



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



2021 BLUE AND GREEN DROP CERTIFICATION PROGRAMME

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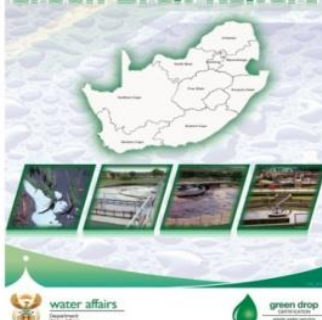
GD History

- Green Drop Assessments commenced in 2008 and led to the 2009 GD Report. Incentive-based regulation was introduced
- The Green Drop process measures and compares the results of the performance of WSIs, 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.
- The Green Water Services Audit and the PAT are the tools whereby incentive- and risk-based regulation is conducted in South Africa.

Green Drop Report 2009 draft South African Waste Water Quality Management Performance



2011 Green Drop Report



2012 Green Drop Progress Report



GD History

- Green Drop audits and certification takes place every 2nd year, using the full set of GWSA criteria to assess performance of the wastewater system.

Output = Green Drop Report

- Progress assessments takes place during the Green Drop 'gap' year, using the PAT to assess the cumulative risk status of treatment systems.

Output = Green Drop Progress Report

Green Drop History

GREEN DROP COMPARATIVE ANALYSIS

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

Green Drop 2021 Audit Requirements

GD#	Description	Weighted Scores (%)
		2021
A	Capacity Management	15
B	Environmental Management	15
C	Financial Management	20
D	Technical Management	20
E	Effluent and Sludge Quality Compliance	30
F	Green Drop Bonuses	✓
G	Green Drop Penalties	15
H	Disqualifier	✓
TOTAL		100

**A1
Registration of
Wastewater Treatment
Plant**

a.)The wastewater treatment facility is registered as per the Requirements of Regulation 2834/813 (Draft Regulation 813 consider for bonus)

**A.2
Registration of Process
Controllers and
Supervisor**

- a.) Copies of Registration Certificates of Process Controllers and Supervisor(s)**
- b.) Copies of the classification certificates of all process controllers/operators and supervisors/superintendents must be uploaded on the IRIS;**
- c.) Compliance with Regulation 2834 (must comply at least 50% in each of the shifts); WSI must indicate shift patterns or measures in place when a shift does not comply with Regulatory Process Control Requirements.**
- d.) WSI must indicate process controllers and/or supervisors that are 'shared' across different plants/sites.**

**A3
Maintenance Capacity**

- a.) Evidence of Maintenance Team used for general maintenance work at the plant & pump-stations(both mechanical and electrical) - (Internal or evidence of Outsourced Term Contract)**
- b) Information on in-house staff (or organogram) or external contractor/s**
- c) Provide additional proof of competency of team (e.g. Qualification & Experience & Trade-test)**
- d) Provide a site specific operation and maintenance schedule (routine / scheduled)**
- e) Contract or Logbook with maintenance entries to serve as evidence of the above aspects**

**A4
Engineering Management
Capacity**

Number of Engineering Staff available in the Municipality taking responsibility for Maintenance Planning and General Asset Management):

- a) 1X Engineering Technician,**
- b) 1 X Engineering Technologist,**
- c) 1 X Engineer, or**
- d) More than one of the above.**

**A5.)
(Advanced Systems Only)
Scientific Capacity
(Sampling and Laboratory
Information Management)**

Number of Scientific Staff appointed for the management of wastewater treatment management, incl sampling and analyses:

- a) 1 X Candidate Scientist,**
- b) 1 X Professional Scientist, or**
- c) More than one of the above**

**B1.
Wastewater Risk
Management**

- a) A Risk Register available on all risks posed by the wastewater collection and treatment processes to the immediate environment (not older than 3 years).
- b) A Wastewater Risk Abatement Plan; is the more advanced standard, but will only be accepted if not older than 3 years, and approved by Management.
 - A practical and site specific Wastewater Risk Abatement Plan (W2RAP) is in place which identify and prioritise risks, with measures to mitigate inefficiencies/inadequacies that result in non-compliance
 - Implementation evidence and proof of management commitment
- c) Implementation evidence and proof of management commitment. Providing evidence of risk mitigation (identified during the audit period)

**B2.
Operational
Monitoring**

Details of Operational Monitoring:

- a) Proof of Operational Monitoring sites, determinands and frequency;
- b) Samples must include: i) inflow, ii) outflow, iii) process flows, v) sludge;
- c) Determinands monitored;
- d) as per Authorisation / as per best practice per technology type;
- e) Frequency: as per Authorisation /as per best practice.

**B3
Compliance
Monitoring (Effluent)**

Details of Compliance Monitoring (For ALL Effluent Discharges).

- a) Sampling Sites as per Authorisation;
 - b) Determinands as per Authorisation (This would include determinands not categorised as Microbiological, Chemical or Physical, eg SAR, biomonitoring) ;
 - c) Sampling frequency occurs as per Authorisation Requirements
- Note1: For zero-effluent treatment systems - still need to monitor for impact on catchment / environment (for both lined and unlined systems). Where oxidation ponds are producing effluent for irrigational purposes then General Limits apply.**
- Note 2: A monitoring programme alone will not be sufficient to obtain full score; Analyses results should proof implementation of the monitoring programme.**

B4

(Advanced Systems Only)
Sludge Classification and Monitoring

- a) Proof of Sludge Classification
- b) Provide Sludge Treatment Monitoring Programme;
- c) Provide Sludge Monitoring Results
- d) Sludge Handling and Management Plan.

B5.) Laboratory Credibility

- a) Name lab(s) for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external)
- b) Certificate of Accreditation for applicable methods,
- c) Or Z-scores results following participation a recognised Proficiency Testing Scheme (–2 \geq z-score \geq 2 are unacceptable)
- d) Or Proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods)
- e) Proof Turn Around time allows for proper process control (less than 5days)

Wastewater Operations and Maintenance Cost Determination done:

- i) Per Wastewater System; or**
- ii) For Municipal Wastewater business as a whole; or**
- iii) Not Done at all**

**C1
Wastewater Operations
Cost Determination**

- a) Municipality / WSI must provide evidence of a proper operations cost determination for the entire wastewater system (incl Pump stations). This must at least incl:**
 - i) Energy Consumption,**
 - ii) Compensation of Employees,**
 - iii) Chemical cost,**
 - iv) Maintenance Cost, etc.**
- b) Provide an operational cost determination per m3 treated.**

Note: budget / cost excluding interest and redemption on capital

WSI is able to provide DWS with proof of Energy Efficiency Management: :

**C2
Energy Demand**

- (a) Energy Demand figures: Current and 3-year Projections (Energy Efficiency Management), based upon Specific Power Consumption (SPC, kWh/m3), and**
- (b) Energy unit cost (R/kWh) and energy consumption figures for the specific WWTW (R/m3)**

**C3
Operations &
Maintenance Budget**

WSI to provide proof of the wastewater system O&M Budget per annum

C4
**Operations &
Maintenance
Expenditure**

WSI to provide proof of the wastewater system O&M Expenditure per annum
Note: budget / cost excluding interest and redemption on capital

Comparing Expenditure /m³ vs Cost Determination/m³

C5
**(Advanced Systems
Only)**
**Supply Chain
Management of Services
and Treatment Products**

a) WSI must provide proof of approved contracts for Outsourced services (i.e. Maintenance) and Treatment Chemical Supplies

**D1
Wastewater Treatment
Works Design Capacity
Management**

(a) Documented design capacity (hydraulic and organic) of the wastewater treatment facility

1. Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant and

(b) Documented daily receiving flows over the 12 months of assessed period (ideally \leq than design capacity)

1. Evidence of daily flows and subsequent calculated averages. Measurement method to be explained

2. Evidence of peak wet weather flow to plant during rain events (record rain event and flow to plant)

3. Evidence of minimum night flow (minimum monitoring: monthly)

4. Water services institution is required to provide motivation/proof of accuracy of meter readings.

(c) Monitoring of outflow volumes (available records).

**D2
Process Audit**

(a) (i) Condition Assessment report (conducted by a technically/scientifically qualified municipal official); evidence required of audit findings and recommendations on treatment facility status. (Previous Audit year up until Oct '21) OR

(ii) The Process Audit (conducted by a duly qualified independent professional person) to include the (design) capability of the plant to meet compliance standards, as well as actual performance of plant. (Period: July 2015 to October 2021).

(b) Evidence/plan of implementation of findings during year(s) following Audit Report required

**D3
Sewer Main Inspection**

Site inspection of sewer reticulation network and pump-station/s. Provide evidence in form of capacity and conditional assessment/audit and recommendations of system. Report to include flow balance that provides evidence which % of total sewage is received at treatment plant.

Note: both the process audit/Conditional Assessment and sewer network report could serve as baseline to the W2RAP (may run concurrently with "system description and risk identification/rating")

NB! Must report on Functionality of Pump stations in the Sewer Collector System.

D4
Wastewater Asset Register

Updated sanitation / wastewater Infrastructure Asset Register

1. Proof of Asset Register, evidence to be submitted. Asset register to include movable equipment and immovable infrastructure / assets with matching detail.

The asset register must detail :

- a) relevant equipment and infrastructure**
- b) indicate asset description**
- c) location**
- d) condition (remaining useful life)**
- e) replacement value**

2. Proof Asset Register is used to inform Maintenance Plan.

D5
(Advanced Systems Only)
Bylaws and Enforcement
(Local Regulation)

Proof of the

a.) Bylaws and b.) Enforcement providing for the regulation of the municipal sewer system, incl the following elements:

- 1. industrial (trade) influent (volumes & quality) discharged into municipal system,**
- 2. package plants,**
- 3. decentralized systems,**
- 4. vacuum tank discharges,**
- 5. Spillages into the environment, and**
- 6. Storm-water connections to sewer system.**

For DPW and Private Plants: copy of municipal bylaws and evidence of compliance to relevant sections

**E1
Monitoring Data
Submission to DWS**

- 1. 12 months of Compliance Monitoring data submitted to DWS on the IRIS**
 - 2. Frequency: Monthly Submission (or as per Authorisation)**
 - 3. WSA must ensure that 12 months' sets of results are submitted and recorded on the IRIS prior to the assessment. Note: All compliance results' data required**
- If proven that the system is not generating effluent, and oxidation pond content is strictly used as per Authorisation Conditions, then 12months' data records not necessary but according to Authorisation requirements.**

**E2
Water Use
Authorisation**

- (a) Copy of authorisation, detailing Effluent Quality Standards.**
NOTE: List Standards to comply with. (GA or License Conditions)

**E3
Effluent Quality
Compliance**

- 90% Microbiological Compliance;**
(e.g. E Coli; Faecal Coliforms)
- b) 90% Chemical Compliance;**
(e.g. COD, Ammonia, Nitrogen, Nitrate, Nitrite, Chlorine, Ortho-Phosphates, Fluoride, Arsenic, Cadmium, Copper, Manganese, Iron, Selenium, Zinc, Boron, etc.)
- c) 90% Physical Compliance**
(e.g. pH, Suspended Solids, Electrical Conductivity, Soap, Oil or Grease, etc)

**E4
(Advanced Systems
Only)
Sludge Quality
Compliance**

- a) Sludge treatment not managed / monitored. (Monitoring records must be produced);**
b) In case of ponds systems, provide schedule for desludging of system.

F1) Process Control Training

**Proof of Process Controller staff being subjected to relevant training the past 24 months
(Technical or Process Control related incl OHS)**

F2) Storm Water Management

Proof of a Storm-water management plan detailing how storm-water (or other extraneous flow eg groundwater) entry is quantified, managed and monitored to prevent entry to sewer systems. Plan should also include measures to prevent sewage from entering storm water systems. Evidence of implementation required

F3) Water Demand Management

Water Demand Management Plan which provides a strategy and/or work plan that identify, quantify, monitor and manage leakages and water losses of any kind that (may) create an artificial water demand due to higher hydraulic loading of wastewater collection and treatment infrastructure. The bonus will be maximised should a wastewater flow balance be provided.

No Drop Assessment

F4) Capital Projects planned for upgrades or refurbishment of wastewater treatment and collector system

Proof of approved business plans for utilizing MIG, WSIG or Municipal Capital Budget for upgrades of refurbishment; **Detail for investment required... Capture detail..**

**F5
Sludge Reuse**

Provide proof of plant-specific initiatives that contribute to wastewater resource and climate resilience objectives: energy efficiency, energy generation, beneficial use of sludge_nutrients, etc. A full score will be awarded if the reduced footprint can be demonstrated (projected CO2 equivalents improved by the initiatives)

**F6
Additional Impact
Monitoring**

Incl. Groundwater and Up-stream / Down Stream monitoring

G1
Wastewater Treatment Works operating beyond hydraulic design Capacity

(a) Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant and
(b) Documented daily receiving flows over the 12 months of assessed period (ideally \leq than design capacity)

Based on information provided in D1

G2
Any Sewer Collector Pump station dysfunctionality causing long term spillage

Based on information provided in D3

H1
Withholding information

Disqualifying Penalty will apply should the Department find proof during / post assessment that the WSI is guilty of an offence as per Section 82 of the Water Services Act, by only submitting partial information in order to present a false impression of WWQ Performance and/or compliance.

H2
Directive Status

If any Directive was issued over the GD Assessment Period by the Department or Delegated Authority to the WSI for this specific WWTW and/or system, then the WSI should present proof of attempts made to adhere to Directive Requirements.

Green Drop Certification status = $\geq 90\%$ score against the above criteria



Audit Period: 1 Jul 2020 – 30 Jun 2021

- ✓ Assessments of 963 wastewater systems
- ✓ Verify desktop audit results via a physical site inspection of 1 plant per WSI and 2 plants per metro

Thank you



green drop
CERTIFICATION
waste water service
REGULATION