

● *Make every drop count*



Waste Water Management

The necessary content of enforceable and implementable bylaws

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Water Quality Compliance

Department Water & Sanitation

Water Quality and Revenue Management

Water Quality Section

- 1: Industrial Effluent**
- 2: Environmental Monitoring**
- 3: Potable Water Compliance**



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→ MONITORING IN 2015

Section	No of sample points	Samples taken	Analysis done
Industrial Effluent	316	4608	28898
Environment Monitoring	143	2192	30440
Potable Water	303	4646	47196
Other		460	2534



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INDUSTRIAL EFFLUENT

LEGISLATION

1. Constitution
2. National Water Act (Act 36 of 1998)
3. Water Services Act (Act 108 of 1997)
4. National Environmental Management Act (Act 107 of 1998)
5. Waste Water By-Laws
6. Water Supply By-Laws
7. Sewer Tariffs
8. Water Supply Tariffs



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→ Industrial Effluent Process

- Industry submit Industrial Effluent Permit application
- Inspection by EMM
- Industrial Effluent Permit issued by EMM
- Frequency of sampling determined by quality and quantity
- Discharge of Industrial Effluent commence
- Industrial Effluent sampling by EMM/Industry
- Industrial Effluent billing
- Review amend or revoke permission

Permit is valid for two years



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→ Effluent Quality and Quantity Monitoring

1. All analyses performed by EMM during the month are used – Analyses performed by accredited Lab
2. Average of all analyses performed by Industry can be submitted to EMM at the end of the month - Analyses should be performed by accredited Lab
3. Industry can take split sample when EMM take sample
4. Effluent meter reading consumption will be used if effluent meter is calibrated as required
5. Percentage of water consumption purchased from EMM will be used if industry do not have effluent meter



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→ Industrial Effluent Tariffs

Formula 2015/2016

$$T_i = \frac{C}{12} \left(\frac{Q_i}{Q_t} \right) \left[a + b \left(\frac{COD_i}{COD_t} \right) + d \left(\frac{P_i}{P_t} \right) + e \left(\frac{N_i}{N_t} \right) + f \left(\frac{SS_i}{SS_t} \right) \right]$$

C **R 1.140 000 000, 00**

Q_t **718 370**

COD_t **753**

P_t **3.81**

N_t **22.7**

SS_t **296**

-a **0,29**

-b **0,26**

-d **0,16**

-e **0,15**



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-
- **Volume Charge 2015/2016** **Tariff R / kl Effluent**

0 – 5 000kl / month	R 7,54
5 001 – 25 000 kl / month	R 4,41
25 001 - or more k/ / month	R 3,71
 - **Minimum charges: R1 522, 00**

The highest of the Industrial effluent tariffs calculated shall be payable



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- **Discharge of Effluent having a Value Contrary to the Discharge Limits:**

The highest of **R1,61** per kilolitre industrial effluent discharged during the relevant month or **R1 649,00** per month for each individual parameter deviating from the Industrial Effluent discharge limits

- **Grease, Oil, Silt or Sand Trap**

In addition to any other tariffs payable in terms of this schedule of tariffs an amount of **R 456,00** per month shall be payable



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Industrial Effluent Analysis Report

Period: 2016/02/01 - 2016/02/29

ENQUIRIES: LEBOGANG MOFFAT
TELEPHONE: 0119992649

SI0083

Account Number: 2100261778

Days per Month: 29

TREATMENT CHARGE

$$T_i = \frac{C}{12} \times \frac{Q_i}{Q_t} \times \left[0.29 + \left(0.26 \times \frac{COD_i}{COD_t}\right) + \left(0.16 \times \frac{P_i}{P_t}\right) + \left(0.15 \times \frac{Ni}{Nt}\right) + \left(0.14 \times \frac{SS_i}{SS_t}\right) \right]$$

$$= \frac{114000000}{12} \times \frac{1340.67}{718370} \times \left[0.29 + \left(0.26 \times \frac{5030.00}{753}\right) + \left(0.16 \times \frac{12.55}{3.81}\right) + \left(0.15 \times \frac{8.10}{22.7}\right) + \left(0.14 \times \frac{2232.50}{296}\right) \right]$$

$$= R 649 477.31$$

$$R/kl = R 16.70$$

ADDITIONAL TARIFF (NON-COMPLIANCE)

$$= Q \times \text{Sum}(\text{Number exceeding limits of individual parameters}) \times \text{Tariff}$$

$$= 38879.37 \times 3 \times 1.66$$

$$= R 193 619.26$$

Effluent Charge Excl VAT: R 843 096.57

(Please note: This is only an information sheet and will be reflected on your account)

ACTUAL CALCULATED VALUES

Minimum Value:	R 1 522.00
* Value by Formulae:	R 649 477.31
Value by Sliderule:	R 177 384.34

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Analysis Report



WAQIS Sampling Report

████████████████████
For Period: 2016/02/01 - 2016/02/29

	Date, Sample, Flow, Randwater, M _ Flow		
	2016/02/04	2016/02/23	Average
	1	1	3
	1 326.14	1 326.14	
	52 190.00	52 190.00	
	14.5	14.5	
COD	5250	4810	5030
CONDUCTIVITY	57	122	90
FE_TOT	8.3	7.3	7.8
N	5.3	10.9	8.1
P	10.4	14.7	12.6
PH	4.0	4.0	4.0
SS	2059	2406	2232.5

Total Penalties: 3



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→ Inspection Fees

In respect of a specific contravention of the Waste Water By-laws or notices of the Council whether continuous or interrupted during a period of 12 months :

- 1st inspection **No charge**
- 1st follow-up inspection subsequent to a notice of rectification
R 1 147,00
- 2nd follow-up inspection subsequent to the notice of rectification
intended above **R 2 885,00**
- 3rd or subsequent follow-up inspection subsequent to the notice of
rectification intended above **R8 237,00**



ACCEPTABLE DISCHARGE LIMITS

- pH at 25° C between 6,0 and 10,0 pH Units
- Electrical conductivity at 25° C: 500 mS/m
- Caustic alkalinity (expressed as CaCo3): 2000 mg/l
- Substances not in solution (including fat, oil, grease, waxes and like substances) and where the volume of effluent discharged per month does exceed 10 000 kl: 500 mg/l
- Substances not in solution (including fat, oil, grease, waxes and like substances) and where the volume of effluent discharged per month does not exceed 10 000 kl: 1000 mg/l
- Fat, oil grease, waxes and like substances soluble in petroleum ether: 500 mg/l
- Sulphides, (expressed as S):10 mg/l
- Hydrogen sulphide (expressed as H2S): 5 mg/l
- Substances from which hydrogen cyanide can be liberated in the drainage installation, sewer and sewage treatment works (expressed as HCN): 20 mg/l
- Formaldehyde (expressed as HCHO): 50 mg/l





- Non-organic solids in suspension: 100 mg/l
- Chemical oxygen demand (COD): 5000 mg/l
- All sugars and/or starch (expressed as glucose): 1500 mg/l
- Available chlorine (expressed as Cl): 100 mg/l
- Sulphates (expressed as SO₄): 1800 mg/l
- Fluorine-containing compounds (expressed as F): 5 mg/l
- Sodium (expressed as Na): 500 mg/l
- Anionic surface active agents: 500 mg/l
- Ammonium Nitrogen as N: 200 mg/l
- Orthophosphate as P: 50 mg/l
- Phenols: 150 mg/l
- Chloride (Cl) 500 mg



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(ii) METALS AND OTHER ELEMENTS: Determinants Upper limits of concentrations

- Nickel (expressed as Ni): 20 mg/l
- Zinc (expressed as Zn): 20 mg/l
- Cobalt (expressed as Co): 20 mg/l
- Chromium (expressed as Cr): 20 mg/l

Should the total collective concentration of all metals in Group A (expressed as indicated above) in any sample of the effluent exceed 40 mg/l, or the concentration of any individual metal in any sample exceed the upper limits as indicated above, the provisions of items 5.1 and 7.4.2 shall apply.



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Group B

Determinants Upper limits of concentrations

- Lead (expressed as Pb): 5 mg/l
- Copper (expressed as Cu) : 5 mg/l
- Cadmium (expressed as Cd) : 5 mg/l
- Arsenic (expressed as As): 5 mg/l
- Boron (expressed as B): 5 mg/l
- Selenium (expressed as Se): 5 mg/l
- Mercury (expressed as Hg): 5 mg/l
- Molybdenum (expressed as Mo): 5 mg/l

Should the total collective concentration of all metals and elements in Group B (expressed as indicated above) in any sample of the effluent exceed 20 mg/l, or the concentration of any individual metal or elements in any sample exceed the upper limits as indicated above, the provisions of items 5.1 and 7.4.2 shall apply.



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Group C

Determinants Upper limits of concentrations

- | | |
|-------------------------------|---------|
| ○ Aluminium (expressed as Al) | 20 mg/l |
| ○ Iron (expressed as Fe) | 20 mg/l |
| ○ Silver (expressed as Ag) | 20 mg/l |
| ○ Tungsten (expressed as W) | 20 mg/l |
| ○ Titanium (expressed as Ti) | 20 mg/l |
| ○ Manganese (expressed as Mn) | 20 mg/l |

Should the individual concentration of all metals in Group C (expressed as indicated above) in any sample of the effluent exceed the upper limits as indicated above, the provisions of items 5.1 and 7.4.2 shall apply.

○ (iii) RADIO-ACTIVE WASTE:

Radio-active waste must comply to safety standards as contemplated in section 36 of the National Nuclear Regulation Act, 1999.



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→ Responsibility of Industries

- Apply for an Industrial effluent discharge permit
- Re-apply for an Industrial effluent discharge permit every two years
- Comply with Industrial Effluent discharge limits
- Pretreatment of industrial effluent
- Restrict discharge volumes if applicable
- Maintain and calibrate industrial effluent meter every two year
- Provide accessible sampling point



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→ Responsibility of Industries

- Notify Council of changes in quality or discharge volume
- Report accidental discharges
- No rainwater from any roof or other surfaces to enter sewer
- Prevent industrial effluent from entering storm water system
- Safe disposal of waste
- Register and meter boreholes that are used in industrial process
- Repair water leaks



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→ Management of Industrial Effluent

- Housekeeping
- Training
- Identify waste streams
- Splitting of waste streams
- Point source treatment and management
- Optimize industrial effluent plant
- Cleaner production
- Integration of new technology



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→ Benefit of Management of IE

- Optimize production plant or process
- Optimize chemical dosage thus saving costs
- Prevent lost of product
- Reduce industrial effluent discharge costs
- Compliance certification
- Sales promotion

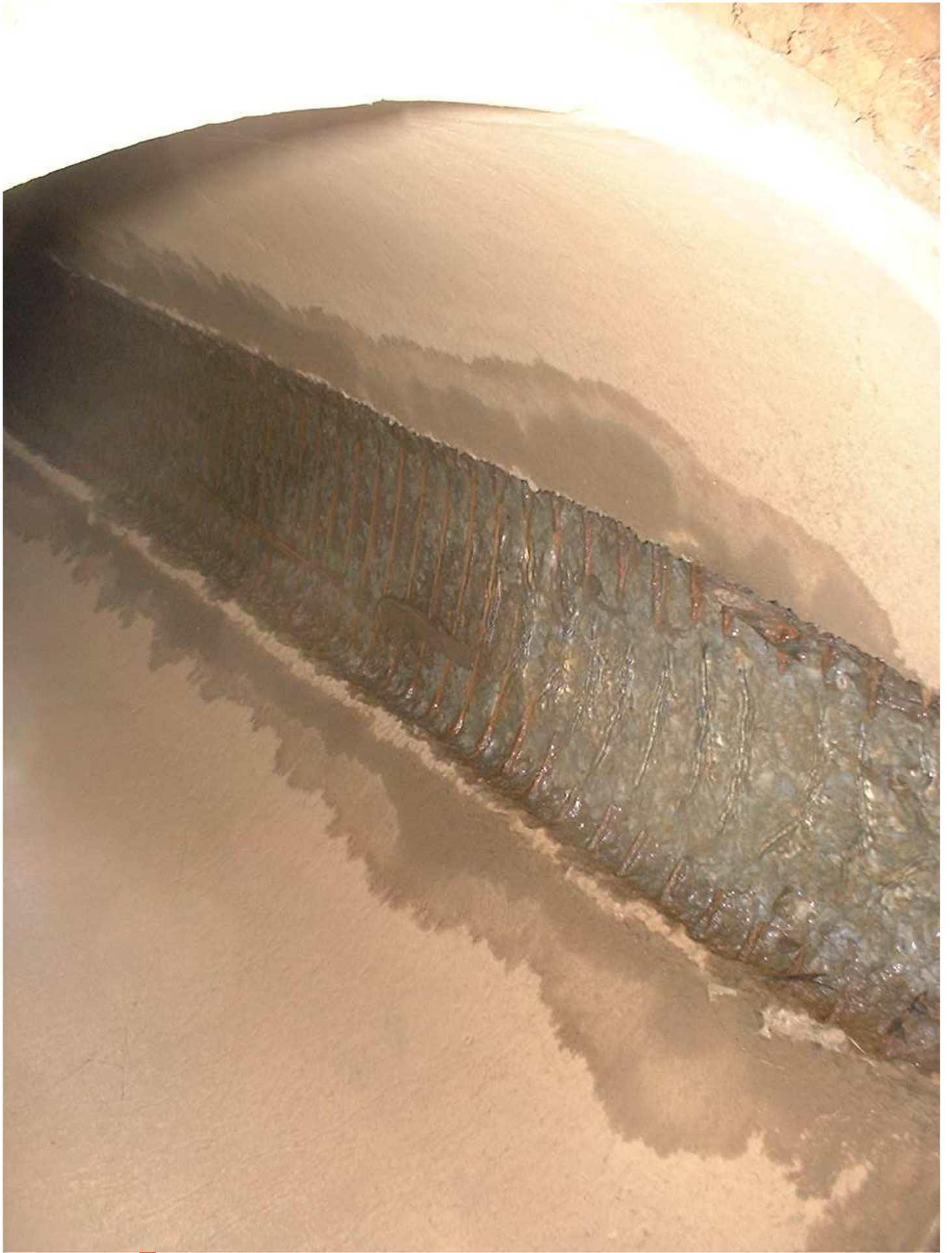


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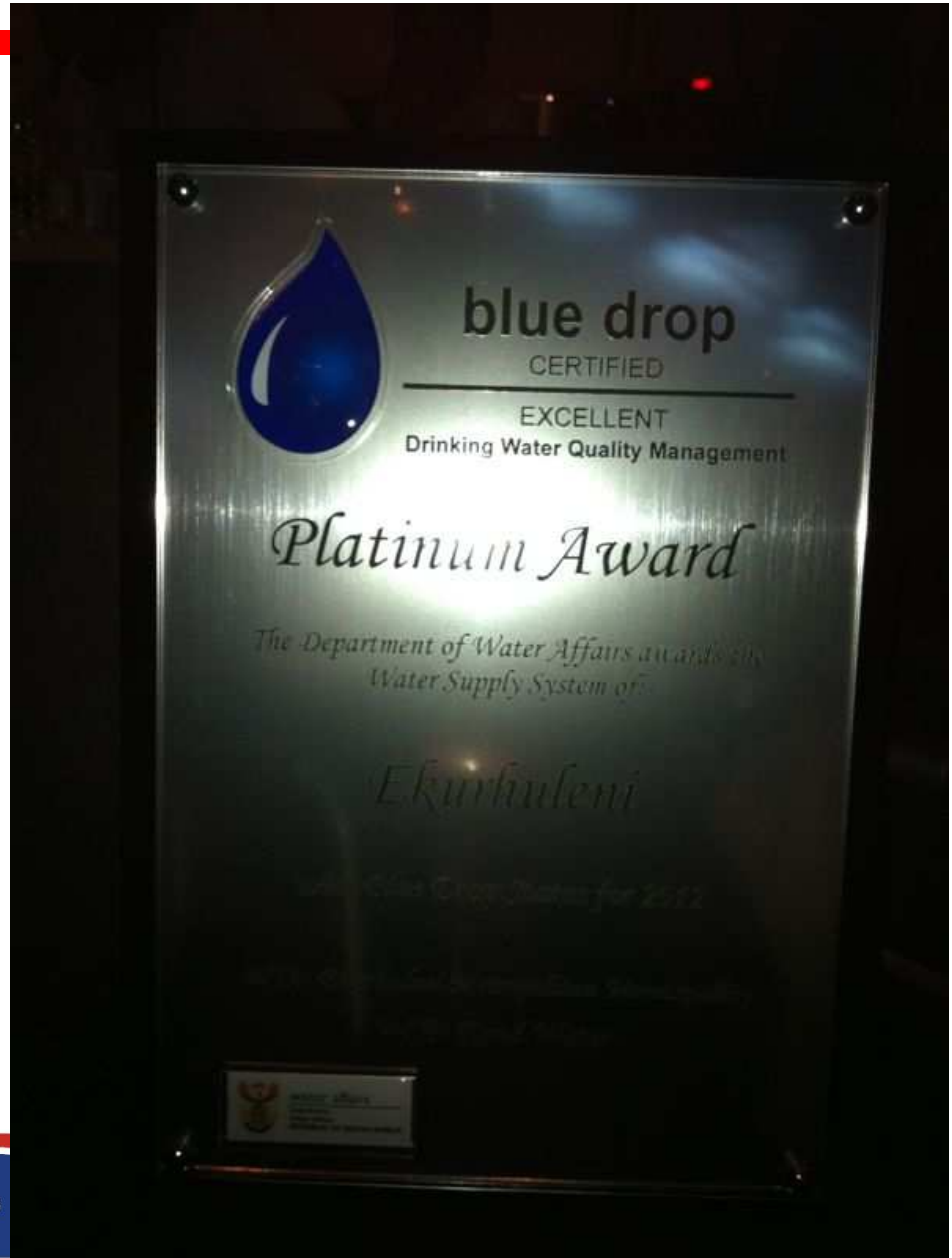


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BLUE DROP AWARD



Necessary content

- Waste Water Bylaw
- Water and Wastewater Services Bylaw



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→ Enforcement Provisions (proposed new bylaw)

- **CHAPTER 13: ENFORCEMENT & APPEALS**
- **Part 1: Offences**
- **127. Offences**
- 127.1. Any person who—
- 127.1.1. obstructs or hinders the municipality in the exercising of the powers or performance of functions or duties under these bylaws;
- 127.1.2. uses, tampers or interferes with municipal equipment, the water supply system, sanitation system, measuring devices or consumption of services rendered;
- 127.1.3. contravenes or fails to comply with a provision of these bylaws other than a provision relating to payment for water services;
- 127.1.4. fails to comply with the terms of a notice served upon him in terms of these bylaws;



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- is guilty of an offence and liable on conviction to a fine not exceeding R20 000 (twenty thousand rand) or in default of payment to imprisonment for a period not exceeding 6 (six) months and in the case of any continued offence, to a further fine, or in default of payment, to imprisonment not exceeding one day for every day during the continuance of such offence, after a written notice has been issued by the municipality and served on the person concerned requiring the discontinuance of such an offence.
- 127.2. Any person committing a breach of the provisions of these bylaws shall be liable to recompense the municipality for any loss or damage suffered or sustained by it in consequence of the breach.



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- **Part 2: Inspections**
- **128. Enforcement**
- 128.1. To enforce these bylaws in the public interest, the municipality may conduct inspections.
- 128.2. If the inspections reveal any form of non-compliance, inspection notices will be issued as set out in bylaw 134.
- 128.3. The municipality may, by written notice, order the owner or occupier to conduct, at his or her cost, periodic expert inspections of the premises in order to identify precautionary measures which would ensure compliance with these bylaws.
- 128.4. If the inspection reveals that the any person has used, tampered or interfered with municipal equipment (including manhole covers), the water supply system, sanitation system, measuring devices (in particular meters installed by the municipality) or consumption of services rendered other than as set out in these bylaws, the owner or occupier shall assume responsibility for such tampering, interference, removal or use and shall be issued with an Inspection Notice immediately requiring cessation of such activity, restoration of any damage or equipment and payment of the Inspection Fee.



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○ **129. Power of Entry and Inspection**

- 129.1. The municipality may enter and inspect any premises for any purpose connected with the implementation or enforcement of these bylaws, at all reasonable times, after having given reasonable written notice to the occupier of the premises of the intention to do so.
- 129.2. Any entry and inspection must be conducted in conformity with the requirements of the Constitution of South Africa, 1996, and any other law and, in particular, with strict regard to decency and order, respect for a person's dignity, freedom and security, and personal privacy.
- 129.3. The municipality may be accompanied by an interpreter and any other person reasonably required to assist the authorised official in conducting the inspection.
- 129.4. A person representing the municipality must, on request, provide his identification.
- 129.5. An official authorised by the municipality shall have the right to enter upon any premises at any reasonable time in order to take samples of or test waste water or industrial effluent or to carry out any inspection or work in connection with a drainage installation which it may deem necessary.





- **130. Provision of Information**
- 130.1. An owner, occupier, consumer or person within the area of supply of the municipality must provide the municipality with accurate information requested by the municipality that is reasonably required by the municipality for the implementation or enforcement of these bylaws.
- 130.2. The municipality may require a commercial or water services intermediary consumer, within one month after the end of a financial year of the municipality, to undertake a water balance audit at the consumer's own cost, the water balance audit must at least involve and report—
 - 130.2.1. the amount of water used during the financial year;
 - 130.2.2. the amount paid for water for the financial year;
 - 130.2.3. the number of people living on the premises;
 - 130.2.4. the number of people permanently working on the premises;
 - 130.2.5. the seasonal variation in demand through monthly consumption figures;
 - 130.2.6. the water pollution monitoring methods;



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- 130.2.7. the current initiatives for the management of the demand for water;
- 130.2.8. the plans to manage their demand for water;
- 130.2.9. a comparison of the report with any report that may have been made during the previous three years;
- 130.2.10. estimates of consumption by various components of use; and
- 130.2.11. a comparison of the above factors with those reported in each of the previous three years, where available.



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- **Part 3: Notices**
- **131. Power to Serve**
- 131.1. The municipality may, by written notice, order an owner, consumer or any other person who fails, by act or omission, to comply with the provisions of these bylaws, or to fulfil any condition imposed in it, to rectify his failure within a period specified in the notice, which period shall take into consideration the cause and rectification requirements.
- 131.2. If a person fails to comply with a written notice served on him by the municipality in terms of these bylaws within the specified period, it may take such action that in its opinion is necessary to ensure compliance, including—
- 131.2.1. undertaking the work necessary itself and recovering the cost of such action or work from that owner, consumer or other person;
- 131.2.2. restricting or discontinuing the provision of services; and
- 131.2.3. instituting legal proceedings.



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- **132. Signing of Notices and Documents**
 - 132.1. A notice or document issued by the municipality in terms of these bylaws and signed by a staff member of the municipality, shall be deemed to have been duly issued and must on its mere production be accepted by a court as prima facie evidence of that fact.





- **133. Service**
- 133.1. Any notice, order or other document that is served on any person in terms of these bylaws must, subject to the provisions of the Criminal Procedure Act, 1977 (Act 51 of 1977), be sent to the address of the consumer recorded by the municipality.
- 133.2. Any legal process is effectively and sufficiently served on the municipality when it is delivered to the municipal manager or a person in attendance at the municipal manager's office.
- 133.3. When any notice or other document must be authorised or served on the owner, occupier of any property, or of any person who holds a right over, or in respect of it, it is sufficient if that person is described in the notice or other document as the owner, occupier or holder of the right over or in respect of, the property, and shall not be necessary to name him.
- 133.4. Where compliance with a notice is required within a specified number of working days, the period that is required shall commence on the date when the notice is served or when it has first been given in any other way contemplated in these bylaws.





- **134. Inspection Notices**
- 134.1. An inspection notice must—
- 134.1.1. give details of any provision of the bylaws that has not been complied with;
- 134.1.2. give the owner, consumer or other person a reasonable opportunity to make representations and state his case, in writing, to the municipality within a specified period, unless the owner, consumer or other person was given such an opportunity before the notice was issued;
- 134.1.3. specify the steps that the owner, consumer or other person must take to rectify the failure to comply;
- 134.1.4. specify the period within which the owner, consumer or other person must take the steps specified to rectify such failure; and
- 134.1.5. indicate that the municipality—
- 134.1.5.1. may undertake any work that is necessary to rectify a failure to comply with a notice and the cost to the municipality of rectification may be recovered from the owner, consumer or other person who has failed to comply with it; and
- 134.1.5.2. may take any other action that it considers necessary for ensuring compliance.



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- 134.2. In the event of an emergency the municipality may, without prior notice to anyone, undertake the work required by subsection 134.1.5 and recover the costs from a person who, but for the emergency, would have to be notified in terms of subsection 134.1.
- 134.3. The costs recoverable by the municipality in terms of subsections 134.1.5 and 134.2 are the full costs associated with that work and includes, but are not restricted to, any exploratory investigation, surveys, plans, specifications, schedules of quantities, supervision, administration charge, the use of tools, the expenditure of labour involved in disturbing or rehabilitation of any part of a street or ground affected by the work and the environmental cost.



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- **135. Final Demand Notice**
- 135.1. If a consumer fails to pay the account on or before the due date, a final demand notice may be hand delivered or sent by registered post to the most recent recorded address of the consumer.
- 135.2. Failure to deliver or to send a final demand notice does not relieve a consumer from paying arrears.
- 135.3. The final demand notice must contain the following statements:
 - 135.3.1. the amount in arrears and any interest payable;
 - 135.3.2. that the consumer refer the issue to a debt counsellor, or follow the dispute resolution procedures;
 - 135.3.3. that the consumer may develop and agree on a plan with the municipality within 10 (ten) working days of the date of the final demand notice to bring the arrear payment up to date; and
 - 135.3.4. that if no such agreement is entered into within the stated period that specified water services may be limited or if appropriate disconnected in accordance with bylaw 13;
 - 135.3.5. that legal action may be instituted against any consumer for the recovery of any amount 40 (forty) days in arrears; and
 - 135.3.6. that the account may be handed over to a debt collector for collection.





- **136. Limitation or Disconnection Notice**
- 136.1. If-
- 136.1.1. no payment is received by the due date;
- 136.1.2. no arrears agreement is entered into;
- 136.1.3. no payment is received in accordance with an arrears agreement; then
- the municipality may after 5 (five) working days after the expiry of the period allowed for payment in terms of the final demand notice –
- 136.1.3.1. limit the provision of water services to a defaulting consumer to basic water services; and
- 136.1.3.2. hand deliver or send, per registered mail, to the last recorded address of consumer, a disconnection notice informing the consumer that the provision of water services will be disconnected within 15 (fifteen) working days of the date of the discontinuation notice.





- 136.2. A disconnection notice must contain –
- 136.2.1. the amount in arrears and any interest payable;
- 136.2.2. a statement that the consumer may conclude an agreement with the municipality for payment of the arrears amount in instalments, within 15 (fifteen) working days of the date of the disconnection notice; and
- 136.2.3. that if no such agreement is entered into within the stated period, the municipality may disconnect the provision of water services with immediate effect, notwithstanding any legal action instituted or in the process of being instituted against the consumer for the recovery of the arrears amount.



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○ **137. Authentication of Documents**

- 137.1. Every order, notice or other document requiring authentication by the municipality shall be sufficiently authenticated, if it is signed by the municipal manager, by a duly authorised officer of the municipality or by the manager of the municipality's authorised agent.
- 137.2. Authority to authorise, as envisaged in subsection 137.1 must be conferred by a resolution of the municipal council, by a written agreement or by a bylaw.



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○ **138. Prima Facie Evidence**

- 138.1. In legal proceedings by or on behalf of the municipality, a certificate reflecting an amount of money as being due and payable to the municipality, shall, if it is made under the hand of the municipal manager, or of a suitably qualified employee of the municipality who is authorised by the municipal manager or the Manager of the municipality's authorised agent, shall upon its mere production constitute prima facie evidence of the indebtedness.



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- **139. Record of municipality binding**
- **140.** In the absence of evidence showing either that the record of the municipality has been incorrectly made or that the meter was at a time of such reading in default, every consumer shall be bound by the record of the municipality, and it shall not be necessary to produce the person who read the meter, or the person who recorded any particular entry, in order to prove such reading or entry. Anyone selling a house under Ekurhuleni Metropolitan jurisdiction must provide the buyer with a certificate from a certified plumber stating that the plumbing in the property is sound and in good working condition.. Without the compliance certificate the sales process will not be approved by Council. The inspection inter alia by the plumber will include checking for any patent and latent leaks and ensure that there is no discharge of wastewater into storm water and no discharge of rain water into the sewer system



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- **Part 4: Appeals**
- **141. Appeals Against Decisions of the Municipality**
- 141.1. A consumer may appeal in writing against a decision of, or a notice issued by, the municipality in terms of these bylaws.
- 141.2. Where the appeal is in relation to the payment of arrears, it may be subject to the National Credit Act.
- 141.3. An appeal in terms of subsection (1) must be made in writing and lodged with the municipal manager of the municipality within 15 (fifteen) working days after a consumer became aware of the decision or notice and must—
- 141.3.1. set out the reasons for the appeal; and
- 141.3.2. be accompanied by any security determined by the municipality for the testing of a measuring device, if it has been tested.



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- 141.4. An appeal must be decided by the municipality within 21 (fourteen) days after an appeal was lodged and the consumer must be informed of the outcome in writing, as soon as possible thereafter.
- 141.5. The consumer remains liable for all other amounts falling due and payable during the adjudication of the appeal.
- 141.6. The decision of the municipality is final.
- 141.7. The municipality may condone the late lodging of appeals or other procedural irregularities.



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Thank You



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