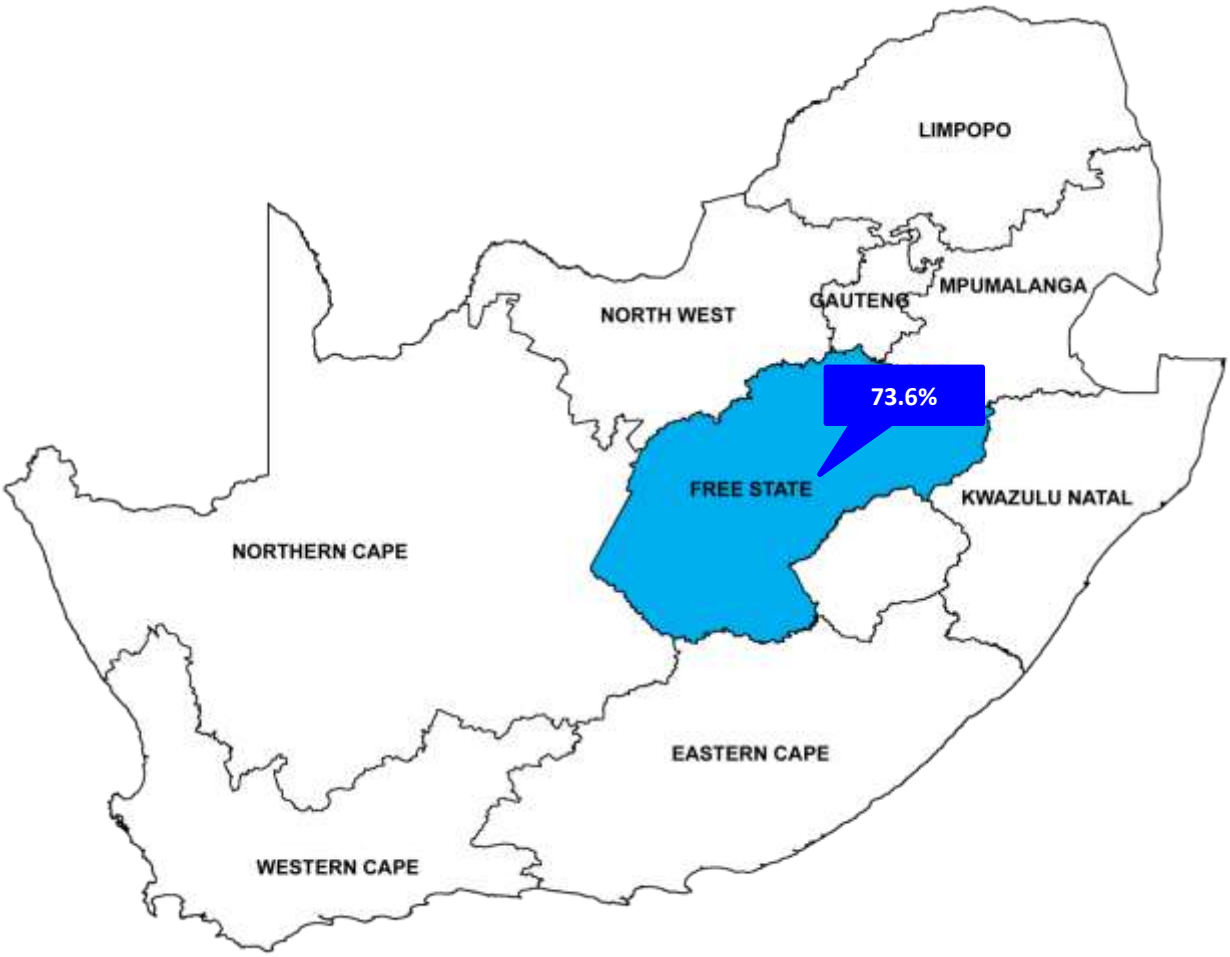


Provincial Best Performer

Matjhabeng Local Municipality is the best performing municipality in the Free State Province with support from Sedibeng Water Board as their Service Provider. The Municipal Blue Drop Score of **94.72%** was achieved. Congratulations!

Blue Drop Provincial Performance Log – Free State

Water Services Authority	Provincial Blue Drop Log Position	Blue Drop Score 2012	Blue Drop Score 2011	Blue Drop Score 2010
Matjhabeng LM (+ Sedibeng Water)	1	94.72	79.91	47.3
Tswelopele Local Municipality	2	92.42	54.71	49.9
Metsimaholo LM (+ Rand Water)	3	89.49	48.86	0
Setsoto Local Municipality	4	89.00	88.64	33.1
Maluti- a- Phofung LM (+ Map Water)	5	86.00	88.94	65.8
Mangaung LM (+ Bloem Water)	6	84.45	84.69	95
Mohokare Local Municipality	7	77.04	80.1	46.3
Kopanong LM (+ Bloem Water)	8	68.7	43.81	60.2
Dihlabeng Local Municipality	9	68.59	30.76	4.9
Nala LM (+ Sedibeng Water)	10	67.23	58.9	63.6
Moqhaka Local Municipality	11	54.93	21.76	0
Naledi LM (+ Bloem Water)	12	51.03	38.69	47.5
Letsemeng Local Municipality	13	49.98	54.69	42.5
Mantsopa LM (+ Bloem Water)	14	47.09	38.48	27.5
Tokologo Local Municipality	15	25.46	20.35	11.8
Ngwathe LM (+ Rand Water)	16	20.59	45.37	25
Nketoane Local Municipality	17	18.57	6.33	20.5
Mafube Local Municipality	18	18.16	15.25	10.6
Phumelela Local Municipality	19	17.9	3.82	0
Masilonyana Local Municipality	20	11.4	6.49	6.2

Top 3

The Department wishes to acknowledge and congratulate Matjhabeng Local Municipality, together with Sedibeng Water Board, for achieving the Provincial Top Performer Award. While this surely is regarded as a pleasant surprise, the second and third place was completely unexpected as well. By a very small margin, Tswelopele Local Municipality came a close and impressive second, with Metsimaholo Local Municipality completing the Provincial Blue Drop podium. These water services institutions are commended for their excellent performance in the 2012 Blue Drop cycle and we trust that they will not rest on their laurels since others are encouraged to endeavour for similar status next time round.

Most Improved

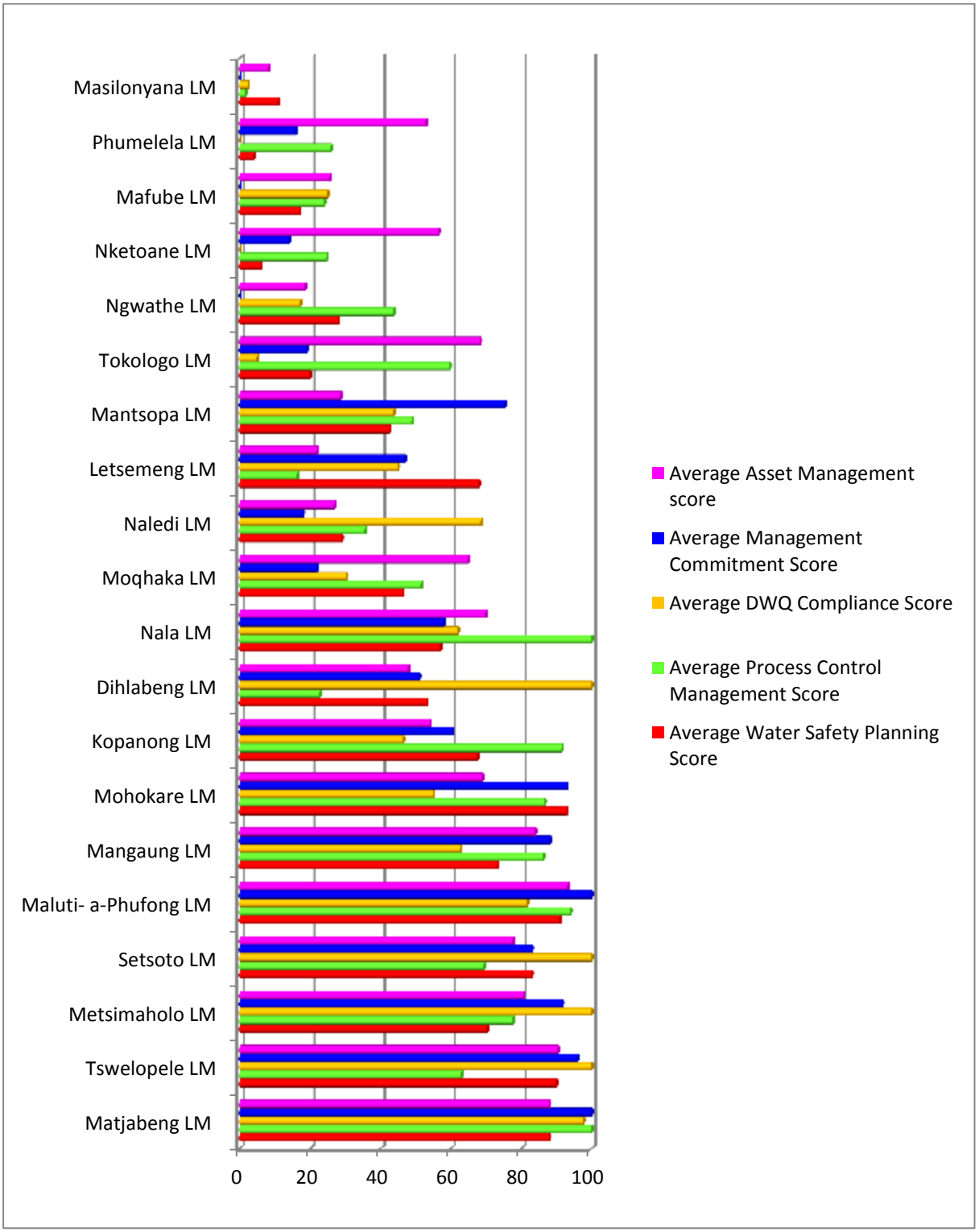
Metsimaholo Local Municipality is acknowledged for tremendous and consistent improvement in performance over the past 3 years. The municipal score for this Water Service Authority increased from a 0% in 2010, to 48.86% in 2011 and an impressive 84.49% in 2012.

Lowest Performer(s)

The lowest performers are listed as Masilonyana, Phumelela, Mafube, Nketoane, Ngwathe and Tokologo Local Municipalities. Since these municipalities are found to be consistently performing below the desired standard, and evidently have no defence mechanisms against the host of risks posed to safe

water supply, serious attention are urgently required to remedy the situation.

2012 Blue Drop Performance Comparator - Free State



Some interesting observations from the Free State performance log:

- Matjhabeng Local Municipality, together with Sedibeng Water, are indeed worthy provincial log leaders for 2012 since they managed to score more than 80% overall for each of the Key Performance Areas as per the set Blue Drop Requirements. This is the only municipality that achieved this feat in the Free State province.
- Setsoto Local Municipality, 2011 Log Leader, unfortunately dropped to fourth place this time around. It is however noticed that while this municipality maintained an excellent compliance record, it did not manage to achieve similar performance for Process Control and Asset Management.

BLUE DROP ASSESSMENT ANALYSIS (FREE STATE)					
Category	**2009**	**2010**	**2011**	**2012**	**Trend**
Number of Municipalities audited	11 (17) 65%	17 (17) 100%	20 (20) 100%	20 (20) 100%	(→)
Number of water systems audited	26	58	76	79	(↑)
Number of Blue Drop Awards	13	24	34	7	(↑)
Provincial Blue Drop score	40.03%~~54.3%~~	48.5%~~79.4%~~	64.10%~~77.3%~~	82.1%	(↑)

Blue Drop Certified Systems

Log Status	Blue Drop Certified System	Blue Drop Score	Water Services Authority	Water Services Provider
1	Qwa-Qwa: Phahameng, Cornet, Makwane & Lusaka	97.20%	Maluti-a-Phofung Local Municipality	Map Water
2	Harrismith	96.32%	Maluti-a-Phofung Local Municipality	Map Water
3	Allanridge	95.24%	Matjhabeng Local Municipality	Sedibeng Water
4	Henneman	95.24%	Matjhabeng Local Municipality	Sedibeng Water
5	Ventersburg	95.24%	Matjhabeng Local Municipality	Sedibeng Water
6	Virginia	95.24%	Matjhabeng Local Municipality	Sedibeng Water
7	Welkom	95.24%	Matjhabeng Local Municipality	Sedibeng Water

Water Services Authority	**Dihlabeng Local Municipality**
Water Services Provider(s)	**Dihlabeng Local Municipality**
Municipal Blue Drop Score:	**68.59%**

Performance Area	Systems	Bethlehem	Clarens	Fouriesburg	Paul Roux
Water Safety Planning (35%)		**57**	**53**	**52**	**52**
Treatment Process Management (10%)		**54**	**15**	**15**	**15**
DWQ Compliance (30%)		**100**	**100**	**100**	**100**
Management, Accountability (10%)		**51**	**51**	**51**	**51**
Asset Management (15%)		**61**	**44**	**47**	**44**
Bonus Scores		3.11	0	0.46	0
Penalties		-0.91	-1.15	-1.14	-1.16
Blue Drop Score (2012)		**71.74% (↑)**	**60.51% (↑)**	**61.25% (↑)**	**60.33% (↑)**
2011 Blue Drop Score		31.49%	24.49%	27.88%	23.01%
2010 Blue Drop Score		04.88%	04.88%	04.88%	04.88%
System Design Capcity (Ml/d)		40	2	6.9	0.528
Operational Capacity (% ito Design)		55.82	130.00	72.46	100.00
Population Served		109 000	6 500	12 001	6 500
Average daily Consumption (l/p/d)		366.97	400.00	416.63	81.23
Microbiological Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**	**>99.9%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**	**>99.9%**

Performance Area	Systems	Rosendal
Water Safety Planning (35%)		**52**
Treatment Process Management (10%)		**15**
DWQ Compliance (30%)		**100**
Management, Accountability (10%)		**51**
Asset Management (15%)		**44**
Bonus Scores		0
Penalties		-1.16
Blue Drop Score		**60.33% (↑)**
2011 Score		24.10%
2010 Score		04.88%
System Design Capacity (Ml/d)		No Information
Operational Capacity (% ito Design)		No Information
Population Served		7 597
Average daily Consumption (l/p/d)		131.63
Microbiological Compliance (%)		**>99.9%**
Chemical Compliance (%)		**>99.9%**

Regulatory Impression

As reflected in the 2012 Blue Drop scores, the DWA is proud to report a significant improvement in drinking water quality management practices implemented at the Dihlabeng Local Municipality compared to the previous assessment. An aspect to highlight is the improved availability of data to calculate microbiological and chemical compliance in each of the supply systems in the latter part of the year. The Department noted that unresolved issues with management prevented monitoring during the first few months of the year.

The Dihlabeng Local Municipality is further encouraged to continue work on their water safety plans; including specifying control measures for each identified risk; and setting timeframes for implementation of improvements for high priority risks. It is, however, important to set realistic target dates. To ensure overall management of drinking water quality according to the international best practice approach of water safety planning, municipal management should maintain their support by availing sufficient funds to undertake this process. In addition, funds should also be used to ensure updated Operation and Maintenance manuals at each of the treatment plants, to address findings identified following the process audits of the plants undertaken by Sedibeng Water, and also to update information regarding the design and operational flow of the various treatment plants.

While the WSA confirms through the risk assessment process, that the Paul Roux treatment plant is able to continuously treat water to a standard acceptable for drinking without immediate resolution of the components of the plant which are in a poor condition, turbidity and residual chlorine operational and compliance monitoring is required to commence in all the supply systems. Data should be submitted to DWA at a monthly frequency, data in 2011 was only submitted for the Bethlehem / Bohlokong supply systems.

Process controlling at most of the treatment plants was again found not to comply with all the requirements of Regulation 2834 (to be replaced by Regulation 17). While DWA again encourages the WSA to ensure opportunities to improve the capacity of the appointed staff, the registration/classification status of staff needs to be confirmed. This will enable improved identification of shortcomings and appropriate training required to improve the skills of the appointed staff. Process Controllers should also capture daily activities in logbooks at all treatment plants. While DWA was presented with a logbook for the Saulspoort WTW, the information was found to be limited to the operational monitoring data.

Site Inspection Scores:

Clarens:	**43%**
Saulspoort:	**59%**

The annual average production (2.6 Ml/day) of Clarens WTW exceeds the design capacity (2 Ml/day).

The Clarens and Saulspoort WTWs were visited to verify the Dihlabeng Local Municipality Blue Drop findings. Overall, the site inspection impression of Clarens WTW was poor, while Saulspoort WTW presented an improved impression of drinking water quality management and the water treatment process.

Areas requiring improvement at the **Clarens** WTW include:

- The overall appearance of the WTW requires attention, and consideration should be given to the

health and hygiene requirements of the workers;

- Non-compliance with Regulation 17: Two Class 0 Process Controllers operate this Class C works and registration certificates are not displayed in a prominent place at the WTW;
- Operational monitoring should be extended to the raw water and after filtration. pH monitoring is required to be implemented on the final water, and the frequency of operational monitoring increased to at least 3 times per day (every 8 hours);
- No maintenance logbook exists at the site;
- The O&M Manual was not available at the Clarens WTW, and similarly no Incident Management Protocol, Register or Emergency Contact Lists was available at the site. While the Protocol has been drafted, it must be implemented at each site as a matter of urgency;
- Inflow measuring devices were not in place at the raw water intake;
- No mechanism exists to remove solids and debris from the raw water;
- The dosing rate was not calculated according to coagulation dosing calculations (jar tests);
- There was no flocculant dosing standby system available;
- There were no standby or backup chlorine dosing systems at the Clarens WTW, and the storage capacity kept on site was inadequate. Also, there was no system (scale, indicator or switch-over device) to monitor the amount of gas left in the containers;
- There was also no chlorine safety equipment available (alarm, detector, extractor fan, masks);
- The flocculation unit was not in a very good condition, with a mechanical stirrer installed but not functioning;
- The sludge dams were not well maintained, and were overgrown with reeds.

Access to Clarens WTW is well controlled

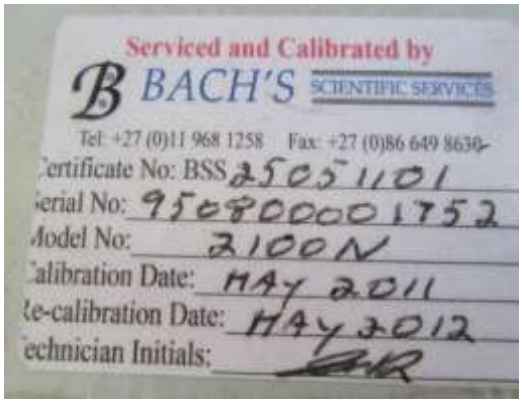
The sludge dams are overgrown with reeds

Areas requiring improvement at the **Saulspoort** WTW include:

- The physical appearance of the WTW was good, with the grass cut, and the facility well secured and manned by a security guard. However, the cattle kept on the WTW property must be removed;
- Non-compliance with Regulation 17 with only one Class IV Process Controllers operating this Class B works, and the remainder of Process Controllers either Class 0 or unregistered;
- No maintenance logbook exists at the site. The O&M Manual, while available, was not accessible at the Saulspoort WTW, and as with Clarens WTW, no Incident Management Protocol, Register or Emergency Contact Lists were available at the site;
- It is unacceptable for the guide for calculating dosage rate to be kept in the locked WTW

supervisor's office;

- There was no standby chlorinator at the Saulspoort WTW, and also no measuring device to monitor the amount of gas left in the containers;
- There were signs of significant floc carry-over at three of the four clarifiers; and
- The sludge dams were not operational - a holding tank diverts the flow to the river.



The turbidimeter is calibrated annually

Weekly jar tests are done to optimise the coagulant regime but no records are kept

Water Services Authority	Kopanong Local Municipality
Water Services Provider(s)	Bloem Water [a]
Municipal Blue Drop Score:	**68.70%**

Performance Area	Systems	Bethulie [a]	Trompsburg [a]	Springfontein [a]	Edenburg [a]
Water Safety Planning (35%)		**70**	**70**	**70**	**73**
Treatment Process Management (10%)		**99**	**100**	**100**	**100**
DWQ Compliance (30%)		**60**	**60**	**52**	**59**
Management, Accountability (10%)		**71**	**71**	**71**	**71**
Asset Management (15%)		**65**	**65**	**65**	**65**
Bonus Scores		3.23	3.24	3.50	3.17
Penalties		0	0	0	0
Blue Drop Score (2012)		**72.45% (↑)**	**72.34% (↑)**	**70.13% (↑)**	**73.02% (↑)**
2011 Blue Drop Score		48.89%	47.59%	41.59%	25.54%
2010 Blue Drop Score		58.13%	58.13%	58.13%	Not Assessed
System Design Capacity (Ml/d)		6	6	6	160
Operational Capacity (% ito Design)		33.33	33.33	33.33	1.25
Population Served		16 000	10 000	10 000	7 000
Average daily Consumption (l/p/d)		125.00	200.00	200.00	285.71
Microbiological Compliance (%)		**98.8%**	**97.8%**	**96.5%**	**96.1%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**	**>99.9%**

Performance Area	Systems	Reddersburg [a]	Gariep [a]	Jagersfontein [a]	Fauresmith [a]
Water Safety Planning (35%)		**73**	**70**	**71**	**41**
Treatment Process Management (10%)		**100**	**100**	**75**	**75**
DWQ Compliance (30%)		**59**	**60**	**0**	**27**
Management, Accountability (10%)		**71**	**71**	**59**	**59**
Asset Management (15%)		**65**	**42**	**42**	**32**
Bonus Scores		3.17	3.60	5.25	5.25
Penalties		0	0	-2.50	-2.50
Blue Drop Score		**73.02% (↑)**	**69.32% (↑)**	**47.30% (→)**	**43.15% (→)**
2011 Score		26.54%	46.17%	Not Assessed	Not Assessed
2010 Score		Not Assessed	71.00%	Not Assessed	Not Assessed
System Design Capacity (Ml/d)		160	2.8	0.5	No information
Operational Capacity (% ito Design)		1.25	71.43	40.00	No information
Population Served		7 000	7 000	7 000	5 000
Average daily Consumption (l/p/d)		285.71	285.71	28.57	200.00
Microbiological Compliance (%)		**96.7%**	**>99.9%**	**88.0%**	**89.9%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**93.0%**	**>99.9%**

Performance Area	Systems	Philippolis [a]
Water Safety Planning (35%)		**71**
Treatment Process Management (10%)		**75**
DWQ Compliance (30%)		**41**
Management, Accountability (10%)		**71**
Asset Management (15%)		**46**
Bonus Scores		4.35
Penalties		-0.52
Blue Drop Score		**62.37% (↑)**
2011 Score		45.93%
2010 Score		53.50%
System Design Capacity (Ml/d)		1.2
Operational Capacity (% ito Design)		83.33
Population Served		4 000
Average daily Consumption (l/p/d)		250.00
Microbiological Compliance (%)		**94.1%**
Chemical Compliance (%)		**>99.9%**

Regulatory Impression

Kopanong Local Municipality displayed noteworthy improvements in their approach to drinking water quality management. This was evident in an improved score for almost all of the supply systems. The Department is also confident that the increased data submission in particular, allowed for an improved evaluation of the drinking water quality compliance per supply system. Although the municipality is still required to improve their monitoring, DWA acknowledged the data submitted by the municipality during the 2011 assessment cycle.

While DWA again applauds Bloem Water on their data submission, Bloem Water is, however, requested to contact DWA to discuss required changes to improve their profile on the BDS. Monitoring responsibilities of the WSP are required to be formalised and clearly indicated to the Department. DWA also needs additional clarity on the Bethulie, Trompsburg and Springfontein compliance monitoring programmes to ensure that compliance associated with the Bethulie treatment works and connected distribution networks is accurately reported. Until such time that clarity is obtained, the difference in the drinking water quality compliance reported for the Bethulie, Trompsburg and Springfontein can therefore only be attributed to factors in the distribution networks affecting the quality of the water. The WSA is also required to investigate the fluctuating water qualities at the points of use, and to confirm the quality of the borehole water.

At future assessments, the WSA and WSP will be required to provide information to confirm that the water safety planning process undertaken for each of the supply systems is system specific and addresses the risks and monitoring needs associated with each system.

The WSA, along with its service provider, is requested to continue to work on their water safety plans. The DWA requires the Kopanong Local Municipality, on completion of the process, to register risk-based compliance monitoring programmes for each system on the Blue Drop System as a new requirement of SANS 241: 2011. The WSA / WSP should also immediately address the microbiological water quality

failures reported in the Jagersfontein, Fauresmith and Philippolis supply systems since the water has been deemed to pose a risk of microbiological infection to consumers. Furthermore, fluoride failures in the Jagersfontein system require close monitoring, and treatment processes must be optimised to prevent any health effects which could ensue after prolonged exposure.

Site Inspection Scores:

Bethulie: 96%

The Bethulie WTW was visited to verify the Kopanong District Municipality Blue Drop findings. Overall, the site inspection impression was very good, with a well managed process.

Areas requiring improvement at the **Bethulie** WTW include:

- The O&M Manual was not at the Bethulie WTW at the time of inspection. This is a vital document which should always be available to guide Process Controllers on the correct operation and maintenance of the WTW;
- While an emergency contact list was present, no drinking water quality Incident Management Protocol existed to guide Process Controllers on the actions to be taken during a failure; and
- Occupational Health and Safety issues require attention since the chemical area was not bunded and no eyewash or emergency shower existed.

Lime dosing at the Bethulie WTW

Chlorine storage: greater than 30 days capacity

Water Services Authority	**Letsemeng Local Municipality**
Water Services Provider(s)	**Letsemeng Local Municipality**
Municipal Blue Drop Score:	**49.98%**

Performance Area	Systems	Koffiefontein	Petrusburg	Jacobsdal	Luckhoff
Water Safety Planning (35%)		**68**	**68**	**68**	**68**
Treatment Process Management (10%)		**22**	**15**	**15**	**15**
DWQ Compliance (30%)		**45**	**45**	**45**	**45**
Management, Accountability (10%)		**47**	**47**	**47**	**47**
Asset Management (15%)		**21**	**26**	**21**	**21**
Bonus Scores		7.50	0	3.00	3.00
Penalties		-2.50	-2.50	-2.50	-2.50
Blue Drop Score (2012)		**52.44% (↑)**	**44.91% (↓)**	**47.24% (↓)**	**47.24% (↓)**
2011 Blue Drop Score		50.65%	50.00%	70.51%	51.00%
2010 Blue Drop Score		42.50%	42.50%	42.50%	42.50%
System Design Capacity (Ml/d)		6	No information	2.88	0.132
Operational Capacity (% ito Design)		100.00	No information	100.00	100.00
Population Served		13 000	8 164	8 102	6 042
Average daily Consumption (l/p/d)		461.54	122.49	355.47	21.85
Microbiological Compliance (%)		**91.7%**	**91.9%**	**93.0%**	**92.6%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**	**>99.9%**

Performance Area	Systems	Oppermansgronde
Water Safety Planning (35%)		**68**
Treatment Process Management (10%)		**15**
DWQ Compliance (30%)		**45**
Management, Accountability (10%)		**47**
Asset Management (15%)		**21**
Bonus Scores		3.00
Penalties		-2.50
Blue Drop Score		**47.24% (↓)**
2011 Score		51.30%
2010 Score		42.50%
System Design Capacity (Ml/d)		1.73
Operational Capacity (% ito Design)		28.90
Population Served		1 500
Average daily Consumption (l/p/d)		333.33
Microbiological Compliance (%)		**87.0%**
Chemical Compliance (%)		**>99.9%**

Regulatory Impression

The Blue Drop performance of the Letsemeng Local Municipality remained constant. However, it is regrettable that the Department again noted the unacceptable microbiological water quality in the Petrusburg, Jacobsdal, Luckhoff and Oppermansgronde supply systems. While the water quality was previously reported as acceptable in the Koffiefontein system, available data now also shows a number of *E. coli* failures in this system. Furthermore, although the Department noted that the municipality commenced activities to educate the public on the "My Water" functionality, very little has been done to inform the public of the health risk that the water poses.

The Department again requires that the municipality improves disinfection procedures at all the treatment plants (including the boreholes), it immediate wants information of the steps that will be taken to improve treatment. Residual chlorine monitoring is required to commence without delay to assess the effectiveness of the disinfection process at the point of consumption. The Department noted the enthusiasm of Mr Lucky Leshabanethe to improve the performance of the Letsemeng Local Municipality, and trusts that Mr Leshabanethe will follow his responsibilities as an Environmental Health Officer to ensure that the public is made aware of the risks.

Municipal management needs to demonstrate their commitment and leadership through providing the funding and resources that are required to ensure improvement in the performance of the municipality. Asset management is an area that requires additional attention; the Department was again informed that the municipality still awaits the reports from the process audits undertaken some time ago. Most process controlling staff is not classified against Regulation 2934 and until such time that the WSA ensures registration of all their staff, the Department has to question the ability of the staff to maintain treatment processes at the various plants. Daily recording of activities at the treatment plants are not recorded regularly, and this lack of information further prevents an assessment of the process control. The fact that the O&M manuals do not address all the required aspects further compounds the situation. Another observation that confirms that urgent attention must be given to asset management is the fact that the municipality cannot confidently (with flow records) confirm the design capacity of the plants, nor do they have information on the average daily production.

On a positive note, the Department encourages the WSA to continue their work to further improve their water safety planning process, and the comprehensive chemical compliance monitoring programme is also recommended to continue.

The communities and visitors to the towns of Letsemeng Local Municipality are warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality to proof that the water can be consumed without a risk of infection.

Site Inspection Scores:

Koffiefontein:	**49%**
Oppermansgronde:	**45%**
Petrusburg:	**28%**

The Koffiefontein, Oppermansgronde and Petrusburg WTWs were visited to verify the Letsemeng Local Municipality Blue Drop findings. Overall, the site inspection impression was unsatisfactory with many areas requiring improvement to ensure the safe production of drinking water and the protection of public health.

Areas requiring improvement at the **Koffiefontein** WTW include:

- Overall site condition was poor, with several unsafe areas and extremely poor housekeeping. While access to the facility was controlled, the fence was in poor condition;
- While a Drinking water quality Incident Management Protocol was not available at the time of inspection, emergency contact details were accessible;
- Inadequate operational monitoring was undertaken to enable process control:
- Turbidity monitoring was not executed correctly
- No records to prove turbidity meter calibration
- Two jar stirrers were available, but were not used to determine coagulation dosing
- While the inflow meter was recently repaired and readings were recorded, these readings were not used for process control;
- The availability of safety equipment (emergency showers, alarms, detectors, extraction fans, masks) was inadequate at the time of inspection;
- There was no standby pump to dose chlorine and inadequate chlorine storage capacity at the time of inspection (30 days storage is recommended);
- The filtration process required optimisation at the time of inspection:
    - Broken/blocked nozzles resulted in uneven bubble distribution during backwashing
    - The filter outlet became dirty during backwashing due to outlets not closing properly
    - The filter media surface was uneven and dirty
    - Algal growth inside the filters
- Water treatment sludge was discharged through reed beds to the river.

Poor condition of building at the Koffiefontein WTW

Algal growth in the filters

Areas requiring improvement at the **Oppermansgronde** WTW include:

- The following critical documents were not available at the Oppermansgronde WTW at the time of the site inspection:
  - Maintenance Logbook; and
  - Drinking water quality Incident Management Protocol – but emergency contact details were available
- While a basic O&M Manual was available, more relevant detail is recommended to be included;
- No records of calibration of operational monitoring equipment were available and free chlorine residual was not adequately determined;
- The dosing rate was not calculated according to coagulation dosing calculations (jar tests);
- Inflow measuring devices were not functional at the time of inspection;
- There was inadequate standby capacity of raw water pumps and one pump in the raw water canal was not functional at the time of inspection;
- There was no mechanism in place to remove debris at the raw water intake;
- The availability of safety equipment (emergency showers, alarms, detectors, extraction fans, masks) was inadequate at the time of inspection;
- There was inadequate standby capacity for flocculant dosing and no ladder was available to monitor the flocculation column;
- There were signs of floc carryover in the clarifiers at the time of the inspection, possibly due to an elevated up flow rate;
- The water treatment sludge was discharged to a dried up stream, resulting in erosion. There was inadequate standby capacity of the supernatant pumps.

Signs of floc carryover at the clarifier

Process water and sludge disposed of to a stream

Areas requiring improvement at the **Petrusburg** WTW include:

- The overall appearance of the WTW was poor, with no office available for the Process Controllers. Access control was also not adequate due to poor condition of fencing.
- The following critical documents were not available at the Petrusburg WTW at the time of the site inspection:
  - Maintenance Logbook
  - A comprehensive O&M Manual
  - Drinking water quality Incident Management Protocol and list of contact details
- Operational monitoring was undertaken but the results were not used to optimize the disinfection

process. No records of calibration of the operational monitoring equipment were available;

- Liquid chlorine was used for disinfection, but no stock was available on site. Disinfection of the water was inadequate at the time of the inspection.

Poor condition of the roof of the storage reservoir

Condition of the pumps at the Petrusburg WTW

No liquid chlorine or standby pump was available - HTH was dosed through the roof promoting further deterioration of roof

Water Services Authority	**Mafube Local Municipality**
Water Services Provider(s)	**Mafube Local Municipality**
Municipal Blue Drop Score:	**18.16%**

Performance Area	Systems	Frankfort-Cornelia	Villiers	Tweeling
Water Safety Planning (35%)		**17**	**17**	**17**
Treatment Process Management (10%)		**24**	**24**	**24**
DWQ Compliance (30%)		**25**	**25**	**25**
Management, Accountability (10%)		**0**	**0**	**0**
Asset Management (15%)		**28**	**27**	**22**
Bonus Scores		0	0	0
Penalties		-1.50	-1.50	-1.50
Blue Drop Score (2012)		**18.35 (↑)**	**18.24 (↑)**	**17.45 (↑)**
2011 Blue Drop Score		15.25%	15.25%	15.25%
2010 Blue Drop Score		10.63%	10.63%	10.63%
System Design Capacity (Ml/d)		9	3.6	3.4
Operational Capacity (% ito Design)		70.00	83.33	58.82
Population Served		56 630	32 000	15 624
Average daily Consumption (l/p/d)		111.25	93.75	128.01
Microbiological Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**

Regulatory Impression

While overall scores for the Mafube supply systems remain very low, the Department noted the effort of the WSA to commence monitoring of drinking water quality in all the supply systems towards the end of 2011. Furthermore, the WSA reported that a service provider has been appointed from early 2012, with particular emphasis on skills transfer to ensure that the newly appointed municipal staff is also capacitated. These actions, along with the processes recently commenced to undertake risk assessments and develop water safety plans in each of the supply systems, are further evidence that the municipality is taking steps to improve drinking water quality management in the Mafube Local Municipality.

Process control at all the treatment plants is, however, one essential aspect that needs immediate attention. The DWA Inspectors raised concern regarding the planned process control amendments at some of the treatment plants. The WSA is encouraged to get a second opinion before making significant treatment process changes. Process Controllers also need to be capacitated; and classification of the staff in terms of Regulation 2834 (to be replaced by Regulation 17) needs to be updated. It is also advised that the O&M manuals for each of the plants are updated and Process Controllers commence with daily recording of activities in logbooks.

Drinking water quality data confirms that water in each of the supply systems is safe for human consumption. The municipality is, however, encouraged to maintain monitoring for 12 months, and also confirm that a representative number of sample points are continuously monitored in each supply system. Improved monitoring will ensure that the Department has more confidence in the compliance calculated against the available data.

Site Inspection Scores:

Frankfort:	**41%**
Tweeling:	**56%**

The Frankfort and Tweeling WTWs were visited to verify the Mafube Local Municipality Blue Drop findings. Overall, the site inspection impression was unacceptable, with much improvement required before it can be stated with confidence that safe drinking water can be produced sustainably.

Areas requiring improvement at the **Frankfort** WTW include:

- The Frankfort WTW was in poor condition, with very limited preventative maintenance undertaken;
- The WTW registration certificate was not displayed at the Frankfort WTW;
- There was no access control at the WTW and cattle were observed on the property;
- Attention is required to be focused on operational monitoring:
  - No proof of calibration of operational monitoring equipment was available
  - Jar testing equipment was not functional and so dosing was not occurring according to coagulation dosing calculations
  - Free chlorine was incorrectly determined by the Process Controller on duty
- A number of improvements are required in critical documentation:
  - Limited information was recorded in the Maintenance Logbook
  - Several critical components were missing from the O&M Manual
  - The is no Incident Management Protocol (but a general municipal contact list was displayed)
- Several Occupational Health and Safety issues need urgent attention. There were no signs or demarcated areas, no emergency showers or eye washes and no chlorine safety equipment (alarms, detector and extractor fans) at the time of the inspection;
- The inflow measuring device was not functional;
- Chlorine was not being dosed at the time of the inspection due to non-payment of the supplier. This presents a serious public health risk;
- The water treatment process is recommended to be optimized and acceptable asset management practiced. The following were observed at the time of the site inspection:
  - Poor general condition of the flocculation unit with lots of foam at the end
  - Two of the six filters were out of commission; filter infrastructure was in poor condition and required cleaning
  - Inadequate backup for backwash pumps and air blowers
  - Uneven bubble distribution during backwashing
- The sampling point for free chlorine measurement may not be representative of all the water leaving the Frankfort WTW;
- Sludge dams were not well maintained.

Entrance to Frankfort WTW with no secure gate, signs or access control

Floating scum at end of flocculator

Reservoir roof in poor condition

Liquid chlorine room without any safety measures

Areas requiring improvement at the **Tweeling** WTW include:

- Similar to Frankfort WTW, the Tweeling WTW facility and infrastructure were in a poor condition, access control was inadequate and WTW registration certificate was not displayed. There was no documentation of maintenance undertaken and no Incident Management Protocol to guide actions to be taken when drinking water failures occur;
- There was inadequate consideration of Occupational Health and Safety issues;
- Operational monitoring was not acceptable, with no records of calibration, incorrect free chlorine determination, and no jar test equipment available;
- There was no standby lime or chlorine dosing equipment, and no monitoring of the chlorine remaining in the container;
- There was no backup for backwash pumps and air blowers, and the present equipment is in poor condition;
- The filter media surface was in poor condition with potential mudballs;
- Free chlorine is not measured at the correct point (outlet of the bulk storage reservoirs) representative of the water leaving the WTW.

The floor of the chlorination room

Filter walls dirty

Water Services Authority	**Maluti-a-Phofung Local Municipality**
Water Services Provider(s)	**Map Water** [a]
Municipal Blue Drop Score:	**86.0%**

Performance Area	Systems	[1] Qwa-Qwa: Phahameng [a]	Harrismith [a]	[2] Qwa-Qwa: Phuthaditjaba [a]
Water Safety Planning (35%)		**92**	**92**	**89**
Treatment Process Management (10%)		**97**	**85**	**100**
DWQ Compliance (30%)		**100**	**100**	**45**
Management, Accountability (10%)		**100**	**100**	**100**
Asset Management (15%)		**97**	**97**	**86**
Bonus Scores		0.89	1.16	5.42
Penalties		0	0	-0.56
Blue Drop Score (2012)		**97.20% (↑)**	**96.32% (↑)**	**82.28% (↓)**
2011 Blue Drop Score		95.74%	95.74%	86.54%
2010 Blue Drop Score		67.00%	65.00%	65.75%
System Design Capacity (Ml/d)		6.7	6.7	40
Operational Capacity (% ito Design)		89.55	89.55	87.50
Population Served		16 460	40 000	312 742
Average daily Consumption (l/p/d)		364.52	150.00	111.91
Microbiological Compliance (%)		**98.0%**	**99.5%**	**95.9%**
Chemical Compliance (%)		**99.9%**	**99.9%**	**99.9%**

[1] Qwa-Qwa: Phahameng, Comet, Makwane and Lusaka

[2] Qwa-Qwa: Phuthaditjaba, Bluegumbush, Mphatlalatsane, Setsing, Poelong and Kestel

Regulatory Impression

Maluti-A-Phofung, assisted by Map Water, once again confirmed that they are competent and committed to continuously provide drinking water of excellent quality to residents within their area of supply. The Department takes pleasure to announce that the municipality maintains Blue Drop status in the QwaQwa-Makwane and Harrismith-Wilge water supply systems. While the scores reflect that the required processes are in place to manage drinking water quality, the DWA Inspectors highlighted that the enthusiasm and commitment of all the staff responsible for drinking water quality management contributed significantly to the continued successes and implementation of good systems.

Microbiological failures, reported in the QwaQwa-Fika Patso water supply system (notably in November) prevented the DWA from awarding the Maluti-A-Phofung Local Municipality with another Blue Drop. With the majority of residents residing within this supply system, the Department takes some comfort that the failures will be addressed through plans to upgrade and re-configure the Fika-Patso water treatment works. Maluti-A-Phofung is, however, encouraged to expedite the upgrade, and also to speedily commission the proposed booster stations intended to address the disinfection problems and associated microbiological water quality failures. While the Department encourages the WSA / WSP to maintain the comprehensive operational and compliance monitoring programmes, implemented in the QwaQwa-Makwane and Harrismith-Wilge water supply systems, the DWA requires the WSA / WSP to address the chemical compliance monitoring programme in the QwaQwa-Fika Patso system. Data from the QwaQwa-Fika Patso system currently shows fewer samples collected in this larger supply system

compared to the smaller QwaQwa-Makwane and Harrismith-Wilge Blue Drop systems.

Site Inspection Scores:

Wilge: **91%**
Makwane: **89%**

The Wilge and Makwane WTWs were visited to verify the Maluti-a-Phofung Local Municipality Blue Drop findings. Overall, the site inspection impression was good, with neat, well operated, maintained and managed WTWs.

Areas requiring improvement at the **Wilge** WTW include:

- Visitor registration to the Wilge WTW is recommended to be implemented;
- There was no standby flocculant dosing pump (the WTW was being upgraded at the time of inspection and temporary equipment was being used for flocculant dosing);
- Occupational Health & Safety issues require attention at the Wilge WTW as emergency showers and eye washes were not available at the time of inspection;
- There was no scale to measure the remaining chlorine gas in the container and no switch over device, but an indicator on the chlorine dispenser was used;
- Optimisation of the flocculation and clarification process is recommended at the new plant.

Operational monitoring equipment is in good condition

Good condition of flocculant dosing pumps

Areas requiring improvement at the **Makwane** WTW include:

- Visitor registration to the Makwane WTW is recommended to be implemented;
- There was no standby flocculant dosing pump;
- Standby chlorine stock is not kept onsite. It is recommended that a Service Level Agreement is signed with the Service Provider to guarantee this arrangement;
- The chlorine gas remaining in the container was not monitored by scale or indicator and there was no switch over device. This requires attention to ensure the continuity of disinfection;
- The chlorine alarm was not functional at the time of inspection; and
- No standby was available for the supernatant pumps.

Operational monitoring equipment at the Makwane WTW

Chlorine gas used for disinfection

Water Services Authority	Mangaung Local Municipality
Water Services Provider(s)	Mangaung Local Municipality; Bloem Water [a]
Municipal Blue Drop Score:	**84.45%**

Performance Area	Systems	Mangaung-East (Maselspoort)	Mangaung-West [a] (Welbedacht)	Botshabelo [a] (Rustfontein)	Thaba Nchu [a] (Groothoek)
Water Safety Planning (35%)		**80**	**71**	**81**	**61**
Treatment Process Management (10%)		**85**	**100**	**95**	**65**
DWQ Compliance (30%)		**100**	**87**	**32**	**32**
Management, Accountability (10%)		**77**	**92**	**92**	**92**
Asset Management (15%)		**90**	**92**	**76**	**78**
Bonus Scores		3.32	4.68	5.28	7.55
Penalties		0	0	-2.24	-2.93
Blue Drop Score (2012)		**91.02% (↑)**	**88.27% (↑)**	**71.06% (↓)**	**62.69% (→)**
2011 Blue Drop Score		85.56%	85.90%	76.90%	Not assessed
2010 Blue Drop Score		95.05%	95.04%	91.77%	Not assessed
System Design Capacity (Ml/d)		145	160	100	18
Operational Capacity (% ito Design)		55.17	68.75	69.00	5.56
Population Served		300 000	400 000	500 000	40 000
Average daily Consumption (l/p/d)		266.67	275.00	138.00	25.00
Microbiological Compliance (%)		**99.3%**	**99.1%**	**92.1%**	**92.1%**
Chemical Compliance (%)		**99.4%**	**99.8%**	**99.9%**	**99.9%**

Regulatory Impression

DWA takes comfort in noting that the Mangaung Local Municipality has started to address some of the factors that prevented them from achieving Blue Drop status last year. The WSA is encouraged to continue the work to improve drinking water quality management. Ensuring that all responsible staff within the municipality participate in the continued improvement of the water safety planning process, and ensuring that their compliance monitoring programme includes a full set of SANS 241 analyses at least once a year in the Maselspoort supply system, are some of the aspects that the WSA can improve on. It is also recommended that the municipality improves relationships between internal stakeholders to ensure a more coherent approach to managing incidents. In addition, commitment from municipal management needs to improve to ensure that the very competent staff of the municipality has the resources to achieve their goal of once again achieving Blue Drop status.

Relationships between Bloem Water and Mangaung technical staff were noted to become more positive towards the completion of the 2011-2012 assessments. DWA trusts that all parties understand that a team effort is needed to improve drinking water quality management in partnership in the Mangaung West, Botshabelo and Thaba Nchu supply areas. On completion of the risk assessment process from catchment to consumer that involved representatives from both the WSA and WSP, the responsibility for compliance monitoring must be formalised. The fact that no evidence is available to substantiate that an agreement has been reached to clarify the monitoring responsibilities of the WSA and WSP, and the lack of a chemical compliance monitoring programme in the Mangaung West, as well as the complete lack of monitoring by the WSA in the Botshabelo and Thaba Nchu supply areas, are seen as serious shortcomings in the approach to drinking water quality management by the WSA.

While the DWA commends Bloem Water for addressing the numerous fluoride failures evident in the 2010 compliance data, unfortunately, a number of microbiological failures in the Botshabelo / Thaba Nchu systems indicate that the water now poses a risk of microbiological infection. The failures are evident in the final water from the Rustfontein treatment facility, and alarmingly, the point-of-use monitoring by the Water Board shows further deterioration. Lack of alignment and coordination in the approach to incident management between the WSA and WSP further negatively impacts the residents since the Water Board is not accountable to communicate the risk to consumers. It is essential that both parties put systems in place (improved disinfection) to improve point-of-use water quality as a matter of urgency.

The setup of supply systems on BDS needs to be further defined to allow system specific water quality assessments. Compliance data on BDS under the Bloem Water profile which has been submitted as one system resulted in DWA reported the same compliance for the two systems even though Thaba Nchu receives water from another treatment plant which might deliver a more acceptable water quality.

Site Inspection Scores:

Rustfontein: **89%**
Maselspoort: **86%**

The Rustfontein and Maselspoort WTWs were visited to verify the Mangaung Local Municipality and Bloem Water Blue Drop findings. Overall, the site inspection impression was good.

Areas requiring improvement at the **Rustfontein** WTW include:

- The WTW registration certificate was not displayed at the facility;
- In terms of general housekeeping of the filters, algae and some scum presence were noted on the side walls.

Areas requiring improvement at the **Maselspoort** WTW include:

- The WTW registration certificate was not displayed at the Maselspoort facility; and
- The overall appearance of the Maselspoort WTW was average, with some improvement in the maintenance of the garden/surroundings recommended;
- Available chlorine storage capacity was inadequate since there was not more than 30 days available on site;
- The emergency shower eye wash was not functioning adequately due to blockages;
- Sludge was discharged to river.

Water Services Authority	Mantsopa Local Municipality
Water Services Provider(s)	Mantsopa Local Municipality; Bloem Water [a]
Municipal Blue Drop Score:	**47.09%**

Performance Area	Systems	Excelsior [a]	Hobhouse	Ladybrand	Tweespruit
Water Safety Planning (35%)		**73**	**35**	**35**	**35**
Treatment Process Management (10%)		**81**	**41**	**41**	**41**
DWQ Compliance (30%)		**86**	**23**	**23**	**23**
Management, Accountability (10%)		**84**	**72**	**77**	**72**
Asset Management (15%)		**52**	**23**	**23**	**23**
Bonus Scores		3.64	7.50	7.50	7.50
Penalties		0	-1.50	-0.75	0
Blue Drop Score (2012)		**79.36% (↑)**	**39.78% (↑)**	**40.98% (↓)**	**41.28% (↑)**
2011 Blue Drop Score		48.25%	30.10%	48.08%	27.53%
2010 Blue Drop Score		24.25%	26.50%	28.50%	25%
System Design Capacity (Ml/d)		No information	No information	10.8	No information
Operational Capacity (% ito Design)		No information	No information	87.22	No information
Population Served		14 871	2 628	34 394	5 881
Average daily Consumption (l/p/d)		134.49	190.26	273.88	170.04
Microbiological Compliance (%)		**96.8%**	**78.6%**	**87.7%**	**91.2%**
Chemical Compliance (%)		**>99.9**	**>99.9**	**>99.9**	**>99.90%**

Performance Area	Systems	Thaba Phatchoa
Water Safety Planning (35%)		**35**
Treatment Process Management (10%)		**41**
DWQ Compliance (30%)		**64**
Management, Accountability (10%)		**72**
Asset Management (15%)		**23**
Bonus Scores		7.50
Penalties		-1.50
Blue Drop Score		**52.15% (↑)**
2011 Score		41.61%
2010 Score		24.25%
System Design Capacity (Ml/d)		No information
Operational Capacity (% ito Design)		No information
Population Served		1 600
Average daily Consumption (l/p/d)		312.50
Microbiological Compliance (%)		**96.2%**
Chemical Compliance (%)		**>99.9**

Regulatory Impression

Since 2010, Mantsopa Local Municipality has shown improvement in their drinking water quality management performance as measured through the Blue Drop Certification Process. However, the continued unacceptable microbiological water quality recorded in the Hobhouse and Tweespruit water supply systems unfortunately still infers that the water poses an unacceptable risk to public health. Microbiological data submitted during the 2011 year, indicates that the water in the Ladybrand supply system now also poses a health risk. The WSA was urged to address treatment deficiencies following the release of the 2011 Blue Drop Report, but the continued failures lead DWA to believe that municipal management has yet to take this warning to heart. Furthermore, it is of significant concern that the data indicates that the municipality has ceased to monitor residual chlorine, and until the WSA clarifies otherwise, the DWA is of opinion that this action was undertaken to hide the fact that the municipality still needs to improve disinfection. Until such time that the municipality can confirm that the water no longer poses a risk of microbiological infection, the Department of Water Affairs insists that Mantsopa Local Municipality issues boil water notices to clearly communicate this risk to the community.

Process control also needs to be addressed with some kind of urgency. The WSA should ensure that the Operation and Maintenance manuals for each of the plants address all aspects required to effectively guide the treatment operation, and Process Controllers should record daily activities in site-specific logbooks. The WSA should also note that until such time that the municipality confirms correct classification of their process controlling staff and their allocation per treatment plant, the Department has to report that process control is insufficient within the Mantsopa Local Municipality.

Acknowledgement was given for the commencement (review) of the water safety planning process in each of the supply systems, and the WSA is encouraged to continue this work and use the findings of the risk assessment to optimise the compliance monitoring programmes. While DWA takes pleasure in noting that chemical determinand monitoring has commenced in each of the supply systems, DWA cannot give full credit for the excellent chemical water quality as indicated by the monitored determinands until such time that the WSA provides proof that all risk defined determinands are being monitored. The onus is also on the WSA to prove that monitoring for less than six months resulted in enough data to calculate compliance.

Work done by Bloem Water improved the performance calculated for the Excelsior supply system. While DWA is confident that Bloem Water has systems in place to adequately identify and address drinking water quality failures, the relatively high number of *E. coli* failures in the Rustfontein final water, which were also evident in the pipeline-system taking water to Mantsopa, are of significant concern to the Department. Total coliform data showed similar trends, but this was not associated with a significant number of residual chlorine failures which would have been expected. Bloem Water is commended for their intensive microbiological and chemical monitoring programmes, and while monitoring continues, sampling and analytical techniques should be excluded as the reason for the unacceptable number of *E. coli* failures.

Site Inspection Scores:

Genoa:	**74%**
Tweespruit:	**68%**

The Genoa and Tweespruit WTWs were visited to verify the Mantsopa Local Municipality Blue Drop findings. Overall, the site inspection impression was satisfactory, but significantly improved operational monitoring is required to be implemented.

Areas requiring improvement at the **Genoa** WTW include:

- The WTW registration certificate was not displayed at the facility;
- The O&M Manual was not available at the Genoa WTW, and similarly no Incident Management Protocol, Register or Emergency Contact Lists were available at the site;
- Operational monitoring was inadequate at the time of the inspection with only free chlorine monitored once per week; pH, turbidity and conductivity monitoring is required to be implemented on the raw, process and final water at a minimum, and the frequency of operational monitoring increased to at least 3 times per day (every 8 hours);
- The inflow measuring device was not operational at the time of the inspection;
- Effective flash mixing was not taking place at the inlet works and dosing was not at the highest point of turbulence;
- There was no standby chlorine dosing system available;
- Health and safety issues require additional attention: Neither emergency showers nor eye washes were available and personal protection equipment (PPE) was lacking.

The overall appearance of the WTW requires attention

More than 30 days of Sud Floc 3535 was available

Areas requiring improvement at the **Tweespruit** WTW include:

- Similar to Genoa WTW, no registration certificate was displayed, no Incident Management Protocol, Register or Emergency Contact Lists were available and only operational monitoring of free chlorine was undertaken;
- The Maintenance Logbook was not available at the time of the inspection to indicate the whether regular maintenance is undertaken;
- No jar testing was undertaken to optimize coagulant dosing;
- The inflow measuring device was not operational at the time of the inspection;
- No mechanism is in place to remove solids and debris from the raw water;

- Health and safety issues require additional attention: Neither emergency showers nor eye washes were available and the chemical area was not bunded;
- No standby dosing systems for flocculant, chlorine or soda-ash were available;
- Inadequate sludge management – sludge and process water is wasted to a nearby veld area.

Flocculant dosing pumps

Pressure filters at Tweespruit WTW

Water Services Authority	**Masilonyana Local Municipality**
Water Services Provider(s)	**Masilonyana Local Municipality**
Municipal Blue Drop Score:	**11.40%**

Performance Area	Systems	Brandfort	Soutpan	Winburg	Theunissen
Water Safety Planning (35%)		**13**	**8**	**13**	**13**
Treatment Process Management (10%)		**8**	**0**	**0**	**15**
DWQ Compliance (30%)		**0**	**0**	**6**	**6**
Management, Accountability (10%)		**0**	**0**	**0**	**0**
Asset Management (15%)		**20**	**8**	**8**	**0**
Bonus Scores		3.00	3.00	7.50	3.00
Penalties		0	0	0	0
Blue Drop Score (2012)		**11.31% (↑)**	**7.01% (↑)**	**14.91% (↑)**	**10.79% (↑)**
2011 Blue Drop Score		03.88%	03.38%	09.08%	07.08%
2010 Blue Drop Score		07.00%	07.00%	07.00%	07.00%
System Design Capacity (Ml/d)		2.4	0.75	3.5	6.4
Operational Capacity (% ito Design)		100.00	100.00	100.00	100.00
Population Served		15 000	5 300	15 500	30 394
Average daily Consumption (l/p/d)		160.00	141.51	225.81	210.57
Microbiological Compliance (%)		**50.0%**	**No information**	**>99.9%**	**>99.9%**
Chemical Compliance (%)		**No information**	**No information**	**No information**	**No information**

Performance Area	Systems	Verkeerdevlei
Water Safety Planning (35%)		**8**
Treatment Process Management (10%)		**0**
DWQ Compliance (30%)		**0**
Management, Accountability (10%)		**0**
Asset Management (15%)		**5**
Bonus Scores		3.00
Penalties		0
Blue Drop Score		**6.56% (↑)**
2011 Score		04.43%
2010 Score		03.00%
System Design Capacity (Ml/d)		No information
Operational Capacity (% ito Design)		No information
Population Served		4 800
Average daily Consumption (l/p/d)		208.33
Microbiological Compliance (%)		**No information**
Chemical Compliance (%)		**No information**

Regulatory Impression

Although showing a slight improvement, the 2012 Blue Drop score of Masilonyana Local Municipality reflects poor management commitment and a lack of appropriate systems within the municipality to manage drinking water quality. Although legally required to continuously monitor the quality of drinking water, the WSA collected only a single sample in each the Brandfort, Winburg and Verkeerdevlei systems for both the months of February and March. This means that with an unsatisfactory six sets of data available to calculate the microbiological compliance, the Department cannot report that it has confidence that the drinking water supplied to residents within the jurisdiction of the municipality poses no risks to their health.

The assessment further indicated that processes are not in place to allow the optimised operation of any of the treatment facilities. While DWA takes note that some of the plants are in process of being upgraded, the WSA could not, with confidence, report the current design or operation capacity of any of the plants. The WSA also failed to adhere to repeated requests to ensure accurate classification of the treatment plants as required under Regulation 2834, and the WSA further failed to provide evidence on the Process Controllers responsible per treatment facility. Evidence of competency of the Process Controller staff needs to be provided, and daily activities should be recorded in logbooks. In addition, it is of utmost importance that Operation and Maintenance manuals are developed for each of the treatment plants.

Masilonyana Local Municipality is urged to take ownership of the Water Safety Plan developed for them. The DWA requires evidence within three months of release of this report that the WSA is confident that all risks has been identified, and an action plan must be developed to detail the implementation of control measure to address the shortcomings in management of drinking water quality. This also includes the immediate, continued sampling of drinking water in all the supply systems.

The communities and visitors to the towns of Masilonyana Local Municipality are warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality to proof that the water can be consumed without a risk of infection.

Site Inspection Scores:

Theunissen: **40%**

The Theunissen WTW was visited to verify the Masilonyana Local Municipality Blue Drop findings. Overall, the site inspection impression was unacceptable, and particular attention needs to be focused on filter refurbishment.

Areas requiring improvement at the **Theunissen** WTW include:

- The WTW registration certificate was displayed, but was registered in 1998 as Class C – reclassification is required;
- The following critical documents were not available at the Theunissen WTW at the time of the site inspection:
  - Maintenance Logbook
  - A comprehensive O&M Manual
  - Drinking water quality Incident Management Protocol and list of contact details
- No jar test equipment was available at the Theunissen WTW and the chemical dosage was only

determined by the chemical supplier;

- The inflow measuring device was located almost 3 km away from the WTW and the Process Controllers were expected to walk to take readings every morning, while there was only one Process Controllers on duty at a time. Solids and debris were also required to be removed at this point. This contributes to workplace dissatisfaction;
- The chemical feed and dosing conditions at the inlet works cannot be monitored since dosing takes place into a closed raw water pipe;
- There was no standby lime or chlorine dosing equipment, inadequate storage capacity of chlorine (30 days storage capacity is required) and no monitoring of the chlorine remaining in the container;
- There was inadequate consideration of Health & Safety issues (no emergency showers or eye washes and no chlorine safety equipment (alarms, detector and extractor fans)) at the time of the inspection;
- Signs of floc carry over were observed at the clarifier;
- Significant asset management and process optimisation of the filters is required:
    - Filters were in a critical state and some could not be backwashed due to broken valves
    - Flow was not evenly distributed due to the condition of the valves
    - Filter media was in very bad condition
    - All four sand filters require urgent refurbishment
- Sludge was discharged directly to river.

Removal of debris from the strainer at the raw water abstraction

Poor condition of filter media

Water Services Authority	Matjhabeng Local Municipality
Water Services Provider(s)	Sedibeng Water [a]
Municipal Blue Drop Score:	**94.72%**

Performance Area	Systems	Allanridge [a]	Henneman [a]	Odendaalsrus [a]	Ventersburg [a]
Water Safety Planning (35%)		**88**	**88**	**88**	**88**
Treatment Process Management (10%)		**100**	**100**	**100**	**100**
DWQ Compliance (30%)		**100**	**100**	**86**	**100**
Management, Accountability (10%)		**100**	**100**	**100**	**100**
Asset Management (15%)		**88**	**88**	**88**	**88**
Bonus Scores		1.38	1.38	2.31	1.38
Penalties		0	0	0	0.
Blue Drop Score (2012)		**95.24% (↑)**	**95.24% (↑)**	**92.05% (↑)**	**95.24% (↑)**
2011 Blue Drop Score		78.87%	80.78%	80.59%	80.81%
2010 Blue Drop Score		Not assessed	47.25%	47.25%	47.25%
System Design Capacity (Ml/d)		No information	No information	No information	No information
Operational Capacity (% ito Design)		No information	No information	No information	No information
Population Served		23 440	23 000	60 839	28 840
Average daily Consumption (l/p/d)		426.62	434.78	575.29	346.74
Microbiological Compliance (%)		**98.9%**	**99.8%**	**98.2%**	**99.8%**
Chemical Compliance (%)		**99.9%**	**99.9%**	**99.9%**	**99.9%**

Performance Area	Systems	Virginia [a]	Welkom [a]
Water Safety Planning (35%)		**88**	**88**
Treatment Process Management (10%)		**100**	**100**
DWQ Compliance (30%)		**100**	**100**
Management, Accountability (10%)		**100**	**100**
Asset Management (15%)		**88**	**88**
Bonus Scores		1.38	1.38
Penalties		0	0
Blue Drop Score		**95.24% (↑)**	**95.24% (↑)**
2011 Score		79.80%	79.63%
2010 Score		47.25%	47.25%
System Design Capacity (Ml/d)		120	No information
Operational Capacity (% ito Design)		40.00	No information
Population Served		85 110	196 731
Average daily Consumption (l/p/d)		563.98	508.31
Microbiological Compliance (%)		**99.3%**	**99.5%**
Chemical Compliance (%)		**99.8%**	**99.8%**

Regulatory Impression

The Department applauds the performance of Matjhabeng Local Municipality who, with the assistance of Sedibeng Water, ensured a 100% turn-around in the management of drinking water quality over the last three years. While the municipality and service provider submitted sufficient information to allow the Department to award Blue Drop status in 5 of the 6 registered supply systems, the WSA / WSP is advised to now embark on a dedicated programme to restore public's trust in their ability as a Water Services Authority. Service delivery in Matjhabeng has been associated with bad publicity over the past few years, and a dedicated effort is therefore required to educate the public and prove to residents that drinking water quality is being managed with excellence. The public particularly needs to be informed of the occurrence of algae and its impact on the acceptability of the drinking water supplies. DWA encourages the municipality and Sedibeng Water to continue its efforts, the performance of this municipality indicates that, with the required staff commitment and management support, service delivery can be of an excellent quality.

Site Inspection Scores:

Balkfontein: **98 %**

The Balkfontein WTW was visited to verify the Matjhabeng Local Municipality and Sedibeng Water Blue Drop findings. Overall, the site inspection indicated a well monitored, maintained and managed Water Treatment Works.

Areas requiring improvement at the **Balkfontein** WTW include:

- While Process Controllers did understand the procedures to follow and who to contact in the case of an incident or failure, there was no Incident Management Protocol or contact list available at the Balkfontein WTW at the time of inspection;
- Resolution of problems/closure of job cards is recommended to be included in the Maintenance Logbook.

Good condition of operational monitoring equipment

Well maintained sludge dams

Water Services Authority	**Metsimaholo Local Municipality**
Water Services Provider(s)	**Metsimaholo Local Municipality; Rand Water** [a]
Municipal Blue Drop Score:	**89.49%**

Performance Area	Systems	Sasolburg [a]	Deneysville	Oranjeville
Water Safety Planning (35%)		**85**	**63**	**63**
Treatment Process Management (10%)		**100**	**75**	**58**
DWQ Compliance (30%)		**100**	**100**	**100**
Management, Accountability (10%)		**90**	**96**	**89**
Asset Management (15%)		**96**	**73**	**73**
Bonus Scores		1.03	2.99	3.37
Penalties		0	-1.00	-1.12
Blue Drop Score (2012)		**94.18%** (↑)	**82.06%** (↑)	**79.81%** (↑)
2011 Blue Drop Score		43.06%	57.68%	58.10%
2010 Blue Drop Score		Not assessed	Not assessed	Not assessed
System Design Capacity (Ml/d)		No information	4.75	2.59
Operational Capacity (% ito Design)		No information	100.00	46.33
Population Served		120 781	40 000	6 700
Average daily Consumption (l/p/d)		82.79	118.75	179.10
Microbiological Compliance (%)		**99.3%**	**99.9%**	**97.5%**
Chemical Compliance (%)		**99.9%**	**99.9%**	**>99.9%**

Regulatory Impression

Metsimaholo Local Municipality displayed an impressive improvement compared to the previous assessment, with the overall Blue Drop score increasing from 48.86% to 83.4%. Measured against microbiological and a limited number of chemical determinands, drinking water quality was again evaluated to be of excellent quality. However, a full set of SANS 241 analyses is still required to be undertaken in all the supply systems, and until this data has been submitted to BDS, monitoring programmes cannot be deemed appropriate. This information is required to confirm that the risk assessment process has been informed by the analysis of all determinands that might affect the quality of the drinking water in the Metsimaholo Local Municipality. The Department trusts this monitoring will be conducted in 2012 as part of the risk assessment process.

Cognisance was taken of the good municipal management support. However, officials responsible for financial management are requested to confirm the accuracy of information provided to the Department, since the maintenance expenditure was considered to be excessive.

Supported by Rand Water, a favourable score was recorded for the Sasolburg supply system and DWA commends the municipality on making information available for this system during the 2011 assessment cycle. The WSA are recommended to embrace all opportunities offered by Rand Water to assist them to improve their performance. Together, the WSA and WSP can attain a Blue Drop in the near future.

Site Inspection Scores:

Deneysville:	**68%**
Oranjeville:	**40%**

The Deneysville and Oranjeville WTWs were visited to verify the Metsimaholo Local Municipality Blue Drop findings. Overall, the site inspection impression was satisfactory at the Deneysville WTW, but poor at the Oranjeville WTW.

Areas requiring improvement at the **Deneysville** WTW include:

- While access to the facility was controlled with a gate, no security personnel were present at the WTW entrance;
- The WTW registration certificate was not displayed at the Deneysville WTW;
- Jar test equipment was not functional at the time of the site inspection, and thus dosing was not done according to coagulation dosing calculations;
- There was inadequate consideration of Health & Safety issues (no emergency showers or eye washes and inadequate chlorine safety equipment (no alarms or detector and a broken extractor fan) at the time of the inspection;
- There was no mechanism to remove solids and debris at the raw water intake;
- There was no standby coagulant or chlorine dosing equipment; and
- Signs of floc carry over were observed at the clarifier.

Operational monitoring equipment

Coagulant dosing

Areas requiring improvement at the **Oranjeville** WTW include:

- The overall condition of the WTW was very poor, with evidence of neglect. The WTW registration certificate was not also displayed at the Oranjeville WTW;
- There was no Incident Management Protocol or list of contacts available to guide the Process Controllers in the case of an emergency;
- A the time of the inspection, the Process Controller on duty had left before the end of his shift;
- Chemical dosing was based on turbidity readings and not floc formation tests;
- The safety, health and hygiene requirements of workers were not adequately taken care of with no place to wash onsite, no emergency showers or eye washes and no chlorine safety equipment (alarms, detector and extractor fans) at the time of the inspection;
- No standby raw water pump was available;

- There was no mechanism to remove solids and debris at the raw water intake;
- There was no flash mixing occurring at the chemical dosing point and no way of monitoring the chemical feed and dosing conditions at the inlet works;
- There was no standby lime, chlorine or soda ash dosing equipment and no measuring device or indicator to monitor the amount of chlorine remaining in the container; and
- Flocculation process optimisation is recommended as no flocs were visible at the end of the unit and the floc channel extremely dirty and covered with algae.

Inflow measuring device used at the Oranjeville WTW

Algal growth was observed in the floc channel

Water Services Authority	**Mohokare Local Municipality**
Water Services Provider(s)	**Mohokare Local Municipality**
Municipal Blue Drop Score:	**77.04%**

Performance Area	Systems	Rouxville	Smithfield	Zastron
Water Safety Planning (35%)		**93**	**93**	**93**
Treatment Process Management (10%)		**90**	**80**	**90**
DWQ Compliance (30%)		**23**	**78**	**64**
Management, Accountability (10%)		**93**	**93**	**93**
Asset Management (15%)		**69**	**69**	**69**
Bonus Scores		0	0	0
Penalties		-2.10	-0.25	-0.30
Blue Drop Score (2012)		**65.63% (↓)**	**82.97% (↑)**	**79.80% (↓)**
2011 Blue Drop Score		80.38%	79.47%	80.28%
2010 Blue Drop Score		54.38%	54.38%	30.38%
System Design Capacity (Ml/d)		2.88	2.2	3.024
Operational Capacity (% ito Design)		45.14	62.73	79.37
Population Served		10 000	10 000	18 000
Average daily Consumption (l/p/d)		130.00	138.00	133.33
Microbiological Compliance (%)		**90.7%**	**99.2%**	**96.9%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**

Regulatory Impression

The DWA applauds the commitment of the municipal management of Mohokare Local Municipality; drinking water quality management that was shown as receiving the required attention to ensure continued service delivery improvements. Implementation of control measures referred to during the assessment, together with improvements already executed, may result in the municipality attaining Blue Drop status in the near future.

While evidence was provided to show the management of incidents according to the incident management protocol (i.e. communication with the hospital following a *E. coli* failure), the annual microbiological compliance showed that drinking water within the Rouxville supply system posed a risk to human health during 2011. Disinfection needs to improve and the WSA is required to inform all users within the supply system of the risk, which was not limited to a once-off failure at one site. Furthermore, a full set of SANS 241 analyses was shown as budgeted for in September 2011, with the findings from the assessment to be used to inform and improve the operational and compliance monitoring programmes. Unfortunately, data available on the Blue Drop System does not support the claim that the full set of analyses was undertaken. In future, the municipality is advised to submit all available information to DWA.

The concern raised in the 2011 report still holds true: "*until such time that evidence confirms compliance monitoring for E. coli and Aluminium only provides sufficient information to confirm the suitability of drinking water within the Mohokare municipality, the limited data alone cannot be used to confirm adequacy of the monitoring programmes and the excellent quality of the drinking water*." Results

following a full SANS 241 analyses in each of the supply systems as part of the risk assessment process now becomes cardinal for the municipality to proof that all risks have been identified and are being monitored.

The DWA Inspectors could not adequately assess processes related to financial budgeting and expenditure. Mohokare Local Municipality needs to ensure participation from Finance staff during future assessments, and the information provided must be clear and correct. The DWA Inspectors noted that budget was not available for maintenance, and the query of over-spending by the drinking water quality section needs to be clarified by availing information to indicate what the budget had been used for.

Site Inspection Scores:

Zastron: **83%**

The Zastron WTW was visited to verify the Mohokare Local Municipality Blue Drop findings. Overall, the site inspection impression was generally good, with acceptable drinking water quality management undertaken.

Areas requiring improvement at the **Zastron** WTW include:

- An outdated 1988 WTW registration certificate was displayed at the facility;
- While an Emergency Contact List was available at the time of the inspection, no comprehensive Incident Management Protocol existed to guide Process Controller's actions during a drinking water quality failure;
- A regular calibration schedule for operational monitoring equipment is recommended to be implemented to ensure credible operational data to manage the process;
- Health and safety issues require additional attention:
  - Neither emergency showers nor eye washes were available;
  - The chemical area was not bunded; and
  - Chlorine safety equipment was lacking: no extractor fan, alarm or automatic detector
- There was no standby chlorine dosing system available and no method of monitoring the gas remaining in the container was used;
- There was no backup available for the filtration system backwash pumps and air blowers.

Operational monitoring equipment at Zastron WTW

Good signage at the chlorine house

Water Services Authority	**Moqhaka Local Municipality**
Water Services Provider(s)	**Moqhaka Local Municipality**
Municipal Blue Drop Score:	**54.93%**

Performance Area	Systems	Kroonstad	Viljoenskroon	Steynrus
Water Safety Planning (35%)		**49**	**45**	**45**
Treatment Process Management (10%)		**70**	**45**	**40**
DWQ Compliance (30%)		**45**	**23**	**23**
Management, Accountability (10%)		**31**	**19**	**16**
Asset Management (15%)		**75**	**58**	**62**
Bonus Scores		8.66	4.50	4.50
Penalties		-3.01	-4.00	-4.00
Blue Drop Score (2012)		**57.55% (↑)**	**38.10% (↑)**	**37.86% (↑)**
2011 Blue Drop Score		20.91%	31.51%	16.35%
2010 Blue Drop Score		Not assessed	Not assessed	Not assessed
System Design Capacity (Ml/d)		60	6.9	2.5
Operational Capacity (% ito Design)		75.00	79.71	60.00
Population Served		155 000	60 000	30 000
Average daily Consumption (l/p/d)		290.32	91.67	50.00
Microbiological Compliance (%)		**78.5%**	**58.4%**	**84.2%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**

Regulatory Impression

Overall, the Moqhaka Local Municipality showed improved performance in all three systems compared to previous evaluations. While DWA congratulates the municipality on the improved microbiological monitoring programmes, data submitted unfortunately again indicated that the water supplied to residents within the jurisdiction of the municipality posed a risk of infection. Continued residual chlorine failures indicate that the municipality has not yet addressed the ineffective disinfection procedures previously highlighted in the 2011 Blue Drop Report. The WSA is thus urgently required to resolve these failures; the action plan to address this problem must also be communicated to DWA. Furthermore, the WSA is legally required to inform the public of the risks to their health.

DWA acknowledged work done by the municipality to complete risk assessments and water safety plans for each of the supply systems. DWA also regards the development of procedures to manage and record incidents, as well as actions taken to appoint and train process controlling staff, and the appointment of service providers to assist and train the municipality on the optimum operation of all the treatment facilities, as positive indications that the municipality is in process of addressing previously identified shortcomings.

Data provided to the Department verified that the municipality conducted a full set of SANS 241 analyses on water supplied within the Kroonstad system during 2011. Similarly, the WSA conducted all the required analyses during 2010 on water supplied within the Viljoenskroon and Steynsrus systems. Since the analyses were not repeated in all the systems during 2011, the Kroonstad supply system compliance monitoring programme was awarded a higher score this year. Moqhaka is reminded that a full set of SANS 241 analyses should be done on water in each of the supply systems at a minimum of an

annual frequency. This data should be used in the risk assessment process and to inform the design of the risk defined monitoring programmes.

The communities and visitors to the towns of Moqhaka Local Municipality are warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality to proof that the water can be consumed without a risk of infection.

Site Inspection Scores:

Kroonstad: 62%

The Kroonstad WTW was visited to verify the Moqhaka Local Municipality Blue Drop findings. Overall, the site inspection impression was satisfactory, but some drinking water quality management and process improvements are recommended.

Areas requiring improvement at the **Kroonstad** WTW include:

- The works appearance was unsatisfactory with overgrown grass and old equipment lying around. The showers and toilets were also not in an acceptable condition;
- The following critical documents were not available at the time of the site inspection:
  - Maintenance Logbook – however, fitters keep a task form where all the incidents are recorded
  - A consolidated, comprehensive O&M Manual
  - Drinking water quality Incident Management Protocol and list of contact details
- There was no mechanism in place to remove debris at the raw water intake;
- Only two of the four inflow meters were in working order with readings being recorded;
- The jar test equipment at the Kroonstad WTW was defective at the time of inspection;
- Four of the five flocculant dosing pumps were not in use due to missing non-return valves;
- The clarification process required optimisation at the time of inspection – there were signs of floc carryover and the baffles did not allow for even overflow (some tanks were out of service being cleaned);
- The water treatment sludge was discharged directly to river.

The overall appearance of the Kroonstad WTW requires attention

Flocculant dosing pumps

Water Services Authority	**Nala Local Municipality**
Water Services Provider(s)	**Sedibeng Water** [a]
Municipal Blue Drop Score:	**67.23%**

Performance Area	Systems	Bothaville [a]
Water Safety Planning (35%)		**57**
Treatment Process Management (10%)		**100**
DWQ Compliance (30%)		**62**
Management, Accountability (10%)		**58**
Asset Management (15%)		**70**
Bonus Scores		2.66
Penalties		0
Blue Drop Score (2012)		**67.23% (↑)**
2011 Blue Drop Score		58.90%
2010 Blue Drop Score		63.56%
System Design Capacity (Ml/d)		No information
Operational Capacity (% ito Design)		No information
Population Served		104 594
Average daily Consumption (l/p/d)		478.04
Microbiological Compliance (%)		**96.6%**
Chemical Compliance (%)		**99.9%**

Regulatory Impression

The Nala Local Municipality has shown some improvement compared to previous assessments. Although the Department commends the municipality for the increased monitoring and submission of information, drinking water quality, notably microbiological quality, unfortunately declined significantly from the point-of-sale (by Sedibeng Water) to the point-of-use. The *E. coli* failures apparent in the compliance data submitted by Nala infer that the water poses an unacceptable risk for human consumption. The municipality should immediately investigate and address the issues affecting the quality of the water at the point-of-use where data on the Blue Drop System shows a microbiological compliance of 90.00% for 2011. Nala Local Municipality is reminded that the compliance reported in the report card is calculated from both the WSA and WSP data.

The water safety planning process is recommended to continue, and the municipality and Sedibeng Water are to confirm that they have extended the water safety plan already developed for the Balkfontein treatment works to address risks specific to the Nala distribution network. In light of the microbiological failures detected in the Nala distribution network, the municipality are required to prioritise the development and implementation of an incident management protocol to guide actions to resolve failures and communicate health risks to the authorities and the community. Management commitment will be essential for success and improvement.

Site Inspection Scores:

Balkfontein: **98 %**

The Balkfontein WTW was visited to verify the Nala Local Municipality Blue Drop findings. Overall, the site inspection indicated a well monitored, maintained and managed Water Treatment Works.

Areas requiring improvement at the **Balkfontein** WTW include:

- While Process Controllers did understand the procedures to follow and who to contact in the case of an incident or failure, there was no Incident Management Protocol or contact list available at the Balkfontein WTW at the time of inspection;
- Resolution of problems/closure of job cards is recommended to be included in the Maintenance Logbook.

Good condition of operational monitoring equipment

Well maintained sludge dams

Water Services Authority	**Naledi Local Municipality**
Water Services Provider(s)	**Naledi Local Municipality; Bloem Water** [a]
Municipal Blue Drop Score:	**51.03%**

Performance Area	Systems	Dewetsdorp [a]	Wepener [a]	Vanstadensrus
Water Safety Planning (35%)		**38**	**38**	**11**
Treatment Process Management (10%)		**47**	**47**	**13**
DWQ Compliance (30%)		**100**	**89**	**17**
Management, Accountability (10%)		**23**	**23**	**8**
Asset Management (15%)		**36**	**36**	**9**
Bonus Scores		2.00	2.15	0
Penalties		-1.78	-0.72	-1.50
Blue Drop Score (2012)		**55.82% (↑)**	**53.66% (↑)**	**10.65% (↑)**
2011 Blue Drop Score		43.59%	43.35%	05.38%
2010 Blue Drop Score		47.50%	47.50%	Not assessed
System Design Capacity (Ml/d)		No information	No information	0.5
Operational Capacity (% ito Design)		No information	No information	70.00
Population Served		17 300	20 000	3 700
Average daily Consumption (l/p/d)		115.61	86.50	94.59
Microbiological Compliance (%)		**>99.9%**	**99.3%**	**94.7%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**No information**

Regulatory Impression

Drinking Water Quality Management in Naledi Local Municipality remained constant with a disappointing minor performance improvement recorded in each of the three supply systems. The municipality was not well prepared for the assessment and also appeared to disregard the requirements of the Regulator and legislation since very little information was provided to the Department on the Blue Drop System. Technical competence and management commitment appears to be a challenge within the Naledi Local Municipality. Instructions issued by the Department in the previous Blue Drop Report are still to be addressed and disinfection at the Vanstadensrus borehole system remains inadequate to eliminate the risk that consumers might contract a water-related disease following the consumption of the borehole water.

The WSA is still to adopt a comprehensive risk assessment and water safety planning process. A full set of SANS 241 analyses must be done in each of the supply systems to determine the risks associated with chemical determinands. The findings from this risk assessment and water safety planning process must be used to inform and implement more comprehensive drinking water quality monitoring programmes.

Similar to the 2011 Blue Drop Assessment, information provided by Bloem Water on the quality of drinking water in the Dewetsdorp and Wepener systems, along with other required information on process control, asset management and other criteria, contributed the majority of the score awarded to the Dewetsdorp and Wepener systems.

Site Inspection Scores:

Vanstadensrus: **18%**
Welbedacht: **76% (Naledi Local Municipality and Bloem Water)**

The Vanstadensrus and Welbedacht WTWs were visited to verify the Naledi Local Municipality Blue Drop findings. While it is acknowledged that the Vanstadensrus package plant has not been in operation for the past year due to a collapsed raw water intake (borehole water is chlorinated before filtration), the site inspection impression indicated serious inadequate drinking water quality management. The site inspection impression of the Welbedacht facility was, however, satisfactory.

Many areas require improvement at the **Vanstadensrus** WTW, including:

- The overall condition of the WTW was poor, with no staff facilities and inadequate access control. General workplace satisfaction was low, and the WTW registration certificate was also not displayed at the Vanstadensrus WTW;
- Key drinking water quality management documentation was not available (Maintenance Logbook, O&M Manual, Incident Management Protocol, Operational Monitoring Logbook);
- The only operational monitoring undertaken was chlorine measurements using a HTH comparator, but no records were available of free chlorine concentrations in the final water;
- Only two of the seven boreholes were in an operational condition;
- There was no inflow measuring device;
- No standby dosing pump was available for the HTH and no backup equipment for the pressure filters;
- Frequent blockages due to HTH solids cause final water not to be chlorinated at times;
- There was no management of process water at the Vanstadensrus WTW.

HTH swimming pool kit with DPD reagents was used to determine free chlorine concentrations

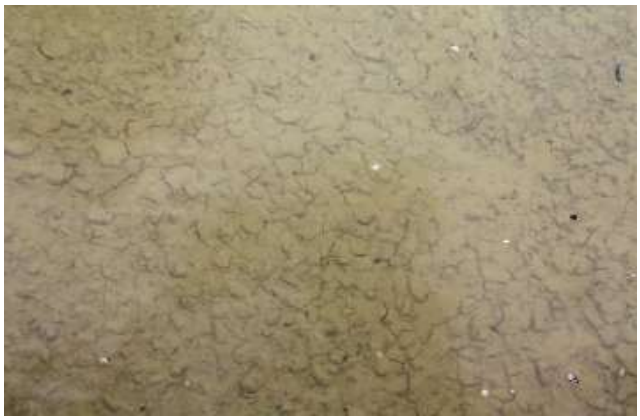
Only one pump was available to pump water to bulk storage reservoirs

Areas requiring improvement at the **Welbedacht** WTW include:

- There was no access control at the raw water intake;
- While an Incident Management Protocol was not yet in place, emergency contact numbers were available in the control room;
- Jar tests were not undertaken to determine coagulant dosing rates;
- There was no mechanism to remove solids and debris at the raw water intake;

- Some housekeeping and filter process optimisation is recommended:
  - Uneven flow splitting to filters was observed
  - Some filter surfaces indicated broken nozzles
  - Inlet flumes became dirty during back wash
  - Some filter media surfaces were uneven with mud not effectively removed
  - The filter house was dirty and in need of maintenance
- Safety signage at the chlorination facilities needs to be updated, and low pressure was recorded in the oxygen cylinder at the time of inspection;
- Sludge dams were not well maintained and full of reeds.

No access control at intake



Examples of sand filter surfaces: muddy and uneven

Water Services Authority	Ngwathe Local Municipality
Water Services Provider(s)	Ngwathe Local Municipality; Rand Water [a]
Municipal Blue Drop Score:	**20.59%**

Performance Area	Systems	Parys	Vredefort	Koppies	Heilbron [a]
Water Safety Planning (35%)		**23**	**21**	**21**	**56**
Treatment Process Management (10%)		**30**	**30**	**32**	**100**
DWQ Compliance (30%)		**0**	**0**	**0**	**45**
Management, Accountability (10%)		**0**	**0**	**0**	**0**
Asset Management (15%)		**23**	**6**	**3**	**58**
Bonus Scores		0	0	0	4.33
Penalties		0	0	0	-1.44
Blue Drop Score (2012)		**14.33% (↓)**	**11.20% (↓)**	**11.00% (↓)**	**54.73% (↓)**
2011 Blue Drop Score		39.55%	37.86%	24.11%	68.45%
2010 Blue Drop Score		21.88%	18.38%	20.38%	48.16%
System Design Capacity (Ml/d)		15	2.4	3.72	No information
Operational Capacity (% ito Design)		125.33	108.33	69.89	No information
Population Served		49 000	18 000	14 700	26 000
Average daily Consumption (l/p/d)		383.67	144.44	176.87	188.46
Microbiological Compliance (%)		**96.7%**	**92.3%**	**50.0%**	**80.0%**
Chemical Compliance (%)		**92.3%**	**No information**	**No information**	**>99.9%**

Performance Area	Systems	Edenville
Water Safety Planning (35%)		**19**
Treatment Process Management (10%)		**27**
DWQ Compliance (30%)		**41**
Management, Accountability (10%)		**0**
Asset Management (15%)		**3**
Bonus Scores		0
Penalties		-1.50
Blue Drop Score		**20.50% (↓)**
2011 Score		23.89%
2010 Score		16.38%
System Design Capacity (Ml/d)		No information
Operational Capacity (% ito Design)		No information
Population Served		6 600
Average daily Consumption (l/p/d)		203.03
Microbiological Compliance (%)		**>99.9%**
Chemical Compliance (%)		**No information**

Regulatory Impression

Ngwathe Local Municipality has done little to improve their performance from the previous Blue Drop assessment. Regardless of the importance of drinking water quality management and the impact on human health that can ensue from poor drinking water quality, municipal management showed little commitment. The performance of Rand Water, which is mostly deemed excellent in all other areas where the Water Board acts as a WSP, is unfortunately undermined since Ngwathe Local Municipality cannot maintain the excellent drinking water quality in the distribution network.

Although compliance monitoring was not maintained for 12 months at representative points within all the supply systems, data submitted shows that the microbiological water quality in the Vredefort, Koppies and Heilbron systems poses a risk to human health. The Department is also again forced to report that it has little confidence in the acceptable microbiological water quality compliance calculated for the Parys and Edenville supply systems. Too little data had been submitted to allow for a defendable assessment.

The Department again found during the 2011-2012 Blue Drop assessment that the WSA expects other role-players to take the lead and assist municipal staff to develop the processes required for acceptable risk-management. The municipality, however, is showing signs of limited commitment to ensuring improvement - previous statements of the DWA that a full set of SANS 241 analyses is needed at a minimum for the water safety planning process in each of the supply systems, has poorly been adhered to with the data submitted in 2011 confirming that the WSA monitored for only three of the required twenty determinands in one supply system.

Furthermore, many other aspects of drinking water quality management require improvement in the Ngwathe Local Municipality. Asset management was again evaluated as poor. The municipality has also not confirmed updated registration of process controlling staff against Regulation 2834, and no attempt was made to improve competency of the staff. In addition, process control appears to be far below the accepted standard since O&M manuals are yet to be updated and available at each of the plants.

In conclusion, it was noted that even though the municipal staff argued that drinking water quality in the Ngwathe Local Municipality is being managed according the requirements of the Department and legislation, various opportunities provided to the municipality to submit evidence were not utilised, resulting in an unacceptable overall Blue Drop performance of 20.6%. The Regulator is not satisfied with the overall performance of drinking water services management in Ngwathe. The WSA is required to submit a Corrective Action Plan to DWA within 30 days of release of the 2012 Blue Drop Report.

The communities and visitors to the towns of Vredefort, Koppies and Heilbron are hereby warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality in proving the contrary.

Site Inspection Scores:

Vredefort:	**15%**
Koppies:	**36%**
Edenville:	**9%**

The Vredefort, Koppies and Edenville WTWs were visited to verify the Ngwathe Local Municipality Blue Drop findings. Overall, the site inspections provide a very poor impression of drinking water quality management in Ngwathe Local Municipality, characterized by neglect and mismanagement, with very little active process control or maintenance being undertaken.

There are many areas requiring improvement at the **Vredefort WTW**, including:

- Overall, the appearance of the WTW was very poor, with little consideration of the health and hygiene requirements of the workers (including a non-functional toilet);
- Workplace satisfaction was low, and a significant safety incident was recorded when a Process Controller was required to be taken to a hospital since an emergency shower/eye wash was not available;
- The WTW registration certificate was not displayed at the facility, and the registration and classification of Process Controllers is required to be updated;
- A Maintenance Logbook was not present at this WTW, and it appears that no maintenance has been undertaken at this facility for an extended period;
- The O&M Manual lacks electrical and mechanical information about the WTW. Process Controllers do not understand this Manual and therefore do not use it;
- There was no comprehensive drinking water quality Incident Management Protocol at the Vredefort WTW. Also, no contact list was available for emergencies;
- No regular operational monitoring was undertaken. There was no pH or turbidity meter or jar testing equipment. A chlorine meter exists but has not been calibrated for an extended period.
- No inflow measuring device exists and the outflow meter was not operational;
- There was no mechanism to remove solids and debris at the inlet works, dosing was occurring before the highest point of turbulence and no monitoring of chemical feed and dosing conditions was undertaken at the time of inspection. Dosing was also not occurring according to coagulation dosing calculations (jar tests);
- Process control was generally weak, and significant attention needs to be provided for optimization of the water treatment process. Process Controllers require process-related training and an assessment of competence thereafter. Improved supervision of process control tasks is also required;
- The condition of dosing pumps was poor, and backup or standby pumps were not available. Confirmation of at least 30 days chemical storage capacity is also required.

Stock of sodium hypo chloride

Dosing line into final water sump

Condition of dosing pumps

Extractor fan not working

Areas requiring improvement at the **Koppies** WTW include:

- Similar to Vredefort, the appearance of the Koppies WTW was poor, with little consideration of the health and hygiene requirements of the workers, and resultant low workplace satisfaction;
- The WTW was poorly fenced, with access control presenting a problem in some places;
- The WTW registration certificate was not displayed at the facility, and the registration and classification of Process Controllers is required to be updated;
- The following critical documents were not present at the Koppies WTW:
    - Maintenance Logbook
    - O&M Manual
    - Drinking water quality Incident Management Protocol and list of contact details
- Operational monitoring was not adequate to ensure process control:
    - Chlorine measurement performed incorrectly
    - No turbidimeter available since Dec 2011
    - No jar testing equipment
- While inflow measurements were being recorded, the accuracy of these measurements was questionable;
- Neither emergency showers nor eye washes were available;
- Treatment chemical storage capacity requires attention to ensure that at least 30 days of storage is available;
- While the filter plant could not be fully assessed due to insufficient water in the sump to be filtered and to demonstrate backwashing, the filtration process appeared to require optimization;
- The sludge and process water were discharged directly to the river.

Old infrastructure

Several water leaks were noted

Site in poor condition

Infrastructure unsafe and in need of urgent maintenance

Similar problems occurred at the **Edenville** WTW. However, it should be noted that the chlorination plant had not yet been installed at the Edenville WTW at the time of inspection. Manual dosing of chlorine was occurring. It is recommended that the chlorination plant is installed and commissioned as a matter of urgency.

Chlorine room filled with pipes

Site overgrown with illegal weeds

Installed water meter close to the roof – cannot be read without ladder

Water Services Authority	**Nketoane Local Municipality**
Water Services Provider(s)	**Nketoane Local Municipality**
Municipal Blue Drop Score:	**18.57%**

Performance Area	Systems	Reitz	Petrus Steyn	Lindley	Arlington
Water Safety Planning (35%)		**6**	**6**	**6**	**6**
Treatment Process Management (10%)		**33**	**33**	**18**	**15**
DWQ Compliance (30%)		**0**	**0**	**0**	**0**
Management, Accountability (10%)		**14**	**14**	**14**	**14**
Asset Management (15%)		**56**	**46**	**67**	**57**
Bonus Scores		4.50	4.50	0	0
Penalties		0	0	0	0
Blue Drop Score (2012)		**19.74% (↑)**	**18.16% (↑)**	**15.43% (↑)**	**13.60% (↑)**
2011 Blue Drop Score		04.77%	05.31%	10.22%	05.04%
2010 Blue Drop Score		22.50%	14.25%	14.25%	17.25%
System Design Capacity (Ml/d)		15	1.5	2	0.68
Operational Capacity (% ito Design)		53.33	100.00	85.00	100.00
Population Served		23 438	30 000	36 000	16 000
Average daily Consumption (l/p/d)		341.33	50.00	47.22	42.50
Microbiological Compliance (%)		**No information**	**No information**	**No information**	**No information**
Chemical Compliance (%)		**No information**	**No information**	**No information**	**No information**

Regulatory Impression

DWA notes with serious concern that drinking water quality management procedures at Nketoana Local Municipality were again found to be unsatisfactory and, in general, the municipality showed little interest or commitment to improve service delivery. Furthermore, the Department received no evidence to indicate municipal management support.

The Department expressed its concern last year regarding the lack of information to determine the quality of water supplied to residents within the jurisdiction of the municipality. With only one set of data available for the Lindley and Arlington systems, the DWA could again not calculate compliance. From a regulatory point of view, and without information to prove otherwise, DWA concludes from the poor drinking water quality management systems, that drinking water supplied to residents within the jurisdiction of Nketoana presents an unacceptable risk to public health. The DWA expresses a zero confidence level in the municipality's ability to render safe and sustainable drinking water.

The situation demands the attention of management, the Regulator trusts that the poor performance against the Blue Drop evaluations will motivate the municipality to rectify the non-compliances without further hesitation or excuse. An action plan must be submitted to the DWA within 30 days of release of this report to indicate how the unwanted situation will be addressed.

The communities and visitors to the towns of Nketoane Local Municipality are warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality to proof that the water can be consumed without a risk of infection.

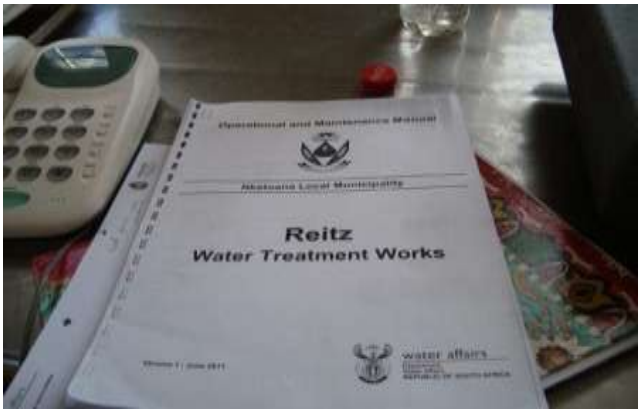
Site Inspection Scores:

Reitz: **45 %**

The Reitz WTW was visited to verify the Nketoane Local Municipality Blue Drop findings. Overall, the site inspection impression was unacceptable and a number of water treatment processes require optimisation.

Areas requiring improvement at the **Reitz** WTW include:

- The WTW registration certificate was not displayed at the Reitz WTW and the Nketoane Local Municipality did not know the class of the works;
- The WTW was not secured against animal access, and there was evidence of animal access to the facility at the time of inspection;
- While no Incident Management Protocol exists, incident management procedures were included in the O&M Manual. It is recommended that these procedures are further developed into a comprehensive Drinking Water Quality Incident Management Protocol covering all risks identified in the catchment-to-consumer Reitz drinking water system;
- Erratic operational monitoring was occurring at the Reitz WTW at the time of inspection and calibration records of operational monitoring equipment were not available. It is essential to undertake regular operational monitoring (including jar testing) to ensure process control at the WTW;
- The inflow measuring device was not operational at the time of the inspection;
- The flocculant dosing pumps were in an unacceptable condition;
- The clarification process requires optimisation – with floc carryover at the clarifiers, no regular desludging (due to a broken pump) and poor condition baffles with sludge buildup recorded at the time of the inspection;
- In terms of filtration, further attention is required to be focused on the mudballs observed on the media filter surface, uneven bubble distribution noted during backwashing, and leaking observed from the filters;
- Water treatment sludge was discharged onto an open field.



A comprehensive O&M Manual exists at the Reitz WTW

The clarification process requires attention

Water Services Authority	**Phumelela Local Municipality**
Water Services Provider(s)	**Phumelela Local Municipality**
Municipal Blue Drop Score:	**17.9%**

Performance Area	Systems	Memel	Vrede	Warden
Water Safety Planning (35%)		**4**	**4**	**4**
Treatment Process Management (10%)		**25**	**43**	**10**
DWQ Compliance (30%)		**0**	**0**	**0**
Management, Accountability (10%)		**16**	**16**	**16**
Asset Management (15%)		**53**	**53**	**53**
Bonus Scores		4.50	4.50	0
Penalties		0	0	0
Blue Drop Score (2012)		**17.83% (↑)**	**19.58% (↑)**	**11.83% (↑)**
2011 Blue Drop Score		09.46%	01.00%	01.00%
2010 Blue Drop Score		Not Assessed	Not Assessed	Not Assessed
System Design Capacity (Ml/d)		2.5	7.5	2
Operational Capacity (% ito Design)		100.00	100.00	100.00
Population Served		23 000	36 000	15 000
Average daily Consumption (l/p/d)		108.70	208.33	133.33
Microbiological Compliance (%)		**No information**	**No information**	**No information**
Chemical Compliance (%)		**No information**	**No information**	**No information**

Regulatory Impression

The 2012 Blue Drop score of Phumelela Local Municipality again indicates that the municipality is not prioritising drinking water quality management, and systems are not in place to ensure service delivery according to a risk management approach. Regardless of previous requests by the Department, monitoring of drinking water quality as a legal requirement is yet to be done. In the absence of any compliance monitoring data to access the quality of drinking water, the DWA is obliged to inform consumers that it has no confidence that the water supplied poses no health risks.

Furthermore, the Department has received little information to confirm that management is committed to comply with the legal requirements of water services delivery. Although DWA was presented with a signed water services development plan and a budget, the WSA intentionally decided to withhold further financial information. Drinking quality performance or compliance information is also not communicated to the public.

The assessment further highlighted that process controlling improvements are required - following the classification of all process controllers, the WSA should confirm that an adequate number of competent process controllers are available to maintain the treatment process at each of the treatment facilities. It is furthermore required that systems be put in place to verify adequate treatment, i.e. operational monitoring should commence immediately at all the plants, process control should be maintained according the requirements of the O&M manuals, and all activities should be recorded in logbooks.

Drinking water quality management has been proven to best be undertaken according the principles of water safety planning. The WSA still has to develop water safety plans for each of the systems after

completing catchment to consumer risk assessments. Control measures should be identified for potential risks to water quality, and funding will need to be made available to implement / maintain control measures. As part of the water safety plan, the WSA is also required to develop an incident management protocol. The DWA requires proof that incidents are recorded in an incident register and that failures are resolved according the stipulation of the protocol.

The Department will investigate how to resolve the lack of systems to manage drinking water quality within the municipality, at the same time the DWA will also investigate the failure of the Phumelela Local Municipality to react to the request of the Department in the 2011 Blue Drop report to submit a plan of action to address the shortcomings.

The residents and visitors to the towns of Memel, Vrede and Warden are hereby warned to not consume tap water without home disinfection (boiling or bleach addition). This warning will remain in place until an official announcement (supported by data on the quality of the water) is made by the municipality proving the contrary.

Site Inspection Scores:

Vrede: **50%**

The Vrede WTW was visited to verify the Phumelela Local Municipality Blue Drop findings. Overall, the site inspection impression was unacceptable with many areas requiring improvement to ensure adequate drinking water quality management and production of safe drinking water.

Areas requiring improvement at the **Vrede** WTW include:

- The overall appearance of the WTW was untidy, with dirty chemical storage houses and unused rubble (bricks and pipes) left on the facility;
- There is no suitable place available for Process Controllers to eat and wash;
- There was no access control at the Vrede WTW, with the gate to the facility wide open, no security guards and no records kept of entry to the facility;
- The WTW registration certificate was not displayed at the Vrede WTW;
- The O&M Manual was not available at the WTW at the time of inspection;
- No Incident Management Protocol or emergency contact details were available. This protocol is an essential document to guide Process Controller's actions when process control is lost and a drinking water quality failure occurs;
- While operational monitoring equipment is available and in good condition, the Process Controller on duty at the time of the inspection did not use the turbidimeter correctly, and was not aware of the procedure to undertake turbidity measurements. The jar test equipment was also not used correctly, and was stored in a dusty environment (lime dosing house);
- The inflow measuring device was not functional at the time of the inspection;
- There was no mechanism to remove solids and debris at the inlet works;
- There were no standby dosing pumps for flocculant, lime or chlorine dosing;
- Occupational Health & Safety issues require attention at the Vrede WTW – there were no emergency showers or eye washes, and no alarm, detector or extractor fan in the chlorine dosing area;
- There was inadequate monitoring of the amount of chorine gas remaining in each container – no scale, switch over device or indicator was used;
- Asset management and process optimisation is recommended a the Vrede WTW:

- Clarifier baffles were broken at the time of inspection
- Uneven bubble distribution was noted during filter backwashing
- Cracks and mudballs were noted on the filter media surface, and some blocked nozzles
- Chlorine contact time in the reactor was less than 30 minutes

Water Services Authority	**Setsoto Local Municipality**
Water Services Provider(s)	**Setsoto Local Municipality**
Municipal Blue Drop Score:	**89.00%**

Performance Area	Systems	Clocolan	Ficksburg	Marquard	Senekal & De Put
Water Safety Planning (35%)		**83**	**83**	**83**	**83**
Treatment Process Management (10%)		**88**	**75**	**40**	**75**
DWQ Compliance (30%)		**100**	**100**	**100**	**100**
Management, Accountability (10%)		**83**	**83**	**83**	**83**
Asset Management (15%)		**74**	**89**	**86**	**62**
Bonus Scores		2.31	2.11	2.82	2.85
Penalties		0	0	0	0
Blue Drop Score (2012)		**89.47% (↓)**	**90.39% (↓)**	**87.15% (↓)**	**87.00% (↑)**
2011 Blue Drop Score		94.11%	95.20%	91.89%	73.80%
2010 Blue Drop Score		34.13%	37.38%	24.38%	35.13%
System Design Capacity (Ml/d)		5.59	15.6	2.2	9.87
Operational Capacity (% ito Design)		57.39	84.17	73.27	85.11
Population Served		23 180	51 568	21 386	34 181
Average daily Consumption (l/p/d)		138.40	254.62	75.38	245.75
Microbiological Compliance (%)		**>99.9%**	**>99.9%**	**97.7%**	**99.9%**
Chemical Compliance (%)		**>99.9%**	**>99.9%**	**>99.9%**	**99.9%**

Regulatory Impression

Following the pride that surrounded acceptance of Blue Drop certification in 2011, it saddens the DWA again not toaward the Setsoto Local Municipality with Blue Drop status at any of their supply systems. The fact that the municipality is yet to finalise their water safety planning process, that Process Controllers still need to be confirmed as correctly registered / classified against Regulation 2934 (to be replaced by Regulation 17), as well as aspects related to asset management that requires improvement prevented the DWA from acknowledging that the municipality is managing all facets of drinking water quality management in an excellent manner. The Department, however, wishes to congratulate the municipality on improving chemical monitoring and notes that residents can be assured that they are receiving drinking water of an excellent quality.

The municipality is encouraged to maintain the processes already in place. However, management support and commitment will be required to ensure that current activities are maintained, while additional funds are provided to address some of the shortcomings identified during this assessment cycle, including:

- As part of the risk assessment process, a full set of SANS 241 analyses must be done on water in all the supply systems at a minimum of an annual frequency. Despite the WSA indicating during the assessment that a full set of analyses were done by Sedibeng Water, data submitted to BDS indicates that this was not the case. The increased frequency of risk-defined determinand monitoring should furthermore result in the submission of 12 months of data.

- Setsoto Local Municipality is also encouraged to confirm adequacy of their disinfection processes. Data submitted to BDS indicate a number of residual chlorine failures. While the 2011 assessment cycle showed no microbiological failures of significance (no *E. coli*), the absence of the residual chlorine at the point-of-use implies that there is no final barrier to safeguard against unforeseen contamination.
- Calibrated flow meters should be available at all the treatment plants - the municipality could not with 100% certainty confirm the average daily production volume at each of the treatment plants.
- Setsoto Local Municipality is encouraged to improve their Incident Management Protocol to clearly state communication lines. Actions taken, outcomes, and the cause of an investigation are some of the aspects which also need to be included in the Incident Register.

Site Inspection Scores:

Ficksberg: **69%**

The Ficksberg WTW was visited to verify the Setsoto Local Municipality Blue Drop findings. Overall, the site inspection impression was satisfactory, but improvements in the disinfection system are required to be implemented.

Areas requiring improvement at the **Ficksberg** WTW include:

- A break in the fence compromised access control and security at the time of the inspection;
- Further attention needs to be given to the health and hygiene needs of the Process Controllers: the places allocated to eat and wash were in poor condition, and lace to eat and wash
- The chlorine dosing system requires improvement:
  - No standby dosing system
  - Storage capacity was less than the required 30 days
  - No method of monitoring the amount of gas remaining in the container
  - Chlorine safety equipment was lacking
- No mechanisms were in place to remove solids and debris from the raw water (a fire hose was used to break up scum);
- Health and Safety: No emergency showers or eye washes were observed;
- Inadequate sludge management was noted at the time of the inspection, with sludge discharged directly to the river.

Operational monitoring equipment

Chlorine storage capacity at the Ficksberg WTW

Water Services Authority	**Tokologo Local Municipality**
Water Services Provider(s)	**Tokologo Local Municipality**
Municipal Blue Drop Score:	**25.46%**

Performance Area / Systems	Boshof	Dealesville	Hertzogville
Water Safety Planning (35%)	**20**	**20**	**20**
Treatment Process Management (10%)	**68**	**43**	**68**
DWQ Compliance (30%)	**0**	**10**	**5**
Management, Accountability (10%)	**19**	**19**	**19**
Asset Management (15%)	**71**	**67**	**67**
Bonus Scores	0	0	0
Penalties	0	-1.50	-1.50
Blue Drop Score (2012)	**26.19% (↑)**	**24.51% (↑)**	**25.36% (↑)**
2011 Blue Drop Score	22.85%	18.85%	18.85%
2010 Blue Drop Score	11.75%	11.75%	11.75%
System Design Capacity (Ml/d)	2.5	1.7	2.26
Operational Capacity (% ito Design)	100.00	100.00	100.00
Population Served	22 429	4 934	7 268
Average daily Consumption (l/p/d)	111.46	344.55	310.95
Microbiological Compliance (%)	**No information**	**>99.9%**	**No information**
Chemical Compliance (%)	**50.0%**	**>99.9%**	**>99.9%**

Regulatory Impression

Reports on the performance of Tokologo Local Municipality since 2010 indicate that the municipality is not prioritising the management of drinking water quality. Last year, the Department noted its concern that no data was submitted by the municipality for the 2010 year to evaluate the microbiological and chemical quality of water supplied to residents within the jurisdiction of the municipality. Data submitted prior to 2010 showed significant failures. While the Department acknowledged the data submitted during the 2011 assessment cycle, the data (focussing on two chemical determinands, for two months only), were too little to determine if the water was safe for human consumption. The National DWA Office Department reported and confirmed last year that both Sedibeng Water and the DWA Free State Office have terminated support to Tokologo due to municipal non-commitment. The WSA cannot therefore continue to claim that Sedibeng Water and the Regional DWA Office monitor drinking water quality on behalf of the municipality.

On release of this report, the Tokologo Local Municipality should provide the Department with proof that their newly appointed service provider has commenced with monitoring. The DWA also requires a plan indicating that the monitoring will be maintained in future, and that adequate monitoring will be done per supply system.

The DWA recognised the water safety plan presented by the municipality. While DWA gave some acknowledgement that the WSA has commenced with the water safety planning process, a number of aspects must improve before the plan will be deemed satisfactory. A comprehensive risk assessment from catchment to consumer, in each of the supply systems, needs to be done. Data for a full set of SANS 241 analyses is needed. The WSA should also re-evaluate the stated risks and associated control

measures - The DWA Inspectors highlighted a number of examples where the control measure was not appropriate to address the risk identified.

While the WSA is referred to the report card for other areas that require immediate attention, the DWA noted with regret that management commitment was observed to be inadequate during the 2011 evaluation. Drinking water quality management cannot improve without complete managerial support and the availability of funding and resources. The Department echoes the 2011 Blue Drop Report: "*Municipal management, accountable for basic service delivery, must therefore provide leadership in the turn-around of this unwanted situation*."

The communities and visitors to the towns of Tokologo Local Municipality, in particular the towns of Boshof and Hertzogville are warned not to consume tap water without home disinfection treatment (boiling or bleach addition). This warning will remain in place until an official announcement is made by the municipality to proof that the water can be consumed without a risk of infection.

Site Inspection Scores:

Boshof:	**38%**
Hertzogville:	**12%**

The Boshof WTW and Hertzogville Borehole System were visited to verify the Tokologo Local Municipality Blue Drop findings. Overall, the site inspection impression was poor, with inadequate drinking water quality management undertaken. The lack of disinfection at the Hertzogville Borehole System was of particular concern.

Areas requiring improvement at both the Boshof WTW and Hertzogville Borehole System include:

- The WTW registration certificate was not displayed at either facility;
- The following critical documents were not present:
  - Maintenance Logbook
  - O&M Manual
  - Drinking water quality Incident Management Protocol and list of contact details
- No operational monitoring was being undertaken to ensure process control.

Specific areas requiring improvement at the **Boshof** include:

- Additional monitoring and inspection of the chlorine chip dosing device is required to ensure that effective disinfection is occurring at all times. A standby disinfection system is also recommended to be installed;
- Standby borehole pumps are recommended to be installed;
- While flow meters have been installed at the borehole pumps and the reservoir, daily flow measurements were not being recorded.

Flow meters on pumps at the Boshof WTW

Chlorine chip disinfection system

Areas requiring improvement at the **Hertzogville** Borehole system include:

- The main reservoir at Hertzogville was not well maintained and the facility was not secured from unauthorized access;
- No inflow measuring devices were available;
- The pumps at the reservoirs were operational; however, there were numerous leaks in the pipes leading to and from the pumps and the reservoirs. No standby pumps were in place.
- Chlorine dosing equipment was not functional during the site inspection, there was no standby chlorine and the amount of gas remaining in the container was not monitored. The lack of effective disinfection will seriously compromise the production of safe drinking water and presents a significant risk to public health.

Poor overall appearance at the Hertzogville reservoir

Inadequate access control at Hertzogville reservoir

Water Services Authority	**Tswelopele Local Municipality**
Water Services Provider(s)	**Tswelopele Local Municipality**
Municipal Blue Drop Score:	**92.42%**

Performance Area	Systems	Bultfontein	Hoopstad
Water Safety Planning (35%)		**91**	**89**
Treatment Process Management (10%)		**63**	**63**
DWQ Compliance (30%)		**100**	**100**
Management, Accountability (10%)		**96**	**96**
Asset Management (15%)		**93**	**88**
Bonus Scores		1.67	1.95
Penalties		-0.13	-0.15
Blue Drop Score (2012)		**92.97% (↑)**	**91.78% (↑)**
2011 Blue Drop Score		62.10%	43.35%
2010 Blue Drop Score		49.88%	49.88%
System Design Capacity (Ml/d)		8.8	6.7
Operational Capacity (% ito Design)		78.41	89.55
Population Served		40 000	28 000
Average daily Consumption (l/p/d)		172.50	214.29
Microbiological Compliance (%)		**99.1%**	**99.0%**
Chemical Compliance (%)		**96.4%**	**99.9%**

Regulatory Impression

The Department applauds Tswelopele Local Municipality for improving all aspects of their drinking water quality management procedures. Maintaining the momentum is likely to result in the Department awarding Tswelopele with Blue Drop status next year. A specific note of appreciation is due for the preparedness of the municipal officials - a presentation at the start of the on-site inspection provided a good overview of the business. The municipal officials were also praised for promptly providing outstanding information and using the confirmation session to confirm correctness of the 2012 Blue Drop assessment. Furthermore, the DWA acknowledges the municipality for maintaining the monitoring of the quality of water supplied to residents since July 2010 and the improvements in submission of information to the Blue Drop System.

In their striving for excellence, in future, Tswelopele is encouraged to maintain and sustain operational monitoring at both of the treatment plants. The WSA are recommended to contact the DWA Regional Office to enquire about the equipment believed to be outstanding, or alternatively, the WSA should purchase at minimum a pH, conductivity, turbidity and residual chlorine meter. The WSA is furthermore encouraged to ensure that the recently drafted Operation and Maintenance manuals for both plants cover all the required aspects to guide process control.

While DWA will continue to make requirements available for each of the annual assessments, Tswelopele is reminded that these requirements coincide with the endeavour of the Department to communicate the criteria that must be systematically improved on to ensure that all municipalities have systems in place to ensure safe drinking water supplies. Tswelopele can continue also to use the criteria to guide their improvements, however, attainment of the criteria during a specific assessment cycle, do

not imply that no further work is needed. While no penalty was applied for the recently developed O&M manuals, the WSA is nevertheless now encouraged to address the identified shortcomings.

In conclusion, the DWA again recommends that Tswelopele should confirm adequacy of the disinfection processes at both treatment plants - data still shows instances where the last barrier to protect against any unforeseen pollution event at the point-of-use has been compromised. The municipality also still has to confirm that the Process Controllers are adequate (and correctly classified) according Regulation 2834 to maintain treatment at both the plants.

Site Inspection Scores:

Bultfontein: 78%

The Bultfontein WTW was visited to verify the Tswelopele Local Municipality Blue Drop findings. Overall, the site inspection impression was good, but further attention is required to be given to the accessibility of operational monitoring equipment and chlorination standby and storage capacity.

Areas requiring improvement at the **Bultfontein** WTW include:

- Operational monitoring only commenced in November 2011, and monitoring equipment was not available onsite at the time of the inspection (kept in the Technical Manager's office). It is essential that operational monitoring equipment (including jar test equipment) is easily and readily accessible to allow staff to maintain process control;
- One of the two chlorinators was not functional at the time of the inspection, resulting in inadequate standby for chlorination. There was also less than 30 days of chlorine storage capacity at the time of inspection;
- Process optimisation is recommended:
  - Uneven flow splitting to filters was noted at the time of inspection
  - Chlorine contact time in the reactor was less than 30 minutes

Incident management procedures are displayed and easily accessible

An inflow measuring device is in place and readings are recorded