

South African Green Drop Certification for Excellence in Wastewater Treatment Plant Operation

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Abstract

Municipalities in South Africa face many challenges in providing effective water services to consumers, especially with regard to the management of wastewater treatment plants (WWTPs). Any WWTP not operating properly discharges effluent which damages the receiving water resource. The Green Drop certification programme was designed to serve as a stimulus for change; a catalyst to establish motivation and leadership in the water sector regarding the management of wastewater services. The aim of the Green Drop programme is to create a paradigm shift by which wastewater operations, management and regulation is approached. It promotes incentive-based regulation; establishing excellence as the benchmark for wastewater services. The criteria focus on the effective management of wastewater services instead of the continuation of end-point monitoring and subsequent reactive operations.

Context

One of the regulatory approaches that have gained significant momentum in South Africa is incentive-based regulation, which was introduced in September 2008. 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 via a standardised scorecard, 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 from customers, the media, political classes and NGOs. The strategy revolves around the identification of

mediocre performing municipalities which consequently correct identified shortcomings as well as the introduction of competitiveness amongst the municipalities and using benchmarking in a market where competition is difficult to implement.

Municipalities receive Green Drop status when they achieve scores of 90% or higher, against stringent Green drop assessment requirements. Green Drop scores are given per individual wastewater system within the municipal area for the following:

- 1 Process control, maintenance and management skills;
- 2 Wastewater quality monitoring;
- 3 Credibility of wastewater sampling and analysis;
- 4 Submission of wastewater quality results;

- 5 Wastewater quality compliance;
- 6 Management of wastewater quality failures;
- 7 Storm-water and water demand management;
- 8 By-laws;
- 9 Capacity and facility to reticulate and treat wastewater;
- 10 Publication of wastewater quality performance;
- 11 Wastewater asset management.

While the Green Drop assessment focuses on the entire business of the municipal wastewater services (entire value chain), risk analysis focuses specifically on the wastewater treatment function. 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 them. 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.

Analysis

The Department of Water Affairs was aware of the need to develop a new regulatory approach based on the fundamentals of conventional regulations to ensure credibility was not compromised. The Green Drop Certification programme is based on 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 holds significant inherent capacity

building characteristics. It is therefore beneficial for the programme to be 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 and improvement of their wastewater business by focusing on essential elements of the business. The HANDbOOK must be read along with the WORKplan as well as the Blue Drop HANDbOOK. It provides technical details which match 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 following:

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

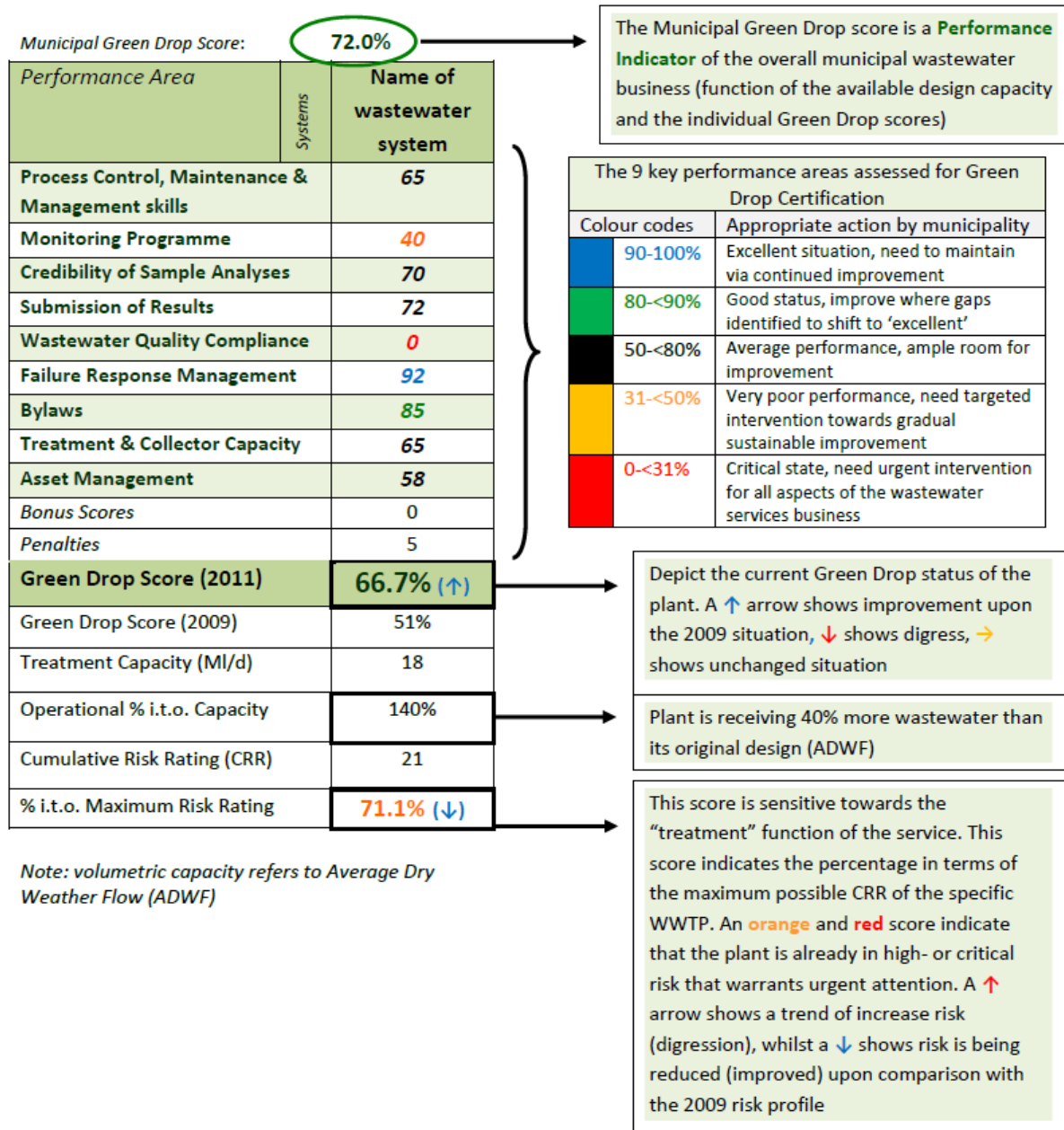
Two additional performance features were added to the 2010/11 Green Drop process:

- Municipal Green Drop score: a percentage score 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 which reflects on the Water Service Institution's wastewater business practice and compliance; and
- Site Inspection score: a score reflecting the physical condition of the plant. Green Drop assessments were verified by means of physical site inspections of randomly

selected sites in each municipality. The inspections conducted included (among others); the appearance of the plant terrain and buildings, structures and equipment, health and safety aspects, on-site monitoring, workplace satisfaction

and information processing commitment by the operational staff.

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.



Lessons Learned

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 raising their service standard and performance. The incentive-based regulatory approach seems to have succeeded in raising overall awareness and acting as a 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 indicates 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 might 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 has 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 keep in mind 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.

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 purposes. The overall progress on a nation-wide scale can be summarised as follows:

- i. 440 plants showed progress by taking up lower risk (CRR% deviation) positions in 2012, while 323 plants digressed or worsened by taking up increased risk ratios and 68 plants maintained their status of 2011
- ii. The majority of plants are at moderate risk (241 plants) and low risk (225 plants), with 212 plants at high risk and 153 plants in critical risk space.

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 marks an 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 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 responsible for support with information on the critical aspects that need support and directs the 'type' of support required;
- Provides the SETA with training gaps and quality of existing technical persons in local government sanitation services; and

- 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 levels, which will be directed by the Green Drop information.

