

### Provincial Best Performer

Maluti-a Phofung is the best performing municipality in the Free State Province:

- ✓ 67% Municipal Green Drop Score
- ✓ 88% improvement on 2009 Green Drop status
- ✓ 100% improvement in CRR risk profile
- ✓ 100% of plants in low and medium risk positions
- ✓ 81 and 83% Site Inspection Score

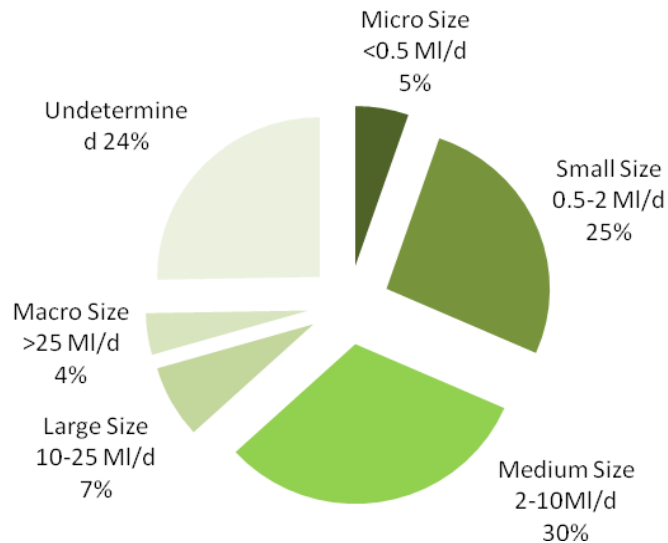


Maluti-A-Phofung Municipality  
Masepala wa Maluti-A-Phofung

## Introduction

Wastewater services delivery is performed by twenty (20) Water Services Authorities in the Free State via an infrastructure network comprising of 95 wastewater collector and treatment systems.

### Distribution of WWTPs in the Free State



A total operational flow of 198 Ml/day is received at the 95 treatment facilities, which has a collective hydraulic design capacity of 482 Ml/day (as ADWF). This means that 41% of the design capacity is taken up by the current operational flows, leaving a surplus of 59% as theoretic 'available' capacity for future demand. However, the findings of the Green Drop assessment suggest that a significant portion of surplus capacity might not be 'readily available', as result of inadequate maintenance and operational deficiencies.

	MICRO SIZE <0.5 Ml/day	SMALL SIZE 0.5-2 Ml/day	MEDIUM SIZE 2-10 Ml/day	LARGE SIZE 10-25 Ml/day	MACRO SIZE >25 Ml/day	Undetermined	Total Ml/day
No of WWTPs	5	25	30	7	4	24	95
Total Design Capacity (Ml/day)	1.6	24.3	140.2	109.2	206.9	24	482.2
Total Daily Inflows (Ml/day)	1.8	8.1	32.0	29.1	126.9	71	197.9

\*ADWF = Average Dry Weather Flow

## Provincial Green Drop Analysis

Analysis of the Green Drop assessments and site inspection results indicate that the bulk of Free State municipalities did not meet the requirement of the regulation programme. With the exception of some positive trends, it is the regulatory impression that wastewater services management are not on par with good practice and legislative compliance. The most encouraging aspect about the Province is a 250% improvement in assessment rates compared to 2009. A total of **100% municipalities** were assessed during the 2010/11 Green Drop Certification.

GREEN DROP COMPARATIVE ANALYSIS			
Performance Category	2009	2010/11	Performance trend
<i>Incentive-based indicators</i>			
Number of municipalities assessed	8 (40%)	20 (100%)	↑
Number of wastewater systems assessed	35	95	↑
Average Green Drop score	15%	24.1%	↑
Number of Green Drop scores ≥50%	7/35 (20%)	11/95 (11.8%)	↓
Number of Green Drop scores <50%	28 (80%)	84/95 (88.2%)	↓
Number of Green Drop awards	0	0	→
Average Site Inspection Score	N/A	46.6%	N/A
<b>PROVINCIAL GREEN DROP SCORE</b>	N/A	31.5%	N/A

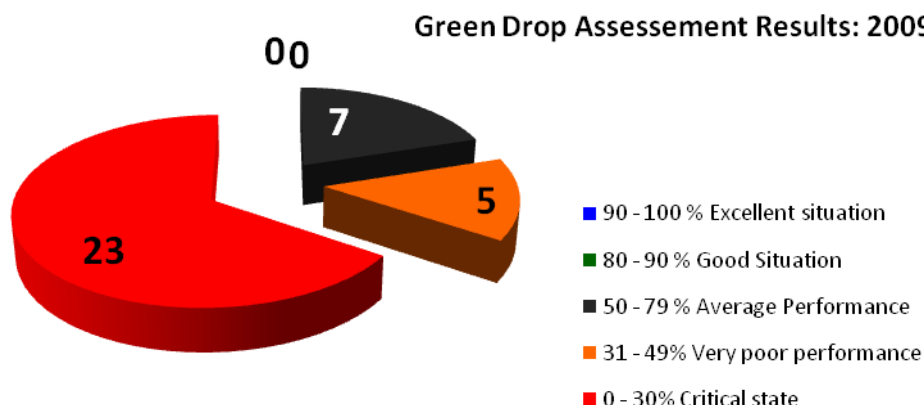
N/A = Not applied

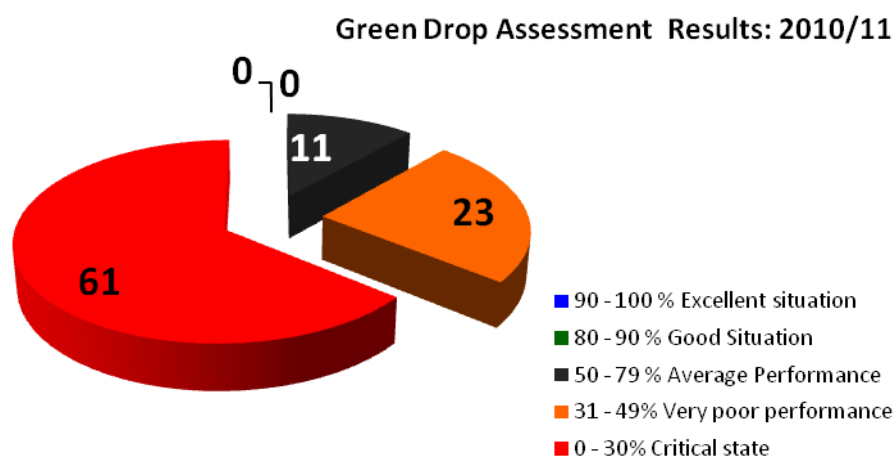
↑ = improvement, ↓ = digress, → = no change

Masilonyana Local Municipality was the only Water Services Institution in the Free State Province that failed in the presentation of evidence for assessment. Site inspections were done to confirm their Green Drop status.

The 100% assessment coverage serves as affirmation that awareness and renewed commitment by municipal management is forthcoming. Through the Green Drop process, municipalities are renewing their operational baselines and reprioritise their plans with the primary objective of raising the current performance status in terms of municipal wastewater management. The incentive-based regulatory approach succeeds to act as a positive stimulus to facilitate improved performance and public accountability, whilst establishing essential systems and processes to sustain and measure gradual improvement.

Whereas only 7 systems obtained Green Drop scores ≥50% in 2009, 11 systems obtained more than 50% in the current Green Drop cycle. However, on a %-scale this marks a decrease in plants with >50% GDC (20% to 12%). The average GDC score increased from 15 to 24%, indicating an improvement in the average performance by municipalities. Regrettably, the performance of the Province as a whole is unsatisfactory, as reflected by the average Municipal Green Drop Score of 31.5%, which places the Free State amongst the lower performing provinces in the country.





When comparing 2010/11 Green Drop results with 2009, the following trends are observed:

- ✓ 60 more systems were assessed in 2010 (95) compared to 2009 (35)
- ✗ 0 systems achieved Green Drop Certification, indicating 0 systems are considered 'excellent' (>90%)
- ✗ 14.3% of systems were in 'very poor state' in 2009 compared to 24.2% in 2010/11
- ✗ 65.7% systems were in 'critical state' in 2009 compared to 64.2% in 2010/11.

### Provincial Risk Analysis

The Green Drop requirements are used to assess the entire value chain involved in the delivery of municipal wastewater services, whilst the risk analyses focus on the treatment function specifically.

CUMULATIVE RISK COMPARATIVE ANALYSIS			
Performance Category	2009	2010/11	Performance trend
<i>Risk-based indicators</i>			
Highest CRR	28.0	28.0	→
Average CRR	14.7	16.2	↑
Lowest CRR	5.0	4.0	↓
Average Design Rating (A)	1.4	1.4	→
Average Capacity Exceedance Rating (B)	4.4	4.5	↑
Average Effluent Failure Rating (C)	5.8	7.1	↑
Average Technical Skills Rating (D)	3.1	2.8	↓
<b>AVERAGE % DEVIATION FROM maximum-CRR</b>	74.7	80.9	↑

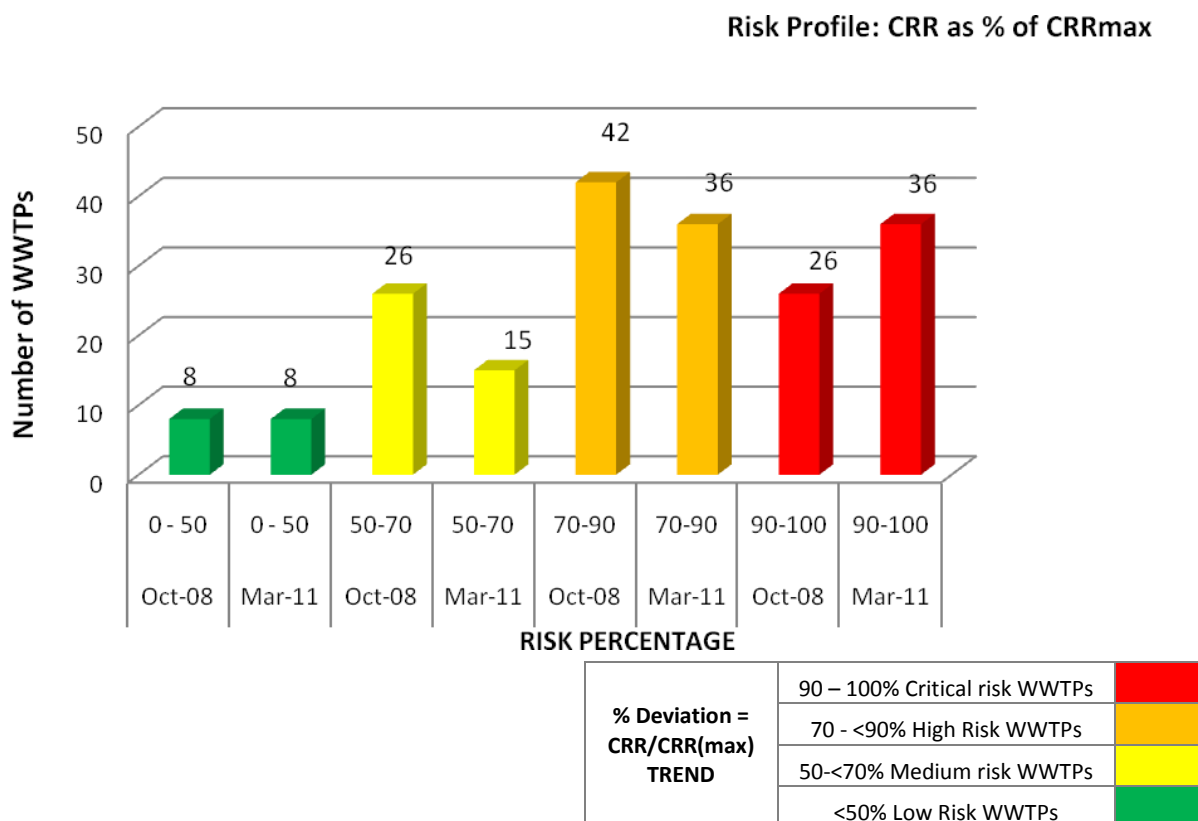
N/A = Not applied

↑ = digress, ↓ = improvement, → = no change

From the above table, it can be observed that the Province has successfully arrested the highest CRR at 28. Low risk facilities moved to a slightly lower CRR level. However, the average CRR increased from 14.7 to 16.2 indicating that efforts need to be intensified to stall facilities that continue to slide into higher risk situations. These municipal treatment plants are clearly identified in this Chapter under "Regulatory Impression".

The CRR analysis further points out that considerable effort has been made to address technical skills in the Province. However, the risk elements pertaining to treatment capacity and effluent quality remains problematic.

When observing the movement of risk in the following bar-chart, it can be seen that then number of plants in critical risk space increase from 26 to 36. The increase in critical risk plants correspond with the decrease in high- and moderate risk plants, as these have moved to higher risk positions. This trend is alarming, as experience has learnt that the cost and specialist resources are much higher to address critical risk scenario, compared to earlier interventions when detecting early warning signals of a plant moving into distress.



The following municipalities are in critical risk positions in 2010/11 and placed under regulatory surveillance:

Priority	WSA Name	2011 Average CRR/CRRmax % deviation	WWTPs in critical risk space
1	Masilonyana LM	100%	Brandfort, Soutpan (New), Theunissen, Verkeerdevlei, Winburg
2	Naledi LM	100%	Wepener, Dewetsdorp, Van Stadensrus
3	Tokologo LM	100%	Boshof, Dealesville, Hertzogville
4	Nketoana LM	96%	Reitz, Arlington, Lindley/ Ntha, Petrus Steyn
5	Mafube LM	93%	Frankfort, Namahadi, Tweeling
6	Phumelela LM	93%	Vrede, Memel, Warden
7	Setsoto LM	91%	Ficksburg, Seneka, Marquard

8	Kopanong LM	91%	Edenberg, Fauresmith, Gariep Dam, Jagersfontein
9	Letsemeng LM	88%	Luckhoff, Jacobsdal
10	Mantsopa LM	88%	Hobhouse, Lady Brand
11	Moqhaka LM	88%	Kroonstad
13	Matjhabeng LM	85%	Witpan, Odendaalsrus (A/S)
16	Dihlabeng LM	78%	Fouriesburg
	Critical risk plants		

*Note: above list reflect critical risk plants only. Municipalities are urged to consult the content of this Chapter to identify the plants that are in **high risk** positions.*

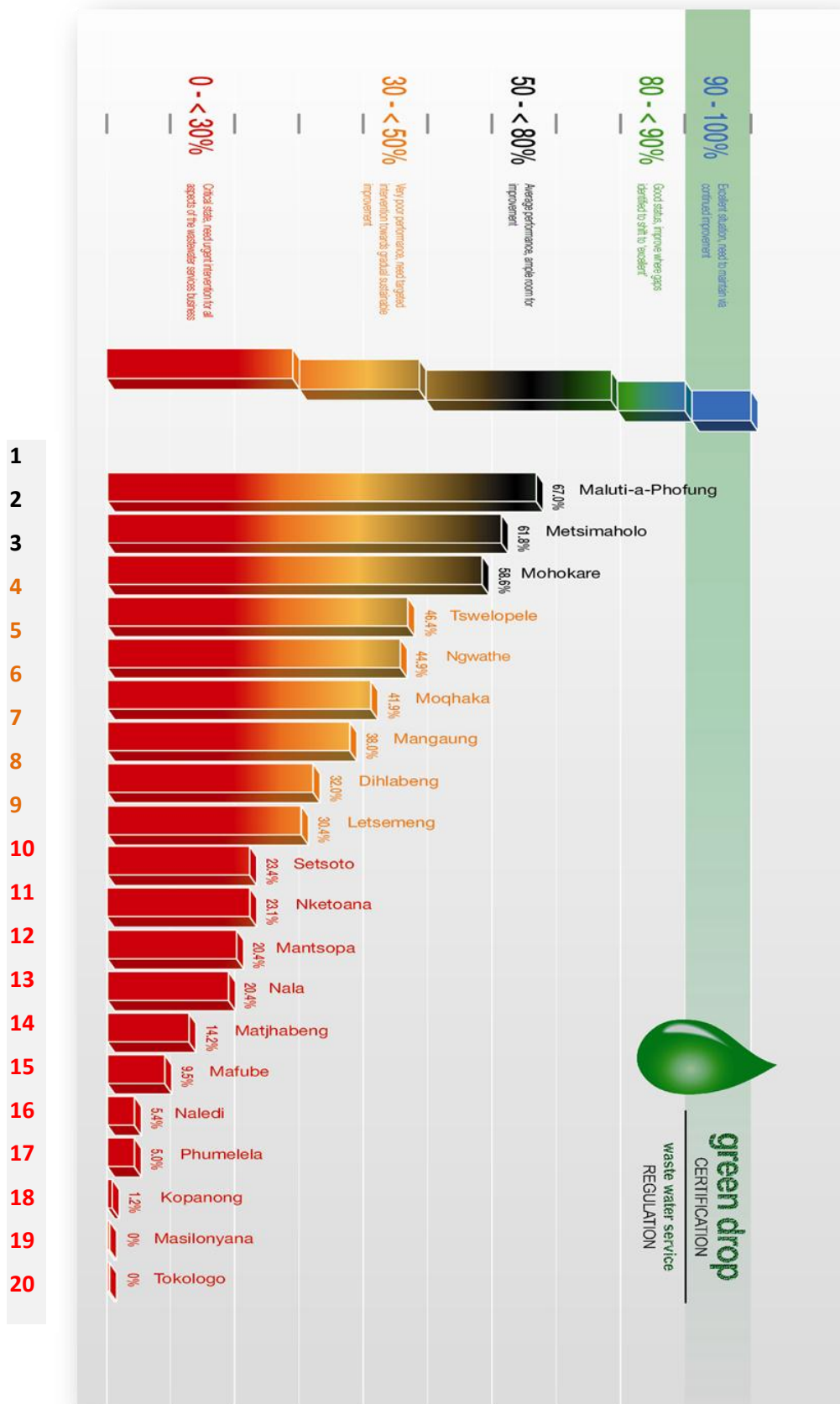
## Conclusion

The Green Drop results for 2010-2011 indicated that municipal wastewater management are not meeting the requirements of the Green Drop regulatory programme and that sub-standard practice and unsatisfactory performance remain the norm in the Province. The (average) Municipal Green Drop Score of 31.5% places the Free State amongst the lower performing provinces in the country on the Provincial Performance log.

**No Green Drop Certificates** are awarded in the Free State.

## Performance Barometer

The following log scale indicates the various positions that municipalities hold with respect to their individual Municipal Green Drop Scores:



Municipal Green Drop Score: **32.0%**

Performance Area	Systems	Bethlehem	Clarens	Paul Roux
Process Control, Maintenance & Management skills		63	48	18
Monitoring Programme		40	0	0
Credibility of Sample Analyses		70	0	0
Submission of Results		25	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		7	7	7
Bylaws		85	85	85
Treatment & Collector Capacity		65	55	10
Asset Management		53	45	70
Bonus Scores		0	0	0
Penalties		5	0	0
<b>Green Drop Score (2011)</b>		<b>34.3% (↑)</b>	<b>21.9% (↑)</b>	<b>18.2% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (MI/d)		18	1.3	0.54
Operational % i.t.o. Capacity		70%	87%	42%
Cumulative Risk Rating (CRR)		21	15	14
% i.t.o. Maximum Risk Rating		<b>75.0% (↓)</b>	<b>83.3% (↑)</b>	<b>77.8% (↓)</b>
Performance Area	Systems	Rosendal	Fouriesburg	
Process Control, Maintenance & Management skills		48	23	
Monitoring Programme		0	0	
Credibility of Sample Analyses		0	0	
Submission of Results		0	0	
Waste water Quality Compliance		0	0	
Failure Response Management		7	7	
Bylaws		85	85	
Treatment & Collector Capacity		25	38	
Asset Management		70	35	
Bonus Scores		0	0	
Penalties		5	0	
<b>Green Drop Score (2011)</b>		<b>22.7% (↑)</b>	<b>16.2% (↑)</b>	
Green Drop Score (2009)		NA – 0%	NA – 0%	
Treatment Capacity (MI/d)		0.24	1.85	
Operational % i.t.o. Capacity		48%	142%	
Cumulative Risk Rating (CRR)		11	17	
% i.t.o. Maximum Risk Rating		<b>66.1% (↓)</b>	<b>94.4% (↑)</b>	

NI - No information NA- Not assessed





## Regulatory Impression

The Dihlabeng Local Municipality has performed unsatisfactory during the Green Drop assessments, indicating that wastewater services are still not being managed according to the expectations of the regulation programme. The complete lack of monitoring presents proof of inefficient wastewater management at the most fundamental levels, and this evidently poses a tremendous risk to public health and the receiving environment. It is a concerning factor that the plants have sufficient capacity (except Fouriesburg- 142% hydraulic overload), but still maintain a 0% compliance. This would point to specific attention needed to restore operational capacity via improved maintenance practices and improved process control. All these actions would however, require technical expertise and appropriate decisions by municipal management.

The availability of relatively good bylaws is encouraging, but a full score for local regulation could not be awarded as the implementation thereof should still be tested over a longer period in time to indicate efficacy levels. The regulator is most optimistic regarding the continued improvement in Dihlabeng, when considering that the municipality has taken the 1<sup>st</sup> positive step to submit evidence for assessment. The municipality is now presented with an opportunity to improve gradually and systematically upon this baseline. The positive Green Drop trend (↑) is supported by a reduced risk profile for three treatment plants (↓), with the exception of the Fouriesburg- and Clarens plants which have entered **high- and critical risk** space, that require renewed efforts.

### Green Drop Findings:

1. One of the 5 wastewater treatment works operates in excess of its design capacity. Significant infrastructure investment is required, but should be planned for basic technology according to the lack of effective wastewater management and operation practices.
2. Other than Bethlehem, none of the other 4 systems could present sufficient proof of monitoring records. Thus the finding of no-monitoring transgression as a significant risk.
3. Underlying above symptoms and evidence of poor performance, is possibly the lack of skilled staff, especially at the smaller works.

*The Regulator is not satisfied with the overall performance of wastewater services management in Dihlabeng. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

**Fouriesburg 42%**  
**Bethlehem 45%**

The Fouriesburg plant was inspected to verify the findings of the Green Drop assessment:

- The staff implement a run-to-failure maintenance approach to infrastructure, which is compounded by the lack of procedures, systems and skilled personnel on site
- At time of inspection, a pumpstation breakdown was left unattended with resultant spillage
- No records of maintenance, monitoring or operational procedures could be presented
- The sludge drying beds were well maintained and the worker facilities neat and clean
- A positive attitude amongst the staff serves as encouragement that the plant can reach its potential should a concerted and resourced effort be put to the mark.

Similar observations were made for the Bethlehem wastewater treatment plant:

- The terrain is tidy and buildings well kept, and the staff is appreciative of their work
- The biofilter system is compromised by dysfunctional primary settling tank pumps
- No disinfection takes place before discharge to the river
- No monitoring results or data are available to inform process control or disinfection regimes.

Municipal Green Drop Score: **1.2%**

Performance Area	Systems	Bethulie	Edenburg	Fauresmith	Gariep Dam
Process Control, Maintenance & Management skills		6	6	6	6
Monitoring Programme		0	0	0	0
Credibility of Sample Analyses		0	0	0	0
Submission of Results		0	0	0	0
Wastewater Quality Compliance		0	0	0	0
Failure Response Management		0	0	0	0
Bylaws		0	0	0	0
Treatment & Collector Capacity		0	8	0	0
Asset Management		0	0	0	0
Bonus Scores		0	0	0	0
Penalties		5	0	0	5
<b>Green Drop Score (2011)</b>		<b>0.6% (↑)</b>	<b>1.3% (↑)</b>	<b>0.6% (↑)</b>	<b>0.6% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (Ml/d)		0.5	1.076	1.0	2.8
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		15	18	18	18
% i.t.o. Maximum Risk Rating		<b>83.3% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>
Performance Area	Systems	Jagersfontein	Phillippolis	Reddersburg	
Process Control, Maintenance & Management skills		6	6	6	
Monitoring Programme		0	0	0	
Credibility of Sample Analyses		0	0	0	
Submission of Results		0	0	0	
Wastewater Quality Compliance		0	0	0	
Failure Response Management		0	0	0	
Bylaws		0	0	0	
Treatment & Collector Capacity		0	0	45	
Asset Management		0	0	13	
Bonus Scores		0	0	0	
Penalties		0	0	5	
<b>Green Drop Score (2011)</b>		<b>0.6% (↑)</b>	<b>0.6% (↑)</b>	<b>7% (↑)</b>	
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%	
Treatment Capacity (Ml/d)		2.2	0.47	0.75	
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	
Cumulative Risk Rating (CRR)		18	15	15	
% i.t.o. Maximum Risk Rating		<b>100% (↑)</b>	<b>83.3% (↑)</b>	<b>83.3% (↑)</b>	

Performance Area	Systems	Springfontein	Trompsburg
Process Control, Maintenance & Management skills		6	6
Monitoring Programme		0	0
Credibility of Sample Analyses		0	0
Submission of Results		0	0
Wastewater Quality Compliance		0	0
Failure Response Management		0	0
Bylaws		0	0
Treatment & Collector Capacity		0	0
Asset Management		0	0
Bonus Scores		0	0
Penalties		0	0
<b>Green Drop Score (2011)</b>		<b>0.6% (↑)</b>	<b>0.6% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%
Treatment Capacity (Ml/d)		0.5	0.73
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		15	15
% i.t.o. Maximum Risk Rating		<b>83.3% (↑)</b>	<b>83.3% (↑)</b>

NI - No information  
NA- Not assessed

## Regulatory Impression

It has been a 1<sup>st</sup> time Green Drop assessment for Kopanong Local Municipality. Taking this step is a positive action on the part of Kopanong. Regrettably, the WSA performed poorly during the Green Drop assessments, indicating that the wastewater services are not being managed effectively and that the expectations of the regulation programme are largely not being met. The lack of information, with minor exceptions at the Reddersburg plant, indicates that the most basic systems, processes and resources are not in place to execute the municipal sanitation function.

The low Municipal Green Drop Score (1.2%) is evident of severe institutional challenges that impede on wastewater management. The technical skills audits recently under taken to determine the skills gaps are encouraging, however the true value of this action lies in the implementation to rectify this gap. The complete lack of scientific services, monitoring schedule, flow logging and design specification on all the plants is disquieting and bears testimony to conventional wisdom that determines that the municipality cannot manage what it does not know.

The Kopanong wastewater systems evidently continue to pose a significant risk to the receiving environment and public health. All nine treatment plants continue along an increased risk profile (↑) and reside in **high- and critical risk** space. The situation demands the attention of municipal administration and governance. The Regulator trusts that this disagreeable baseline will motivate the municipality to rectify its status without further hesitation or excuse.

### Green Drop Findings:

1. Not one of the 9 wastewater treatment plants has actual flow data from which the operational capacity can be calculated. A maximum risk position is therefore assumed, whereas all plants are exceeding its design capacity.
2. In addition, only 2 plants could present verified design specification and information.

3. On this basis, no future planning can be done to rectify the situation and the continued functioning of these works is completely unsustainable. Significant skills, planning and infrastructure investment are required, and preference should be taken towards robust basic technology when considering the apparent lack of maintenance and operation practices.
4. The municipality could not provide any proof of monitoring records, legal authorisation of the plants, technical audits or budget and expenditure records to support a positive Green Drop score. Thus the findings of the general transgression against all Green drop requirements are considered a significant and severe risk.

*The Regulator is not satisfied with the overall performance of wastewater services management in Kopanong. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

**Springfontein 11%**

**Reddersburg 39%**

The following observations pertain to the Springfontein plant:

- A technical person is on site during time of inspection, but is not fully conversant with technical and maintenance aspects
- The inlet works are equipped with bar screens but no canopy is provided. The head of works was littered with screenings and the disposal trench was full and overflowing
- A vandalised chlorination room and a pump house have been unused for three years without rectification by management
- The pump house has its electrical distribution box exposed with open wires and the dysfunctional pump is still on its stand/base
- No direct overflow of final effluent from the ponds, but the area around the chlorination room was soaked with seepage from the ponds or connector pipework - groundwater contamination would be probable
- The inflow and as well the outflow is not measured.

In the town of Springfontein a pump station equipped with submersible pumps was not functional on the day of inspection. This did not pose a direct hazard as its overflow is linked to the ponds which are approximately 1.5 km indistance. However, this does not conform to good practice and should be rectified without delay.

The Reddersburg plant inspection was found to be:

- Plant is under refurbishment with upgraded of the existing pond system
- Improvements are observed at the inlet works (handling of screenings) and with the installation of flow meters with telemetry
- No disinfection or monitoring or on-site testing of the final effluent quality undertaking
- Noted that the municipality allowed the design engineer to commence with refurbishment work, without first establishing the quality or quantity profile of the wastewater. This alludes to a need for more stringent contract management on the side of the WSA with regard to further deliverables by the service provider.

Municipal Green Drop Score: **30.4%**

Performance Area	Systems	Jacobsdal	Luckhoff	Koffiefontein
Process Control, Maintenance & Management skills		40	30	50
Monitoring Programme		65	30	65
Credibility of Sample Analyses		76	61	61
Submission of Results		75	75	75
Wastewater Quality Compliance		10	62	62
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		20	0	20
Asset Management		18	28	28
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>25.7% (↑)</b>	<b>32.6% (↑)</b>	<b>43.1% (↑)</b>
Green Drop Score (2009)		0%	0%	0%
Treatment Capacity (MI/d)		NI	NI	NI
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		17	22	16
% i.t.o. Maximum Risk Rating		<b>94.4% (↑)</b>	<b>95.6% (↑)</b>	<b>88.9% (↑)</b>
Performance Area	Systems	Petrusburg	Oppermans-gronde	
Process Control, Maintenance & Management skills		40	30	
Monitoring Programme		55	30	
Credibility of Sample Analyses		61	61	
Submission of Results		75	75	
Wastewater Quality Compliance		33	5	
Failure Response Management		0	0	
Bylaws		0	0	
Treatment & Collector Capacity		20	0	
Asset Management		27.5	27.5	
Bonus Scores		0	0	
Penalties		0	0	
<b>Green Drop Score (2011)</b>		<b>32.3% (↑)</b>	<b>18.4% (↑)</b>	
Green Drop Score (2009)		0%	0%	
Treatment Capacity (MI/d)		NI	NI	
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	
Cumulative Risk Rating (CRR)		13	16	
% i.t.o. Maximum Risk Rating		<b>72.2% (↓)</b>	<b>88.9% (↓)</b>	

NI - No information

NA- Not assessed



## Regulatory Impression

The Letsemeng Local Municipality has performed unsatisfactory during the Green Drop assessments, indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The municipal score of 30.4% indicate that a number of aspects need to be addressed to move wastewater services towards compliance and good practice. The absence of design and flow information presents in itself a major gap. Further gaps comprise of the lack of legal authorisation of the plant and its technical staff, operational monitoring, operations & maintenance manuals, Bylaws and asset management baseline information. Jacobsdal, Petrusburg and Oppermansgronde show non-compliance to national legislation in terms of effluent quality, and thereby pose a significant risk to the receiving environment and public health.

The availability of a laboratory is encouraging and should be used to expand the monitoring programme and to build a scientific- and process knowledge base. The positive step taken to register plant personnel is a further positive development. Overall, the municipality shows a marked improvement (↑) in Green Drop scores for all 5 plants, when compared to the 2009 results. These improved GDC scores are testimony that Letsemeng could, with the appropriate resources and focus, effect a positive turn-around in their wastewater services, and may target >50% in the upcoming Green Drop assessments. To reach this target, the municipality need to rectify the gaps that were identified in the Green Drop 2010/11 process and take a risk-based approach to prioritise and address such gaps. Three of the 5 plants continue along an upward risk curve (↑) in **high and critical risk** space.

### Green Drop Findings:

1. Five out of 5 wastewater treatment works could not provide design specifications of their plants and now flows are being measured. The continued functioning of these works is completely unsustainable, as the basic information is not in place to support or inform suitable decisions.
2. None of the 5 systems could present sufficient proof of operational monitoring records or of operations & maintenance manuals used to control the plant. Thus the finding of the non-monitoring transgression which is a significant risk.
3. The most significant transgression would possibly be the low % compliance that is observed for three of the 5 treatment plants, which is compounded by the low technical skills base found at these plants.

*The Regulator is not satisfied with the overall performance of wastewater services management in Letsemeng. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

<b>Luckhoff</b>	<b>27%</b>
<b>Jacobsdal</b>	<b>42%</b>

The Luckhoff and Jacobsdal treatment facilities were inspected to verify the Green Drop findings:

- The plants are in a deteriorated state and is poorly maintained, with litter and screening not removed from the site
- No operations and maintenance manuals, procedures or logbooks available
- The pond system is infested with reeds and hyacinths and no disinfection of the final effluent takes place
- Basic facilities for the plant workers need to be addressed as a matter of priority, i.e. safety equipment and rest/drinking water facility
- A sense of 'caring' and ownership were notable, despite the potential of the plant to be quite a pleasant looking facility
- The Jacobsdal biofilter system is out of commission and no disinfection takes place.

Municipal Green Drop Score: **9.5%**

Performance Area	Systems	Cornelia	Frankfort	Tweeling
Process Control, Maintenance & Management skills		5	5	0
Monitoring Programme		9	0	0
Credibility of Sample Analyses		0	0	0
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		13.8	13.75	13.8
Bylaws		20	20	20
Treatment & Collector Capacity		20	42.5	20
Asset Management		42.5	12.5	12.5
Bonus Scores		0	40	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>12.1% (↑)</b>	<b>15.0% (↑)</b>	<b>6.2% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (MI/d)		0.25	1.23	1.0
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		14	18	18
% i.t.o. Maximum Risk Rating		<b>77.8% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>
Performance Area	Systems	Namahadi	Villiers / Qalabotjha	
Process Control, Maintenance & Management skills		12.5	2.5	
Monitoring Programme		0	0	
Credibility of Sample Analyses		0	0	
Submission of Results		0	0	
Wastewater Quality Compliance		0	0	
Failure Response Management		13.8	13.8	
Bylaws		20	20	
Treatment & Collector Capacity		50	27.5	
Asset Management		12.5	12.5	
Bonus Scores		0	0	
Penalties		0	0	
<b>Green Drop Score (2011)</b>		<b>10.5% (↑)</b>	<b>7.2% (↑)</b>	
Green Drop Score (2009)		NA – 0%	NA – 0%	
Treatment Capacity (MI/d)		1.4	2.4	
Operational % i.t.o. Capacity		200%	150%	
Cumulative Risk Rating (CRR)		18	16	
% i.t.o. Maximum Risk Rating		<b>100% (→)</b>	<b>88.9% (→)</b>	

NI - No information NA- Not assessed



## Regulatory Impression

The Mafube Local Municipality has performed unsatisfactory during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not being met, resulting in an overall municipal score of 9.5%. The most prominent gaps are to be found in the lack of technical staff, as well as management aspects as reflected in the breach of essential planning, procedures and planning aspects. The lack in monitoring persist on almost all levels, ranging from plant operations and repairs logging to daily flow measurements to financial aspects. As result of the non-monitoring in effluent quality, all 5 plants fail on the critical criterion of % compliance to effluent quality requirements, and thereby continue pose a significant risk to the receiving environment and public health.

On a positive note, the initiation of infrastructure audits is encouraging. The rectification of the audit findings will be the determinative action that will influence the upcoming Green Drop assessment. From the 2010/11 Green Drop results, it is possible for the municipality to identify the key gaps in the sanitation services delivery function and to address those in a risk-based approach. In terms of the municipality's risk profile, the CRRs show continued digress (↑) in the majority of the plants. All plants still resides within **high- and critical risk** boundaries. It is extremely disconcerting that 3 treatment facility now reside in maximum critical risk space. The Regulator reminds the municipality that extraordinary effort and resources will have to be applied to turnaround this unacceptable situation.

### Green Drop Findings:

1. Four of the 5 wastewater treatment works do not monitor flow and are unable to determine if sufficient plant capacity is intact to support the operational flow and strength.
2. The continued functioning of these works is completely unsustainable, and in the absence of a skilled and resourced team, planning should revolve around robust basic technology which could deliver upon the required effluent quality standards.
3. None of the 5 plants could present sufficient proof of monitoring records at any level, including operational, compliance and flow monitoring. Thus the finding of the no-monitoring transgression which is a significant risk.
4. Should any of the plants face a disaster or emergency situation, it would not be in a position to deal with such, as the protocol and procedures are not in place.

*The Regulator is not satisfied with the overall performance of wastewater services management in Mafube. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

<b>Villiers</b>	<b>9%</b>
<b>Frankfort</b>	<b>29%</b>

The Villiers (29%) and Frankfort (9%) plants were inspected to verify the Mafube Green Drop findings:

- The Villiers plant appears neat and fenced in, with daily visits to clean screening and attend to general duties. However, Frankfort is largely unsecured and accessible to man and animals
- No operation, maintenance or monitoring records were found at both plants
- Absence of screening at the Frankfort plant results in the visible flotation of solid materials in the primary pond
- The effluent from the Villiers pond systems are discharged to the Qualabotjha biofilter plant, but the Villiers ponds are functioning reasonably well, and could with relative ease upgrade its Green Drop score by addressing the administrative and management aspects identified in the assessment.
- Trainee staff are largely responsible for the Frankfort plant – they have a positive attitude towards their work, but need guidance and further training to take up such responsibility
- No disinfection is taking place, and unmonitored effluent quality is used for farming purposes.



Municipal Green Drop Score: 67%

Performance Area	Systems	Wilge /Harrismith	Kestell	Phuthaditjaba	Tshiame
Process Control, Maintenance & Management skills		75	75	75	75
Monitoring Programme		60	50	65	50
Credibility of Sample Analyses		100	100	100	100
Submission of Results		100	100	100	50
Wastewater Quality Compliance		0	73	61	73
Failure Response Management		50	50	50	50
Bylaws		35	35	35	35
Treatment & Collector Capacity		70	35	42.5	35
Asset Management		80	80	80	80
Bonus Scores		21.3	27.5	21.3	27.5
Penalties		0.5	0.5	0.5	0.5
<b>Green Drop Score (2011)</b>		<b>55.6% (↑)</b>	<b>75.5% (↑)</b>	<b>73.1% (↑)</b>	<b>73.0% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	48%	NA - 0%
Treatment Capacity (MI/d)		6	0.8	9.5	0.9
Operational % i.t.o. Capacity		100%	40%	59%	44%
Cumulative Risk Rating (CRR)		13	4	9	4
% i.t.o. Maximum Risk Rating		<b>56.5% (↓)</b>	<b>22.2% (↓)</b>	<b>39.3% (→)</b>	<b>22.2% (↓)</b>

Performance Area	Systems	Elandsrivier / Phuthahitjaba 2	Makwane - Matsegeng	Moeding
Process Control, Maintenance & Management skills		75	75	85
Monitoring Programme		65	50	50
Credibility of Sample Analyses		100	100	100
Submission of Results		100	50	0
Wastewater Quality Compliance		0	33	0
Failure Response Management		50	50	50
Bylaws		35	35	35
Treatment & Collector Capacity		50	50	42.5
Asset Management		80	80	80
Bonus Scores		27.5	27.5	21.3
Penalties		0.15	0.5	0
<b>Green Drop Score (2011)</b>		<b>54.7% (↑)</b>	<b>62.5% (↑)</b>	<b>49.7% (↓)</b>
Green Drop Score (2009)		52%	52%	52%
Treatment Capacity (MI/d)		0.5	0.2	0.2
Operational % i.t.o. Capacity		26%	27%	11 %
Cumulative Risk Rating (CRR)		7	5	10
% i.t.o. Maximum Risk Rating		<b>38.9% (↓)</b>	<b>27.8% (→)</b>	<b>55.6% (↓)</b>

NI - No information NA- Not assessed



## Regulatory Impression

The Maluti-a-Phofung Local Municipality presented a fairly varied performance portfolio, which received Green Drop scores between 49 and 75%. The important point is that these scores represent a notable improvement on the 2009 status (with the exception of Moeding). Unfortunately, the municipal Green Drop score of 67%, indicate that the wastewater services are still not on par with the requirements of the regulation programme but that the municipality is certainly moving into a position of strength. This is supported by the overall risk reduction (↓) that is evident on all CRR profiles, with all plants finding itself in low to moderated risk positions. The municipal practices related to technical skills, credibility and submission of results onto the GDS, largely conform to the Green Drop requirement, resulting in an overall municipal score of It is also encouraging to see the progress on asset management and financial planning aspects.

Judging by the plant's available capacity, it is concerning to note non-compliance to effluent quality standards within the margins of sufficient plant capacity. Process control and interpretation of scientific data to effect appropriate process adjustments need to receive attention to advance compliance to discharge standards. In cases of low flows, alternatives options should be investigated to optimise the food:mass ratios to improve treatment efficiencies. Kestell and Tshiame set a benchmark for the other plants in terms of its improved effluent quality compliance (73%). A major concern remains the lack of legal authorisation, and resultant penalties applied to all plants.

From the 2010/11 Green Drop results, it is possible for the municipality to identify the key gaps in its water services delivery function and to rectify those in a risk-based approach. If the municipality could apply focus and resources to these, it is possible for Maluti-a-Phofung to move its Green Drop score towards the >80% in the GDC 2011/12 cycle – thereby establishing a new benchmark for the Free State. Unfortunately, for now, the municipal services still fall short of best practice and performance.

### Green Drop Findings:

1. The majority of the plants does not monitor its incoming flow and is uncertain of the design capacity (hydraulic and organic) of the plants. Verification of such baseline information is necessary to inform future planning. Moreover, based on estimations, it appears as though available plant capacity of the Wilge WWTWs are already stretched or exceeded, rendering an upgrade project (for Wilge) and water infiltration projects (at all plants) a future priority.
2. The updating of Bylaws and implementation thereof, as well as the implementation of an incident response management, remains a managerial priority.
3. None of the 7 plants could present a valid authorisation, whilst 3 of the plants had poor to zero compliance on their effluent quality. Thus the finding of the final effluent quality transgression which is a significant risk to public health and the environment.

### Site Inspection Scores

<b>Phuthadhitjaba</b>	<b>67%</b>
<b>Wilge / Harrismith</b>	<b>86%</b>

The Phuthadhitjaba plant was found in fairly good condition, although not to the standard of Wilge:

- A lack of security may hamper this plants performance, especially during night shift with a 4 hourly sampling regime. Recent incidents of computer theft remains unresolved
- One of 4 primary biofilters and 1 of 3 secondary biofilters were not operational due to a mechanical breakdown
- Flow was not evenly distributed across all biofilters, due to blocking of nozzles
- The sludge drying beds are accessible and well maintained and only stabilised sludge from the anaerobic digesters is pumped to the drying beds
- The dried solids are stockpiled and used by farmers and as lawn dressing.



The Wilge plant was found to be in the following condition:

- The plant appeared neat and very well cared for, with logbooks, maintenance schedules and manuals in place
- Operational equipment is clean and in place and used on a daily basis, whilst the larger laboratory facility is used for comprehensive analysis and verification purposes
- At the inlet works, ultrasonic measurement instruments are suspended above channel
- All instruments were clean and in working order, and meters were functioning and daily flows recorded. The flow meter has not been calibrated
- Screenings from the automatic screens discharge to waste bins which are emptied and removed daily (or up to 4 times per day) to the landfill site
- All processes (screening, grit removal, settling, clarification, disinfection with sodium hypochlorite) are functioning well
- At the activated sludge process, DO, pH and SVI measurements are made every 4 hours for process optimisation. MLSS is stable at 3800-4200 mg/l and good settling during clarification
- Reasons as to why the plant did not achieve a 90%'s score include the motor and gearbox breakdowns on the ASP, biofilters in need of refurbishment, decommissioned settling tanks which compromises the efficiency of the disinfection process, and septic conditions in the pond system
- The staff is committed and knowledgeable about their plants and work well together
- The staff is to be congratulated on the operation of the anaerobic digesters and the sludge drying beds, which shows consistently a well stabilised and odourless sludge for use on the adjacent land.



*Safety awareness and signage at the Maluti plants is high on the management agenda*



Municipal Green Drop Score: **38.0%**

Performance Area	Systems	Botshabelo	ThabaNchu	Bainsvlei	Northern Works
Process Control, Maintenance & Management skills		33	18	33	28
Monitoring Programme		75	75	75	75
Credibility of Sample Analyses		40	40	40	40
Submission of Results		0	0	0	0
Wastewater Quality Compliance		31	31	55	55
Failure Response Management		0	0	0	0
Bylaws		70	70	70	70
Treatment & Collector Capacity		63	8	23	25
Asset Management		43	15	435	13
Bonus Scores		12.5	18.8	18.8	18.8
Penalties		0.25	0.5	0.5	0.5
<b>Green Drop Score (2011)</b>		<b>39.4% (↓)</b>	<b>20.4% (↓)</b>	<b>43.5% (↓)</b>	<b>38.8% (↑)</b>
Green Drop Score (2009)		66%	65%	65%	37%
Treatment Capacity (MI/d)		10.5	4.5	4	3
Operational % i.t.o. Capacity		53%	75%	80%	75%
Cumulative Risk Rating (CRR)		13	12	13	11
% i.t.o. Maximum Risk Rating		<b>56.5% (↑)</b>	<b>52.1% (↑)</b>	<b>56.5% (↑)</b>	<b>47.8% (↑)</b>
Performance Area	Systems	Bloemspruit	Bloemindustria	Welvaart	Sterkwater
Process Control, Maintenance & Management skills		25	18	33	33
Monitoring Programme		75	0	50	75
Credibility of Sample Analyses		40	0	40	40
Submission of Results		0	0	0	0
Wastewater Quality Compliance		48	0	72	31
Failure Response Management		0	0	0	0
Bylaws		70	70	70	70
Treatment & Collector Capacity		52.5	18	25	52.5
Asset Management		13	43	43	43
Bonus Scores		18.8	0	18.8	18.8
Penalties		0	0	0	0.5
<b>Green Drop Score (2011)</b>		<b>39.8% (↓)</b>	<b>13.4% (↓)</b>	<b>47.0% (↑)</b>	<b>39.3% (↓)</b>
Green Drop Score (2009)		44%	65%	44%	44%
Treatment Capacity (MI/d)		73	0.5	4	18.6
Operational % i.t.o. Capacity		128%	56%	67%	177%
Cumulative Risk Rating (CRR)		23	12	12	17
% i.t.o. Maximum Risk Rating		<b>69.7% (↑)</b>	<b>66.6% (↓)</b>	<b>52.2% (→)</b>	<b>73.9% (↑)</b>

NI - No information      NA- Not assessed



## Regulatory Impression

The Mangaung Local Municipality performance did not meet expectations, resulting in an overall low municipal score for Mangaung (38%). The Green Drop results points to wastewater services not being managed according to the requirements of the regulation programme. It has been the assessors observation that the low Green Drop scores are not as much an indication of poor performance, as it is a result of uninspired staff and unmotivated effort to present evidence before the panel. High-quality practice is already in place on the ground, supported by a competent technical and management team. The portfolio of evidence presented was therefore, not considered a fair representation of the true status of the municipality. Understandably, the 2010 loss of critical information has been a major setback to Mangaung, and stresses the importance of secure information management systems. The recent capturing of all information on the GDS system and submission of compliance data is a positive development, and these efforts were acknowledged upon conclusion of the scores.

The most prominent gaps in the current performance point to the lack in quality assurance in the water laboratory, which compromise the credibility of the results, as well as the 0% compliance to effluent standards, based on the inability for the municipality to provide a 12 months profile of the effluent results. Furthermore, the lack of training, asset management, financial data and planning information is notably absent or insufficient. It is noted that inadequate attention is given to the registration of technical staff, as well as classification and licensing of the treatment plants.

A definitive negative trend (↓) is observed in both the Green Drop results and the predominant risk disposition of all plants in Mangaung. It is the regulatory view that the Mangaung wastewater services pose a significant risk to the receiving environment and public health, and that a concerted effort be applied to reverse the current upward CRR risk profile (↑). Sterkwater is the 1<sup>st</sup> plant to move into a **high risk** position. Experience has learned that once this trend is followed, it becomes increasingly hard to normalise the situation towards accepted norms and standards.

A strong reference point for Mangaung is the presence of an extremely competent and knowledgeable team that is already in place. This single factor should give Mangaung the traction to improve or achieve Green Drop status in 2011/12, backed by appropriate resources. Also, the infrastructure is not overly stretched in terms of capacity (with the exception of Bloemspruit and Sterkwater), and effluent quality standards should be within reasonable reach.

### Green Drop Findings:

1. Eight out of 8 wastewater treatment plants did not meet effluent quality compliance in respect of microbiological quality, which indicate a serious lapse in disinfection of final effluent before discharge into the respective river systems.
2. None of the 8 systems had a quality assured scientific service in place, as result of a lack in accreditation or using an inter-laboratory proficiency analysis or exchange programme.
3. Evidence of maintenance records, manuals and standard operating procedures are absent or has not been presented. Copies of manuals were also not found at the plants.
4. Two of the 8 plants exceed its hydraulic design capacity.
5. Lastly, the Green Drop score against the skills category does not do reflect the potentially strong technical skills set, and registration of plant personnel must be addressed along strengthened training initiatives.

### Site Inspection Scores

<b>Bloemspruit</b>	<b>49%</b>
<b>Sterkwater</b>	<b>66%</b>

The Bloemspruit and Sterkwater WWTPs were inspected to verify the Green Drop findings:

- The terrains were relatively well kept, but revealed a lack of general workers for housekeeping and site maintenance

- Both plants are old and overloaded, with evidence of lack of routine maintenance and dire need for refurbishment, repairs and replacement
- The staff is highly committed to the highest level performance despite the constrained situation of overloading and continued lack of maintenance. These plants are prime examples of a committed staff with excellent process knowledge that is stretching the existing infrastructure to its maximum
- However, the overloading of the plant, deteriorated equipment and damaged civil structures (e.g. anaerobic digesters at Bloemspruit) are compromising the ability of the facilities to deliver a safe and sustainable service in the medium to long term future
- Closer inspection revealed difficulties at the two plants to produce a stabilised final sludge at the Bloemspruit plant and to maintain optimal conditions for efficient nutrient removal at the Sterkwater plant

At conclusion of the Green Drop assessment period, the staff reaffirmed their commitment to the process, and it is expected that Mangaung will up their game to perform better in the upcoming Green Drop cycle.

Municipal Green Drop Score: **20.4%**

Performance Area	Systems	Ladybrand	Tweespruit	ThabaPhatdisa
Process Control, Maintenance & Management skills		17.5	2.5	5
Monitoring Programme		9	9	9
Credibility of Sample Analyses		70	70	70
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		35	20	24.5
Asset Management		40	10	40
Bonus Scores		40	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>21.6% (↑)</b>	<b>8.1% (↑)</b>	<b>13.3% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%	NA - 0%
Treatment Capacity (MI/d)		17.5	0.5	0.5
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		22	14	15
% i.t.o. Maximum Risk Rating		<b>95.6% (↓)</b>	<b>77.8% (↓)</b>	<b>83.3% (↓)</b>
Performance Area	Systems	Excelsior	Hobhouse	
Process Control, Maintenance & Management skills		5	0	
Monitoring Programme		9	9	
Credibility of Sample Analyses		70	70	
Submission of Results		0	0	
Wastewater Quality Compliance		0	0	
Failure Response Management		0	0	
Bylaws		0	0	
Treatment & Collector Capacity		0	24.5	
Asset Management		10	10	
Bonus Scores		0	0	
Penalties		0	0	
<b>Green Drop Score (2011)</b>		<b>6.4% (↑)</b>	<b>8.3% (↑)</b>	
Green Drop Score (2009)		NA - 0%	NA - 0%	
Treatment Capacity (MI/d)		0.5	0.5	
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	
Cumulative Risk Rating (CRR)		15	23	
% i.t.o. Maximum Risk Rating		<b>83.3% (↓)</b>	<b>100% (↑)</b>	

NI - No information    NA- Not assessed



## Regulatory Impression

The Mantsopa Local Municipality has performed unsatisfactory during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Mantsopa (20.4%). The gaps in the current performance reach into **all aspects** of wastewater service delivery, with gaps ranging from technical skill levels, qualitative and quantitative monitoring, planning to management of wastewater collection and treatment. The recent implementation of monitoring with an accredited university-based laboratory, were awarded with good scores against data credibility. All mentioned levels will have to be raised from a critical- to basic service level before the municipality would be able to move forward.

On a positive note, the municipality is commended for taking the first step to present their results for assessment. From these results, Mantsopa can identify the critical gaps first, and take a risk-based approach to rectify the high-risk areas in a phased approach over the next 1-5 years. For now, the situation in Mantsopa is considered critical from a regulatory view and holds high risk to public health and the environment. All plants are already in **high risk** positions, with Hobhouse and Ladybrand in **critical risk** position. One positive aspect is that the (↓) arrows indicate that risk is already being mitigated towards a more manageable margin. However, the situation remains fragile and the findings demand the attention of municipal management and political principles.

### Green Drop Findings:

1. Five out of 5 wastewater treatment plants cannot measure its impact on receiving water and natural resources, as result of the absence in monitoring. This transgression reaches beyond effluent quality monitoring, and include volumetric (flow) metering as well.
2. None of the 5 systems had a technical skills base in place and is not registered with the national authority. The plants are not authorised for the business they conduct. Even with manuals and procedures in place, the staff does not have interpretation expertise.
3. No evidence of maintenance records, manuals and standard operating procedures were presented during the assessment, but have been found at the plants. This indicate a low preparation level and disconnect between what is in place within the municipality (planning).
4. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend it useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.

*The Regulator is not satisfied with the overall performance of wastewater services management in Mantsopa. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

## Site Inspection Scores

**Ladybrand 43%**

The Ladybrand WWTP was inspected to verify the Green Drop findings:

- Alack of process and technical knowledge of the existing staff
- The operations and maintenance manuals are available but not used
- No monitoring takes place and the disinfection unit is not functional
- Flow meters are installed but not used or calibrated
- Evidently, the plant experience major sludge accumulation, and the primary settling and final clarification are compromised.
- The terrain and buildings are well maintained and clean. With concerted effort by management and the staff, this plant could improve its performance and appearance in a short space of time.



Municipal Green Drop Score: **0%**

Performance Area	Systems	Theunissen	Brandfort	Soutpan (New)
Process Control, Maintenance & Management skills		0	0	0
Monitoring Programme		0	0	0
Credibility of Sample Analyses		0	0	0
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		0	0	0
Asset Management		0	0	0
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>0% (→)</b>	<b>0% (→)</b>	<b>0% (→)</b>
Green Drop Score (2009)		NA -0%	NA -0%	NA -0%
Treatment Capacity (MI/d)		NI	NI	NI
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		18	18	18
% i.t.o. Maximum Risk Rating		<b>100% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>
Performance Area	Systems	Verkeerdevlei	Winburg	
Process Control, Maintenance & Management skills		0	0	
Monitoring Programme		0	0	
Credibility of Sample Analyses		0	0	
Submission of Results		0	0	
Waste water Quality Compliance		0	0	
Failure Response Management		0	0	
Bylaws		0	0	
Treatment & Collector Capacity		0	0	
Asset Management		0	0	
Bonus Scores		0	0	
Penalties		0	0	
<b>Green Drop Score (2011)</b>		<b>0% (→)</b>	<b>0% (→)</b>	
Green Drop Score (2009)		NA -0%	NA -0%	
Treatment Capacity (MI/d)		NI	NI	
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	
Cumulative Risk Rating (CRR)		18	18	
% i.t.o. Maximum Risk Rating		<b>100% (→)</b>	<b>100% (→)</b>	

NI - No information

NA- Not assessed



## Regulatory Impression

The indifferent behaviour by Masilonyana Local Municipality towards a national programme intent to inform the public of local municipal wastewater services performance, is deplorable. For a second year, the municipality disregarded the regulator's requirement to be assessed against the Green Drop criteria. Subsequently, the assessment was concluded in absence of a positive portfolio of evidence and verified by means of physical site assessments. From a regulatory point of view, wastewater services by Masilonyana present a high risk situation to public health and the environment. The Department of Water Affairs expresses a zero confidence level in the municipality's capability to render a safe and sustainable wastewater service.

As the environmental and consumer's best interest are represented by the Green Drop programme, Masilonyana is issued with a **ZERO** Green Drop score, and the regulatory audit process is being triggered for further intervention. The transgression is considered to have reached a high risk and distress situation, as this is the second- and consecutive year that the municipality attain a **ZERO rating**. Of further concern, is the continued negative trend in risk position of the municipal wastewater treatment facilities. ALL plants have since 2009 deteriorate to find itself currently in **100% critical risk** space. Urgent governance, managerial and sectoral intervention is called for.

### Green Drop Findings:

1. Five of the 5 wastewater treatment works receive a 0% Green Drop score, as the municipality did not show up at the assessment and did not present any evidence to attest to its ability to conduct its wastewater services in a safe and sustainable manner. All 11 requirements of the GDC process are taken as non-compliant, and need urgent attention and rectification.

*The Regulator is not satisfied with the overall performance of wastewater services management in Masilonyana. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

## Site Inspection Scores

<b>Winburg</b>	<b>29%</b>
<b>Theunissen</b>	<b>32%</b>

The Winburg and Theunissen WWTPs were inspected to confirm the standpoint taken by the Regulator. Both plants were found to be in unsatisfactory condition. The following observations were made for the Winburg plant:

- Terrain and equipment not maintained, skilled staff is not in place and basic of operational duties are left unattended
- Basic procedures such sludge handling appeared 'foreign' to the plant staff and it is clear that many challenges are imbedded in the day to day operation, maintenance, monitoring and management of wastewater services in the municipality
- No grit removal, sludge withdrawal or disinfection are taking place
- No manuals or procedures or safety equipment are in place.

The Theunissen plant was found to be in a similar state:

- The plant is in a state of disrepair and neglect with equipment not functional, structures in place but not operated properly and no disinfection taking place
- A number of treatment units are non-functional, despite its initial adequate design and sizing
- No monitoring takes place, on-site monitoring equipment is not calibrated or dysfunctional

For both plants, the 29-32% technical scores awarded is justified against the remains of previously adequately sized- and built infrastructure. The current pace of neglect and disinterest will not benefit the remnants of existing infrastructure, which is unlikely to reach its design lifespan before major investment will be required to restore the facility to be functional and sustainable.



Municipal Green Drop Score: **14.2%**

Performance Area	Systems	Allanridge	Henneman	Phomolong	Virginia
Process Control, Maintenance & Management skills		63	68	635	98
Monitoring Programme		50	50	50	50
Credibility of Sample Analyses		10	10	10	10
Submission of Results		75	75	75	75
Wastewater Quality Compliance		0	0	0	18
Failure Response Management		0	0	0	0
Bylaws		0	0	0	0
Treatment & Collector Capacity		0	0	0	0
Asset Management		0	0	0	30
Bonus Scores		0	0	0	0
Penalties		0	0	0	1.0
<b>Green Drop Score (2011)</b>		<b>15.5% (↑)</b>	<b>9.2% (↑)</b>	<b>15.5% (↑)</b>	<b>26.9% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%	NA - 0%	NA - 0%
Treatment Capacity (MI/d)		6	6	6	26
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		20	20	19	21
% i.t.o. Maximum Risk Rating		<b>87.0% (↑)</b>	<b>87.0% (↑)</b>	<b>82.6% (↑)</b>	<b>75.0% (↑)</b>
Performance Area	Systems	Kutlwanong	Mbabane	Ventersburg	Thabong
Process Control, Maintenance & Management skills		63	63	63	98
Monitoring Programme		50	50	50	50
Credibility of Sample Analyses		0	10	10	10
Submission of Results		75	75	75	75
Wastewater Quality Compliance		0	0	0	18
Failure Response Management		0	0	0	0
Bylaws		0	0	0	0
Treatment & Collector Capacity		0	0	0	0
Asset Management		0	0	0	15
Bonus Scores		0	0	0	0
Penalties		0	0	0	1.0
<b>Green Drop Score (2011)</b>		<b>15.0% (↑)</b>	<b>15.5% (↑)</b>	<b>15.5% (↑)</b>	<b>24.6% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%	NA - 0%	NA - 0%
Treatment Capacity (MI/d)		6	3	3	12
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		20	15	15	16
% i.t.o. Maximum Risk Rating		<b>87.0% (↑)</b>	<b>83.3% (↑)</b>	<b>83.3% (→)</b>	<b>69.6% (↑)</b>



Performance Area	Systems	Theronia	Odendaalsrust	Witpan
			Plant flooded and under rehabilitation – no assessment information presented	
Process Control, Maintenance & Management skills		68	0	0
Monitoring Programme		50	0	0
Credibility of Sample Analyses		10	0	0
Submission of Results		75	0	0
Wastewater Quality Compliance		0	0	00
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		0	0	0
Asset Management		0	0	0
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>16.0% (↑)</b>	<b>NA% (↑)</b>	<b>NA% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%	NA - 0%
Treatment Capacity (Ml/d)		17	6	28
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		19	23	28
% i.t.o. Maximum Risk Rating		<b>82.6% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>

NI - No information

NA- Not assessed

## Regulatory Impression

The Matjhabeng Local Municipality has performed unsatisfactory during the Green Drop assessments, indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Matjhabeng (14.2%). The gaps in the current performance reach almost across all aspects that would normally define a properly managed wastewater service. However, deficiency at senior technical management level presents the most prominent gap.

Credit can be given to the efforts made in terms of registration of technical staff, submission of results and the implementation of a monitoring programme. The gaps in the bigger business of wastewater management is yet to be addressed, and range from qualitative monitoring, credibility of results, financial and management and planning of wastewater collection and treatment. Future planning would be compromised by the lack of flow data, as the current capacity of the plants is not known by the staff. It is also of concern that Bylaws are not in place and not implemented, given the vast range of external factors that could impact negatively on the plant and collection system. Amongst these are the impact of industrial and medical waste and sludge handling after the reclamation of gold from sewage sludge. All mentioned aspects will have to be raised from its current 'critical state' to a basic level of operations before the municipality would be in a position to move forward.

The situation in Matjhabeng is considered critical from a regulatory view and holds high risk to public health and the environment. The risk profiles of all plants deteriorated with 10 out of 11 plants now in



**critical state.** Considering the vast amount of support and enforcement activities in Matjhabeng, it is extremely disquieting that the municipal management still appears to stand passive and unaccountable to its primary responsibility and service to its customer base. These findings demand the attention of municipal management and governance will to turnaround this unacceptable situation.

**Green Drop Findings:**

1. Seven out of 11 wastewater treatment plants do not meet effluent quality standards, with 2 plants reaching 18% compliance. A further two plants cannot be monitored as they have been decommissioned for refurbishment. The absence of flow monitoring compound the impact as the contamination load to the receiving natural environment cannot be measured or arrested.
2. None of the 11 systems had plans in place to expand or refurbish their collector or treatment infrastructure. If such plans have been developed via support interventions, it is notable that management do not use or interact with such plans. Two plants are currently under refurbishment, one of which was damaged via flood conditions. The sustainability of such investment is disputed, as the infrastructure is likely to be compromised by the lack of competency within the institution.
3. None of the plants could present any evidence of design capacity or flow logging, and credibility of any data is suspect.
4. No Bylaws is in place, thereby compounding the negative impacts from extraneous flows (e.g. stormwater to sewer, industrial effluent, vacuum tankers, illegal connections). Revenue enhancement would not be possible under the lacking local regulation conditions.
5. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in infrastructure not being valued and maintained to extend it useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.

*The Regulator is not satisfied with the overall performance of wastewater services management in Matjhabeng. The WSA is to submit a Corrective Action Plan to DWA within 30 of release of the Green Drop Report.*

**Site Inspection Scores**

<b>Thabong</b>	<b>60%</b>
<b>Virginia</b>	<b>63%</b>

The Thabong and Virginia WWTW were inspected to verify the Green Drop findings. The Thabong plant was found to be:

- Plant is under refurbishment with most equipment not functional or out of commission
- No disinfection took place during this time, and most treatment unit processes have already been compromised (primary and secondary settling, aeration, scrapers, anaerobic digestion)
- The structures and terrain are in a fair condition
- Procedures and logbooks are absent or outdated at time of inspection, but an operations and maintenance manual is in place.

The Virginia plant was found in a slightly better condition:

- 5 out of 6 aerators working, screening and degritting functional and sludge drying beds in good condition
- One clarifiers is functional and no disinfection takes place
- The plants is fenced in but access to the plant is possible
- No record or evidence of process monitoring or management could be inspected.



*Thabong PST under refurbishment*



*Thabong PST aerators non-functional, build-up of scum in reactor*



*Virginia plant – 5 out of 6 aerators functional but process control absent*

Municipal Green Drop Score: **58.6%**

Performance Area	Systems	Zastron	Smithfield	Rouxville
Process Control, Maintenance & Management skills		28	285	48
Monitoring Programme		50	50	50
Credibility of Sample Analyses		70	70	100
Submission of Results		75	75	75
Wastewater Quality Compliance		48	100	100
Failure Response Management		28	13.8	13.8
Bylaws		20	20	40
Treatment & Collector Capacity		55	55	52.5
Asset Management		10	10	10
Bonus Scores		58.8	58.5	58.5
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>49.0% (↑)</b>	<b>60.3% (↑)</b>	<b>64.5% (↑)</b>
Green Drop Score (2009)		0%	0%	5%
Treatment Capacity (MI/d)		1	0.5	1.5
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		16	13	16
% i.t.o. Maximum Risk Rating		<b>88.9% (↑)</b>	<b>72.2% (↓)</b>	<b>88.9% (↓)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Mohokare Local Municipality has performed average to satisfactory, with the exception of the Zastron system which performed poorly. The improvement from a 0-5% baseline (2009) to current status of 60-65% is commendable, and a prime example of measurable progress where areas of focus has been earmarked. The Green Drop scores indicate that wastewater services are not fulfilled as yet, but a repeat of the 2010 progress will result in fulfilment of the expectations of the regulation programme. The Zastron plant is compromised mainly by the low compliance to effluent quality specifications and the continuance of poor practices such as the lack in flow monitoring. Other aspects that need attention include the Bylaws and asset management practices. These areas are compounded by the lack of technical and management expertise.

A positive trend is observed in terms of the improved Green Drop scores, as well as risk mitigation. Unfortunately, all plants are still in distress of **high risk** space, but continued efforts should turnaround this scenario in the near future.

#### Green Drop Findings:

1. Three out of 3 wastewater treatment plants have inadequate and unregistered technical staff in place.
2. None of the 3 systems have flow measurement in place, nor are the available monitoring and measurement equipment calibrated.
3. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful

lifespan. This is bound to place an additional burden on the municipal budget when reactive maintenance and repairs and premature replacements will have to be done to ensure an acceptable service level.

### Site Inspection Score

**Rouxville65%**

The RouxvilleWWTP was inspected to verify the Green Drop findings:

- The terrain was reasonably well maintained and fenced in with locked gates
- No procedures, manuals or monitoring equipment was in place at the plant, as these were kept at the Zastron office
- The ponds are functioning well, but the biofilter arms are stationary whilst others distribute effluent unevenly across the rock media
- Inflow measuring devices and disinfection unit are available but not functional
- Screening and grit removal are efficient but sluice gates removed which reduce controlled use of the channels.



*Fenced pumpstation at the Rouxville plant*

Municipal Green Drop Score: **41.9%**

Performance Area	Systems	Kroonstad	Viljoenskroon	Steynsrus
Process Control, Maintenance & Management skills		88	38	38
Monitoring Programme		0	0	0
Credibility of Sample Analyses		85	100	70
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		45	100	100
Bylaws		40	40	40
Treatment & Collector Capacity		50	35	35
Asset Management		100	100	100
Bonus Scores		8.75	8.75	35
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>40.8% (↑)</b>	<b>40.6% (↑)</b>	<b>43.0% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (Ml/d)		20	4.3	NI (assume 0)
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		21	15	16
% i.t.o. Maximum Risk Rating		<b>91.3% (→)</b>	<b>83.3% (→)</b>	<b>88.9% (↑)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Moqhaka Local Municipality has performed unsatisfactory during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met, especially with regard to the lack of a monitoring programme and submission of results, and the consequence of being non-compliant to the legal effluent quality requirements. However, it is encouraging to note that asset management practice has been established and some protocol for disaster management set in place. Unfortunately, when comparing the progress made in these administrative functions, the mismatch with the practice in the field and on the plants are discouraging (see technical inspection findings).

The situation in Moqhaka is considered critical from a regulatory view and holds high risk to public health and the environment. The municipality has not been able to arrest and rectify the risk elements at any of its 3 plants. Kroonstad is still in **critical risk** space, and Steynrus WWTW is following the same pattern and is only 1% short of critical risk. The findings demand the attention of municipal management and governance.

#### Green Drop Findings:

1. Three out of 3 wastewater treatment plants cannot determine its impact on receiving water and other natural resources, as a result of the absence of monitoring. This transgression reaches beyond effluent quality monitoring, and includes volumetric (flow) metering as well.



2. None of the 3 systems had captured its data on the GDS or could show any prove of submission of results to the Department of Water Affairs, as per legal requirement.
3. For 2 out of the 3 plants, evidence of maintenance records, manuals and standard operating procedures have not presented at the assessment, but have been found at the plants. This indicate a low preparation level and a disconnect between what is in place within the municipality (planning).
4. Absence of knowledge related to design capacity (Steynsrus) and no-monitoring of operational flows at all plants, nullify attempts at planning collector and treatment infrastructure.

### Site Inspection Scores

<b>Steynsrus</b>	<b>25%</b>
<b>Viljoenskroon</b>	<b>43%</b>
<b>Kroonstad</b>	<b>41%</b>

Three plants were inspected to verify the Green Drop findings. The observations for Steynsrus are as follows:

- The plant was deserted with the exception of a security guard
- The plant was unkept, no facilities for workers, no staff, no processes or documentation or safety signs on the plant
- No evidence of any process control could be detected – in practice or on paper
- The 25% afforded is attesting to the last remainder of existing infrastructure that is still standing the test of time, but this may not sustain.

The following findings pertain to the Viljoenskroon plant:

- The plant had a Class III operator on site, and evidence of process control could be inspected
- No manuals, procedures or protocol could be observed, including maintenance records
- Flow measurement device is in place at the inlet works but not calibrated or recorded
- Manholes are uncovered and grass has protruded through some of the concrete structures
- The plant is under currently under construction
- The mixed liquor showed good settling properties and disinfection is taking place at the final discharge point
- The 22 drying beds are in satisfactory condition.

Similar to the aforementioned plants, Kroonstad displayed the following:

- Class B certificate is clearly displayed
- The newer part of the plant requires maintenance and all buildings are deteriorated and unkept
- The older part of the plant is in an advanced state of deterioration, but refurbishment has commenced. The construction site poses various hazards, from unhealthy conditions to safety aspects
- Major refurbishment is taking place and already improved functionality is observed. The biofilter's centre columns and effluent distribution arms, along with the mechanical upgrades, are significant improvements
- The anaerobic digesters has not been maintained and must be cleaned and recommissioned



Whilst the refurbishment is an encouraging rectification step, it is observed that as yet, no processes are in place to prevent the new infrastructure from following the same path as to what has landed the Moghaka plants in this state.

Municipal Green Drop Score: **61.8%**

Performance Area	Systems	Oranjeville	Deneysville	Sasolburg
Process Control, Maintenance & Management skills		59	59	63
Monitoring Programme		75	75	100
Credibility of Sample Analyses		10	10	55
Submission of Results		75	75	100
Wastewater Quality Compliance		20	20	20
Failure Response Management		14	14	55
Bylaws		100	100	100
Treatment & Collector Capacity		78	47	92.5
Asset Management		55	60	50
Bonus Scores		25	25	55
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>49.7% (↑)</b>	<b>47.4% (↑)</b>	<b>62.7% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%	NA - 0%
Treatment Capacity (MI/d)		0.46	2.1	37
Operational % i.t.o. Capacity		200%	NI (assume >100%)	51%
Cumulative Risk Rating (CRR)		14	12	23
% i.t.o. Maximum Risk Rating		<b>77.8% (↓)</b>	<b>66.7% (↑)</b>	<b>67.7% (↓)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Metsimaholo Local Municipality has performed unsatisfactory during the Green Drop assessments, indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The only exception would be the Sasolburg plant (62.75%) which fared reasonably well (plants operated by Sasol Industries). However, the WSA is commended for the positive developments in terms of Bylaw enforcement, submission of results and the use of the GDS to monitor compliance. This is the 1<sup>st</sup> submission of evidence by Metsimaholo and the regulator holds high expectations that the WSA will raise its performance during the upcoming Green Drop assessment cycle.

Overall, the Green Drop requirements are largely not met, with the key gaps pertaining to water quality compliance and the credibility of the sample analysis. The Sasolburg plant is doing reasonably well, with scope to improve on the final effluent compliance. The plant scored 96% for its technical inspection and the staff was found to be knowledgeable and efficient. The processes and practices of this plant should be replicated at the lower scoring plants.

A positive trend is observed in terms of the overall improved Green Drop scores (↑) and municipal score of 61.8%. The only plant in **high risk** space is Oranjeville, but the positive trend (↓) seems to indicate the risk has been mitigated. Unfortunately, Deneysville shows a negative trend of increased risk (↑).

#### Green Drop Findings:

1. Three out of 3 wastewater treatment plants have a negative impact on the receiving environments, as result of sub-standard effluent quality.

2. One out of 3 plants does not monitor their operational flows and equipment is either not present or dysfunctional. One of the plants exceeds its design capacity by 200%.
3. Two of the 3 plants have insufficient record and proceedings regarding incident management, manuals and standard operating procedures.
4. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.

### Site Inspection Scores

<b>Deneysville</b>	<b>66%</b>
<b>Sasolburg</b>	<b>96%</b>

The Deneysville (66%) and Sasolburg (96%) WWTWs were inspected to verify the Green Drop findings. The Sasolburg plant is operated and maintained by Sasol Industries via a service level agreement with the municipality:

- The plant treats a combination of chemical, industrial and domestic wastewater, via a biofilter and oxidations pond system, with SCADA control
- The plant is in prime condition, but plans are in place for further upgrades to the plant and pumpstations
- Monitoring is in place, procedures and manual, and health and safety best practice is maintained.

Contrary to the above plant, the Deneysville plant is hampered by security problems and open access to animals and unauthorised persons:

- The terrain is kept within reasonable means and most of the equipment is functional. Procedures and manuals are not in place and no flow metering is done as equipment is stolen
- A first course of action would be the securing of the premises.



*SCADA controlled Sasolburg plant in good condition*



*Deneysville plant hampered by uncontrolled access, vandalism and theft*

Municipal Green Drop Score: **20.4%**

Performance Area	Systems	Bothaville	Wesselsbron
Process Control, Maintenance & Management skills		62.5	20
Monitoring Programme		10	0
Credibility of Sample Analyses		0	0
Submission of Results		0	0
Wastewater Quality Compliance		0	5
Failure Response Management		0	0
Bylaws		0	0
Treatment & Collector Capacity		30	0
Asset Management		30	20
Bonus Scores		40	75
Penalties		0	0
<b>Green Drop Score (2011)</b>		<b>20.7% (↑)</b>	<b>17.7% (↑)</b>
Green Drop Score (2009)		NA - 0%	NA - 0%
Treatment Capacity (Ml/d)		8.5	1.2
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		20	15
% i.t.o. Maximum Risk Rating		<b>87.0% (↑)</b>	<b>83.3% (↓)</b>

NI - No information

NA- Not assessed

## Regulatory Impression

The Nala Local Municipality has not impressed during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Nala (20.4%). The gaps in the current performance reach into most aspects of the wastewater business and it is difficult to find but one requirement that is on par with good practice. The gaps range from technical skill levels, qualitative and quantitative monitoring, planning and management of wastewater collection and treatment. All mentioned levels will have to be raised from a critical- to a minimum/average level before the municipality would be in a position to move forward. However, it is encouraging to note that Nala earned some bonus points for its training initiatives in terms of potable- and wastewater treatment.

The situation in Nala is considered critical from a regulatory view and holds high risk to public health and the environment. Both plants are still in **high risk** space and the Bothaville plant continues along a trend of increased risk. The findings demand the attention of municipal management.

### Green Drop Findings:

1. Two out of 2 wastewater treatment plants cannot determine its impact on receiving water and other natural resources, as a result of the absence of monitoring. This transgression reaches beyond effluent quality monitoring, and includes volumetric (flow) metering as well.

2. None of the 2 systems had a technical skills base in place and is not registered with the Department, and plant are not authorised for the business they conduct. Even with manuals and procedures in place, the staff does not have the background to interpret information.
3. Both plants could not provide evidence of maintenance records, manuals and standard operating procedures during the assessment.
4. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.

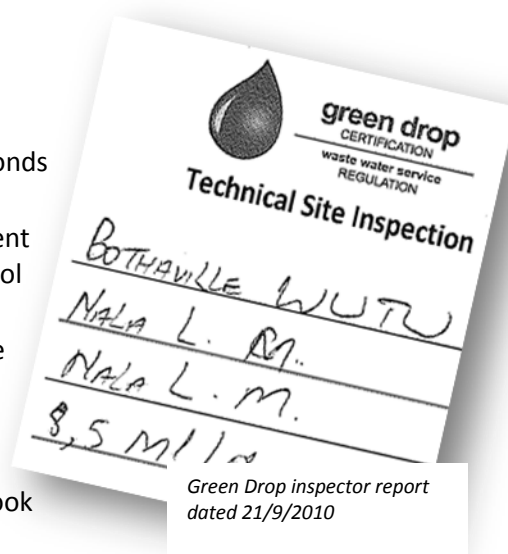
*The Regulator is not satisfied with the overall performance of wastewater services management in Nala. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

**Wesselsbron 39%**  
**Bothaville 62%**

The Wesselsbron plant was found to be:

- The plant is well maintained in terms of the grass, ponds and surroundings
- The lack of basic administrative and management functions and process monitoring and control jeopardise the overall functionality of the plant
- No operations manual or maintenance logsheets are kept and the plant is not displaying its classification status
- Staff is not wearing protective clothing
- Security is in place at the gates, but a visitors log in book is not maintained
- A new activated sludge plant is constructed, but the current negligent practice will expose the new infrastructure and the investment made in this high-end technology.



Similar to Wesselsbron, the Bothaville plant was found to be well operated and the terrain organised and neat, but with the following shortcomings:

- Lack of management support, documentation of activities, recording, safety and compliance failures (especially disinfection) may jeopardise the sustainable future of the plant
- Flow equipment as well as disinfection facilities are in place but not replaced after damaged by floods
- The staff is committed, but need motivation and leadership
- Of concern is the overflow of the sludge holding dam to the river at day of inspection - situation represents a major health risk and environmental hazard.

Municipal Green Drop Score: **5.4%**

Performance Area	Systems	Dewetsdorp	Wepener	VanStadensrus
Process Control, Maintenance & Management skills		15	0	0
Monitoring Programme		0	0	0
Credibility of Sample Analyses		0	0	0
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		0	0	70
Asset Management		20	20	20
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>4.5% (↑)</b>	<b>3.0% (↑)</b>	<b>10.0% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (Ml/d)		2	5	3
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		18	23	18
% i.t.o. Maximum Risk Rating		<b>100% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Naledi Local Municipality has performed unsatisfactory during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Naledi. The gaps in the current performance reach into **all aspects** of wastewater service delivery and it is difficult to find but one requirement that is on par with good practice. The gaps range from technical skill levels, qualitative and quantitative monitoring, planning and management of wastewater collection and treatment. All mentioned levels will have to be raised from a critical- to a minimum/average level before the municipality would be in a position to move forward.

The situation in Naledi considered critical from a regulatory view and holds high risk to public health and the environment. The CRR status indicates that all 3 plants have deteriorated to **critical risk state**. The findings demand the attention of municipal management.

#### Green Drop Findings:

1. Three out of 3 wastewater treatment plants cannot determine its impact on receiving water and other natural resources, as result of the absence in monitoring.
2. This transgression reaches beyond effluent quality monitoring and include the absence of volumetric (flow) metering.

3. None of the 3 systems had an adequate technical skills base in place and is not registered with the Department. The treatment plants are not authorised for the business they conduct.
4. No operating and maintenance manuals or standard operating procedures are in place, and the staff does not have the background to interpret information.
5. Evidence of maintenance records, manuals and standard operating procedures have not presented at the assessment.
6. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.

*The Regulator is not satisfied with the overall performance of wastewater services management in Naledi. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

## Site Inspection Score

**Dewetsdorp 57%**

The Dewetsdorp WWTP was inspected to verify the Green Drop findings. The plants presented a much improved picture when compared to the fairly poor performance portfolio evidence presented to the assessor panel. Clearly, the staff on the ground are doing a reasonably good job, which are not elevated at management level:

- ✘ The plant appears to be in good condition, with grass cut and buildings neat
- ✘ The plant is fenced except for the maturation ponds, which is accessible to the public and animals
- ✘ The screens and grit removal is in place and inlet works provided with a flow meter, however, this equipment has not been calibrated since its installation in 2007 (Note the discrepancy between flow recorded on site, but not presented at assessment)
- ✘ The primary settling tanks are not in a good condition, no scraping and uneven flow over weirs have been detected
- ✘ The activated sludge plant was compromised by mechanical equipment which has been removed and not replaced
- ✘ The plant clarifiers receive very low flow, and disinfection is in place, even though a back chlorine cylinder was not in place
- ✘ No maintenance records or monitoring equipment were observed and sampling points are not used, as result of the lack of a monitoring regime.

Municipal Green Drop Score: **44.9%**

Performance Area	Systems	Parys	Vredefort	Koppies
Process Control, Maintenance & Management skills		60	55	55
Monitoring Programme		60	60	60
Credibility of Sample Analyses		10	10	10
Submission of Results		75	25	0
Wastewater Quality Compliance		28	0	52
Failure Response Management		62	62	62
Bylaws		10	10	10
Treatment & Collector Capacity		15	65	85
Asset Management		63	63	66
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>42.1% (↑)</b>	<b>35.7% (↑)</b>	<b>52.5% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (MI/d)		7.4	5.5	3
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		15	16	9
% i.t.o. Maximum Risk Rating		<b>65.2% (↓)</b>	<b>69.6% (↓)</b>	<b>50.0% (↓)</b>
Performance Area	Systems	Heilbron	Edenvale	
Process Control, Maintenance & Management skills		55	55	
Monitoring Programme		60	0	
Credibility of Sample Analyses		10	10	
Submission of Results		50	0	
Wastewater Quality Compliance		80	40	
Failure Response Management		62	62	
Bylaws		10	10	
Treatment & Collector Capacity		85	0	
Asset Management		66	66	
Bonus Scores		0	0	
Penalties		0	0	
<b>Green Drop Score (2011)</b>		<b>63.4% (↑)</b>	<b>34.4% (↑)</b>	
Green Drop Score (2009)		NA – 0%	NA – 0%	
Treatment Capacity (MI/d)		4.2	NI	
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	
Cumulative Risk Rating (CRR)		7	8	
% i.t.o. Maximum Risk Rating		<b>38.9% (↓)</b>	<b>44.4% (↓)</b>	

NI - No information

NA- Not assessed





## Regulatory Impression

The Ngwathe Local Municipality has performed overall poorly for the 2010/11 Green Drop assessments, indicating that the wastewater services are not being managed according to the expectations of the regulation programme. With the exception of the Heilbron plant, the Green Drop requirements are largely not met and result in a low overall municipal score for Ngwathe. Of concern is that even the Vredefort plant, a new 'state of art' plant commissioned in 2009, are not performing to standard (GDC of 35%). In fact, this plant shows 0% effluent quality compliance, despite the new technology and considerable capital expenditure.

Analysis of the Green Drop assessment data, indicated the predominant gaps be in the inadequate submission of data, poor effluent quality, and analytical procedures (scientific credibility). It is also disappointing that, despite the various support and enforcement initiatives directed at Ngwathe, basic procedures such as municipal Bylaws are still not implemented. However, areas of improvement is noted (skills, monitoring programme, asset management, planning) and it is hoped that these positive patterns will affect other areas of operations as well.

From a regulatory perspective, the situation in Ngwathe has improved markedly, and is supported by positive trends in the Green Drop scores (↑), as well as the risk mitigation. All plants have moved out of high- and critical risk space into a more manageable CRR rating (↓). Well done to Ngwathe for early signs of turning around a fragile situation. Further work must be pursued until Green Drop scores of 80% have been achieved (immediate target).



Top: 2008 construction of the new Vredefort plant;  
Below: new blower motors for diffuse aeration system.

**Plant output = 0% effluent compliance**

### Green Drop Findings:

1. Four out of 5 wastewater treatment plants discharge sub-standard effluent quality which impact negatively on the receiving environment. Notably, the Ngwathe plants discharge into sensitive water bodies with high risk to down-stream users if effluent quality does not comply with authorised standards.
2. This transgression reaches beyond effluent quality monitoring, and include volumetric (flow) metering as well, with 4 out of 5 plants not measuring the incoming or discharging flows.
3. One out of the 5 systems does not have a monitoring regime in place whilst the other 4 lack critical components, such as catchment monitoring (i.e. up/down stream river and boreholes).
4. None of the 5 systems had Bylaws in place or implemented.
5. Evidence of maintenance records, manuals and standard operating procedures are inadequate for all systems.
6. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being operated and maintained to reach its design lifespan. The poor performance of the new Vredefort plant being one example of this finding.

### Site Inspection Scores

<b>Parys</b>	<b>41%</b>
<b>Koppies</b>	<b>55%</b>

The Parys and Koppies WWTPs were inspected to verify the Green Drop findings. From the comparison, it is evident that the municipality has shown some progress on the documentation, auditing and

administration of the plants, but that the field work, infrastructure and technical staff are still in dire condition. For example, operation and maintenance manuals are on site, but staff is not conversant with its content. It is encouraging to observe that monitoring equipment is in place and calibrated, and a laboratory services is utilised.

At the Parys plant:

- General maintenance of the plant is poor, grass unkept, eating facilities is not hygienic and no painting done on buildings
- Two serious contraventions re regarding health and safety have been noticed which require attention by management
- Critical pumps and valves for grit removal, humus tanks and sludge handling are not functional,

<p>More than 2 Serious OHS contraventions?</p>	<p>* Very deep and dangerous manhole and sumps are not closed nor protected. This poses a serious hazardous condition which can be fatal if someone can fall in.</p> <p>* Also there are no official appointments of safety representatives and no meeting</p>
--	--

and need urgent attention

- Many mechanical functions are performed manually by staff or not performed at all
- The plant is overall in a poor condition, which is disconcerting when taking into account the regulatory pressure and support initiatives to this plant
- The primary settling tanks are in poor condition and not optimally operated, 2 out of 6 biofilters decommissioned, and clarification compromised with poor settleability and extensive scum formation visible
- Disinfection by means of plastic drums and manual addition with no contact time for optimal disinfection of disease causing microorganisms is an unsettling and unsustainable practice
- Operational monitoring is not done, and hence, no basis for operational decisions or process control is in place.

The Koppies plant is in slightly better condition and technical staff seems to be working to their maximum capacity and means:

- The lack of on-site monitoring equipment, flow metering, personal protection equipment and gear, and signage is evident of the lack of management attention at this level
- The waste sludge (WAS) pump is not functional, which compromises the entire activated sludge plant and very high sludge densities were observed - this will compromise the plant's ability to comply to final effluent specification in the very near future
- The plant staff ensure that the sludge drying beds are clean and disinfection takes place of the final effluent (with sufficient contact time)
- Overall, this plant is in good condition and the staff is to be congratulated for their 'home-grown' attempts to maintain the plant.

Municipal Green Drop Score: **23.1%**

Performance Area	Systems	Reitz	Petrus Steyn	Lindley / Ntha	Arlington
Process Control, Maintenance & Management skills		23	18	18	18
Monitoring Programme		40	0	0	0
Credibility of Sample Analyses		0	0	0	0
Submission of Results		0	0	0	0
Wastewater Quality Compliance		0	0	0	0
Failure Response Management		28	28	28	0
Bylaws		0	0	0	0
Treatment & Collector Capacity		8	0	0	0
Asset Management		80	80	80	80
Bonus Scores		40	40	40	40
Penalties		0	0	0	0
<b>Green Drop Score (2011)</b>		<b>27.7% (↑)</b>	<b>22.5% (↑)</b>	<b>22.5% (↑)</b>	<b>19.7% (↑)</b>
Green Drop Score (2009)		5%	5%	8%	5%
Treatment Capacity (Ml/d)		NI	NI	NI	NI
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		22	17	17	18
% i.t.o. Maximum Risk Rating		<b>95.6% (↑)</b>	<b>94.4% (↑)</b>	<b>94.4% (↑)</b>	<b>100%(↑)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Nketoana Local Municipality has performed unsatisfactory during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met, as reflected by the 23.1% municipal score. The gaps in the current performance reach into most aspects of wastewater service delivery. The most pertinent gaps are the **0% scores** related to lack in monitoring systems, compromised credibility of results, non-submission of results, poor planning and lack of basic design and flow information. The only score that justifies a positive comment would be that asset management aspects are being addressed, albeit only on paper and not in practice.

The situation in Nketoana is considered critical from a regulatory view and holds high risk to public health and the environment. A positive trend is observed in terms of the improved Green Drop scores, which is commendable. However, this positive pattern must be translated to a risk-based prioritised approach, as the current risk profiles are indicative of infrastructure in dire condition. All 4 plants have moved into **critical risk space** (94-100%) since the 2009 assessment.

### Green Drop Findings:

1. Three out of 4 wastewater treatment plants cannot determine its impact on receiving water and other natural resources, as a result of the absence in monitoring.
2. This transgression reaches beyond effluent quality monitoring, and includes volumetric (flow) metering for 4 out of the 4 plants.

3. None of the 5 systems had a technical skills base in place and is not registered with the Department, and plant are not authorised for the business they conduct.
4. Manuals, maintenance schedules and proof of maintenance and standard operating procedures are lacking at all plants.
5. Design capacity and planning methodologies to extend the capacity of treatment and collector systems are not in place in any of the 4 systems.
6. The absence of a asset management result in infrastructure not being maintained and operated in a manner that it will serve the design lifespan, and will place undue burden on the budget when premature replacements will have to be done to ensure an acceptable service level.

*The Regulator is not satisfied with the overall performance of wastewater services management in Nketoana. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

<b>Petrus Steyn</b>	<b>9%</b>
<b>Reitz</b>	<b>19%</b>
<b>Ntha / Lindley</b>	<b>35%</b>

The Petrus Steyn plant and Reitz plants are both in an advanced state of neglect and disrepair, despite the recent upgrading:

- Electrical motors are non-functional, degritting not efficient, terrain overgrown, buildings in state of disrepair and no staff to be found to attend to the problems
- Chlorine chemicals are stored in open sunlight and disinfection not adequate.
- The electrical transformer is damaged at Petrus Steyn, the biofilters are leaking and connector pipes blocked and the ponds have serious sludge accumulation and flotation
- No evidence of even remote attempts to operate and maintain these plants is found.
- Vandalism and extensive cattle grazing is evident – plant operator is under impression that cattle belongs to the technical officer and no attempts are made to removed the animals
- Screen and flow metering is in place, but not calibrated.



*Advanced state of disrepair of the Petrus Steyn plant - primary settling tanks overflowing and blocked; deteriorated ponds.*

The Ntha (Lindley) plant was found in poor condition, with unkept grasses, spilled water ways on the site, and goats freely roaming the plant and damaging the fence:

- Limited buildings on the plant and no staff is present at the site
- Vandalism at the plant forces the inlet works function to be executed at the pumpstations where screenings are removed and buried next to the pump station
- The oxidation ponds are functional, but scum and sludge visible as result of inadequate cleaning
- Encouraging, is that aerators and pumps are in working condition and disinfection takes place via 240 litre chlorine cylinders at the final discharge point
- No flow measurement, monitoring or any procedural evidence held at the plant.

*Right: Lindley town pumpstation, screenings removed manually and buried; Left: Primary settling tanks at Lindley plant, with aerated oxidation ponds in background*



Municipal Green Drop Score: **5.0%**

Performance Area	Systems	Vrede	Warden	Memel
Process Control, Maintenance & Management skills		<b>3</b>	<b>3</b>	<b>3</b>
Monitoring Programme		<b>0</b>	<b>0</b>	<b>0</b>
Credibility of Sample Analyses		<b>0</b>	<b>0</b>	<b>0</b>
Submission of Results		<b>0</b>	<b>0</b>	<b>0</b>
Wastewater Quality Compliance		<b>0</b>	<b>0</b>	<b>0</b>
Failure Response Management		<b>0</b>	<b>0</b>	<b>0</b>
Bylaws		<b>0</b>	<b>0</b>	<b>0</b>
Treatment & Collector Capacity		<b>8</b>	<b>0</b>	<b>0</b>
Asset Management		<b>28</b>	<b>28</b>	<b>28</b>
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>5.1% (↑)</b>	<b>4.3% (↑)</b>	<b>4.3% (↑)</b>
Green Drop Score (2009)		0%	0%	0%
Treatment Capacity (Ml/d)		7.5	NI	NI
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		21	17	17
% i.t.o. Maximum Risk Rating		<b>91.3% (↑)</b>	<b>94.4% (↑)</b>	<b>94.4% (↑)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Phumelela Local Municipality has performed poorly during the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Phumelela (5.0%). The gaps in the current performance reach into **all aspects** of wastewater service delivery and it is difficult to find but one requirement that is on par with good practice. The gaps range from technical skill levels, qualitative and quantitative monitoring, planning and management of wastewater collection and treatment. All mentioned levels will have to be raised from a critical- to a minimum/average level before the municipality would be in a position to move forward. It is commendable that the municipality presented evidence for Green Drop assessment. Now that a baseline is available, the municipality can start afresh to address the gaps in a systematic risk-based approach.

The situation in Phumelela is considered critical from a regulatory view and holds high risk to public health and the environment. The municipality has deteriorated from its risk position in 2009 and all plants are now in **critical risk space** (91-94%). The findings demand the attention of municipal management and provincial government. The findings are further compounded by the technical findings, which warrants regulatory intervention.

#### Green Drop Findings:

1. Three out of 3 wastewater treatment plants cannot determine its impact on receiving water and other natural resources, as result of the absence in monitoring.



2. Two out of 3 plants do not have design information and all 3 plants do not have daily flow metering in place.
3. None of the 3 systems had a technical skills base in place and is not registered with the Department, and plant are not authorised for the business they conduct. Even with manuals and procedures in place, the staff does not have the background to interpret information.
4. Evidence of maintenance records, manuals and standard operating procedures have not presented at the assessment. The municipality displayed a low preparation level and a disconnect between what is in place within the municipality (planning).
5. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful lifespan. This is bound to place an additional burden on the municipal budget when premature replacements will have to be done to ensure an acceptable service level.
6. The technical findings are of serious consequence, and in direct contravention and violation of the water acts.

*The Regulator is not satisfied with the overall performance of wastewater services management in Phumelela. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

<b>Warden</b>	<b>0%</b>
<b>Vrede</b>	<b>51%</b>

The Warden plant was awarded a 0% with reason:

- The plant was found to be in appalling condition, but deliberate actions were taking by the municipality to prevent the raw sewage from entering the treatment plant and be treated by the pond system design for such purpose
- The assessor note captures the situation adequately ➔
- The biofilters that were constructed 5 ago, has also been manipulated to release sewage to the nearby river
- This poor management practice calls for urgent intervention from the provincial and national authorities, following the Green Drop findings. Further comment on the state of the plant is not made, as nothing is operational or maintained.

Very poor. Sewer is flowing over the ponds and both inlet pipelines have been deliberately broken to prevent inflow to the ponds. The broken inlet pipelines allow for sewer to bypass the oxidation ponds and flow via a little stream down to the river.

2 x bio-filters constructed. According to the WSA's technical officer, these bio-filters were out of operation for the last 5 years. No water is pumped to the bio-filters and the outlet sewer pipe to the filters was deliberately damaged to allow for the effluent to run to the river, bypassing the pump station.



*New equipment at Warden: capital investment made despite run-down of existing infrastructure*



*Warden biofilters and pond not functional*

The Vrede plant was found in better condition, being a fairly new plant:

- Most equipment and structures are new and functional, but a lack of maintenance and monitoring may result in similar situation that that of the Warden plant
- Some of the treatment processes were decommissioned as result of the low flow to the plant
- Disinfection is taken place, but not monitoring equipment in place at the plant for qualitative or quantitative measurement. No operations and maintenance procedures, manuals or evidence at plant.



*Vrede plant with new infrastructure, showing the recycling pumpstation and the final effluent*

*Warden plant – well fenced with security signage, but open gate and not visitor's logbook*

Municipal Green Drop Score: **23.4%**

Performance Area	Systems	Ficksburg	Clocolan	Marquard	Senekal
Process Control, Maintenance & Management skills		75	75	35	60
Monitoring Programme		30	0	0	50
Credibility of Sample Analyses		25	0	0	25
Submission of Results		0	0	0	0
Wastewater Quality Compliance		3	0	0	0
Failure Response Management		27.5	0	0	0
Bylaws		20	20	20	20
Treatment & Collector Capacity		40	22.5	60	60
Asset Management		32.5	32.5	32.5	47.5
Bonus Scores		0	0	0	0
Penalties		0	0	0	0
<b>Green Drop Score (2011)</b>		<b>25.3% (↑)</b>	<b>11.6% (↑)</b>	<b>15.4% (↑)</b>	<b>26.4% (↑)</b>
Green Drop Score (2009)		7%	7%	7%	7%
Treatment Capacity (Ml/d)		12.2	2.2	7.5	8
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		21	16	17	21
% i.t.o. Maximum Risk Rating		<b>91.3% (↑)</b>	<b>88.9% (↑)</b>	<b>94.4% (↑)</b>	<b>91.3% (↑)</b>

NI - No information

NA- Not assessed

## Regulatory Impression

The Setsoto Local Municipality has performed unsatisfactory the Green Drop assessments indicating that the wastewater services are not being managed according to the expectations of the regulation programme. The Green Drop requirements are largely not met and result in a low overall municipal score for Setsoto (23.3%). The gaps in the current performance reach into various aspects of wastewater service. The predominant gaps are found in technical skill levels, qualitative and quantitative monitoring, credibility of analytical results, effluent quality compliance and Bylaws and incident management. It is commendable that the municipality have knowledge of its design capacity and has taken steps to put plans in place to address the capacity constraints in the sewer collector and treatment systems.

Overall, the situation in Setsoto is considered critical from a regulatory view and holds high risk to public health and the environment. Although a positive trend is observed in terms of the improved Green Drop scores, the municipality currently has 4 plants in **critical risk space** (88-94%) and the risk appears to continue along a negative pattern. The findings demand the attention of municipal management.

### Green Drop Findings:

1. Four out of 4 wastewater treatment plants do not have credible data and do not submit their data and performance as per legal stipulation.
2. Two out of 4 plants cannot determine its impact on receiving water and other natural resources, as a result of the absence in monitoring. The other 2 plants have inadequate monitoring in



place. This transgression reaches beyond effluent quality monitoring, and include the lack of volumetric (flow) metering at all 4 plants.

3. None of the 4 systems complies with effluent quality standards.
4. Bylaws and incident management protocols are not adequate or implemented.
5. Lastly, the absence of a risk-based approach and adoption of integrated asset management principles, result in good infrastructure not being valued and maintained to extend its useful lifespan.

*The Regulator is not satisfied with the overall performance of wastewater services management in Setsoto. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Score

**Ficksburg 48%**

The Ficksburg treatment plant was inspected to verify the Green Drop findings. The plant was found in average condition with concerted efforts made by plant management with the means available. Certain shortcomings need to be addressed to raise the score >60%:

- The grass is cut, terrain well kept and buildings clean
- No manuals or procedures or logbooks are to found on site
- Removal of screenings and grit well operated and flow meter in place (not calibrated)
- The settling and clarification processes are taking place, but is compromised by low flow conditions
- Activated sludge plant is compromised by the lack of monitoring
- Disinfection is not taking place due to reportedly 'technical challenges'.



Municipal Green Drop Score: **0%**

Performance Area	Systems	Dealesville	Hertzogville	Boshoff
Process Control, Maintenance & Management skills		0	0	0
Monitoring Programme		0	0	0
Credibility of Sample Analyses		0	0	0
Submission of Results		0	0	0
Wastewater Quality Compliance		0	0	0
Failure Response Management		0	0	0
Bylaws		0	0	0
Treatment & Collector Capacity		0	0	0
Asset Management		0	0	0
Bonus Scores		0	0	0
Penalties		0	0	0
<b>Green Drop Score (2011)</b>		<b>0% (→)</b>	<b>0% (→)</b>	<b>0% (→)</b>
Green Drop Score (2009)		0%	0%	0%
Treatment Capacity (Ml/d)		NI	NI	NI
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		18	18	18
% i.t.o. Maximum Risk Rating		<b>100% (↑)</b>	<b>100% (↑)</b>	<b>100% (↑)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The passive approach and lack of responsibility displayed by Tokologo Local Municipality in terms of its wastewater services is deplorable. The municipality provided no evidence in support of the wastewater services delivery in the municipal area. From a regulatory point of view, wastewater services by Tokologo present a high risk situation to public health and the environment. As result, the Department of Water Affairs expresses a zero confidence level in the municipality's ability to render a safe and sustainable wastewater service.

As the environmental and consumer's best interest are represented by the Green Drop programme, Tokologo is issued with a **ZERO Green Drop** score, and the regulatory audit process is being triggered for further intervention. The situation is further compounded by the fact that all 3 plants have deteriorated to represent a maximum risk profile of having reached a **100% CRR risk** position. Urgent governance and managerial intervention is called for, which may include elevation to provincial level of governance to comprehend and rectify this situation.

#### Green Drop Findings:

1. Three of the 3 wastewater treatment works receive a 0% Green Drop score, as the municipality did not present any evidence to attest to its ability to conduct its wastewater services in a safe and sustainable manner.

2. Three out of 3 plants are in critical condition pertaining to the risk they hold, meaning the WWTWs does not have the plant capacity, technical staff or basic information in place to manage and operate their systems.
3. The resultant effluent quality is assessed to be 100% non-compliant.

*The Regulator is not satisfied with the overall performance of wastewater services management in Tokologo. The WSA is to submit a Corrective Action Plan to DWA within 30 days of release of the Green Drop Report.*

### Site Inspection Scores

**Dealesville 14%**  
**Hertzogville 18%**

The Dealesville plant inspection revealed the following:

- The plant had no manuals or logbooks for flow or effluent quality on site or operators activities
- The bar screen was in place but not attended to, and the oxidation ponds showed signs of plastics and floating materials on the surface and sludge built-up in the ponds
- The discharge of effluents from road haulers was not monitored and access not controlled.



*Dealesville and Hertzogville plants experience problems with controlled vacuum tank discharge and terrain maintenance*

The Hertzogville plant is in a similar condition as the Dealesville plant:

- Absence of operating and maintenance activities, and no records or monitoring in place
- The ponds are not sludged up, but the tanker control is jeopardising the sustainable use of the ponds systems, if the municipality are not verifying what is being discharged
- As the town is serviced by septic tank systems, the municipality assumes that only sewerage is received at the ponds
- The screening facility has fallen over and is not functional. A poor quality effluent is evident from the pond system.

Municipal Green Drop Score: **46.4%**

Performance Area	Systems	Bultfontein	Hoopstad
Process Control, Maintenance & Management skills		100	90
Monitoring Programme		15	15
Credibility of Sample Analyses		11	11
Submission of Results		15	15
Wastewater Quality Compliance		13	0.5
Failure Response Management		72.5	100
Bylaws		49	49
Treatment & Collector Capacity		85	60.5
Asset Management		80	80
Bonus Scores		8.75	35
Penalties		1	1
<b>Green Drop Score (2011)</b>		<b>46.2% (↑)</b>	<b>47.2% (↑)</b>
Green Drop Score (2009)		NA – 0%	NA – 0%
Treatment Capacity (Ml/d)		3.0	1.1
Operational % i.t.o. Capacity		NI (assume >100%)	NI (assume >100%)
Cumulative Risk Rating (CRR)		15	16
% i.t.o. Maximum Risk Rating		<b>83.3% (→)</b>	<b>88.9% (↓)</b>

NI - No information

NA- Not assessed

### Regulatory Impression

The Tswelopele Local Municipality has improved markedly on their 2009 Green Drop status and were well prepared for the assessments. Various areas of improvement are noted, supported by a committed Tswelopele technical team. The Green Drop requirements are adequately met in areas of asset management, planning, and response management, Unfortunately, the overall municipal score of 46.4% indicate that the wastewater services are not meeting the expectations of the regulation programme. The gaps in the current performance are predominantly and directly linked to the operational aspects of the 2 wastewater treatment facilities and comprise of credibility of analytical results, lack of adequate monitoring programme and submission to Department of Water Affairs, and effluent quality non-compliance. The municipality is however, commended for tackling the problems at root, and by achieving 90-100% in the GD requirement for technical skills, registration of plant operators, maintenance and operational aspects. The municipality also qualified for bonus scores for training initiatives.

The overall trend for Tswelopele is positive in terms the improved Green Drop scores (↑), as well as the proven ability of the municipality having stalled and commenced with the rectification (↓) of primary risk elements at the 2 plants. However, note is taken that the plants are still in **high risk space** and that efforts need to be scaled up.

#### Green Drop Findings:

1. Two of the 2 wastewater treatment plants do not have adequate monitoring regimes in place and credibility of the analytical results cannot be validated.

2. Both plants do not submit their results to the national authority and have not captured their information on the GDS.
3. 100% of the plants are not in compliance with the effluent quality discharge standards employed in the municipality.
4. Penalties were given to both systems for not having licenses or valid authorisations in place with the Department of Water Affairs.
5. Both systems do not record operational flow, which hampers proper planning and resource allocation.

#### Site Inspection Scores

<b>Bultfontein</b>	<b>39%</b>
<b>Hoopstad</b>	<b>50%</b>

The Bultfontein plant was found in the following condition:

- The terrain was well reasonably well maintained and facilities for workers are in place, despite the fact that plant personnel is not permanently on site
- No logbooks, manuals or records are kept on site, with the exception of the failure management protocol
- The plant is under construction at present time. Screening is functional but not grit removal is taking place
- A flow meter is in place but not read by operating staff
- Security is not in place and the ponds are not fenced in
- Both the pond system and the biofilters are operational and surrounding well maintained. Even distribution is taking place and clarification appears effective
- The plant is overloaded hydraulically and this compromises the final effluent quality.

The Hoopstad plant was very tidy and neat, and the following findings have relevance:

- ✘ Screening takes place but no evidence of use of the degritting chambers and equipment was apparent
- ✘ Structurally, the ponds are in excellent condition and well maintained, some sludge retention is visible on the primary ponds
- ✘ Both the ponds and the biofilters are in good functional condition and good settling is taking place
- ✘ No records are kept at the plant, except for the incident management procedures.