was split in two since the Municipality takes responsibility of treatment from the Maselspoort plant which is providing the eastern suburbs and inner-city. Bloem Water is the bulk provider for the western suburbs; feeding from the Welbedacht water treatment works.

The audit team was of the opinion that the municipal officials interviewed during the audit were impressive in their display of competence and commitment towards drinking water quality management. This carried through to the results of the audit being rather positive; instilling confidence that the drinking water supply of Mangaung is well managed.

The municipality’s recent commencement of using the Blue Drop System allows the Department to have an ongoing platform to monitor DWQ performance. Unfortunately a regulatory void is created by the lack of data submission by Bloem Water. Just as unfortunate would be Bloem Water’s preparation for the audit which certainly was not on par with what is expected from the water utility.

Nevertheless available records shows that there is sufficient reason to be confident that drinking water of good quality is being supplied and will be carried through during the World Cup tournament and beyond.

### Drinking Water Quality Compliance

Good quality water from bacteriological and chemical perspective has continuously exceeded the 99% limit. This indicates that the municipality and water board strives towards supplying water of a excellent quality to its constituency.

## **Treatment Technology and Infrastructure**

The audit teams inspected the Maselspoort and Welbedacht water treatment facilities, as well as the Arboretum reservoirs. A third water treatment facility, Rustfontein works (operated by Bloem Water) would also have been assessed but no one was available to answer the auditors' questions.

The general condition of the Maselspoort facility is regarded as well maintained which could serve as an indication of adequate asset management. However the general lack of documented proof of technical audits as well as a rather small maintenance budget tends to spoil a potential positive technical audit summary.




The tendency of the intellectual memory being confined to the minds of individuals is regarded by the audit team as a huge risk to the continued effective management of drinking water quality within the municipality. The documentation of standard operations procedures is highly recommended.

The Arboretum reservoir supplies water to the section of the city centre where the sports stadium is located. The condition of this reservoir was found to be acceptable. It was also found to be well secured with no sign of unauthorized entry.

## **2010 Blue Drop Status**

Noting that there is a possible boundary between the water supply from the Maselspoort water treatment works and the rest of the treatment facilities, no reason was found why Blue Drop status should not be reallocated to the Maselspoort water supply for the 2010 cycle. A very good score of 95.05% was achieved during the audit. An epic improvement is required for the management of the rest of the system before the Department can boldly award Blue Drop status to the entire Mangaung area.



Blue Drop 2010 Score	97.00%	
Actual DWQ Compliance (Microbiological)	>99.90%	
Actual DWQ Compliance (Chemical)	>99.90%	

### Audit Impression

The Department audited both Mbombela Local Municipality (Water Services Authority) and Silulumanzi, which is the concessionary supplier to the Nelspruit area. The audit took place on a day (2 December 2009) after massive rains and storms that caused havoc to treatment procedures. The upstream weir was damaged and this caused for excessively high turbidity levels ( $\pm 500$  NTU) in the raw water. Together with chemical dosing problems the New Nelspruit works were taken out of operation temporarily and water supply was left carried alone by the Old Works. It was therefore necessary to do a follow-up assessment in January 2010.

While the Silulumanzi representatives did well to answer all the questions of the auditors, the audit team was left concerned about the risk of both entities becoming dependant on singular highly skilled individuals. The commitment of these individuals is highly commendable and should certainly be regarded as valuable assets to both Silulumanzi and the Mbombela Municipality. The Department wishes to praise the effort of these employees who went at great lengths to provide information through various means even in private capacity to address the outstanding issues of the audit.

The audit also revealed that capacity building is required within the Mbombela Local Municipality before there could be complete confidence in the drinking water quality management of other water supply systems under the jurisdiction of the authority. This might not be the case for the specific water supply system of Nelspruit where the skills level of the concessionaire is deemed to be more than adequate.

The overall impression was a mixture of “good” and “not so good”; yet nothing to the extent of the Department losing faith in the abilities of the audited institutions. The efforts of Silulumazi to train the unemployed to become possible employees in the scarce-skilled fields of process controlling, is highly appreciated by the Department and exemplary to the sector.

Since this audit was only focusing on the water supply of the host city and not on adjacent towns, the Department will assess the rest of the areas serviced by Mbombela and Silulumanzi during the January 2010 Blue Drop assessments.

### **Drinking Water Quality Compliance**

The records of the Silulumanzi analyses provide sufficient proof that the business is committed to the provisioning of drinking water which is safe for human consumption. Besides the efforts during the audit to get the New Nelspruit works operational as well as to sustain a safe supply from the old works, the records display a positive trend.

It is on record that the quality complies well with the Blue Drop Requirement of more than 99% compliance for both microbiological and chemical determinands.

### **Treatment Technology and Infrastructure**

The general condition of the New Nelspruit works suggests that improvement in asset management is required. Even though the infrastructure is far from a state of dilapidation, it would be best if a concerted effort is made to improve the general state of assets through addressing the appearance thereof.




The general operations of the plant seem to be in acceptable order. The audit team noted the special efforts to align process controlling with the compliance monitoring processes.

The safety conditions of the plant, in terms of access control and exposed dosing equipment is regarded as issues requiring urgent intervention. Both elements could result into dire consequences to the wider Nelspruit community. This is an area that requires improvement urgently.

## 2010 Blue Drop Status

The Department can confirm that the Nelspruit system retains its prestigious Blue Drop status since a very good 97% was obtained during the 2010 Blue Drop audits and assessment.



Blue Drop 2010 Score	95.08%	
Actual DWQ Compliance (Microbiological)	98.90%	
Actual DWQ Compliance (Chemical)	98.59%	

### Audit Impression

The water supply systems of Nelson Mandela Bay were audited in October 2009 and subsequently again assessed on 15 January 2010. On both occasions the audit teams were very well received and very much impressed by the level of preparedness of the municipal unit management and team. This level of reception indicated the level of self-confidence reigning within the metro in its abilities to effectively manage drinking water quality. The Department was certainly not disappointed throughout the entire audit even though certain aspects were identified where improvement is required.

The metro certainly portrayed itself as a professional outfit with highly skilled managers and employees who are committed to the supply of safe drinking water. The huge investment underway into the upgrade and refurbishment of treatment infrastructure creates further confidence that there is an evident commitment to sustain and improve current efficacy levels.

During the initial audit the team split into four groups to inspect the disciplines of treatment; reticulation; monitoring and social aspects. These inspections led to the formulation of the following (improvement required) findings:

- The metro could improve its communication on its drinking water quality performance to the wider public since many community members interviewed displayed indifference, ignorance or a state of being misinformed.
- Operational monitoring such as the measurement of residual chlorine should be revisited since the transportation of samples to a central point of analyses could compromise accuracy of results.

- Incident management protocol at the treatment works could be improved. There is an incident management protocol in place but it requires improvement to ensure that all possible incidents and its limits are catered for.

During 2009 the Nelson Mandela Bay water supply system scored very well against the Blue Drop criteria but was penalized for the chemical compliance. It was evident during this audit that the officials were hard at work to prevent a repeat of this situation.

### **Drinking Water Quality Performance**

Monitoring records indicate that the drinking water complies well in terms of bacteriological quality (a microbiological compliance of 98.9%). There is also an indication that chemically the water quality improved beyond the 95% compliance limit set. The Department took confidence out of the observation that Total Trihalomethanes improved from 46% to 95% compliance over the assessment period.

It could therefore be accepted that the Nelson Mandela Metro is providing water which is safe to its constituency and will be capable to sustain this trend throughout the World Cup tournament and beyond.

### **Treatment Technology and Infrastructure**

The audit team was impressed by the neat and well-kept appearance of the two treatment works (Loerie and Elandsjacht) inspected. The condition of the Elandsjacht works brings this facility squarely into contention for recognition of one of the neatest works in South Africa. The need for the massive upgrade of Loerie is well understood, but it is also regarded as a pity that the antique equipment in this plant is now replaced with advanced technology. The condition of this antique equipment is once again indicative of excellent asset management practices. The audit also confirmed that sufficient budget (12% of the operational budget) is availed for maintenance.



**Figure 3: Loerie Water Treatment Works**

The team also inspected 12 reservoir sites across the Port Elizabeth area and found that all except for one was well kept and secured. The Kwanobuhle reservoir has a floating canvas top, which was torn and the water was exposed to secondary contamination since access to the reservoir was not secured. The municipality indicated during the audit that efforts were underway to improve the situation through bypassing this reservoir to another close by. This situation is regarded by the Department as a high risk which requires urgent attention even though it has no impact on the water supply to the soccer stadium or tourist accommodation centers. Yet due to the risk posed to the communities supplied from this reservoir, the Metro is urged to improve this situation soonest.

### **2010 Blue Drop Status**

The concerted effort by Nelson Mandela Metro to improve the management of drinking water quality over the past 12 months ensured that the Department acknowledges these enhancements by awarding Blue Drop status for the 2010 cycle. The municipality scored 95.08% during the assessment.

## Polokwane Local Municipality



Blue Drop 2010 Score	95.70%	
Actual DWQ Compliance (Microbiological)	99.12%	
Actual DWQ Compliance (Chemical)	99.79%	

### Audit Impression

The Department audited the City of Polokwane in December 2009 and reassessed in February 2010 due to the fact that inadequate communication compromised preparation for the initial audit. The Department notes the concerted effort made by Polokwane Local Municipality and Lepelle Water to improve and get documentation in place to improve its Blue Drop compliance scores. Most promising is the initiation of the Water Safety Plan process which will add tremendous value towards the sustainable supply of safe drinking water to Polokwane.

### Drinking Water Quality Performance

It was found that due to incorrect sample point listing on the Blue Drop system (BDS) the overall quality compliance calculation was erroneous for the City of Polokwane. This rectification however indicated that urgent disinfection improvement is required for borehole usage in the water supply systems serving smaller rural villages within the jurisdiction of the Water Services Authority.

The microbiological compliance for tap water quality within the City of Polokwane was recorded to be 99.12% while compliance for chemical health determinands over the past 12 months were recorded as 99.79%.

Even though the laboratory used is not SANAS accredited, a significant improvement in proficiency testing is noted. This is most encouraging and certainly a step in the right direction but the municipality is urged to seriously consider accreditation.

## **Treatment Technology and Infrastructure**

The audit team inspected three treatment facilities and some of the reservoirs in the city and made the following observations:




- There is a serious need for access control and security at both treatment works and reservoirs to be improved. The team gained access to these facilities without any questions being asked and was able to open manhole covers which were unprotected. It was also observed that these fencing had many holes in it and signs of customary unauthorized entry.
- The team was impressed with the knowledge of the plant manager and process controller accompanying the audit. The hand-written logbook is commendable since it speaks of an active and effective process control mechanism which seeks to continually improve tap water quality.

## **2010 Blue Drop Status**

While there remains room for improvement in the areas mentioned above, it has been an exceptional effort by the municipal and water board team to enhance the management of drinking water quality in all areas of the set Blue Drop criteria. The Department is encouraged by the improvements that are evident in the Polokwane drinking water quality management and therefore allocates the prestigious Blue Drop Certification for the water supply system of the City of Polokwane. A very good score of 95.70% was obtained for the 2010 assessment (while 70.5% was scored in the 2009 round); thus the first Blue Drop Certification for Polokwane.

## Rustenburg Local Municipality



Blue Drop 2010 Score	95.10%	 The Blue Drop Certification logo, which includes a blue water drop icon and the text "blue drop CERTIFICATION drinking water quality REGULATION".
Actual DWQ Compliance (Microbiological)	> 99.90%	 A large, 3D-style green checkmark indicating high compliance.
Actual DWQ Compliance (Chemical)	99.38%	 A large, 3D-style green checkmark indicating high compliance.

### Audit Impression

The Rustenburg Local Municipality (Water Services Authority), and two bulk providers, Rand Water and Magalies Water were interviewed as part of the Blue Drop audit for the Greater Rustenburg water supply system.

The monitoring records indicate that the quality of water supplied by both Magalies and Rand Water (bulk water providers) are of impeccable quality, which instill great confidence. The audit team however found that there were need for improvement in the manner the municipality monitors end-point and reticulation water quality. Since an official commitment was obtained for improvement in monitoring and incident management, the audit team was left with a higher level of confidence in the preventative management of Rustenburg water supply.

The water safety plan also requires improvement to ensure that no risks are left out of the equation between the bulk providers and authority as well as that municipal management takes ownership of the process to manage identified risks. The Department will continuously monitor performance in these areas and will reevaluate Blue Drop performance should the municipality fail to honour its commitments.

## **Drinking Water Quality Performance**

There is no doubt about the quality of the tap water since there is sufficient compliance records that at the point of bulk delivery the water is complying with the national standard and is certainly safe for human consumption.

Both Magalies and Rand Water satisfied the team that they are performing their tasks with excellence. There are sufficient records that serve as evidence that the bulk providers are supplying water of excellent quality into the greater Rustenburg water supply system. The quality of water exceeds the 99% Blue Drop compliance requirement for both microbial (99.99%) and chemical determinants.

Therefore the Department is confident that the residents and visitors to Rustenburg are supplied with safe water and that in spite of some minor managerial shortcomings this would be sustained throughout the World Cup tournament and beyond.

## **Treatment Technology and Infrastructure**

There is sufficient evidence to conclude that treatment and process control is on par with regulatory expectations even though room for improvement in the areas of chemical dosing responsibility has been identified.

Security at the reservoirs requires some improvement regarding access control and safeguarding manholes. The construction of an additional reservoir is well underway but there is doubt about the projected date of completion which is said to be ahead of the FIFA 2010 World Cup tournament. Nevertheless the Department is encouraged by the sign of significant infrastructure investment. Every effort is required to commission this additional infrastructure prior to the World Cup tournament.

The Department is yet to be convinced about asset management of the reticulation system but hope to get greater clarity on this issue soon.

## 2010 Blue Drop Status

The excellent performance of the two bulk providers, as well as the commitment obtained from the authority to improve monitoring and incidence management, provides sufficient reason for the Department to issue Blue Drop Certification to the Rustenburg supply system. A credible score of 95.10% is achieved during the 2010 audits which suggests that there reign's adequate confidence in drinking water quality management excellence levels in this area.



## Conclusion

The next Blue Drop report (2010) will be released later this year and this will serve as the final regulatory finding of the South African DWQ management for the 2010 cycle and will be widely communicated. As an ongoing measure of informing the general public an electronic facility was generated on the Blue Drop System ([www.dwa.gov.za/bluedrop](http://www.dwa.gov.za/bluedrop)) where interested parties can be informed on the actual drinking water quality of any town or city. This facility is called "My Water". During Water Week the Department will be increasing its marketing of this facility, locally and internationally.

This audit round produced sufficient evidence that South Africa may market its tap water as the preferred thirst quencher since the quality thereof is on par with the expectations of the World Health Organisation. The Department will proceed with its regulatory efforts to improve overall management of drinking water quality at all levels to ensure that the quality be sustained throughout the World Cup tournament and beyond.

