

2011 Green Drop Report



040_2011



water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA



green drop
CERTIFICATION

waste water service
REGULATION

THE GREEN DROP REPORT INDEX

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ACRONYMS

ADWF	Average Dry Weather Flow
COD	Chemical Oxygen Demand
CRR	Cumulative Risk Rating
DWA	Department of Water Affairs
GA	General Authorisation
GD	Green Drop
GDC	Green Drop Certification
GDS	Green Drop System (www.dwa.gov.za/greendrop)
MLSS	Mixed Liquor Suspended Solids
NGO	Non-Governmental Organisation
O&M	Operation and Maintenance
PST / SCT	Primary Settling Tank / Secondary Clarification Tank
RPMS	Regulatory Performance Measurement System
SLA	Service Level Agreement
WRC	Water Research Commission
WSI	Water Services Institution
W ₂ RAP	Wastewater Risk Abatement Plan
WS	Water Services
WWTP	Wastewater Treatment Plant
R2834	Regulation 2834

Provinces:

MP	Mpumalanga Province
NW	North West Province
GP	Gauteng Province
LP	Limpopo Province
FS	Free State Province
KZN	Kwa-Zulu Natal Province
WC	Western Cape Province
NC	Northern Cape Province
EC	Eastern Cape Province



*“... greatness does not come from doing the same things but trying harder. When you do that, even the combined efforts of all your people are too diluted to make much of a difference. Like having hundreds of people pushing with their hands on a brick wall, you spend a lot of energy getting nowhere. **Greatness comes from focus.** Having the effort of those hundreds of people translate into a single point of impact, like a single sledgehammer, will definitely have more impact. **Core competencies are “focus points” that funnel people’s skills and efforts to make a greater effect.**”*

(Paula Williams)

The Green Drop regulation programme seeks to identify and develop the core competencies required for the sector that if strengthened, will gradually and sustainably improve the level of wastewater management in South Africa. This form of incentive- and risk-based regulation holds the intent to synergise with the current goodwill exhibited by municipalities and existing Government support programmes to give the focus, commitment and planning needed.

Regulation is important to ensure effective and efficient delivery of sustainable water services. This is recognised both by South African authorities and Internationally. It clarifies the requirements and obligations placed on water service institutions, thereby protecting consumers from a potentially unsustainable and unsafe service.

Incentive-based Regulation in South Africa

(Municipal Green Drop Certification)

One of the regulatory approaches that are gaining significant momentum is that of Incentive-based Regulation, which was introduced on 11 September 2008 to the water sector at the National Municipal Indaba in Johannesburg by the Minister of Water Affairs. The concept was defined by two programmes: the Blue Drop Certification Programme for Drinking Water Quality Management Regulation; and the Green Drop Certification Programme for Wastewater Quality Management Regulation.

The Green Drop process measures and compares the results of the performance of Water Service Authorities and their Providers, and subsequently rewards (or penalises) the municipality upon evidence of their excellence (or failures) according to the minimum standards or requirements that has been defined. Awareness of this performance is obtained by pressure through the customers, the media, political classes and NGOs. The strategy revolves around the identification of mediocre performing municipalities who consequently correct the identified shortcomings, as well as the introduction of competitiveness amongst the municipalities and using benchmarking in a market where competition is difficult to implement.

Risk-based Regulation in South Africa

(Municipal CRR profiles)

Whilst the Green Drop assessment focuses on the entire business of the municipal wastewater services (entire value chain), the risk analysis focuses on the wastewater treatment function specifically. This allows the Regulator to have insight into the treatment component of the municipal business, which is one of the high risk components within the production chain. Risk-based regulation allows the municipality to identify and prioritise the critical risk areas within its wastewater treatment process and to take corrective measures to abate these. Risk analysis is used by the Regulator to identify, quantify

and manage the corresponding risks according to their potential impact on the water resource and to ensure a prioritised and targeted regulation of high risk municipalities.

Risk is defined and calculated by the following formulae:

$$\text{Cumulative Risk Rating (CRR)} = A \times B + C + D$$

where:

A = Design Capacity of plant which also represent the hydraulic loading onto the receiving water body

B = Operational flow exceeding-, on- and below capacity

C = Number of non-compliance trends in terms of effluent quality as discharged to the receiving water body

D = Compliance or non-compliance i.t.o. technical skills

A CRR value is calculated for each municipal wastewater treatment facility in South Africa, as provided in this Green Drop Report. Municipalities can consult the Department of Water Affairs to obtain the individual risk assessments for their plants. However, the various municipal CRR profiles are usually send to the respective Executive Mayors from the Minister's office, to inform the political principles of the facilities that reside in high- and critical risk space.

A CRR%deviation is used throughout the Report to indicate that variance of a CRR value before it reaches its maximum CRR value. The higher the CRR%deviation value, the closer the CRR risk is to the maximum value it can obtain. Example 1: a 95% CRR%deviation value means the plant has only 5% space remaining before the system will reach its maximum critical state (100%). Example 2: a 25% CRR%deviation value means the plant holds a low and manageable risk position and is not close to the limits that define a critical state (90-100%).

Wastewater Risk Abatement Planning (W₂RAP)

Wastewater treatment is the first barrier in a multi-barrier system of ensuring public- and environmental health. In the same way that the Water Safety Plan identifies, plan and manage the risks in the drinking water treatment and supply systems, does the W₂RAP identify, plan and manage risks in the wastewater collection and treatment system.

The development of the South African W₂RAP Guideline for Municipalities draws from the principles and concepts of other risk management procedures, such as the Water Safety Plan and Hazard Analysis and Critical Control Points. The Guideline is published by the Water Research Commission and Department of Water Affairs. Municipal W₂RAPs will be invited as part of the Portfolio of Evidence in future Green Drop assessments and will enjoy increased weight to encourage municipalities to use risk abatement in their business decision making processes. It also encourages methodical thinking, as well as a more proactive and pragmatic approach towards improved wastewater service management.

Municipal Water Quality WORKplan

The "Municipal Water Quality WORKplan" has been developed to guide municipalities towards meeting the 2014 Presidential Targets for wastewater quality, as well as improved Green Drop performance. The WORKplan seeks to i) hold up a benchmark on what world best-practice identifies as core values that enable improved organization performance and ii) sets out a WORKplan for the South African water sector, whereby municipal management and national regulation authorities can focus effort and work towards improved and sustainable water and wastewater management. This plan builds on the existing Green Drop Certification programme, as well as the risk-based approach as outlined in the W₂RAP, to formulate the calendar and targets for regulation in the sector as they impact on local government. In short, the WORKplan spells out the foreseeable future of water and wastewater quality in the country,

and the key areas that will drive change and the milestones that will determine if progress is on par with planning.

Green Drop HANDBOOK

The Department of Water Affairs was cognisant of the need to develop a new regulatory approach upon the fundamentals of conventional regulation to ensure that credibility was not compromised. The Green Drop Certification programme is based upon the core fundamentals of regulatory responsibilities and cannot be regarded as a Municipal Support Programme. However, the programme is informative and educational by design and thereby, carries significant inherent capacity building characteristics. It is therefore a beneficial trait that the programme is directly linked to government support initiatives.

In order to provide more clarity with regard to the Green Drop Certification programme, a Green Drop HANDBOOK was developed to aid municipalities in preparing for assessment, but also to improve their wastewater business by focussing on essential elements of the business. The HANDBOOK must be read in conjunction with the WORKplan as well as the Blue Drop HANDBOOK. It provides technical detail that matches the specific requirements of the Green Drop Certification process, as well as information on how an assessment is conducted. It also ensures the uniform understanding and application of Green Drop requirements.

Green Drop Scoring

The two main outputs from the Green Drop assessment are the:

- ◆ Green Drop score for each municipal system assessed; and
- ◆ The Cumulative Risk Rating for each municipal wastewater treatment works calculated

Two additional performance features were added to the 2010/11 Green Drop process:

- **Municipal Green Drop score:** a percentage score which is based on the design capacities of the individual plants as a function of the total available design capacity of the municipal plants, as related to the individual Green Drop Certification (GDC) score of each system. This score serves as a Performance Indicator that reflect upon the Water Services Institution's wastewater business practice and compliance;
- **Site Inspection score:** a score that reflect the physical condition of the plant. Green Drop assessments were verified by means of physical site inspections of randomly selected sites in each municipality. Inspections were conducted which include (amongst others); appearance of the plant terrain and buildings, structures and equipment, health and safety aspects, on-site monitoring, as well as the workplace satisfaction and process knowledge commitment by the operational staff.

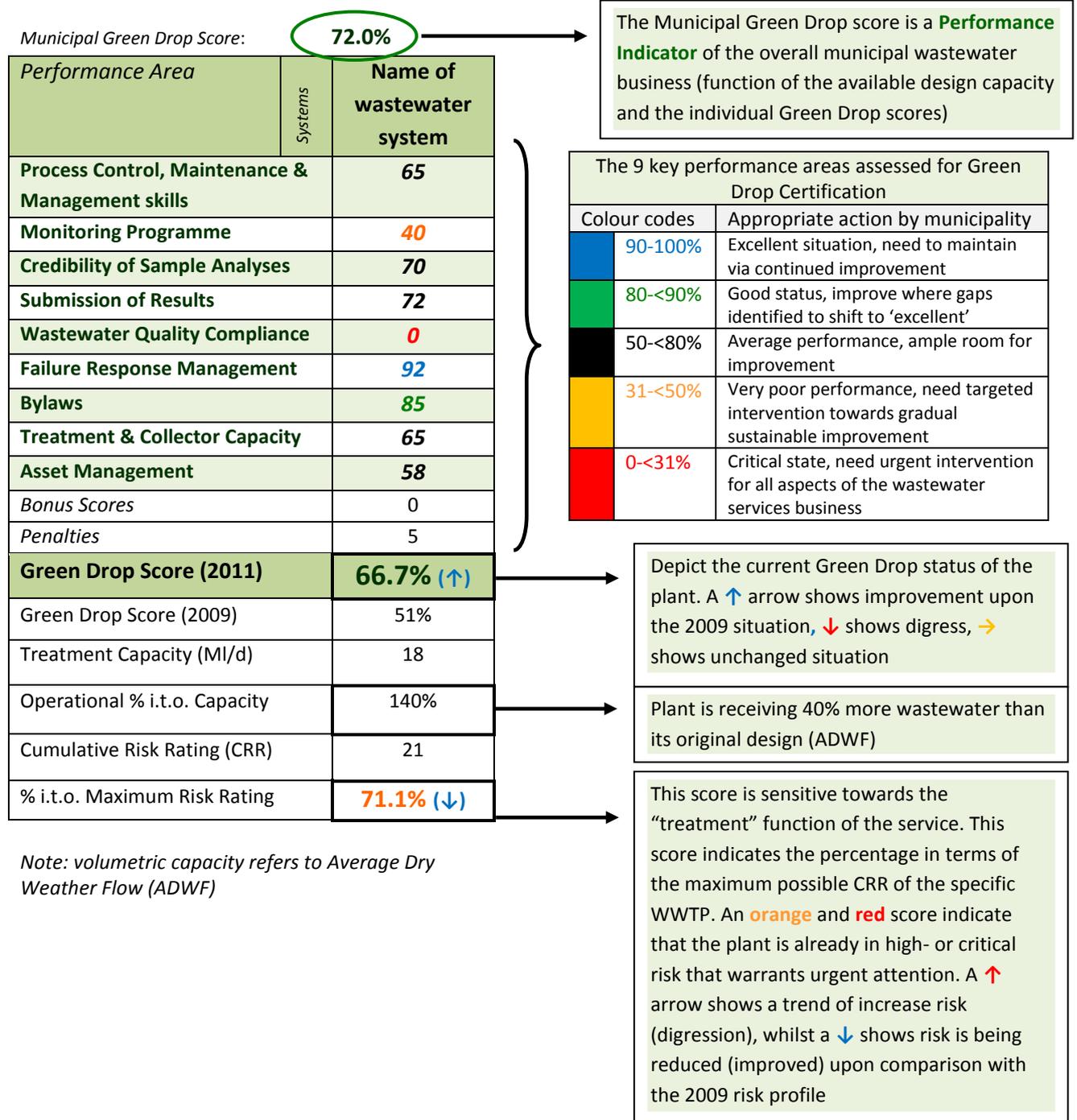
The Green Drop Report

The Green Drop Report for 2010/2011 has been designed with the objective to provide the sector and its stakeholders with **current, accurate, verified** and **relevant** information on three different levels:

1. **System specific** data and information pertaining to the performance of each wastewater system on municipal level;
2. **Province specific** figures and information to highlight the strengths, weaknesses and progress for the collective of municipalities within the province;
3. **National overview** that collate and elevate the detailed findings on system level to that of a provincial overview, which can then be compared and inculcated as a national view of wastewater service performance. Comparative analyses amongst the provincial performances are useful indicators and benchmarks for the various role players.

How to Read the Report Card

The following is an example of a typical municipal report card. Results are provided in colour coded format – each colour has a specific meaning and performance reference.



The Green Drop Report Card and Scoring Criteria

Assessments are conducted by a panel consisting of a qualified wastewater professional as Lead Assessor, 2-4 Assessors and a Learner Assessor who also coordinate the logistical arrangements of the assessments. The team selection is done based on the outcomes of a Green Drop Examination which tests the assessor's knowledge and competence in the subject field.

The following scorecard outlines the key requirements of the Green Drop assessment and indicates the Portfolio of Evidence that was required by each municipality to calculate a Green Drop score per wastewater system.

GREEN DROP CERTIFICATION 2010/11			
No	GREEN DROP CRITERIA	REQUIREMENTS	SUB-REQUIREMENTS
1	Process Control, Maintenance and Management Skill <i>Primary weight 10</i>	A copy (certified) of Registration Certificate of Works displaying Classification (R2834)	<ul style="list-style-type: none"> ✓ Copy of registration certificate must be uploaded on the GDS
		Copies (certified) of Registration Certificates of Process Controllers and Supervisors	<ul style="list-style-type: none"> ✓ Copies of the classification certificates must be uploaded on GDS ✓ WSI must indicate shift patterns ✓ Proof of qualifications & experience of shift workers performing process controlling tasks ✓ Compliance with R2834 WSI must indicate process controllers and / or supervisors shared across different works / sites
		Proof of Maintenance Team used for general maintenance work at the plant (both mechanical & electrical)	<ul style="list-style-type: none"> ✓ Information on in-house or external contractor, SLA arrangement ✓ Contract or Logbook with maintenance entries will serve as proof ✓ Additional proof required on team competency ✓ Provide additional proof of competency of team (e.g. Qualification & Experience & Trade-test)
		Proof of a 'site-specific' Operation & Maintenance Manual	<ul style="list-style-type: none"> ✓ Front page and index required for submission, but sufficient content must be proven ✓ O&M manual to contain: structural, mechanical, electrical detail of plant, design specifications of plant, reference to drawings, operational schedules, maintenance schedules, process detail and control, instrumentation specification/type, fault finding, monitoring, pump curves, supportive appendices
<ul style="list-style-type: none"> ✓ BONUS: Proof of Process Controller staff being subjected to relevant training the past 12 months 			
2	Wastewater Quality Monitoring Programme <i>Primary weight 10</i>	Details of sampling sites; determinants and frequencies of Operational Monitoring	<ul style="list-style-type: none"> ✓ Proof of Operational Monitoring Sites; Determinants and Frequency ✓ Samples must include: inflow, outflow, process flows, industrial effluent, sludge. Determinants as per License / Permit / Authorisation. Frequency as per License / Permit / Authorisation or Best practice for particular technology type & size of works
		Details of sampling sites; determinants and frequencies of Compliance Monitoring	<ul style="list-style-type: none"> ✓ Proof of Compliance Monitoring Sites, Determinants & Frequency as per specification in license / GA / permit / registration (including catchment monitoring; up / downstream samples) ✓ Sludge monitoring and classification as per WRC Sludge Guidelines ✓ <i>* Note: for zero-effluent treatment systems - still need to monitor for impact on catchment / environment (for both lined & unlined systems)</i> <i>* Applicable to oxidation ponds as well</i>

3	Wastewater Sample Analysis (credibility) <i>Primary weight 5</i>	Provide proof and the name of the Laboratory used	✓ Name lab for operational analysis (in-house or on-site) and lab for compliance analysis (in-house or external)
		Certificate of Accreditation for applicable methods OR Z-scores results ($-2 \geq z\text{-score} \geq 2$ are unacceptable) in a recognised Proficiency Testing Scheme . OR proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods)	<ul style="list-style-type: none"> ✓ Check if laboratory is accredited to perform the specific methods ✓ Check acceptability of Z-scores for the water quality determinants
		Explanation on how monitoring results are used to amend / improve process controlling	✓ Practical example [The assessor will select at random analytical parameter/s from the presented analytical results to present an audit question]
		BONUS: Monitoring at an acceptable frequency and for the required determinants	<ul style="list-style-type: none"> ✓ Proof to be provided that WSI maintains a 100% monitoring trend at an acceptable minimum frequency against a full set of required process determinants. Best practice indicators: low-end techn/small size = 1x-2x/month, medium size = 1x-2x/week, high techn/macro size = 1x/day or hourly
4	Submission of Wastewater Quality Results <i>Primary weight 5</i>	Proof of data submission to DWA (12 months)	<ul style="list-style-type: none"> ✓ 12 months of data submitted to DWA on the GDS. ✓ WSIs must ensure that 12 months' sets of results are recorded on GDS. ✓ Note: All compliance results data required to award full score
5	Wastewater Quality Compliance <i>Primary weight 30</i>	Copy of effluent quality limits or standards used to calculate compliance (e.g. effluent limits or standards as per license, General Authorisation, or Permit)	✓ Authorisation proof, contains the specified effluent quality limits or standards for discharge to a water body / or for irrigation / for industrial use / or for other applications
		Effluent Quality CATEGORIES: 90% Microbiological compliance; 90% Chemical compliance & 90% Physical compliance	<ul style="list-style-type: none"> ✓ 90% Compliance with all 3 Effluent Quality CATEGORIES (If not Authorised; 8x General Authorisation Limits apply) ✓ Note: 90th percentile compliance considered in case of large data sets to be assessed as performance measure
		Bonus	<ul style="list-style-type: none"> ✓ A practical and acceptable wastewater Management Rectification plan (or Wastewater Risk Abatement Plan; W₂RAP) is in place to address inefficiencies/inadequacies that result in non-compliance ✓ Plan must indicate priorities, timeframes and resource definition
		Penalty	✓ No proof of valid Authorisation (or sufficient proof of Application)
6	Wastewater Quality Failures Response Management <i>Primary weight 10</i>	Proof of a documented wastewater Incident Management Protocol	<ul style="list-style-type: none"> ✓ Protocol to specify alert levels, response times, required actions, roles & responsibilities and communication vehicles ✓ NB. Include pump station failure
		Provide evidence of implementation of Protocol	✓ Wastewater Quality Failure & Sewer Spillage Incident register

7	Stormwater and Water Demand Management <i>2010/11 not assessed</i>	Proof of a Stormwater management plan detailing how stormwater will be prevented from entering sewer systems and how sewer spillages or sewerage from entering stormwater. Evidence of implementation required	<ul style="list-style-type: none"> ✓ Copy of front page and contents pages + Implementation proof ✓ WSI must have knowledge of baseline figures (e.g. measured % or volumetric rates of infiltration)
		Water Demand Management Plan including a practical strategy to address artificial water demand due to leakages and non-sewer infiltration, causing higher hydraulic loading of wastewater collector and treatment infrastructure. (Might include the need for a wastewater balance)	<ul style="list-style-type: none"> ✓ Copy of Strategy or Implementation Plan, Implementation proof ✓ WSI must have knowledge of baseline figures (e.g. measured % or volumetric rates of losses)
8	Bylaws <i>Primary weight 5</i>	Proof of the Bylaws providing for the regulation of industrial (trade) effluent (volumes & quality) discharged into municipal system, package plants, decentralized systems, vacuum tank discharges and spillages into the environment	<ul style="list-style-type: none"> ✓ Copy of front page, Index and portion referring to industrial/trade effluent
		Evidence of Bylaws enforcement by Local Authority	<ul style="list-style-type: none"> ✓ Proof of application of Bylaw clause in practice, supported by written notice(s) to offender
9	Wastewater Treatment Facility Capacity <i>Primary weight 10</i>	Documented design capacity (hydraulic and organic) of the wastewater treatment facility. Documented daily receiving flows over the 12 months of assessed period (ideally < than design capacity)	<ul style="list-style-type: none"> ✓ Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant. ✓ Evidence of daily flows and subsequent calculated averages. ✓ Measurement method to be explained Assessor may request proof of calibration certificates of inflow meters to verify accuracy of data
		Medium to long term planning to ensure sufficient capacity for treatment system and to ensure effluent quality compliance	<ul style="list-style-type: none"> ✓ Detailed Workplan which stipulates type of work, associated budget and projected timeframe, as well as the planned output of this work
		Medium to long term planning to ensure sufficient capacity for collecting system	<ul style="list-style-type: none"> ✓ Detailed Workplan which stipulates type of work, associated budget and projected timeframe, as well as the planned output of this work
10	Publication of Wastewater Management Performance <i>2010/11 not assessed</i>	Annual Publication of wastewater management performance against the requirements of the site-specific License conditions or General Authorisations	<ul style="list-style-type: none"> ✓ Name and date of publication, copy of information pertaining to audit question. ✓ Note: Level of detail must include compliance detail
		Publication in various communication mechanisms to reach wider audience, in particular information to the public	<ul style="list-style-type: none"> ✓ Evidence / Copy of publication in each media form. ✓ Electronic (web) good but not entirely sufficient. ✓ Web-based reporting will equate to 40% of this sub-criteria score

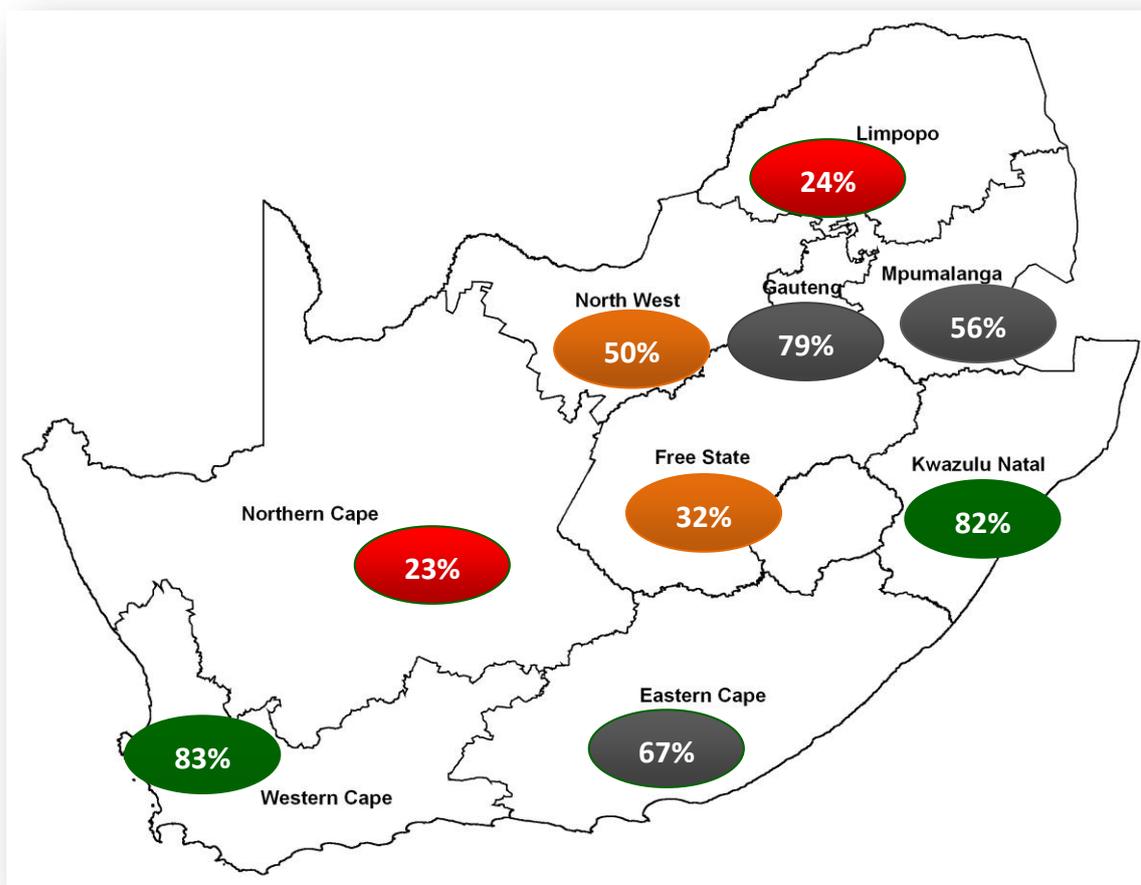
11	Wastewater Asset Management <i>Primary weight 15</i>	Annual Audit report addressing: collection and treatment infrastructure and process control	<ul style="list-style-type: none"> ✓ Proof of Technical Audit/ Assessment/ Inspection Report and evidence/plan for implementation of findings
		Updated sanitation / wastewater infrastructure Asset Register	<ul style="list-style-type: none"> ✓ Proof of Asset Register, evidence to be submitted. ✓ Asset register to include movable equipment and infrastructure assets (Cover page plus Index)
		Operation and maintenance budget and comparative expenditure detail for: 1 - wastewater treatment (in cents/m3); 2 - collection system (R/m3)	<ul style="list-style-type: none"> ✓ 50% score to proof of budget, 50% score to proof of expenditure against budget ✓ Unit costs per system must be provided <i>Guide 1: low end technology = R 0.50/Kl, medium to high end technology = R0.80-1.20/ Kl</i> <i>Guide 2: R55 000 (Ml/day plant capacity)</i>
		Maintenance records of pump-stations	<ul style="list-style-type: none"> ✓ Proof of maintenance work done on mechanical, electrical, civil per pump station

"It always seems impossible until its done."

Nelson Mandela



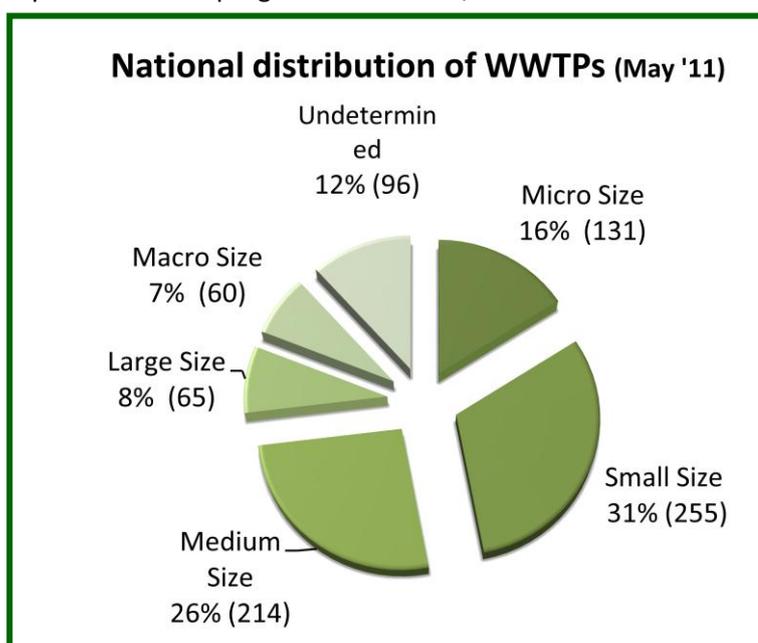
CHAPTER 2: NATIONAL OVERVIEW



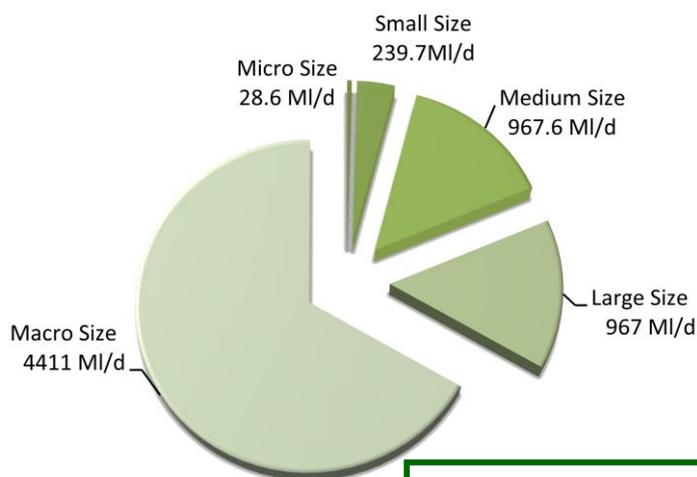
Introduction

Wastewater services delivery is performed by a vast number of Water Services Authorities and their Providers in South Africa. The Green Drop Certification programme of 2010/11 verified the status of wastewater service delivery by hundred and fifty-six (156) municipalities that provide services via an infrastructure network comprising of 821 wastewater collector and treatment systems. The Green Drop assessment results verified a spread of treatment plants across the country to comprise predominantly (73%) of micro-, small- and medium sized plants. Sixty-seven percent (67%) of design capacity is contained at macro-size plants, which are mostly located in the larger cities.

The operational flow distribution concurs with the hydraulic design capacity and the correlation can be illustrated as follows:



Design Capacity Distribution



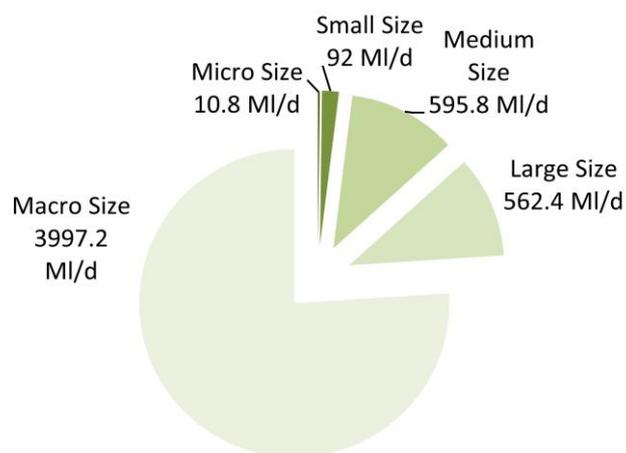
A total flow of 5258 ML/day is received at the 821 treatment facilities, which has a collective hydraulic design capacity of 6614 ML/day (as ADWF). This means that 80% of the design capacity is taken up by the current operational flows, leaving 20% to meet the future demand without creating new capacity.

However, the findings of the Green Drop assessment suggest that a significant portion of this existing 'surplus capacity' might not be readily available, as result of inadequate maintenance and operational deficiencies, especially at lower capacity municipalities.

The opposite scenario is also possible at high capacity municipalities, where infrastructure can usually cope with flows that exceed the theoretical design capacity without compromising the final effluent capacity. This attainment is however, dependant on qualified and experienced plant management and scientific services.

Analysis of the operational flows indicate that Gauteng manages the bulk of the national load which account for 49%, followed by 17% in the Western Cape and 14% in Kwa-Zulu Natal. The balance of the provinces receives and treats the remainder 20% of wastewater generated in South Africa.

Operational Flow Distribution



Province (abbreviated)	No. WWTPs per Province	Total Design Capacity (ML/D)	Total Daily Inflow (ML/D)
MP	76	323.1	159.1
NW	35	315.8	143.8
FS	95	482.2	197.9
GP	56	2595.1	2579.0
KZN	143	1076.2	715.9
LP	67	150.4	123.2
WC	155	1031.4	901.2
NC	71	150.3	93.3
EC	123	489.5	344.9
Totals	821	6614.0	5258.3

National Green Drop Analysis

Analysis of the 2010/11 Green Drop assessments and site inspection results indicate that municipal wastewater service performance vary from 'excellent' to 'unacceptable'.

GREEN DROP COMPARATIVE ANALYSIS			
Performance Category	2009	2010/11	Performance trend
<i>Incentive-based indicators</i>			
Number of municipalities assessed	98	156 (100%)	↑
Number of wastewater systems assessed	444	821	↑
Average Green Drop score	37%	45%	↑
Number of Green Drops ≥50%	216 (49%)	361 (44%)	↓
Number of Green Drops <50%	228 (51%)	460 (56%)	↓
Number of Green Drop awards	33	40	↑
Average Site Inspection Score	N/A	51.4%	N/A
PROVINCIAL GREEN DROP SCORE	N/A	71%	N/A

N/A = Not applied

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

A total of 156 municipalities and 821 wastewater systems were assessed in 2010, compared to 98 municipalities and 444 systems in 2009. The marked improvement in submission of performance portfolios by municipalities affirms the commitment by municipal management to raise their service standard and performance. The incentive-based regulatory approach seems to have succeeded to raise the overall awareness and to act as positive stimulus for gradual and sustainable improvement across the country. This is evident when comparing the 2009 average Green Drop score of 37% to the current improved status of 45%.

Analysis of the Green Drop results indicate a fairly good National Green drop Score of **71%**. However, this value might be skewed as a few excellent Provincial Scores would balance out the lower Provincial performers.

A negative trend is observed when comparing the number of Green Drop scores >50% in 2009 (49%) decreased proportionally to 44%. This trend can possibly be explained by considering that 377 'first time' systems were assessed and many of these achieved low Green Drop scores, very similar to the 2009 type trends. The encouraging aspect of this result is that a verified baseline have been established against which continued performance can be gauged and measured.

The excellent performers increased from 33 Green Drop awards in 2009 to 40 in 2010/11, with Western Cape (19x) and KZN (11x) producing the highest number of Green Drop awards. Readers must be mindful that Green Drop requirements become more stringent (and detailed) with every assessment cycle. Hence, the 40 systems that achieved Green Drop status are truly 'excellent'. The Green Drop philosophy does not chase numbers as targets, but quality and excellence

The increment in Green Drop certified systems is even more significant if noted that a number of systems lost Certification Status since 2009:

- 20 of 33 systems lost their 2009 Green Drop status
- 14 of 33 systems retained Green Drop status
- 26 systems are awarded Green Drop status for the 1st time.

National 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	29.0	32.0	↑
Average CRR	13.3	13.6	↑
Lowest CRR	4.0	3.0	↓
Average Design Rating (A)	1.4	1.4	→
Average Capacity Exceedance Rating (B)	3.7	4.1	↑
Average Effluent Failure Rating (C)	5.7	5.7	→
Average Technical Skills Rating (D)	2.4	2.6	↑
AVERAGE % DEVIATION FROM maximum-CRR	66.8	69.2	↑

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

From the above table, both positive and negative observations can be derived. The positive picture is that the average risk position is maintained between 13.3 - 13.6 CRR, whilst the lowest CRR position was improved upon by taken on 1 CRR unit lower position (3.0). Also, no digress can be observed in terms of effluent quality and design capacities of plants for the country as a whole.

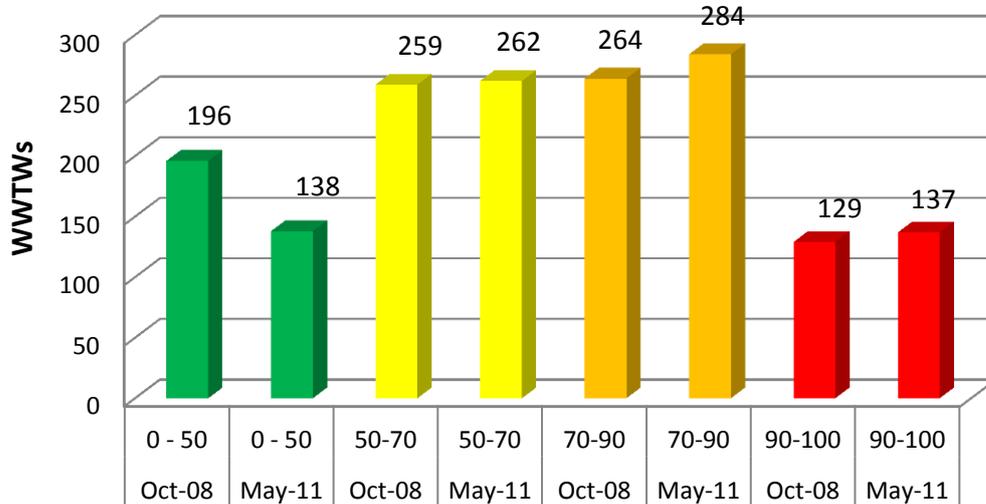
However, the highest CRR position that was occupied by CRR 29 (2009) has moved to CRR 32 which is a higher risk position. Most importantly is that the average % deviation from the maximum CRR has increased from 66.8 to 69.2%. This might be a marginal increase, but indicates that plants continue (on average) to move into higher risk space.

Although the national picture looks stable with slight negative leaning, it is impressed upon the municipalities with digressing risk profiles to address those situations. These municipal treatment plants are clearly identified in the various Chapters under “Regulatory Impression” and marked with **CRR↑** for each individual plant. **CRR values** marked in **red** and **orange** means that those treatment plants are in **high**- and **critical** risk positions. Unless those plants are not turning around performance, the above table will not show a positive risk profile for the country, and the health of the receiving environment will remain under threat.

The movement of risk in the following bar-chart is also relatively neutral and indicate that no drastic movement is taking place as a national average. The overall picture is one of ‘stability’ whereby it seems that the country as a whole has managed to contain the risk, with slight movement to a higher risk position, as can be seen by the increase in plants in the critical risk (137) and decrease in plants in the low risks (138) positions.

Overall, the risk trend is neutral to negative, particularly when considering that 58 plants left the ‘low risk’ landscape to move to higher risk positions. The Regulator regards this trend with concern and will place municipalities with increased CRR trends under regulatory surveillance.

National Risk Profile: CRR as % of CRRmax



RISK PERCENTAGE

% Deviation = CRR/CRR(max) TREND	90 – 100% Critical risk WWTPs	Red
	70 - <90% High Risk WWTPs	Orange
	50-<70% Medium risk WWTPs	Yellow
	<50% Low Risk WWTPs	Green

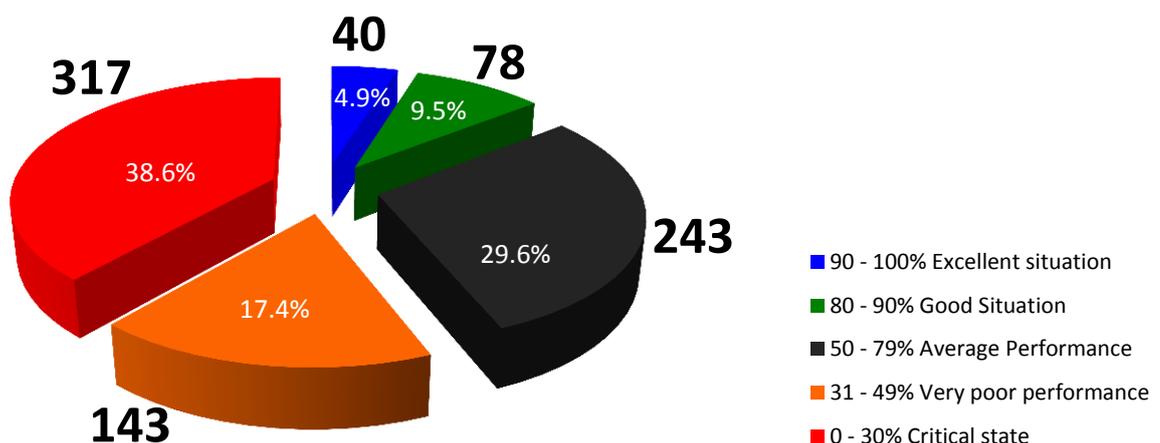
Comparative Analysis of Provincial Performance

Provincial performance profiles are the summation of the respective municipal performances. Each Province has different dynamics with municipal participants that perform exceptionally well, on average, unsatisfactory or very poorly. The key performance indicators are compared for benchmarking and self assessment purpose in the following table. The table prioritises in terms of highest- to lowest provincial performers:

PROVINCE		KEY PERFORMANCE AREA				
Province (abbreviated)	Provincial Green Drop Score	CRR and %deviation from CRRmax	Average Green Drop Score	Green Drop Awards 2011	% Systems that achieved >50% Green Drop score	Position on National Performance Log
W-Cape	83.1%	62%	65%	19	75%	1
KZN	82%	55%	61%	11	66%	2
Gauteng	78.8%	57%	68%	5	68%	3
E-Cape	67.2%	78%	33%	3	26%	4
Mpumalanga	56%	73%	42%	1	41%	5
N-West	50%	76%	29%	1	17%	6
F-State	31.5%	83%	24%	0	12%	7
Limpopo	24%	79%	24%	0	15%	8
N-Cape	23%	76%	26%	0	13%	9

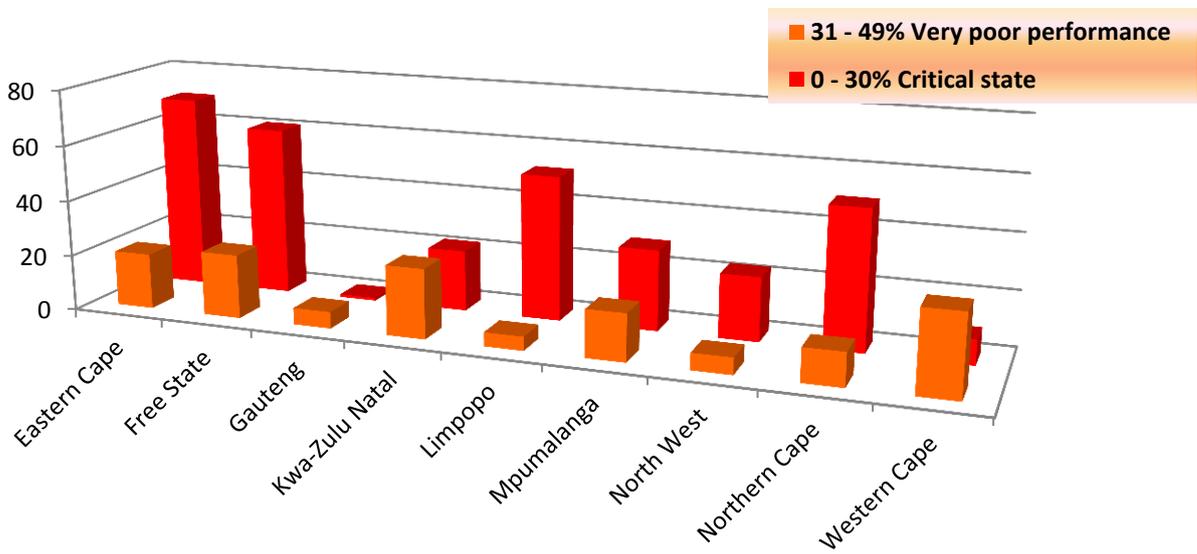
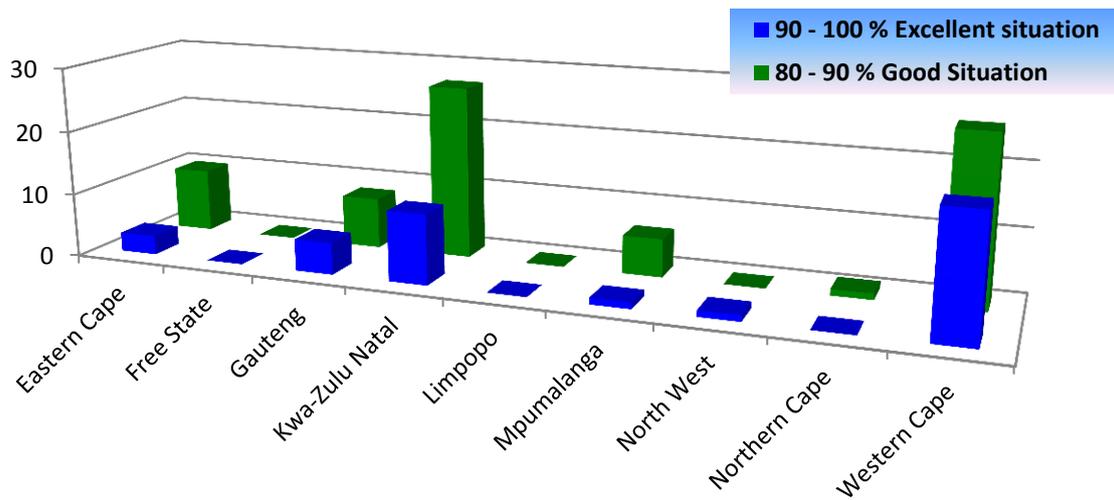
The following pie-chart provides a snapshot view of the number of plants (and %) in each performance category. Ideally, the South African public would want to see that the majority of wastewater systems reside in the blue, green and black sections in future. Currently, only 44% of all systems occupy this space. As the Green Drop Certification programme and regulatory pressure continue, it is likely that more and more systems will move into the higher performance categories.

National Green Drop Results for 2010/11



It is not sufficient to regard the above status as a stand-alone picture. It is necessary to also ask (and answer) the following questions:

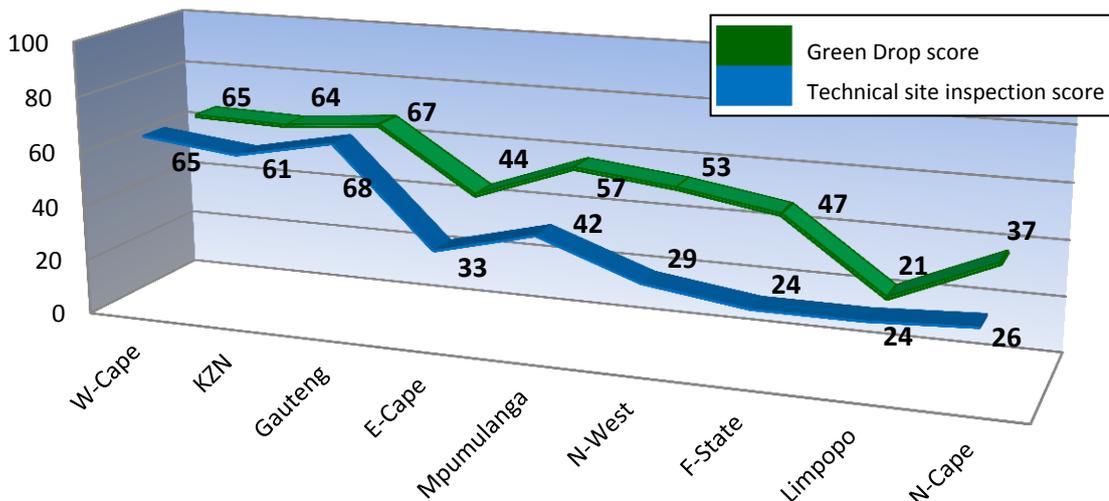
- ? who and where are the good and excellent performers that occupy the blue and green sections;
- ? who and where are the sub-standard performers that occupy the red and orange sections.



From the above analysis, it can be seen that Western Cape, followed by Kwa-Zulu Natal and Gauteng are producing the high performing wastewater systems. Eastern Cape, followed by Free State, Northern Cape and Limpopo are producing the bulk of systems that are in critical and poor performing positions.

In addition, the Green Drop programme included a 'verification' step in follow-up to the desktop assessments to confirm that the situation in the field is consistent with the evidence presented by the municipality before the Green Drop assessment panel. The results indicate a close correlation between the desktop assessment and the physical site conditions. Western-Cape, KZN, Gauteng and Limpopo had less than 4% variance between the respective scores. However, high deviations were found between the Green Drop and Site Inspection scores in the cases of Eastern Cape, Mpumalanga, North West, Free-State and Northern Cape.

Variance between Green Drop scores and Site Inspection scores



Analysis of the underlying factors to these higher deviations indicates that the technical managers are removed or disengaged from the practices in the field. A common scenario is that the technical manager may not be aware of the work taken place on the plants, and thereby also do not include these results as part of the portfolio of evidence to the GDC assessor panel. For example, it is quite common that management present “no information” for flows to a particular plant, but upon plant inspection, the flow meter is in place and flow recorded on a daily basis. The contrary scenario is also found where a manager has good paper work in place, but the plant conditions are not up to standard. The reader will track such differences throughout the Green Drop Report by comparing the Green Drop scores with the (randomly selected) Technical Site Inspection score.

Key Findings and Way Forward

The national position on wastewater service performance is a variation from excellent to very poor. The one accomplishment that can be attributed to municipalities in South Africa is the marked increase in submission of evidence for Green Drop assessment, and the subsequent **100% coverage** of all systems. This mark and important reference point which few countries can claim credit. As such, the Regulator has a complete database of the exact strengths and gaps per municipality and per wastewater system from where gradual and sustainable improvement can be facilitated and measured on a continuous basis.

The value proposition of Green Drop and CRR information to the sector is vast:

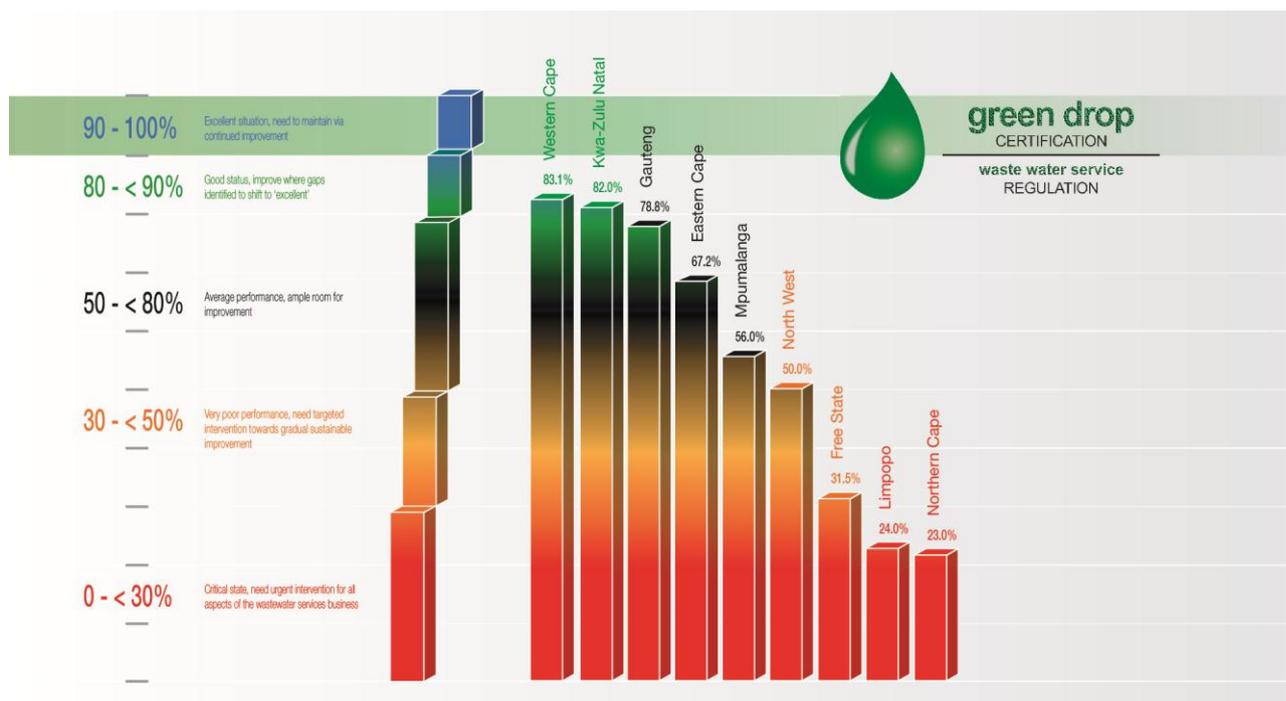
- Provides the Regulator with a scientific basis to prioritise regulatory interventions where poor performance and failure are evident;
- Provides Local Government with information and data pertaining to their systems to plan progressively for continued improvement or turnaround where reduced performance is still evident
- Provides sector partners that are responsible for support with information on the critical aspects that need support and will direct the ‘type’ of support required;
- Provides the SETA with training gaps and quality of existing technical persons in local government sanitation services
- Lastly, Green Drop information provides the public with accurate and verified information on the status of their local municipality’s wastewater service management performance.

The way forward is contained in a progressive Green Drop programme which alternates the Green Drop assessments with regulatory implementation on ground level, which will be directed by the Green Drop information. In 2011 to 2012, the Regulation Unit will be engaging (within predetermined Regulatory Inspector Panels) with allocated Water Services Authorities in order to measure progress on the published Green Drop Report as well as WS Regulation Performance Publications (RPMS). This would mean that panels will be:

- Monitoring rectification processes (which will include planning initiatives, technology choices, MG applications, etc);
- Gauge GDS and RPMS activity;
- Work with low performing municipalities to identify key areas of focus for turnaround and to perform proper performance audits;
- Monitoring Service Level Agreements vs. Actual Service Delivery/performance by service providers;
- Allow for the Municipal Cross Pollination programme to take effect;
- Work with Water Resource and Protection unit to inform the licensing processes.

The above outputs will be contained in a Green Drop Progress Publication in 2012 to inform stakeholders of the progress on the ground. The next Green Drop assessment cycle will commence in June 2012, and will produce an update on the current Report. A detailed schedule and WORKplan is available for sector consultation and input at the Municipal Water Quality Conference of June 2011.

National Performance Barometer



Green Drop Awards 2010/11

The following municipalities are congratulated for their excellence achievement in terms of their compliance status, standards and good management practice in wastewater service delivery to their communities. Well done and continue to aspire to advance this good performance to even higher peripheries in the coming year.

40 Green Drop Certificates are awarded in 2010/11 (alphabetical order):

Eastern Cape:

- ◆ **2 Green Drops:** Buffalo City Local Municipality
- ◆ **1 Green Drop:** Nelson Mandela Bay Metropolitan Municipality

Gauteng:

- ◆ **4 Green Drops:** City of Johannesburg / Johannesburg Water
- ◆ **1 Green Drop:** Ekurhuleni / ERWAT

Kwa-Zulu Natal:

- ◆ **9 Green Drops:** eThekweni Metropolitan Municipality
- ◆ **2 Green Drops:** Ilembe District Municipality.

Mpumalanga:

- ◆ **1 Green Drop:** Mbombela Local Municipality

North West:

- ◆ **1 Green Drop:** Tlokwe Local Municipality

Western Cape:

- ◆ **11 Green Drops:** City of Cape Town Metropolitan Municipality
- ◆ **2 Green Drops:** Bitou Local Municipality
- ◆ **2 Green Drops:** Mosselbay Local Municipality
- ◆ **1 Green Drop:** Overstrand Local Municipality
- ◆ **1 Green Drop:** Witzenberg Local Municipality
- ◆ **1 Green Drop:** Beaufort West Local Municipality
- ◆ **1 Green Drop:** George Local Municipality



"If you are going to achieve excellence in big things, you develop the habit in little matters. Excellence is not an exception, it is a prevailing attitude." Colin Powell

Green Drop Certified Systems for 2010/11 (alphabetical order):

- | | |
|----------------------------------|--|
| 1. Amazimtoti (95.5%) | eThekweni Metropolitan Municipality |
| 2. Beaufort West (90.7%) | Beaufort West Local Municipality |
| 3. Camps Bay (91.8%) | City of Cape Town |
| 4. Central (96.0%) | eThekweni Metropolitan Municipality |
| 5. Ceres (92.9%) | Witzenberg Local Municipality |
| 6. Craigieburn (90.0%) | eThekweni Metropolitan Municipality |
| 7. Dekama (90.0%) | Ekurhuleni Metropolitan Municipality / ERWAT |
| 8. Driftsands (91.0%) | Nelson Mandela Bay Metropolitan Municipality |
| 9. East Bank (90.9%) | Buffalo City Local Municipality |
| 10. Ennerdale (91.4%) | City of Johannesburg / Johannesburg Water |
| 11. Frasers (97.6%) | Ilembe District Municipality |
| 12. Fremersheim A (90.5%) | Mosselbay Local Municipality |
| 13. Gordon's Bay (92.9%) | City of Cape Town |
| 14. Goudkoppies (92.9%) | City of Johannesburg / Johannesburg Water |
| 15. Green Point (91.8%) | City of Cape Town |
| 16. Gwaing (95.0%) | George Local Municipality |
| 17. Hermanus (92.1%) | Overstrand Local Municipality |

18. Hout Bay (91.3%)	City of Cape Town
19. Kingsburgh (94.8%)	eThekweni Metropolitan Municipality
20. Kingstonvale (Nelspruit) (90.9%)	Mbombela Local Municipality
21. Klipheuwel (90.9%)	City of Cape Town
22. Kurland (96.1%)	Bitou Local Municipality
23. Llandudno (92.8%):	City of Cape Town
24. Macassar (Strand) (96.8%)	City of Cape Town
25. Magabeni (90.0%)	eThekweni Metropolitan Municipality
26. Melkbosstrad (92.9%)	City of Cape Town
27. Mossel Baai (90.9%)	Mosselbay Local Municipality
28. Northern Works (92.4%)	City of Johannesburg / Johannesburg Water
29. Olifantsvlei (93.1%)	City of Johannesburg / Johannesburg Water
30. Phoenix (99.4%)	eThekweni Metropolitan Municipality
31. Plettenberg Bay (96.5%)	Bitou Local Municipality
32. Potchefstroom (97.0%)	Tlokwe Local Municipality
33. Shakaskraal (98.5%)	Ilembe District Municipality
34. Southern (92.3%)	eThekweni Metropolitan Municipality
35. Umdloti (90.0%)	eThekweni Metropolitan Municipality
36. Umkomaas (92.2%)	eThekweni Metropolitan Municipality
37. Wesfleur (Atlantis) (92.8%)	City of Cape Town
38. West Bank (92.7%)	Buffalo City Local Municipality
39. Wildevleivlei (96.3%)	City of Cape Town
40. Zandvleit (91.8%)	City of Cape Town

