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PROVISION OF ENGINEERING AND PROJECT MANAGEMENT SUPPORT TO LOCAL MUNICIPALITIES

MOHOKARE LOCAL MUNICIPALITY: GREEN DROP IMPROVEMENT PLAN

PROJECT: MISA/002/2013/TPSP/PROVINCES

COMPILED BY:

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Project No. 1320

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EXECUTIVE SUMMARY

The Department of Water Affairs (DWA) is cognisant of the need and continues to develop a regulatory approach underpinned by the fundamentals of conventional regulation, thus ensuring that credibility of its approach is not compromised. Incentive-based regulation is a form of regulation and should not be perceived to be a weakened form of enforcement. DWA has introduced the internationally recognised and acclaimed water quality compliance incentive regulation programmes called the Blue Drop & Green Drop Certification. Recently the No Drop Certification Programme has been incorporated onto the Blue Drop to address the water demand & conservation challenges at the municipalities.

Traditionally wastewater regulation was seen as only the monitoring of effluent quality and little or no attention was given to the actual service of wastewater collection, treatment and discharge as a part of water services. The discharge of effluent (water containing waste) remains a Section 21 Water Use as legislated in the National Water Act. The required process controlling and supervisory skills are determined by requirements of Regulation 2834 which was promulgated under the Water Act of 1956. A new regulation, Regulation 17, is currently out for public scrutiny and comment. Wastewater Services are thus regulated as per the requirements of 4 pieces of Legislation; the Constitution, Water Services Act, National Water Act and Water Act of 1956.

The Green Drop Improvement Plan (GDIP) is one of the performance measurements that the regulator, DWA, expects the Water Services Authorities (WSA) to incorporate in the strategies implemented toward regulatory wastewater management compliance. The GDIP is therefore one of the management tools that the WSA can utilise to monitor continuous improvement toward regulatory wastewater quality compliance.

The most significant areas of improvement within the WSA as highlighted in this Mohokare GDIP are the following:

1. Risk management remains one of the fundamental building blocks toward wastewater quality regulatory compliance. The WSA, as part of its pursuit toward wastewater management compliance, should embrace the principles of risk management, particularly in the treatment of effluent discharged to the wastewater treatment works. This should be an integrated process involving all key stakeholders within and without the municipality. The development of the Wastewater Risk Abatement Plan (W_2RAP) and use thereof as a management tool to manage risk across the supply area is encouraged. See Table 3 below.
2. Higher emphasis to be placed on the maintenance services function and their facilitation toward optimum wastewater quality services delivery in particular. The WSA is encouraged to pay attention to the role the maintenance function can play in ensuring that the infrastructure is kept at a functional condition and thus improvement to its useful life and appropriate service delivery.
3. The WSA is commended on the various improvements – the new WWTW next to the old pond systems - that are being commissioned at the Zastron & Smithfield Works. The WSA is advised to consider any implications the improvements can have on the Works water use licences. Further, the WSA should pay attention to the staff requirements and availability to render appropriate operations of the upgraded and new process units.
4. Operations optimisation, particularly record keeping, should be introduced.

5. The WSA is urged to install flow measurement devices at all its Works.

6. Wastewater quality sampling and monitoring at the three Works supply systems is critical in the pursuit toward healthy services provision. The WSA is therefore urged to ensure that the following is adhered to:

   - Appropriate Operational Monitoring is observed at all the Wastewater Treatment Works
   - Final effluent discharge compliance monitoring is administered – informed by the Works water use licence -across the water supply systems.
   - Accredited laboratory services are provided to the WSA.

7. The WSA is urged to utilise the GDIP as a management tool toward effective and sustainable water quality regulatory compliance.

Compiled by	:	Pro-plan SA Consulting Engineers (Pty) Ltd
Project Director	:	Charl van der Walt
PROPLAN Ref Number	:	1320
Date	:	December 2013

1. INTRODUCTION

Proplan Consulting Engineers (Pty) Ltd (ProPlan) was appointed in July 2013 to assist the Mohokare Local Municipality (MLM) with the compilation of a Green Drop Improvement Plan (GDIP) in order to ensure the organisation and planning of continuous improvement towards effective management and operation of the drinking water systems in Mohokare.

2. SCOPE OF WORK

The scope of work for compiling a Green Drop Improvement Plan for MLM is based on the Green Drop Certification Programme and the Green Drop Requirements published in 2012. The Green Drop Improvement Plan needs to be used by the MLM as a tool to ensure continuous and sustainable improvement of performance to increase their Green Drop Score in a calculated and balanced manner which will encourage good management practices and overall improvement in drinking water quality and management.

3. GREEN DROP CERTIFICATION PROGRAMME

The Green Drop Certification Programme was initiated by the DWA in 2009 as an innovative means to regulate and monitor municipal performance and management of wastewater services.

The Green Drop Programme also provides the general public with transparent reporting on the ability of the responsible authority to manage waste water quality according to the risk management principles outlined by the World Health Organisation (WHO). Therefore the Green Drop Certification Programme not only reflects the actual waste water quality but also the ability of responsible institutions to sustain the quality as well as preparedness to deal with any incident that may pose a health risk to the public or adversely affect the environment.

4. GREEN DROP STATUS

In order to obtain the prestigious Green Drop Status, which requires a score of 95% or more, municipalities or Water Service Institutions need to comply with a specific set of requirements, which have become progressively stricter since the programme's inception. Municipalities are provided with a target of 95% compliance to the set of Green Drop.

Requirements in order to be awarded with a Green Drop Award to confirm their management of their waste water systems with excellence.

4.1 Green Drop Requirements

The Green Drop Requirements which were published and used for the 2012 report will be used to compile the GDIP for the Mohokare municipality. Table 1 below list the requirements of the 2012 Green Drop Audit.

Green Drop Criteria	Requirements	Sub Requirements
Process Control, Maintenance and Management Skill 10%	A copy (certified) of **Registration Certificate of Works** displaying Classification (Regulation 2834)	Copy of registration certificate must be uploaded on the GDS.
	Copies (certified) of **Registration Certificates of Process Controllers and Supervisors**	1. Copies of the classification certificates of **all** process controllers/operators and supervisors/superintendents must be uploaded on the GDS. 2. Compliance with Regulation 2834 (must comply at least 50% in each of the shifts); WSI must indicate shift patterns or measures in place when no shift work is undertaken. 3. WSI must indicate process controllers and/or supervisors that are 'shared' across different plants/sites. 4. Proof of qualifications & experience of shift workers performing process controlling task.
	Proof of **Maintenance Team** used for general maintenance work at the plant (both mechanical and electrical)	1. Information on in-house staff or external contractor/s 2. Provide additional proof of competency of team (e.g. Qualification & Experience & Trade-test) 3. Provide a site specific operation and maintenance schedule (routine / scheduled) 4. Contract or Logbook with maintenance entries will serve as proof
	Proof of a 'site-specific' **Operation & Maintenance Manual**	1. O&M manual/s 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 2. Front page and index required for submission , but sufficient content must be proven.
	BONUS: Proof of Process Controller staff being subjected to relevant training the past 12 months	
Wastewater Quality Monitoring Programme 10%	Details of **Operational Monitoring:**	Proof of Operational Monitoring sites, determinants and frequency. Samples must include: • Inflow, outflow, process flows, industrial effluent, sludge • Determinants monitored: • As per Authorisation / as per best practice per technology type; • Frequency : as per Authorisation /as per best practice
	Details of **Compliance Monitoring**.	• Sampling Sites as per Authorisation • Determinands as per Authorisation • Sampling frequency occurs as 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 will not be sufficient to obtain full scores. Analyses results should proof implementation of the monitoring programme.***
	Laboratory used:	1. Name lab for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external) 2. Provide the turnaround in laboratory analysis (in hours: from time of submission to time of results dissemination)

Green Drop Criteria	Requirements	Sub Requirements
Wastewater Sample Analysis(credibility) 5%	Certificate of Accreditation for applicable methods OR Z scores results(-2 z-score 2 are unacceptable) in a recognised Proficiency Testing Scheme OR proof of Intra- and inter-laboratory proficiency(quality assurance as prescribed in Standard Methods)	• 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 a random analytical parameter/s from the presented analytical results to present an audit question).
	Bonus: Monitoring at an acceptable frequency and for the required determinands	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 practise indicators: low-end trench n/small size = 1x-2x/month, medium size = 1x-2x/week, high techno/macro size = 1x/day or hourly.
Submission of Wastewater Quality Results 5%	Proof of **data submission** to DWA	• 12 months of data submitted to DWA **on the GDS** • WSA must ensure that 12 months' sets of results are submitted and recorded on the GDS prior to the assessment. Note: **All compliance results' data required**
Effluent Quality Compliance 30%	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	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 sets to be assessed performance measure**
	Bonus	• A practical Green Drop Improvement Plan (GDIP) in place – with baseline (current) score, tasks, responsible person, completion date, budget, target • GDC score • Implementation evidence and proof of management of process
	Penalty	• Sludge treatment not managed / monitored(Monitoring records must be produced) • In case of pond system, provide schedule for desludging of systems
Wastewater Quality Risk Management 10%	Proof of a documented **Wastewater Incident Management Protocol**	Protocol to specify alert levels, response times, required actions, roles & responsibilities and communication measures/vehicles NB. Include Pump station failure and sewer collector system spillages
	Provide **evidence of implementation** of Protocol	Wastewater Quality Failure Incident and Sewer Spillage Incident register

Green Drop Criteria	Requirements	Sub Requirements
Stormwater and Water Demand Management	Proof of a storm water management plan detailing how storm water will be prevented from entering sewer systems and how sewer spillage s or sewerage from entering storm water. Evidence of implementation required	Copy of front page and contents page + 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)	• Copy of strategy or Implementation Plan, Implementation proof • WSI must have knowledge of baseline figures(e.g. measured % or volumetric rates of loss)
Bylaws (Local Regulation) 5%	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, Spillages into the environment	Copy of front page, Index and portion referring to industrial/ trade effluent
	Evidence Bylaws enforcement by Local Authority	Proof of application of Bylaw clause in practise, supported by written notice(s) to offender
Wastewater Treatment Facility Capacity 10%	Documented design capacity (**hydraulic and organic**) of the wastewater treatment facility	Design capacity as Average Dry Weather Flow (ADWF) and COD load to the plant
	Documented daily **receiving flows** over the 12months of assessed period (ideally ≤ than design capacity)	• Evidence of daily flows and subsequent calculated averages. • Measurement method to be explained • Evidence of peak wet weather flow to plant during rain events (record rain event and flow to plant) • Evidence of minimum night flow (minimum monitoring: monthly) • Water services institution is required to provide motivation/proof of accuracy of meter readings.
	Medium to long term planning to ensure sufficient **capacity for treatment system** and to ensure effluent quality compliance;	Detailed Work-plan which stipulates type of work, associated budget and projected timeframe, as well as the planned output of this work
Publication of Wastewater Management Performance	Annual Publication of wastewater management performance against the requirements of the site specific License conditions for General Authorisations.	• 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	• 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
	Annual Audit report addressing: collection and treatment infrastructure and process control	Proof of Technical Audit / Assessment / Inspection Report and evidence / plan for implementation of findings
	Updated sanitation / wastewater infrastructure Asset Register	• Proof of Asset Register , evidence to be submitted • Asset register to include movable equipment and infrastructure assets(Cover page plus Index)
Wastewater Asset Management 15%	Operation and maintenance budget and comparative expenditure detail for: Wastewater treatment (in cents/m^3) Collection system (R/m^3)	• 50% score to proof of budget, 50% score to proof of expenditure against budget • Units costs per system must be provided Guide 1: low and technology = R0.50/kl, medium to high end technology = R0.80 – 1.30 /kl Guide 2: R55,000 (Ml/day plant capacity)
	Maintenance records of pump stations	Proof of maintenance work done on mechanical, electrical, civil per pumpstation

5. CURRENT GREEN DROP PERFORMANCE OF MOHOKARE LOCAL MUNICIPALITY

5.1 Overall Performance

Mohokare Local Municipality has not performed well in the four previous rounds of the Green Drop Assessments and a summary of the performance is outlined in Figure 1 below.

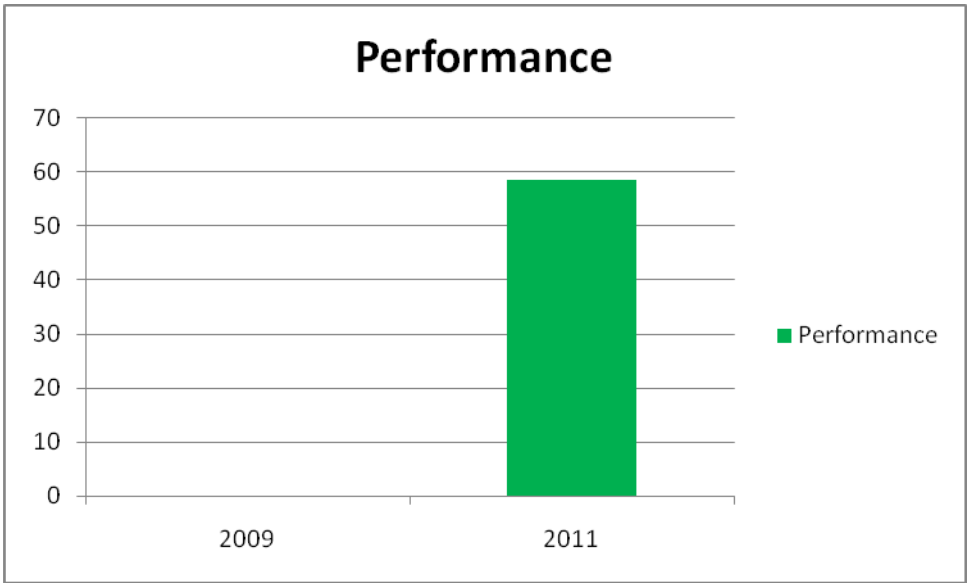

Figure 1 Summary of Mohokare's Green Drop Performance (2009-2012)

In the first year (2009) of the Green Drop audits, Mohokare failed to present the Department with the required information for the Green Drop Certification Programme therefore a 0% score was applied. Thereafter in the 2011 assessment period, a significant overall improvement was achieved, viz. 58.6%.

The overall Free State Provincial Performance Log 2011, 2012 is displayed in the Figure 2 below. The log is the measurement of the FS Municipalities' risk mitigation in the provision of wastewater services. The Mohokare risk profile performance is listed as follows:

- 2011: position 6 - 83.3%
- 2012: position 17 (total group of 4 municipalities share this position) – 100%

The risk mitigation performance of the municipality has deteriorated to a 100% as measured during the 2012 GD PAT Process, reflecting on a marked absence of a risk management culture within the management of wastewater services.

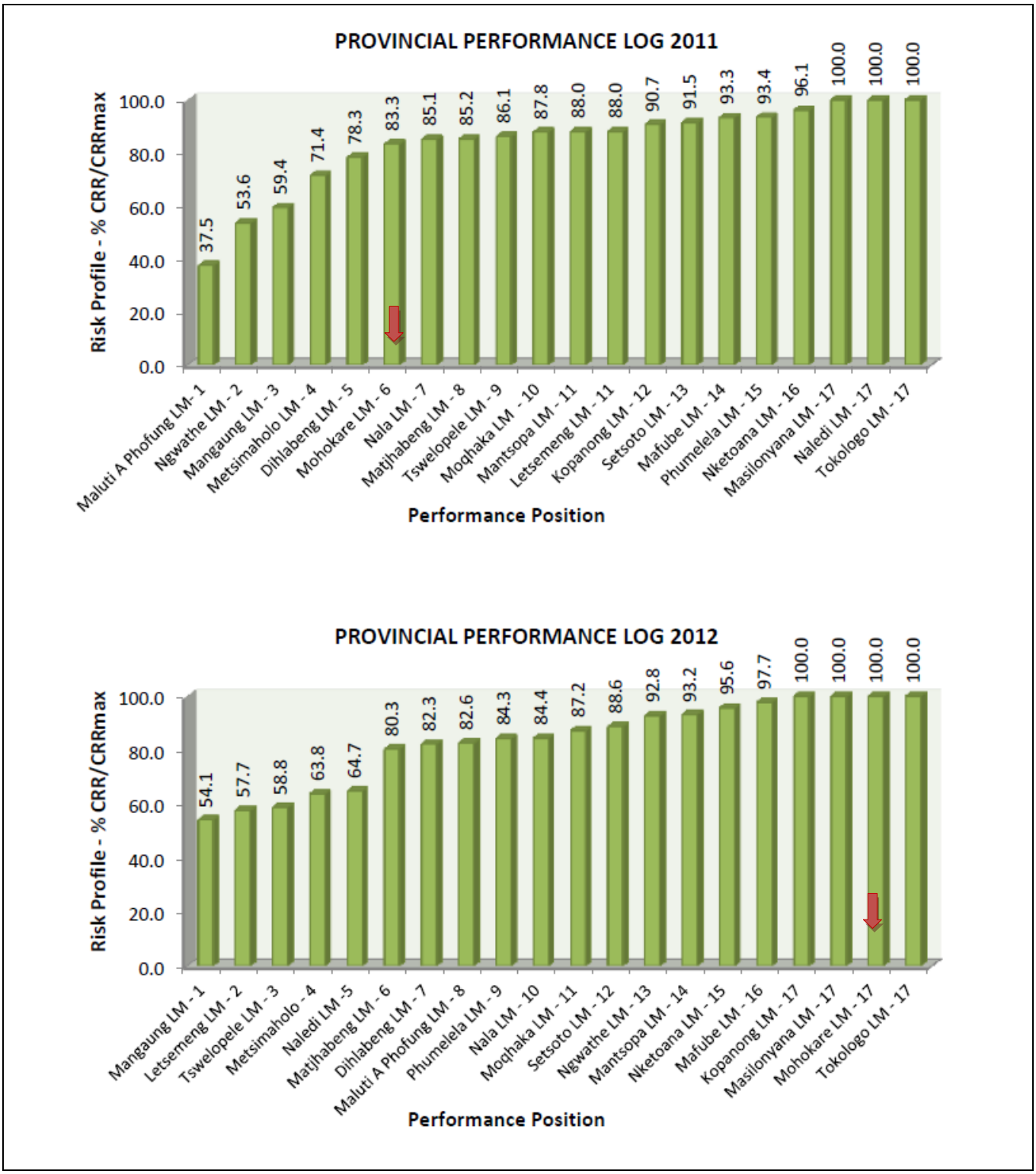

Figure 2 Free State Provincial Performance Log with red arrows indicating performance of Mohokare

The development and subsequent utilisation of the Green Drop Improvement Plan should assist the municipality in improving its overall performance in the subsequent GD assessments.

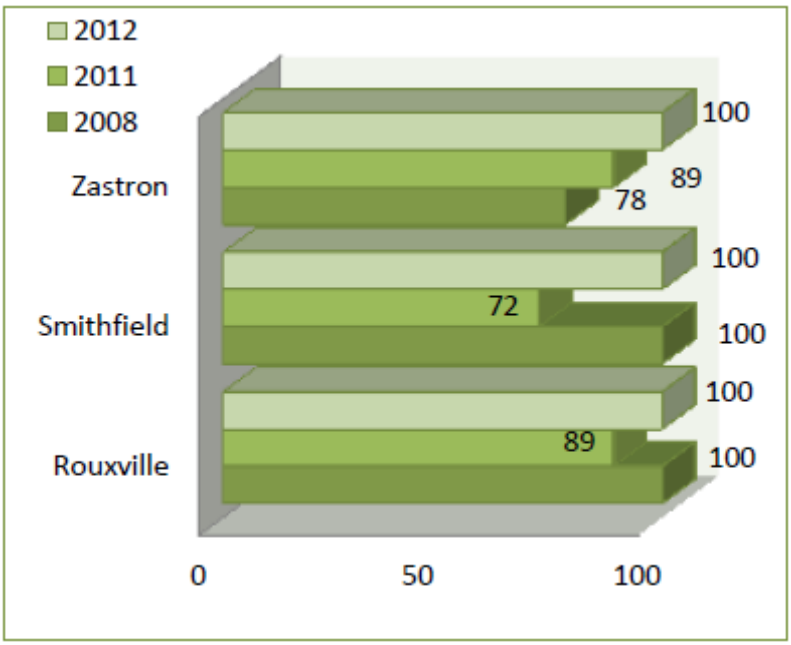

Figure 3 Mohokare Municipality Risk Trend Analysis 2008-2012

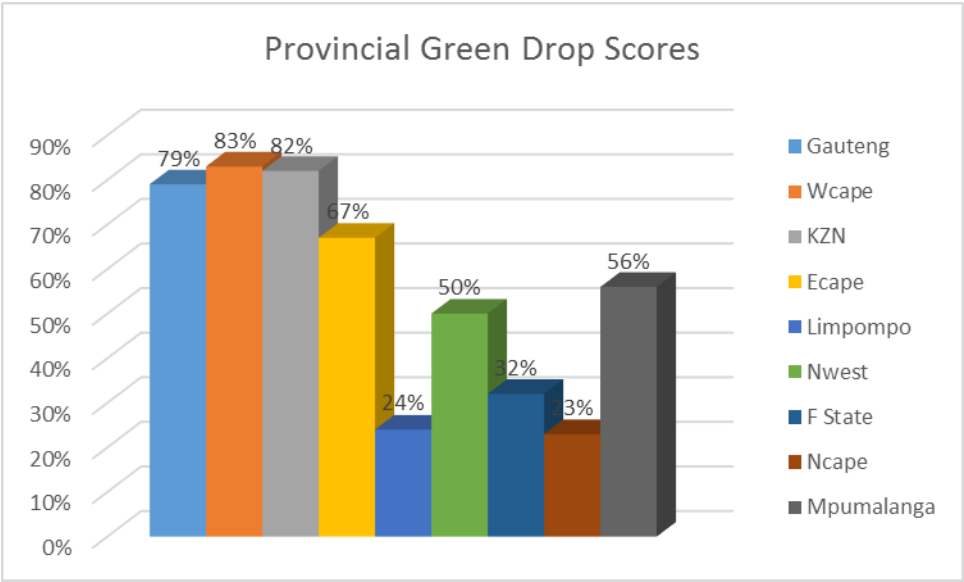

Figure 4 Provincial Green Drop Performances based on the Scores of the Individual Wastewater Services institutions within their respective Provinces

5.2 Individual System Performance in Mohokare

Each system is audited individually for Green Drop. The performance of each system is summarized below in Table 1 and Table 2. The score card has also changed over the four years period as stipulated below:

2011 – Changes within the Green Drop Score card which placed Failure Response Management as a sub-requirement under the Water Safety Planning Process named the Incident Management Protocol and an Incident Register. A Management Accountability and Local Regulation performance area was introduced and the Data Submission to DWA as well as Publication of Performance criteria were sorted under this requirement.

2012 - The Maintenance competency performance area was moved from the Process Control performance area to the Asset Maintenance performance area

2012 - Credibility of sample analysis was moved to form part of the Water Safety Planning Process Performance Area.

All these changes are indicated in Table 1 and Table 2 as italicised performance areas but for the comparison of performance for these 3 systems, similar requirements are compared against each other for each system (Table 1 and Table 2) for each of the previous four system assessments.

Table 1 Green Drop Performance of Mohokare Local Municipality - 2012

Municipal Green Drop Score: 58**.6%**

Performance Areas	Zastron	Smithfield	Rouxville
Process Control, Maintenance & Management Skills	**28**	**28.5**	**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	58.5	58.5	58.5
Penalties	0	0	0
Green Drop Score (2011)	**49.0%** (↑)	**60.3%** (↑)	**64.5%** (↑)
Green Drop Score (2009)	NA – 0%	NA – 0%	NA – 0%
Treatment Capacity (Ml/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	**88.9%** (↑)	**72.2%** (↓)	**88.9%** (↓)

Table 2 2012 Green Drop Progress Report - Mohokare Local Municipality

Assessment Areas	Zastron	Smithfield	Rouxville
Technology	Oxidation Ponds	Oxidation Ponds	Oxidation Ponds
Design Capacity(Ml/d)	1.0	1.0	1.5
Operational % i.t.o. Design Capacity	NI	NI	NI
lxiv) Microbiological Compliance	NM	NM	NM
lxv) Chemical Compliance	NM	NM	NM
lxvi) Physical Compliance	NM	NM	NM
Annual Average Effluent Quality Compliance	**NM**	**NM**	**NM**
Wastewater Risk Rating (%CRR/CRRmax)	**100.0%(↑)**	**100.0%(↑)**	**100.0%(↑)**
Highest Risk Area	Lack of influent monitoring, no effluent compliance monitoring, non compliance with R234 for operating and maintenance staff	Lack of influent monitoring, no effluent compliance monitoring, non compliance with R234 for operating and maintenance staff	Lack of influent monitoring, no effluent compliance monitoring, non compliance with R234 for operating and maintenance staff

Assessment Areas	Zastron	Smithfield	Rouxville
Risk Abatement Process	Final W_2RAP	Final W_2RAP	Final W_2RAP
Capital & Refurbishment expenditure in 2010/2011	R0.0m	Upgrading Plant to 1.5 Ml/day , installation of flow meters.	R0.0m
Description of Projects' Expenditure	Construction of new Plant	Construction of new Plant	
Wastewater Risk Abatement planning	A final W_2RAP is in place to commence with risk abatement, as identified & prioritised in the municipality		

NOTE:

The regulatory impression from DWA, as captured in the 2012 GD Progress Report[1] reads:

"It is of concern that all the wastewater treatment plants are now categorised as critical risk plants. The parameters that contribute to the increased risk rating are:

- *the lack of influent flow monitoring,*
- *no effluent compliance monitoring, and*
- *non-compliance with R2834 with regard to operating and maintenance staff."*

Urgent action is required to reverse the critical situation and risk rating of all the wastewater treatment plants.

[1] DWA 2012 Green Drop Progress Report

6. INDIVIDUAL WWTW GREEN DROP PERFORMANCE OF MOHOKARE LOCAL MUNICIPALITY

6.1 Zastron WWTW

On viewing the GDS as of beginning December 2013, the following wastewater works summary data is recorded on the Zastron WWTW:

Works Name:	**Zastron**			
Registration Number:	40700019			
Province:	FS		Water Services Authority:	FS163
Villages Served:			Population Served:	
Class:	E		System Calculated Class:	**E**
Applicable Limits:	GENERAL LIMITS		Discharge Into:	
Is Discharge Authorized:	No Information		Authorisation Type:	
Design Capacity (Ml/d):	1.00		Available Capacity (Ml/d):	0.00
Operating Capacity (Ml/d):	0.00		Maximum Discharge Volume:	0.00
Number of Sample Points:	2		Number of Determinands to be Tested:	18
Number of Tests done to date:	162		Number of Tests done this month:	Currently not implemented
Risk Ratings:				
Cumulative Risk Rating:	**16**		Risk Rating Date:	**May 01, 2011**
Design Capacity Rating:	**NI**		Operating Capacity Rating:	**NI**
Effluent Failure Rating:	**NI**		Technical Skills Rating:	**NI**
Compliance:			Select Compliance Period:	Nov 2013
Monitoring:		**0.00%**	Operational:	**0.00%**
Microbiological:		**0.00%**	Physical:	**0.00%**
Chemical:		**0.00%**		
Flagged for Relocation?	☐			

NOTE:

Compliance as calculated from the data loaded on the GDS in the last 12 months, i.e**. Nov 2012 – Nov 2013, is 0.00%**. This could either be due to no compliance data loaded on the GDS or data loaded is out of compliance.

6.2 Rouxville WWTW

On viewing the GDS as of beginning December 2013, the following wastewater works summary data is recorded on the Rouxville WWTW:

Works Name:	**Rouxville**		
Registration Number:	40700013		
Province:	FS	Water Services Authority:	FS163
Villages Served:		Population Served:	
Class:	E	System Calculated Class:	**D**
Applicable Limits:	GENERAL LIMITS	Discharge Into:	
Is Discharge Authorized:	No Information	Authorisation Type:	
Design Capacity (Ml/d):	1.50	Available Capacity (Ml/d):	0.00
Operating Capacity (Ml/d):	0.00	Maximum Discharge Volume:	0.00
Number of Sample Points:	2	Number of Determinands to be Tested:	9
Number of Tests done to date:	279	Number of Tests done this month:	Currently not implemented
Risk Ratings:			
Cumulative Risk Rating:	**16**	Risk Rating Date:	**May 01, 2011**
Design Capacity Rating:	**NI**	Operating Capacity Rating:	**NI**
Effluent Failure Rating:	**NI**	Technical Skills Rating:	**NI**
Compliance:	Select Compliance Period: Nov 2013		
Monitoring:	**0.00%**	Operational:	**0.00%**
Microbiological:	**0.00%**	Physical:	**0.00%**
Chemical:	**0.00%**		
Flagged for Relocation?	☐		

NOTE:

Compliance as calculated from the data loaded on the GDS in the last 12 months, i.e**. Nov 2012 – Nov 2013, is 0.00%**. This could either be due to no compliance data loaded on the GDS or data loaded is out of compliance.

6.3 Smithfield WWTW

On viewing the GDS as of beginning December 2013, the following wastewater works summary data is recorded on the Rouxville WWTW:

Works Name:	**Smithfield**			
Registration Number:	40700022			
Province:	FS		Water Services Authority:	FS163
Villages Served:			Population Served:	
Class:	C		System Calculated Class:	**D**
Applicable Limits:	GENERAL LIMITS		Discharge Into:	
Is Discharge Authorized:	No Information		Authorisation Type:	
Design Capacity (Ml/d):	1.20		Available Capacity (Ml/d):	0.00
Operating Capacity (Ml/d):	0.00		Maximum Discharge Volume:	0.00
Number of Sample Points:	2		Number of Determinands to be Tested:	18
Number of Tests done to date:	189		Number of Tests done this month:	Currently not implemented
Risk Ratings:				
Cumulative Risk Rating:	**13**		Risk Rating Date:	**May 01, 2011**
Design Capacity Rating:	**NI**		Operating Capacity Rating:	**NI**
Effluent Failure Rating:	**NI**		Technical Skills Rating:	**NI**
Compliance:			Select Compliance Period:	Nov 2013
Monitoring:		**0.00%**	Operational:	**0.00%**
Microbiological:		**0.00%**	Physical:	**0.00%**
Chemical:		**0.00%**		
Flagged for Relocation?	☐			

NOTE:

Compliance as calculated from the data loaded on the GDS in the last 12 months, i.e**. Nov 2012 – Nov 2013, is 0.00%**. This could either be due to no compliance data loaded on the GDS or data loaded is out of compliance.

Table 3 Zastron Wastewater Treatment Plant: Greendrop Improvement Plan

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
1	**Process Control and Maintenance**						
1.1	**Works registration**	a) The wastewater treatment facility is registered as per the Requirements of Regulation 2834/17.	Registered on GDS	confirm registration on GDS, print latest Works certificate annually	Moshe	Q2 2014	Not required
1.2	**Process controller and supervisor registration**	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 GDS; 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.	PCs: 1 Class V - roaming; 1 Class 0 (Supervisor); 1 Class 0. Only 1 PC at WWTW, day shift only.	Appropriate competency & certificate information to be loaded on the GDS for PC classification. Thereafter compliance against Works classification van be reviewed.	Moshe	Q2 2014	Not required
1.3	**Maintenance team**	a) Evidence of Maintenance Team used for general maintenance work at the plant & pump-stations(both mechanical and electrical) 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	Internal team for electrical work across. Organogram not available Competency detail to be updated	WQ Technician will source all required documentation & upload GDS for project access from 4th Nov. Maintenance function within WSA requires urgent review, particularly regard: competencies/qualification, organizational structure & their relation to the Works' Operations, their specific function & process of operation.	Director	Q2 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
1.4	**Operations and maintenance manual**	a) Proof of a 'site-specific' Operation & Maintenance Manual O&M manual to contain: 1. structural, 2. mechanical, 3. electrical detail of plant, 4. design specifications of plant, 5. reference to drawings, 6. operational schedules, 7. maintenance schedules, 8. process detail and control, 9. instrumentation specification/type, 10. fault finding, 11. monitoring, 12. pump curves, 13. supportive appendices	Kept at Works, in process of updating - same generic O&M that's copied at all other Works.	WSA to ensure that a site-specific O&M Manual is provided as part of the new consulting engineering developments at the Works. WSA also to ensure that there's common understanding on whether or not the old & the new Works will co-exists & how.	Director	Q1 2014	Budget to be determined
1.5	**Operational logbook**	a) A logbook is in place to record all incidents at the wastewater treatment works. b) Evidence is presented that the logbook process is being implemented.	State of recording books leaves much to be desired: not orderly, generic activity entries, no accountability.	WSA should embark on the revision of whole Works record keeping process & system, this to be implemented across the supply systems.	Moshe	Q2 2014	Budget to be determined
Bonus	**Process Control**	**BONUS**: Proof of Process Controller staff being subjected to relevant training the past 24 months 1. Names of trainees and signature of attendance / Certificate 2. Date and training subject field 3. Training provider and content of training	None	Appropriate training that will further enhance the operational capabilities of the Process Controllers to be introduced annually. Municipality HR Dept. to be part of process.	Moshe	Q2 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
2	**WASTEWATER MONITORING PROGRAMME**						
4.1	**Water Use Authorisation**	Copy of authorisation, detailing Effluent Quality Standards. **NOTE**: List Standards to comply with. **NOTE:** List Sampling plans required	GA licence, loaded on GDS	Licencing to be addressed in the context of the infrastructure development of the new Works & how the process will integrate with the Old Works. Check validity of current licence. WULA renewal process to be initiated.	**Moshe**	**Q1 2014**	**Budget to be determined**
2.1	**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, iv) industrial 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 (1/month for micro & small plants, 1 /week for medium plants, and 1/day for large & macro plants)	none conducted	WSA is advised to follow best practice while in the process of sorting out the formal DWA WULA. Some form of operational monitoring to be introduced.	**Moshe**	**Q1 2014**	**Budget to be determined**
2.2	**Compliance monitoring**	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, e.g. SAR) ; **c)** Sampling frequency occurs as Authorisation Requirements Note 1: 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.	Conducted by WQ Technician in accordance GA a) only final discharge b) determinands: pH, EC, Temp, SS; Ammonia, Nitrate/Titrite, COD, Phosphate; *E.coli*, Faecal coliform. C) frequency: 2 X per month	Load/update GDS with current monitoring programme. WSA to ensure alignment of actual sites, sampling & monitoring with the GDS registered Compliance Monitoring Programme.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
2.3	Laboratory used	a) Name lab(s) for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external) b) Provide the turnaround in laboratory analysis (in hours: from time of submission to time of results dissemination)	IGS across WSA Turnaround time: Micro - 24hrs; Chemical - within 15 days; Physical - onsite, however, no monitoring at WWTW	WSA should confirm contract & SLA with Laboratory service provider & load details of the Lab certification on the GDS.	Moshe	Q1 2014	Not required
2.4	Laboratory credibility	a) Certificate of Accreditation for applicable methods, b) Or Z-scores results following participation a recognised Proficiency Testing Scheme (–2 ≥ z-score ≥ 2 are unacceptable)**c)** Or Proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods)	Lab participates in PTS, however, no evidence provided.	WSA to load latest Lab PTS & related credibility information on the GDS.	Moshe	Q1 2014	Not required
2.5	Process control monitoring results	Explain 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. This might be checked during on-site assessment.] NOTE: Not Necessary to ask Municipality for every system to be assessed.	monitoring results not utilised to improve process controlling. Mostly chemical failure - no process improvement implemented.	WSA to decommission one of the Primary Ponds at a time for desludging, ideally, this could be achieved during the commissioning of the newly constructed Work on site.	Moshe	Q1 2014	Budget to be determined
3	SUBMISSION OF WATER QUAILTY						
3.1	Data submission	1. 12 months of data submitted to DWA on the GDS 2. WSA must ensure that 12 months' sets of results are submitted and recorded on the GDS prior to the assessment. Note: All compliance results' data required	Lack of IGS account payment has resulted in delays in making results available to the WSA. Data available but not loaded	WSA to update GDS with relevant compliance results soon as data is available.	Moshe	Q1 2014	Budget to be determined
Penalty	Data not captured	Penalty will apply should Wastewater results be available but not captured on GDS.		WSA to ensure that they do not keep compliance results & not load these on the GDS system.	Moshe	Q1 2014	Not required

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
Penalty	**Section 82**	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 (on GDS) in order to present a false impression of WWQ Performance and/or compliance.		WSA to ensure correctness & an audit trial of compliance results between the information loaded on the GDS & the hard copies - paper trail - of the compliance results.	**Moshe**	**Q1 2014**	**Not required**
4	**WASTEWATER EFFLUENT QUALITY COMPLIANCE**						
4.2	**Effluent quality compliance**	a) 90% **Microbiological Compliance** (e.g. E Coli; Faecal Coliforms) b) 90% **Chemical Compliance** (e.g. COD, Ammonia, Nitrogen, Nitrate, Nitrite, Residual 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) **NOTE: The WSA to provide the CRR final effluent data in the prescribed excel format used during the Green Drop 2012 Progress Assessment Tool assessment (includes ALL parameters per category required to be tested per the authorisation)**	No GDS access granted to confirm data at time of report submission. GDS data accessed through normal viewing privilege included in the report, compliance reflects 0,00% across all the systems. **Compliance Class** a) Microbiological Compliance b) Chemical Compliance c) Physical Compliance	WSA to load compliance results on the GDS soon as they are available. **Compliance %** [redacted]	**Moshe**	**Q1 2014**	**Budget to be determined**
Bonus	**GDIP**	**a)** A practical Green Drop Improvement Plan (GDIP) in place – with baseline (current) score, tasks, responsible person, completion date, budget, target GDC score; **b)** Implementation evidence and proof of management of process		WSA to monitor & evaluate GDIP implementation on an ongoing basis.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
Penalty	**Sludge management**	a) Sludge treatment not managed / monitored. (Monitoring records must be produced); b) In case of ponds systems, provide schedule for desludging of system.	Ponds not desludged - ever.	Decommissioning of the Ponds, one at a time for desludging purposes - plan to be initiated.	Moshe	Q1 2014	Budget to be determined
5	**WASTEWATER QUALITY RISK MANAGEMENT**						
5.1	**Wastewater Risk Abatement Plan (W2RAP)**	a) A practical and site specific Wastewater Risk Abatement Plan (W_2RAP) is in place which identify and prioritise risks, with measures to mitigate inefficiencies/inadequacies that result in non-compliance b) Implementation evidence and proof of management commitment	W2RAP is the 2011-2012 document. Review/update should be conducted.	WSA to clarify how the new developments at the Works will integrate with the current pond system, this should inform the necessity of a W2RAP process for the current pond system.	Director	Q1 2014	Not required
5.3	**Incident Management Protocol**	a) Evidence of a documented Wastewater Incident Management Protocol b) Protocol to specify alert levels, response times, required actions, roles & responsibilities and communication measures/vehicles. c) NB. Include Pump station failure (sewer collector system spillages)	loaded on GDS, will update	Review & ensure all incidents are addressed, the IMP should be part of the W2RAP development.	Moshe	Q1 2014	Budgeted for already
5.2	**Incident Register**	a) Provide evidence of implementation of Protocol b) Wastewater Quality Failure Incident and Sewer Spillage Incident register.	none available.	Incident register to be incorporated in the W2RAP development exercise.	Moshe	Q1 2014	Not required
			Number of spillages recorded at wastewater treatment works in register for reporting period				
			Number of spillages recorded within sewer collector network in register for reporting period				

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
Bonus	**Energy**	WSI is able to provide DWA with: a) Electricity consumption over last financial year (in KWh/day) and Rand value (R/year) of treatment plant; b) Energy demand projections over next >3 years (in KWh/day) and in Rand value (R/year); and c) Calculate cost of energy (KWh/kl wastewater treated)	Average Energy Consumption in **kWh/d**	Most energy usage is at Pump Station, Biofilters are no longer in use at all the WWTW. A proper energy usage recording process to be introduced and updated constantly. The commissioning of the new Works will possibly have energy usage implications.	**Moshe**	**Q1 2014**	**Budget to be determined**
6	**LOCAL REGULATION**						
6.1	**Bylaws**	Proof of the Bylaws providing for the regulation of: 1. Industrial (trade) influent (volumes & quality) discharged into municipal system, 2. Package plants, 3. Decentralized systems, 4. Vacuum tank discharges and 5. Spillages into the environment. 6. Storm-water connections to sewer system.	Up to date	Updated bylaws to be loaded on GDS	**Moshe**	**Q1 2014**	**Not required**
6.2	**Enforcement**	1. Proof of application of Bylaw clause in practice, supported by written notice/s to offender **OR** 2. Proof of adequate enforcement (informing relevant sectors and means of monitoring industrial or other sewer influent.) 3. Records of Package Plants in area of jurisdiction (where development was approved by the Authority (Local Government).	Letters by the EHP to be loaded on GDS	Appropriate proof of enforcement activity records from the EHP to be loaded on the GDS.	**Moshe**	**Q1 2014**	**Not required**
Penalty	**Industrial Monitoring**	No evidence of any Industrial influent monitoring. 1. There must be proof in form of results to indicate WSA is performing its local regulation function as per Wastewater Services.	Abattoirs discharges - the EHP conducts inspection, details will be loaded on GDS.	WSA should load relevant data on GDS. Response on the evidence of "red" contamination on the influent in one of the primary Ponds at the Works to be provided.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
Bonus	**Publication**	1. Annual Publication of wastewater management performance against the requirements of the site-specific License conditions or General Authorisations 2. Name and date of publication, copy of information pertaining to audit question. 3. Note: Communication must include compliance summary	None	WSA is encouraged to consolidate waste water performance information & publish so constituencies can access.	**Moshe**	**Q1 2014**	**Budget to be determined**
7	**WASTEWATER TREATMENT CAPACITY**						
7.1	**Design Capacity**	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 ≤ 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) - provide proof of verification system and/or calibration of meters)	No detail	WSA to ensure that the new Works currently under construction will be commissioned with a site-specific O&M Manual, also ensure that the consulting engineers constructing the new Works provide site-specific detail as required by the GD KPA 7.1. WSA to commence measuring & recording flows in and out of the Works.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
7.2	WWTW Capacity Planning	Medium to long term planning to ensure sufficient capacity for treatment system and to ensure effluent quality compliance; 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget, iii) projected timeframe iv) planned output of this work. Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)	New Works under construction at the old Works site, this is evidence of WWTW Capacity planning. WSA is also in the process of developing Master Plan	Confirm motivation of the refurbishments/extra process technology at the Zastron & Smirthfield Works, confirm scope of master plan development from Pro-Plan	Director	Q1 2014	Not required
7.3	Collector Capacity Planning	Medium to long term planning to ensure sufficient capacity for collecting system 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget iii) projected timeframe iv) the planned output of this work Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)	New Works under construction at the old Works site, this is evidence of WWTW Capacity planning. WSA is also in the process of developing Master Plan	Confirm motivation of the refurbishments/extra process technology at the Zastron & Smirthfield Works, confirm scope of master plan development from Pro-Plan	Director	Q1 2014	Not required
Penalty	Capacity Utilisation 90% or more			WSA to source Works design capacity detail & record daily flows so utilization can be determined.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8	WASTEWATER ASSET MANAGEMENT						
8.1	Process Audit	a) Process Audit reporting (evidence required of audit findings and recommendations) on treatment facility efficacy. The audit to include the (design) capability of the plant to meet compliance standards, as well as actual performance of plant. Should've been done between July 2010 and June 2012. b) Evidence/plan of implementation of findings during year following Audit Report required.	none conducted	WSA is advised to consider the integration of the new developments to the old pond system Works, this will inform the need to conduct a Process Audit at its Works.	Director	Q1 2014	Budget to be determined
8.2	Sewer Main Inspection	a) Site inspection of sewer reticulation network and pump-station/s. Provide evidence in form of capacity and condition assessment 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 and sewer network report could serve as baseline to the W_2RAP (may run concurrently with "system description and risk identification/rating)	no inspections done	WSA to check if the water Master Plan will include sewer main inspection programme, & load that component on the GDS, else develop one.	Director	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8.3	**Wastewater Asset Management**	**a)** 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 life) e) replacement value	Not made available	Get assistance from Finance to load asset register front page with appropriate headings - wastewater infrastructure related - on GDS	**Director**	**Q1 2014**	**Not required**
8.4	**O&M Budget and Expenditure**	**a)** Operation and maintenance budget and comparative expenditure detail for: 1. wastewater treatment (in cents/m3), and 2. collection system (R/m3) The assessor will require the WSI to explain how these figures compare or are benchmarked to determine whether budget is (in)sufficient NOTE: Indicate whether WSI could only provide global figures or system specific figures.	No comment from WQ Technician	Engage with Director: Tech Services to facilitate Finance's assistance in this regard.	**Director**	**Q1 2014**	**Not required**
		Wastewater Operations, Maintenance and Repairs Budget (Rand million)	Operations Expenditure on WWTW (Rand Million)				
		Wastewater Operations, Maintenance and Repairs Expenditure (Rand million)	Average per Kl wastewater treated (Rand)				
		Wastewater Maintenance and Repairs Expenditure (Rand million)	Operations Expenditure on Sewer Main Operations (Rand Million)				
		% Maintenance and Repairs Expenditure against OMR budget	Expenditure on sewer per m^3 treated				

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8.5	Pump Station Maintenance	Proof of maintenance work done on mechanical, electrical, civil per pump station	State of Pump Station is evidence of lack of ownership & care of infrastructure.	WSA to initiate a maintenance "shock treatment" of restoring the Pump Station to a respectable municipal infrastructure asset. Planned & instituted maintenance regime should improve condition & this facilitate the production of effective service delivery.	Moshe	Q1 2014	Budget to be determined
8	ADDITIONAL BONUSSES						
Bonus	Cross-polination	WSI is able to provide evidence of improvement partnership initiatives with smaller municipalities (Cross-pollination). Green Drop scores will serve as good evidence to measure the outcomes of such initiative/s.	No partnerships exist	WSA is not sufficiently resourced at present.			
Bonus	Stormwater management	Proof of a Storm-water management plan detailing how storm-water 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	No info available	Inquiry on availability of a storm water management plan across the WSA.	Moshe	Q1 2014	No budget required
Bonus	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 info available	Inquiry on availability of a WCDM plan across the WSA.	Moshe	Q1 2014	No budget required

Table 4 Rouxville Wastewater Treatment Plant: Greendrop Improvement Plan

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
1	PROCESS CONTROL AND MAINTENANCE						
1.1	**Works registration**	a) The wastewater treatment facility is registered as per the Requirements of Regulation 2834/17.	Registered on GDS as Class E; however, system calculated as Class D	confirm registration on GDS, print latest Works certificate annually	**Moshe**	**Q2 2014**	**Not required**
1.2	**Process controller and supervisor registration**	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 GDS; 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.	4 PC: Class V (roaming), rest Class 0.	Appropriate competency & certificate information to be loaded on the GDS for PC classification. Thereafter compliance against Works classification van be reviewed.	**Moshe**	**Q2 2014**	**Not required**
1.3	**Maintenance team**	**a)** Evidence of Maintenance Team used for general maintenance work at the plant & pump-stations(both mechanical and electrical) **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	No info available	WQ Technician will source all required documentation & upload GDS for project access from 4th Nov. Maintenance function within WSA requires urgent review, particularly regard: competencies/qualification, organizational structure & their relation to the Works' Operations, their specific function & process of operation.	**Director**	**Q2 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
1.4	**Operations and maintenance manual**	a) Proof of a 'site-specific' Operation & Maintenance Manual O&M manual to contain: 1. structural, 2. mechanical, 3. electrical detail of plant, 4. design specifications of plant, 5. reference to drawings, 6. operational schedules, 7. maintenance schedules, 8. process detail and control, 9. instrumentation specification/type, 10. fault finding, 11. monitoring, 12. pump curves, 13. supportive appendices	Generic, requires re-work.	WSA is encouraged to source original site-specific O&M Manual, else, develop a new one.	**Director**	**Q1 2014**	**Budget to be determined**
1.5	**Operational logbook**	a) A logbook is in place to record all incidents at the wastewater treatment works. b) Evidence is presented that the logbook process is being implemented.	Kept at Works	WSA should embark on the revision of whole Works record keeping process & system, this to be implemented across the supply systems.	**Moshe**	**Q2 2014**	**Budget to be determined**
Bonus	**Process Control**	**BONUS**: Proof of Process Controller staff being subjected to relevant training the past 24 months 1. Names of trainees and signature of attendance / Certificate 2. Date and training subject field 3. Training provider and content of training	No training provided	Appropriate training that will further enhance the operational capabilities of the Process Controllers to be introduced annually. Municipality HR Dept to be part of process.	**Moshe**	**Q2 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
2	**WASTEWATER MONITORING PROGRAMME**						
2.1	**Water Use Authorisation**	Copy of authorisation, detailing Effluent Quality Standards. **NOTE**: List Standards to comply with. **NOTE:** List Sampling plans required	General Limits reflected on GDS	WSA to provide evidence of a valid WWTW WULA	Moshe	Q1 2014	Budget to be determined
2.2	**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, iv) industrial 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 (1/month for micro & small plants, 1 /week for medium plants, and 1/day for large & macro plants)	None conducted	WSA is advised to follow best practice while in the process of sorting out the formal DWA WULA. Some form of operational monitoring to be introduced.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
2.3	**Compliance monitoring**	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, e.g. SAR) ; c) Sampling frequency occurs as Authorisation Requirements Note 1: 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.	Conducted by WQ Technician in accordance GA a) only final discharge b) determinands: pH, EC, Temp, SS; Ammonia, Nitrate/Titrite, COD, Phosphate; *E.coli*, Faecal coliform. C) frequency: 2 X per month	Load/update GDS with current monitoring programme. WSA to ensure alignment of actual sites, sampling & monitoring with the GDS registered Compliance Monitoring Programme.	**Moshe**	**Q1 2014**	**Budget to be determined**
2.4	**Laboratory used**	a) Name lab(s) for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external) b) Provide the turnaround in laboratory analysis (in hours: from time of submission to time of results dissemination)	IGS across WSA Turnaround time: Micro - 24hrs; Chemical - within 15 days; Physical - onsite, however, no monitoring at WWTW	WSA should confirm contract & SLA with Laboratory service provider & load details of the Lab certification on the GDS.	**Moshe**	**Q1 2014**	**Not required**
2.5	**Laboratory credibility**	a) Certificate of Accreditation for applicable methods, b) Z-scores results following participation a recognised Proficiency Testing Scheme (–2 ≥ z-score ≥ 2 are unacceptable) c) Proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods)	PTS	WSA to load latest Lab PTS & related credibility information on the GDS.	**Moshe**	**Q1 2014**	**Not required**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
2.6	**Process control monitoring results**	Explain 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. This might be checked during on-site assessment.] NOTE: Not Necessary to ask Municipality for every system to be assessed.	monitoring results not utilised to improve process controlling. mostlty chemical failure - no process improvement	WSA to decommission one of the Primary Ponds at a time for desludging, ideally, this could be achieved during the winter period.	**Moshe**	**Q1 2014**	**Budget to be determined**
3	**SUBMISSION OF WATER QUAILTY**						
3.1	**Data submission**	1. 12 months of data submitted to DWA on the GDS 2. WSA must ensure that 12 months' sets of results are submitted and recorded on the GDS prior to the assessment. Note: All compliance results' data required	Lack of IGS account payment has resulted in delays in making results available to the WSA. Data available but not loaded	WSA to update GDS with relevant compliance results soon as data is available.	**Moshe**	**Q1 2014**	**Budget to be determined**
Penalty	**Data not captured**	Penalty will apply should Wastewater results be available but not captured on GDS.		WSA to ensure that they do not keep compliance results & not load these on the GDS system.	**Moshe**	**Q1 2014**	**Not required**
Penalty	**Section 82**	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 (on GDS) in order to present a false impression of WWQ Performance and/or compliance.		WSA to ensure correctness & an audit trial of compliance results between the information loaded on the GDS & the hard copies - paper trail - of the compliance results.	**Moshe**	**Q1 2014**	**Not required**

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GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
4	WASTEWATER EFFLUENT QUALITY COMPLIANCE						
4.2	Effluent quality compliance	a) 90% **Microbiological Compliance** (e.g. E Coli; Faecal Coliforms) b) 90% **Chemical Compliance** (e.g. COD, Ammonia, Nitrogen, Nitrate, Nitrite, Residual 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.) **NOTE: The WSA to provide the CRR final effluent data in the prescribed excel format used during the Green Drop 2012 Progress Assessment Tool assessment (includes ALL parameters per category required to be tested per the authorisation)**	No GDS access granted to confirm data at time of report submission. GDS data accessed through normal viewing privilege included in the report, compliance reflects 0,00% across all the systems. **Compliance Class** a) Microbiological Compliance b) Chemical Compliance c) Physical Compliance	WSA to load compliance results on the GDS soon as they are available. **Compliance %**	Moshe	Q1 2014	Budget to be determined
Bonus	GDIP	**a)** A practical Green Drop Improvement Plan (GDIP) in place – with baseline (current) score, tasks, responsible person, completion date, budget, target GDC score; **b)** Implementation evidence and proof of management of process		WSA to assign accountability on GDS recommendation with timelines of implementation, budget allocation, and monitoring of performance.	Moshe	Q1 2014	Budget to be determined
Penalty	Sludge management	a) Sludge treatment not managed / monitored. (Monitoring records must be produced); b In case of ponds systems, provide schedule for desludging of system.	Ponds not desludged - ever.	Decommissioning of the Ponds, one at a time for desludging purposes - plan to be initiated.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
5	**WASTEWATER QUALITY RISK MANAGEMENT**						
5.1	**Wastewater Risk Abatement Plan (W2RAP)**	a) A practical and site specific Wastewater Risk Abatement Plan (W_2RAP) is in place which identify and prioritise risks, with measures to mitigate inefficiencies/inadequacies that result in non-compliance b) Implementation evidence and proof of management commitment	Not developed	WSA to ensure that W2RAP is developed for the Works.	**Director**	**Q1 2014**	**Not required**
5.3	**Incident Management Protocol**	a) Evidence of a documented Wastewater Incident Management Protocol b) Protocol to specify alert levels, response times, required actions, roles & responsibilities and communication measures/vehicles. c) NB. Include Pump station failure (sewer collector system spillages)	Require revision	Review & ensure all incidents are addressed, the IMP should be part of the W2RAP development.	**Moshe**	**Q1 2014**	**Budgeted for already**
5.2	**Incident Register**	a) Provide evidence of implementation of Protocol b) Wastewater Quality Failure Incident and Sewer Spillage Incident register.	Require revision	Incident register to be incorporated in the W2RAP development exercise.	**Moshe**	**Q1 2014**	**Not required**
			Number of spillages recorded at wastewater treatment works in register for reporting period				
			Number of spillages recorded within sewer collector network in register for reporting period				

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
Bonus	**Energy**	WSI is able to provide DWA with: a) Electricity consumption over last financial year (in KWh/day) and Rand value (R/year) of treatment plant; b) Energy demand projections over next >3 years (in KWh/day) and in Rand value (R/year); and c) Calculate cost of energy (KWh/kl wastewater treated)	not documented	Most energy usage is at Pump Station, Biofilters are no longer in use at all the WWTW. A proper energy usage recording process to tbe introduced and updated constantly.	**Moshe**	**Q1 2014**	**Budget to be determined**
			Average Energy Consumption in **kWh/d**				
6	**LOCAL REGULATION**						
6.1	**Bylaws**	Proof of the Bylaws providing for the regulation of: 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. 6. Stormwater connections to sewer system.	Up to date	Updated bylaws to be loaded on GDS	**Moshe**	**Q1 2014**	**Not required**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
6.2	**Enforcement**	1. Proof of application of Bylaw clause in practice, supported by written notice/s to offender **OR** 2. Proof of adequate enforcement (informing relevant sectors and means of monitoring industrial or other sewer influent.) 3. Records of Package Plants in area of jurisdiction (where development was approved by the Authority (Local Government).	Letters by the EHP to be loaded on GDS	Appropriate proof of enforcement activity records from the EHP to be loaded on the GDS.	**Moshe**	**Q1 2014**	**Not required**
Penalty	**Industrial Monitoring**	No evidence of any Industrial influent monitoring. 1. There must be proof in form of results to indicate WSA is performing its local regulation function as per Wastewater Services.	Abbattoirs discharges - the EHP conducts inspection, details will be loaded on GDS.	WSA should load relevant data on GDS. Response on the evidence of "red" contamination on the influent in one of the primary Ponds at the Works to be provided.	**Moshe**	**Q1 2014**	**Budget to be determined**
Bonus	**Publication**	1. Annual Publication of wastewater management performance against the requirements of the site-specific License conditions or General Authorisations 2. Name and date of publication, copy of information pertaining to audit question. 3. Note: Communication must include compliance summary	none	WSA is encouraged to consolidate waste water performance information & publish so constituencies can access.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
7	WASTEWATER TREATMENT CAPACITY						
7.1	Design Capacity	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 ≤ 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) - provide proof of verification system and/or calibration of meters)	Not available	WSA to source original O&M for design capacity information. Daily flows to be recorded on an ongoing basis, include night flows to inform the water demand process. Calibrated flow meters to be installed.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
7.2	**WWTW Capacity Planning**	Medium to long term planning to ensure sufficient capacity for treatment system and to ensure effluent quality compliance; 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget, iii) projected timeframe iv) planned output of this work. Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)	no info available	WSA to check if the water Master Plan will include WWTW capacity planning, & load that component on the GDS, else develop one.	**Director**	**Q1 2014**	**Not required**
7.3	**Collector Capacity Planning**	Medium to long term planning to ensure sufficient capacity for collecting system 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget iii) projected timeframe iv) the planned output of this work Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)	no info available	WSA to check if the water Master Plan will include collector capacity planning, & load that component on the GDS, else develop one.	**Director**	**Q1 2014**	**Not required**
Penalty	**Capacity Utilisation 90% or more**			WSA to source Works design capacity detail & record daily flows so utilization can be determined.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8	WASTEWATER ASSET MANAGEMENT						
8.1	Process Audit	**a)** Process Audit reporting (evidence required of audit findings and recommendations) on treatment facility efficacy. The audit to include the (design) capability of the plant to meet compliance standards, as well as actual performance of plant. Should've been done between July 2010 and June 2012. **b)** Evidence/plan of implementation of findings during year following Audit Report required.	info not available	WSA is advised to conduct a Process Audit at its Works.	Director	Q1 2014	Budget to be determined
8.2	Sewer Main Inspection	**a)** Site inspection of sewer reticulation network and pump-station/s. Provide evidence in form of capacity and condition assessment 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 and sewer network report could serve as baseline to the W_2RAP (may run concurrently with "system description and risk identification/rating)	info not available	WSA to check if the water Master Plan will include sewer main inspection programme, & load that component on the GDS, else develop one.	Director	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8.3	**Wastewater Asset Management**	**a)** 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 life) e) replacement value	info not available	Get assistance from Finance to load asset register front page with appropriate headings - wastewater infrastructure related - on GDS	**Director**	**Q1 2014**	**Not required**
8.4	**O&M Budget and Expenditure**	**a)** Operation and maintenance budget and comparative expenditure detail for: 1. wastewater treatment (in cents/m3), and 2. collection system (R/m3) The assessor will require the WSI to explain how these figures compare or are benchmarked to determine whether budget is (in)sufficient NOTE: Indicate whether WSI could only provide global figures or system specific figures.	info not available	Engage with Director: Tech Services to facilitate Finance's assistance in this regard.	**Director**	**Q1 2014**	**Not required**
		Wastewater Operations, Maintenance and Repairs Budget (Rand million)	Operations Expenditure on WWTW (Rand Million)				
		Wastewater Operations, Maintenance and Repairs Expenditure (Rand million)	Average per Kl wastewater treated (Rand)				
		Wastewater Maintenance and Repairs Expenditure (Rand million)	Operations Expenditure on Sewer Main Operations (Rand Million)				
		% Maintenance and Repairs Expenditure against OMR budget	Expenditure on sewer per m^3 treated				

GD KPA	Requirements	Sub-Requirements	Comment on criteria met	Improvement Opportunity	Responsibility	Completion Date	Budget Allocation
8.5	Pump Station Maintenance	Proof of maintenance work done on mechanical, electrical, civil per pump station	Pump Station kept in a best of class condition, record keeping to be made available	Maintenance records to be available, planned maintenance to be introduced.	Moshe	Q1 2014	Budget to be determined
8	ADDITIONAL BONUSSES						
Bonus	Cross-polination	WSI is able to provide evidence of improvement partnership initiatives with smaller municipalities (Cross-pollination). Green Drop scores will serve as good evidence to measure the outcomes of such initiative/s.	No partnerships exist	WSA is not sufficiently resourced at present.	Moshe	Q1 2014	Budget to be determined
Bonus	Stormwater management	Proof of a Storm-water management plan detailing how storm-water 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	No info available	Inquiry on availability of a storm water management plan across the WSA.	Moshe	Q1 2014	No budget required
Bonus	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 info available	Inquiry on availability of a WCDM plan across the WSA.	Moshe	Q1 2014	No budget required

Table 5 Smithfield Wastewater Treatment Plant: Greendrop Improvement Plan

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
1	PROCESS CONTROL AND MAINTENANCE						
1.1	Works registration	a) The wastewater treatment facility is registered as per the Requirements of Regulation 2834/17.	Registered as C in GDS	confirm registration on GDS, print latest Works certificate annually	Moshe	Q2 2014	Not required
1.2	Process controller and supervisor registration	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 GDS; 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.	3 PC registered on GDS: 1 Class V (roaming), rest Class 0	Appropriate competency & certificate information to be loaded on the GDS for PC classification. Thereafter compliance against Works classification van be reviewed.	Moshe	Q2 2014	Not required

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
1.3	**Maintenance team**	a) Evidence of Maintenance Team used for general maintenance work at the plant & pump-stations(both mechanical and electrical) 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	No information provided in this regard	WQ Technician will source all required documentation & upload GDS for project access from 4th Nov. Maintenance function within WSA requires urgent review, particularly regard: competencies/qualification, organizational structure & their relation to the Works' Operations, their specific function & process of operation.	**Director**	**Q2 2014**	**Budget to be determined**
1.4	**Operations and maintenance manual**	a) Proof of a 'site-specific' Operation & Maintenance Manual O&M manual to contain: 1. structural, 2. mechanical, 3. electrical detail of plant, 4. design specifications of plant, 5. reference to drawings, 6. operational schedules, 7. maintenance schedules, 8. process detail and control, 9. instrumentation specification/type, 10. fault finding, 11. monitoring, 12. pump curves, 13. supportive appendices	no documentation is kept at the Works.	WSA to ensure that a site-specific O&M Manual is provided as part of the new consulting engineering developments at the Works. WSA also to ensure that there's common understanding on whether or not the old & the new Works will co-exists & how.	**Director**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
1.5	Operational logbook	**a)** A logbook is in place to record all incidents at the wastewater treatment works. **b)** Evidence is presented that the logbook process is being implemented.	No recordkeeping is implemented at the Works.	WSA should embark on the revision of whole Works record keeping process & system, this to be implemented across the supply systems.	Moshe	Q2 2014	Budget to be determined
Bonus	Process Control	**BONUS**: Proof of Process Controller staff being subjected to relevant training the past 24 months 1. Names of trainees and signature of attendance / Certificate 2. Date and training subject field 3. Training provider and content of training	No training provided	Appropriate training that will further enhance the operational capabilities of the Process Controllers to be introduced annually. Municipality HR Dept to be part of process.	Moshe	Q2 2014	Budget to be determined
2	WASTEWATER MONITORING PROGRAMME						
2.1	Water Use Authorisation	Copy of authorisation, detailing Effluent Quality Standards. **NOTE**: List Standards to comply with. **NOTE:** List Sampling plans required	WSA did not provided evidence of licence.	Licencing to be addressed in the context of the infrastructure development of the new Works & how the process will integrate with the Old Works. Check validity of current licence. WULA renewal process to be initiated.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
2.2	**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, iv) industrial 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 (1/month for micro & small plants, 1 /week for medium plants, and 1/day for large & macro plants)	none conducted	WSA is advised to follow best practice while in the process of sorting out the formal DWA WULA. Some form of operational monitoring to be introduced.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
2.3	**Compliance monitoring**	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, e.g. SAR) ; c) Sampling frequency occurs as Authorisation Requirements Note 1: 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.	Conducted by WQ Technician in accordance GA a) only final discharge b) determinands: pH, EC, Temp, SS; Ammonia, Nitrate/Titrite, COD, Phosphate; *E.coli*, Faecal coliform. C) frequency: 2 X per month	Load/update GDS with current monitoring programme. WSA to ensure alignment of actual sites, sampling & monitoring with the GDS registered Compliance Monitoring Programme.	**Moshe**	**Q1 2014**	**Budget to be determined**
2.4	**Laboratory used**	a) Name lab(s) for operational analysis (in-house or on-site) and lab for compliance analysis/checks (in-house or external) b) Provide the turnaround in laboratory analysis (in hours: from time of submission to time of results dissemination)	IGS across WSA Trunaround time: Micro - 24hrs; Chemical - within 15 days; Physical - onsite, however, no monitoring at WWTW	WSA should confirm contract & SLA with Laboratory service provider & load details of the Lab certification on the GDS.	**Moshe**	**Q1 2014**	**Not required**
2.5	**Laboratory credibility**	a) Certificate of Accreditation for applicable methods, b) Or Z-scores results following participation a recognised Proficiency Testing Scheme (–2 ≥ z-score ≥ 2 are unacceptable) c) Or Proof of Intra- and Inter-laboratory proficiency (quality assurance as prescribed in Standard Methods)	PTS participation by the Lab, however, no evidence provided.	WSA to load latest Lab PTS & related credibility information on the GDS.	**Moshe**	**Q1 2014**	**Not required**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
2.5	**Process control monitoring results**	Explain 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. This might be checked during on-site assessment.] NOTE: Not Necessary to ask Municipality for every system to be assessed.	monitoring results not utilised to improve process controlling. Mostly chemical failure - no process improvement	WSA to decommission one of the Primary Ponds at a time for desludging, ideally, this could be achieved during the commissioning of the newly constructed Work on site.	**Moshe**	**Q1 2014**	**Budget to be determined**
3	**SUBMISSION OF WATER QUAILTY**						
3.1	**Data submission**	1. 12 months of data submitted to DWA on the GDS 2. WSA must ensure that 12 months' sets of results are submitted and recorded on the GDS prior to the assessment. Note: All compliance results' data required	Lack of IGS account payment has resulted in delays in making results available to the WSA. Data available but not loaded	WSA to update GDS with relevant compliance results soon as data is available.	**Moshe**	**Q1 2014**	**Budget to be determined**
Penalty	**Data not captured**	Penalty will apply should Wastewater results be available but not captured on GDS.		WSA to ensure that they do not keep compliance results & not load these on the GDS system.	**Moshe**	**Q1 2014**	**Not required**
Penalty	**Section 82**	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 (on GDS) in order to present a false impression of WWQ Performance and/or compliance.		WSA to ensure correctness & an audit trial of compliance results between the information loaded on the GDS & the hard copies - paper trail - of the compliance results.	**Moshe**	**Q1 2014**	**Not required**

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GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
4	WASTEWATER EFFLUENT QUALITY COMPLIANCE						
4.2	Effluent quality compliance	a) 90% **Microbiological Compliance** (e.g. E Coli; Faecal Coliforms) b) 90% **Chemical Compliance** (e.g. COD, Ammonia, Nitrogen, Nitrate, Nitrite, Residual 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) NOTE: The WSA to provide the CRR final effluent data in the prescribed excel format used during the Green Drop 2012 Progress Assessment Tool assessment (includes ALL parameters per category required to be tested per the authorisation)	No GDS access granted to confirm data at time of report submission. GDS data accessed through normal viewing privilege included in the report, compliance reflects 0,00% across all the systems. **Compliance Class** / **Compliance %** a) Microbiological Compliance b) Chemical Compliance c) Physical Compliance	WSA to load compliance results on the GDS soon as they are available.	Moshe	Q1 2014	Budget to be determined
Bonus	GDIP	**a)** A practical Green Drop Improvement Plan (GDIP) in place – with baseline (current) score, tasks, responsible person, completion date, budget, target GDC score; **b)** Implementation evidence and proof of management of process		WSA to assign accountability on GDS recommendation with timelines of implementation, budget allocation, and monitoring of performance.	Moshe	Q1 2014	Budget to be determined
Penalty	Sludge management	a) Sludge treatment not managed / monitored. (Monitoring records must be produced); b) In case of ponds systems, provide schedule for desludging of system.	Ponds not desludged - ever.	Decommissioning of the Ponds, one at a time for desludging purposes - plan to be initiated.	Moshe	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
5	WASTEWATER QUALITY RISK MANAGEMENT						
5.1	Wastewater Risk Abatement Plan (W2RAP)	a) A practical and site specific Wastewater Risk Abatement Plan (W_2RAP) is in place which identify and prioritise risks, with measures to mitigate inefficiencies/inadequacies that result in non-compliance b) Implementation evidence and proof of management commitment	W2RAP is the 2011-2012 document. Review/update should be conducted.	WSA to clarify how the new developments at the Works will integrate with the current pond system, this should inform the necessity of a W2RAP process for the current pond system.	Director	Q1 2014	Not required
5.3	Incident Management Protocol	a) Evidence of a documented Wastewater Incident Management Protocol b) Protocol to specify alert levels, response times, required actions, roles & responsibilities and communication measures/vehicles. c) NB. Include Pump station failure (sewer collector system spillages)	loaded on GDS, will update	Review & ensure all incidents are addressed, the IMP should be part of the W2RAP development.	Moshe	Q1 2014	Budgeted for already
5.2	Incident Register	a) Provide evidence of implementation of Protocol b) Wastewater Quality Failure Incident and Sewer Spillage Incident register.	none available	Incident register to be incorporated in the W2RAP development exercise.	Moshe	Q1 2014	Not required
			Number of spillages recorded at wastewater treatment works in register for reporting period				
			Number of spillages recorded within sewer collector network in register for reporting period				

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
Bonus	**Energy**	WSI is able to provide DWA with: a) Electricity consumption over last financial year (in KWh/day) and Rand value (R/year) of treatment plant; b) Energy demand projections over next >3 years (in KWh/day) and in Rand value (R/year); and c) Calculate cost of energy (KWh/kl wastewater treated)	Process not implemented.	WSA is advised to commence collecting & recording electric data to compute energy demand projections.	**Moshe**	**Q1 2014**	**Budget to be determined**
			Average Energy Consumption in **kWh/d**				
6	**LOCAL REGULATION**						
6.1	**Bylaws**	Proof of the Bylaws providing for the regulation of: 1. Industrial (trade) influent (volumes & quality) discharged into municipal system, 2. Package plants, 3. Decentralized systems, 4. Vacuum tank discharges and 5. Spillages into the environment. 6. Stormwater connections to sewer system.	Up to date	Updated bylaws to be loaded on GDS	**Moshe**	**Q1 2014**	**Not required**
6.2	**Enforcement**	1. Proof of application of Bylaw clause in practice, supported by written notice/s to offender **OR** 2. Proof of adequate enforcement (informing relevant sectors and means of monitoring industrial or other sewer influent.) 3. Records of Package Plants in area of jurisdiction (where development was approved by the Authority (Local Government).	Letters by the EHP to be loaded on GDS	Appropriate proof of enforcement activity records from the EHP to be loaded on the GDS.	**Moshe**	**Q1 2014**	**Not required**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
Penalty	**Industrial Monitoring**	No evidence of any Industrial influent monitoring. 1. There must be proof in form of results to indicate WSA is performing its local regulation function as per Wastewater Services.	Abattoirs discharges - the EHP conducts inspection, details will be loaded on GDS.	WSA should load relevant data on GDS. Response on the evidence of "red" contamination on the influent in one of the primary Ponds at the Works to be provided.	**Moshe**	**Q1 2014**	**Budget to be determined**
Bonus	**Publication**	1. Annual Publication of wastewater management performance against the requirements of the site-specific License conditions or General Authorisations 2. Name and date of publication, copy of information pertaining to audit question. 3. Note: Communication must include compliance summary	None	WSA is encouraged to consolidate waste water performance information & publish so constituencies can access.	**Moshe**	**Q1 2014**	**Budget to be determined**
7	**WASTEWATER TREATMENT CAPACITY**						
7.1	**Design Capacity**	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 ≤ 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)	No detail	WSA to ensure that the new Works currently under construction will be commissioned with a site-specific O&M Manual.	**Moshe**	**Q1 2014**	**Budget to be determined**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
Cont.		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) - provide proof of verification system and/or calibration of meters)					
7.2	**WWTW Capacity Planning**	Medium to long term planning to ensure sufficient capacity for treatment system and to ensure effluent quality compliance; 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget, iii) projected timeframe iv) planned output of this work. Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)	New Works under construction at the old Works site, this is evidence of WWTW Capacity planning. WSA is also in the process of developing Master Plan	Confirm motivation of the refurbishments/extra process technology at the Zastron & Smirthfield Works, confirm scope of master plan development from Pro-Plan	**Director**	**Q1 2014**	**Not required**
7.3	**Collector Capacity Planning**	Medium to long term planning to ensure sufficient capacity for collecting system 1. Detailed Work-plan which stipulates: i) type of work, ii) associated budget iii) projected timeframe iv) the planned output of this work	New Works under construction at the old Works site, this is evidence of WWTW Capacity planning. WSA is also in the process of developing Master Plan	Confirm motivation of the refurbishments/extra process technology at the Zastron & Smirthfield Works, confirm scope of master plan development from Pro-Plan	**Director**	**Q1 2014**	**Not required**

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
Cont.		Note: When the WSI is motivating that 'no work' is needed, then provide basis for such standpoint (i.e. quantified design versus operational capacity, usage of system, expected housing developments, condition of treatment system)					
Penalty	CapacityUtilisation 90% or more			WSA to source Works design capacity detail & record daily flows so utilization can be determined.	Moshe	Q1 2014	Budget to be determined
8	WASTEWATER ASSET MANAGEMENT						
8.1	Process Audit	a) Process Audit reporting (evidence required of audit findings and recommendations) on treatment facility efficacy. The audit to include the (design) capability of the plant to meet compliance standards, as well as actual performance of plant. Should've been done between July 2010 and June 2012. b) Evidence/plan of implementation of findings during year following Audit Report required.	Refurbished Works	WSA is advised to conduct a Process Audit at its Works.	Director	Q1 2014	Budget to be determined
8.2	Sewer Main Inspection	**a)** Site inspection of sewer reticulation network and pump-station/s. Provide evidence in form of capacity and condition assessment 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 and sewer network report could serve as baseline to the W_2RAP (may run concurrently with "system description and risk identification/rating)	No inspections done	WSA to check if the water Master Plan will include sewer main inspection programme, & load that component on the GDS, else develop one.	Director	Q1 2014	Budget to be determined

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
8.3	**Wastewater Asset Management**	a) 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 life) e) replacement value	Not made available	Get assistance from Finance to load asset register front page with appropriate headings - wastewater infrastructure related - on GDS	**Director**	**Q1 2014**	**Not required**
8.4	**O&M Budget and Expenditure**	a) Operation and maintenance budget and comparative expenditure detail for: 1. wastewater treatment (in cents/m3), and 2. collection system (R/m3) The assessor will require the WSI to explain how these figures compare or are benchmarked to determine whether budget is (in)sufficient NOTE: Indicate whether WSI could only provide global figures or system specific figures.	No comment from WQ Technician	Engage with Director: Tech Services to facilitate Finance's assistance in this regard.	**Director**	**Q1 2014**	**Not required**
		Wastewater Operations, Maintenance and Repairs Budget (Rand million)	Operations Expenditure on WWTW (Rand Million)				
		Wastewater Operations, Maintenance and Repairs Expenditure (Rand million)	Average per Kl wastewater treated (Rand)				
		Wastewater Maintenance and Repairs Expenditure (Rand million)	Operations Expenditure on Sewer Main Operations (Rand Million)				
		% Maintenance and Repairs Expenditure against OMR budget	Expenditure on sewer per m^3 treated				

GD KPA	Requirements	Sub-Requirements	Comment on Criteria Met	Improvement opportunity	Responsibility	Completion Date	Budget Allocation
8.5	**Pump Station Maintenance**	Proof of maintenance work done on mechanical, electrical, civil per pump station	No pump station		**Moshe**	**Q1 2014**	**Budget to be determined**
8	**ADDITIONAL BONUSSES**						
Bonus	**Cross-polination**	WSI is able to provide evidence of improvement partnership initiatives with smaller municipalities (Cross-pollination). Green Drop scores will serve as good evidence to measure the outcomes of such initiative/s.	No partnerships exist	WSA is not sufficiently resourced at present.	**Moshe**	**Q1 2014**	**Budget to be determined**
Bonus	**Stormwater management**	Proof of a Storm-water management plan detailing how storm-water 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	No info available	Inquiry on availability of a storm water management plan across the WSA.	**Moshe**	**Q1 2014**	**No budget required**
Bonus	**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 info available	Inquiry on availability of a WCDM plan across the WSA.	**Moshe**	**Q1 2014**	**No budget required**