

EXECUTIVE SUMMARY

Background

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. It is a form of regulation that holds the intent to synergise the current goodwill exhibited by Water Services Institutions and existing government support programmes, to give the focus, commitment, planning and resources needed to achieve excellence in wastewater management.

The Green Water Services Audit is the tool whereby incentive- and risk-based regulation is conducted in South Africa. The Green Drop process measures and compares the results of the performance of Water Service Institutions, and subsequently rewards (or penalises) the institution upon evidence of their excellence (or failures) according to the minimum standards or requirements that has been defined.

Whilst the *Green Drop assessment* focuses on the entire value chain (reticulation, pumping, treatment, discharge) of the wastewater business within the municipal (or other) wastewater services business, the *Cumulative Risk assessment* focuses on the wastewater treatment function specifically. The latter approach allows the Regulator to have insight into the treatment component of the municipal business, which is one of the high risk components within the wastewater value 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.

The two main outputs from the Green Drop assessment for the 2013 cycle are:

- ◆ A weighted Green Drop score for each municipal system; and
- ◆ A Cumulative Risk Rating for each municipal wastewater treatment works.

Wastewater Systems that are awarded Green Drop Certification status, achieved $\geq 90\%$ and is marked with....



Wastewater Systems that reside in critical state with exceptional poor performance for $< 30\%$ is marked with....



In keeping with the Minister's commitment to provide the water sector and its stakeholders with **ongoing, current, accurate, verified** and **relevant** information on the status of wastewater services in South Africa, the Green Drop Report 2013 provides the findings and report progress pertaining to:

- ✓ current status and risk trend of municipal wastewater collection and treatment facilities;
- ✓ current status of collector and treatment facilities under ownership of the Department of Public Works; and
- ✓ current status of selected privately owned treatment and reticulation facilities.

Municipal Wastewater Management: Status and Performance

Background

Wastewater services delivery is performed by one hundred and fifty two (152) Water Services Authorities in South Africa via an infrastructure network comprising of 824 wastewater collector and treatment systems. A total operational flow of 5128.8 MI/day is received at the 824 treatment facilities, which has a collective hydraulic design capacity of 6509.7 MI/day (as ADWF). This means that 78.8% of the existing design capacity is accounted for by the current operational flows, leaving a theoretical surplus of 22.2% as 'available' capacity for future demand (although many individual plants have no surplus and run at full capacity).

National Green Drop Analysis

Analysis of the 2012/13 Green Water Services Audit and site inspection results indicates that the reaching of the Green Drop objective is close to being achieved, **considering the significant and progressive movement in overall performance made on national scale**. However, the analysis also indicates that many municipalities still do not meet the regulatory expectations.

GREEN DROP COMPARATIVE ANALYSIS				
Performance Category	2009	2010/11	2012/13	Performance trend
Number of municipalities assessed	98	156 (100%)	152 (100%)	→

GREEN DROP COMPARATIVE ANALYSIS				
Performance Category	2009	2010/11	2012/13	Performance trend
Number of wastewater systems assessed	444	821	824	↑
Average Green Drop score	37%	45%	46.4%	↑
Number of Green Drop scores ≥50%	216 (49%)	361 (44%)	415 (50.4%)	↑
Number of Green Drop scores <50%	228 (51%)	460 (56%)	409 (49.6%)	↑
Number of Green Drop awards	33	40	60	↑
Average Site Inspection Score	N/A	51.4%	57.0%	↑
NATIONAL GREEN DROP SCORE	N/A	71%	73.8%	↑

N/A = Not applied

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

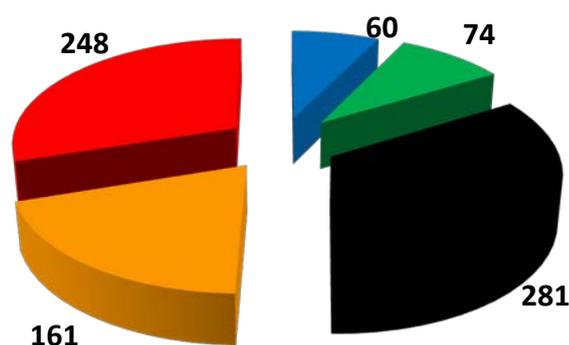
The 2012/13 Green Drop audits included all municipalities that own and operate wastewater infrastructure in South Africa. The **100% coverage** remains constant with the 2011 audit cycle, although some numeric changes were noted in the number of municipalities assessed, as result of demarcation changes. The results indicate that the incentive-based regulatory approach, enhanced by a risk-based methodology, 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 216 systems obtained Green Drop scores of ≥50% in 2009 and 361 systems in 2011, 415 systems obtained more than 50% in the 2013 Green Drop cycle. On a %-scale, this marks an increase from 44 to 50.4% for systems with >50% Green Drop scores. The average Green Drop score follows an equally impressive improvement trend since 2009 (37%) to 2011 (45%) to 2013 (46.4%), indicating an improvement in the average performance by municipalities. Overall, the above table is marked by an all round '↑' which signifies an **improvement trend in ALL performance areas**.

The most significant performance measure is however, the **National Green Drop Score**, which applies weight per size of a treatment system. The Regulator is satisfied with the increase in the national score from 71% in 2011 to **73.8% in 2013**. The most impressive statistic is the **number of Green Drop Certifications** that were achieved in 2013, totalling at **60 systems** compared to 40 systems in 2011 and 33 in 2009. What makes this figure remarkable, is that the 2013 Green Drop criteria were significantly more stringent than the 2011 criteria. In addition, it is noted that 6 systems missed the 90% cut off mark by a few decimal points and the Regulator trust that these systems will cross this boundary with the next GWSA cycle. A wastewater system that achieved ≥90%, can truly be regarded as 'excellent' and has achieved a level of mastery that will compete with the best wastewater systems in the world

Regrettably, a number of systems have been issued **Purple Drops** in 2013. These **248 systems** received **<30% GDC scores** during 2013, thereby earning the undesirable status of 'systems in crisis'.

Number of systems that is placed in excellent, good and critical positions



90 – 100% Excellent	Blue
80-<90% Good	Green
50-<80% Average	Grey
30-<50% Poor	Yellow
0-<30% Critical state	Red

Trend analysis 2009 to 2013:

- ✓ 328 more systems were assessed in 2013 (824) compared to 2009 (444)
- ✓ 60 systems achieved **Green Drop Certification**, indicating that 20 more systems are considered 'excellent' (≥90%) compared to 2011
- ✓ Lesser number of systems (30.1%) are in 'critical state' in 2013 compared to 38.6% critical state systems in 2011
- ✓ 50.3% of systems are residing in excellent/good/average areas in 2013, compared to 44% of systems in 2011, meaning the bulk of systems are now >50%
- ✗ **30.1%** of all systems are in **critical state**, and regulatory actions will be prompted to address the poor performance – these systems were issued **Purple Drops** and are clearly marked throughout the Report.

National Risk Analysis

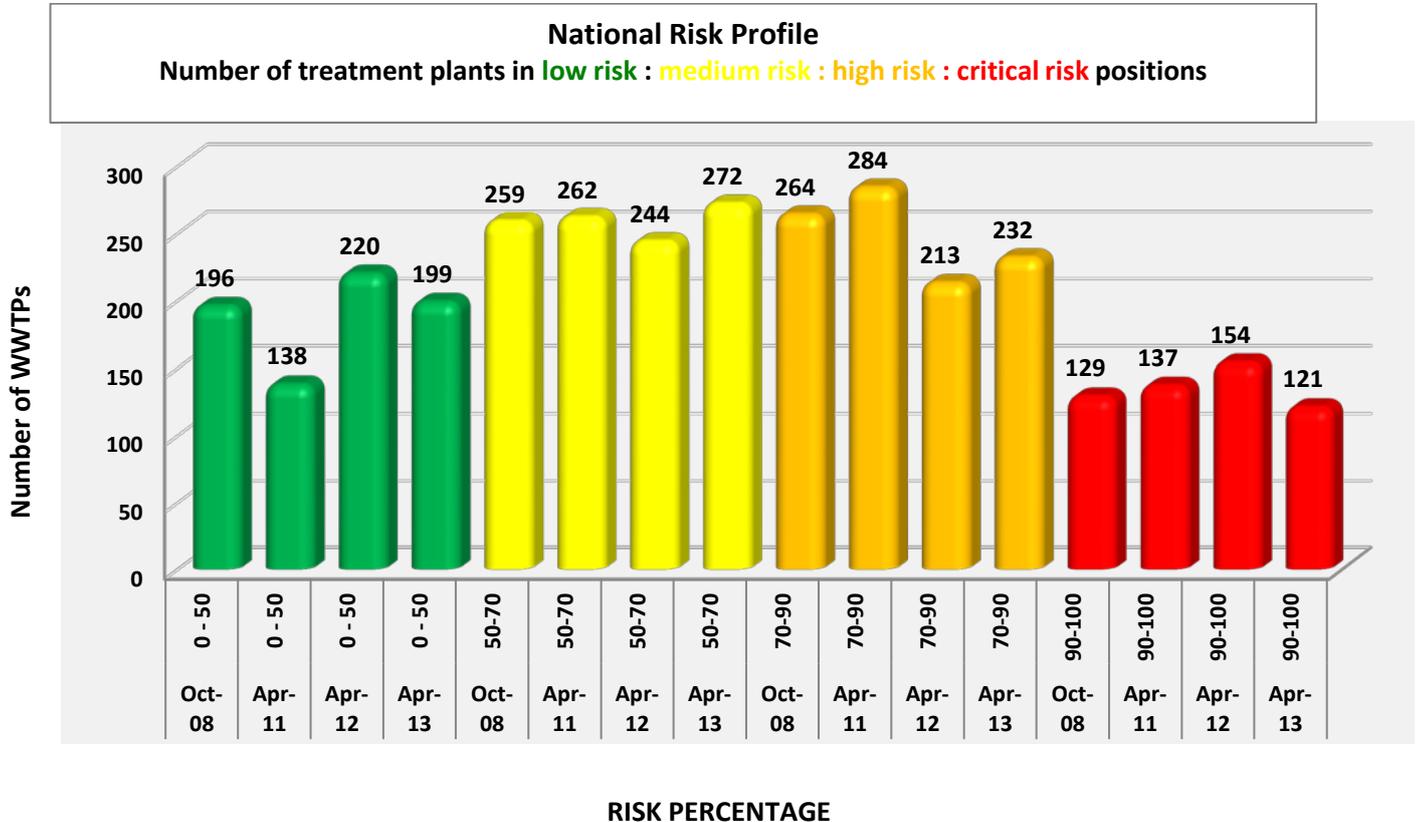
The Green Drop requirements are used to assess the entire value chain involved in the delivery of municipal wastewater services (collect, treat, discharge of sewage), whilst the risk analyses focus on the (treatment) function specifically.

NATIONAL CUMULATIVE RISK COMPARATIVE ANALYSIS					
Performance Category	2008	2011	2012	2013	Performance Trend
Highest CRR	29	32	28	30	↑
Average CRR	13.3	13.6	12.3	12.2	↓
Lowest CRR	4	3	2	4	↑
Average Design Rating (A)	1.4	1.4	1.4	1.4	→
Average Capacity Exceedance Rating (B)	3.7	4.1	3.8	3.6	↓
Average Effluent Failure Rating (C)	5.7	5.7	4.7	4.9	↑
Average Technical Skills Rating (D)	2.4	2.6	2.5	2.5	→
Average % Deviation from CRR _{max}	67.0	69.2	65.9	65.4	↓

↑ = digress (increased risk), ↓ = improvement (reduced risk), → = no change

From the above table, it can be observed that the national highest CRR in 2013 is at 30 compared to the 28-32 risk positions during previous years. The average CRR decreased from 12.3 to 12.2% ↓, indicating a slight improvement from the 2012 Green Drop Progress Report findings. When compared to the previous 2011 Green Drop assessment, the average CRR again shows an improvement from 13.6% to 12.2% ↓. The CRR analysis indicates that a concerted effort must still be made to address the effluent failure (C) and technical skills (D) ratings in the country. The most significant risk indicator is however, the **Average CRR %deviation of 65.4%** which occupies a lower risk position compared to the 2012 result. Hence, both the Green Drop score and the Cumulative Risk Rating indicate an overall improvement in wastewater services from the period 2011 to 2013.

The following schematic shows the trend in each risk category from 2008 to 2013.



The number of plants in critical risk space decreased from 154 to 121 over the past year (2012 to 2013). The plants that previously occupied the critical risk space are now occupying the high and medium risk categories, as can be seen by the increase in high risk- (213 to 232) and medium risk plants (244 to 272).

These trends show an overall improvement trend and municipalities are strongly encouraged to continue with the implementation of their risk abatement process (W₂RAP) to prioritise resources and to abate the higher risk outliers. Already, this graph illustrates that the W₂RAP process is bearing fruit by consistently moving treatment facilities into lesser risk positions. Unfortunately, the positive trend is tempered by the upwards movement of 21 plants from low to moderate risk positions. It is important that municipalities ensure that risk positions are maintained once an acceptable risk space has been occupied. This position will be determined from the 2013/14 Green Drop PAT process.

Regrettable, 121 treatment plants still reside in **critical risk** positions. The Regulator will prompt the necessary actions to ensure those municipal plants are put under surveillance as **'hot spots'** to ensure that risk mitigation and compliance are up-scaled and fast-tracked.

Regulatory Focus for 2013 and 2014

The following Provinces received **GREEN DROP SCORES BELOW 30%**, which indicate that the overall municipal wastewater business is not on par with good practice and legislative compliance. These municipalities in these Provinces are placed under **regulatory surveillance**, in accordance the Water Services Act (108 Of 1997) Sections 62 and 63.

Position	Provinces	Number of Wastewater Systems with <30% score
1	Gauteng	0
2	Western Cape	9
3	North West	21
4	Kwa-Zulu Natal	32
5	Limpopo	32
6	Northern Cape	33
7	Eastern Cape	34
8	Mpumalanga	41
9	Free State	46
		248

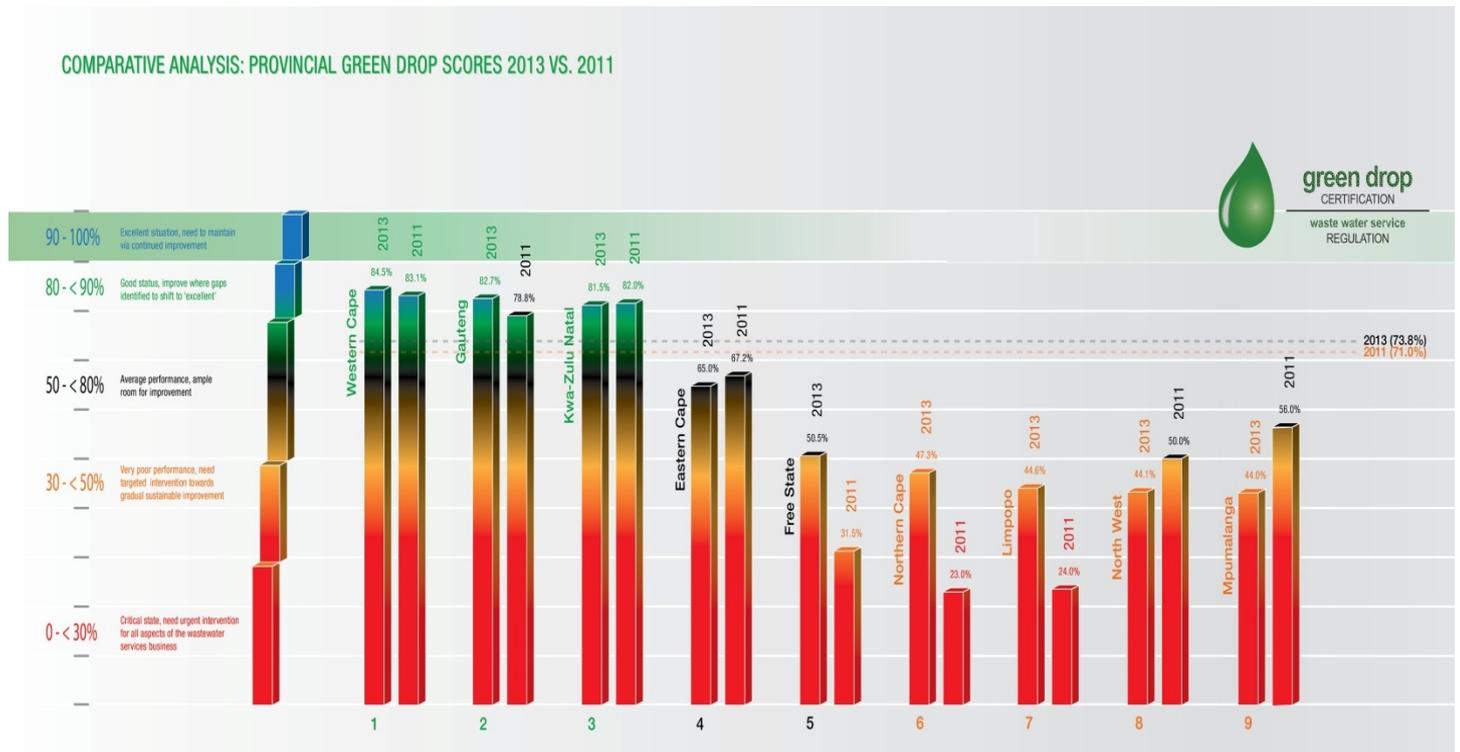


Performance Barometer

The GREEN DROP PERFORMANCE BAROMETER reflects the level of mastery that a municipality has achieved in terms of its overall municipal wastewater business, as indicated by the **individual Municipal Green Drop Scores**. The top performers are indicated on the bar chart left, whilst the lower achievers are grouped to the far right of the bar.

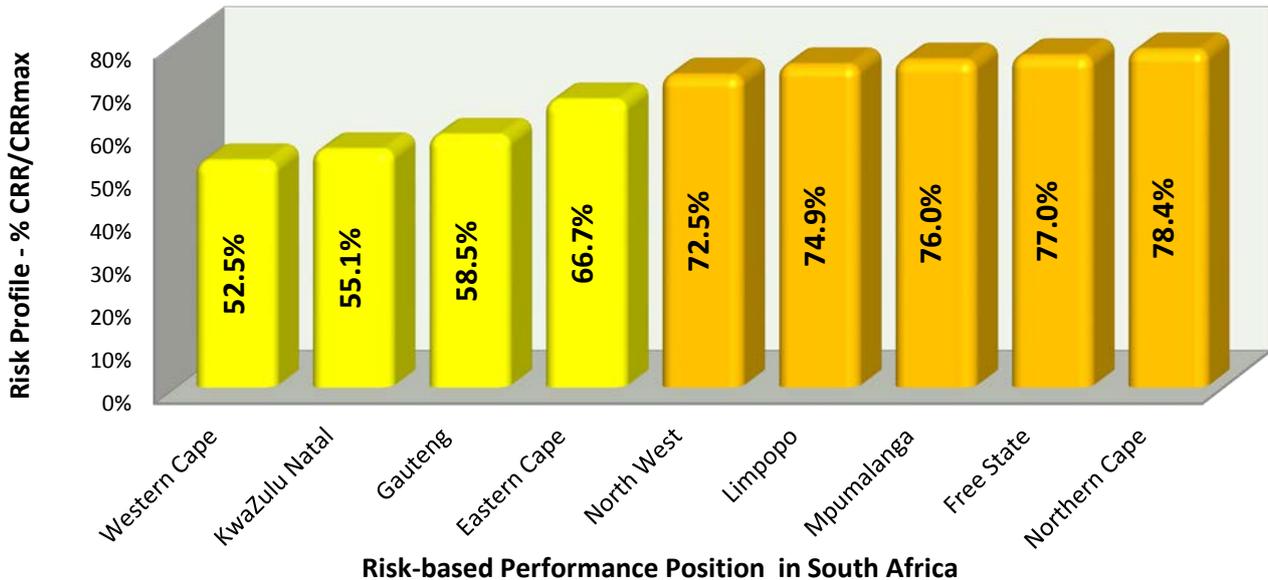


A comparison between the 2013 and 2011 Green Drop scores reveals that Western Cape, Gauteng, Free State, Northern Cape and Limpopo have improved their performance positions, whilst Mpumalanga and North West Provinces shows a disappointing overall decline in performance.



The CUMULATIVE RISK LOG reflects the level of risk that a municipality potentially pose in terms of its wastewater treatment facility, as indicated by the **individual Cumulative Risk Ratings**. The low risk municipalities are indicated on the bar chart left, whilst the critical risk municipalities are grouped to the far right of the bar chart. A 100% CRR value translates to a municipality which all key parameters (human resource, plant capacity, operational flow and effluent quality) hold an extremely high risk to public health and the environment.

NATIONAL PERFORMANCE LOG 2013



National Best Performers

Analysis of the Green Drop results reveals that the nine provinces can be categorised into various performance categories:

- Top Performers: Gauteng, Western Cape and Kwa-Zulu Natal
 - These provinces achieved the highest weighted Green Drop score and lowest Risk positions
- Average Performers: Eastern Cape and Free State
 - These provinces obtained weighted Green Drop scores in the average performance range
- Poor Performers: Northern Cape, Limpopo, North West and Mpumalanga
 - These provinces obtained weighted Green Drop scores of less than 50% and CRR positions in excess of 70%.
 - Free State also falls under this category as result of its provincial CRR of >70%.

Whilst the Green Drop process recognised and reward 'excellence' as per above, the programme fundamentally is designed to acknowledge the effort and will of municipalities that showed progressive improvement in performance over time. It is therefore imperative to note the following top movers:

- Top advancers:
 - Northern Cape Province improved their weighted Green Drop score from 23% in 2011 to 47.3% (24.3% improvement)
 - Limpopo improved their weighted Green Drop score from 24% to 44.6% (20.6% improvement)
 - Free State improved their weighted Green Drop score from 31.5% to 50.5% (19% improvement).
- Digressing trends:
 - Mpumalanga digressed significantly from 56% to 44% over the 2 year period
 - North West digressed from 50% to 44.1% over the same period.

The Department of Water Affairs acknowledges the excellence in wastewater management achieved for the Green Water Services Audit year of 2012/13.

The following are the three Best Provinces acknowledged for top overall performance, (including surveillance):

Gauteng is acknowledged based on the following record of excellence:

- ✓ 82.7% Provincial Green Drop Score
- ✓ 86.2% of plants (50 of 58) in low and medium risk
- ✓ No number of Wastewater Systems <30% score

The Western Cape is acknowledged based on the following record of excellence:

- ✓ 84.5% Provincial Green Drop Score
- ✓ 84.2% of plants (133 of 158) in low and medium risk positions.
- ✓ 9 number of Wastewater Systems with <30% score

Kwa-Zulu Natal is acknowledged based on the following record of excellence:

- ✓ 81.5% Provincial Green Drop Score
- ✓ 75.9% of plants (107 of 141) in low and medium risk
- ✓ 32 number of Wastewater Systems with <30% score

There is marginal difference between the weighted scores of the top three provinces:

- ✓ Gauteng Province scored 82.7%: this is a markable improvement from the 2011 score of 78.8% and notable that **NONE of the municipalities in Gauteng are placed under regulatory surveillance**;
- ✓ Western Cape Province scored 84.5%: thereby maintaining a good state and marginal improvement from the 2011 score of 83.1%; noting that nine municipalities are placed under regulatory surveillance;
- ✓ Kwa-Zulu Natal has scored 81.5%: thereby maintaining its 2011 status, noting that the province has 32 municipalities under regulatory surveillance.



Three Provinces are acknowledged for **BEST OVERALL PROGRESS** since from 2011 to 2013:

- ✓ Northern Cape
- ✓ Limpopo
- ✓ Free State

The following table summarises the **2013 GREEN DROP CERTIFICATION** awards:

SIXTY (60) GREEN DROP CERTIFICATES ARE AWARDED IN THE COUNTRY AS A WHOLE:



Province	Number of Wastewater Systems with <30% score	Number of 2013 Green Drop Certificates
Eastern Cape	34	1
Free State	46	1
Gauteng	0	8
Kwa-Zulu Natal	32	19
Limpopo	22	1
Mpumalanga	41	2
Northern Cape	33	1
North West	21	1
Western Cape	9	26
National Total	248	60

Conclusion

- ✓ The results from the Green Water Services Audit 2012/13 indicate that municipalities, on a national scale, have improved overall in terms of their National Green Drop score (71% in 2011 to 73.8% in 2013 ↑), as well as their Cumulative Risk Ratio (69.2% in 2011 to 65.4% in 2013 ↓). The Regulator is satisfied with the systematic and consistent improvement in municipal wastewater management.
- ✗ However, a number of municipal systems (30.1%) are still not on par with the expectations of the Green Drop regulatory programme, as per compliance and best practice requirements. These municipal systems have been issued with Purple Drops, that will serve as 'triggers' to exert regulatory and enforcement measures following the release of the Green Drop Report 2013. A special mention to the Gauteng Province, for being the 1st Province in the Green Drop regulation history that recorded ZERO systems in critical state (<30% Green Drop score). This '**zero-tolerance**' of Purple Drops is commendable and set a benchmark for the nation.