



RAND WATER

Tshwane Water Quality Report
1 Month

23 October 2020 to 20 November 2020

Date generated: 04 December 2020

| | | | | | | | Descriptive Statistics | | |
|--|--------------------------------|----------------|-----------------------------------|---------------|---|---|------------------------|--------------------|-------------------------|
| Determinands | Measurement Units | Risks | SANS 241:2015 standard limits (1) | No of results | Required compliances to SANS 241:2015 spec(%) | Achieved compliances to SANS 241:2015 spec(%) | Mean | Standard Deviation | Mean + 3 Std deviations |
| Microbiological determinands | | | | | | | | | |
| <i>E. coli</i> | (mpn per 100 mL) | Acute health | Non-detect | 84 | 99.0% | 100% | 0 | 0.00 | 0 |
| Total Coliforms | (mpn per 100 mL) | Operational | ≤ 10 | 84 | 95.0% | 100% | 0 | 1.09 | 3 |
| Heterotrophic Plate Count | (cfu per 1 mL) | Operational | ≤ 1000 | 84 | 95.0% | 100% | 1 | 5.33 | 17 |
| <i>Cryptosporidium spp</i> (2) | (org / 10 Litre) | Acute health | Non-detect | 16 | 99.0% | 100% | 0 | 0.00 | 0 |
| <i>Giardia spp</i> (2) | (org / 10 Litre) | Acute health | Non-detect | 16 | 99.0% | 100% | 0 | 0.00 | 0 |
| Somatic Coliphages (2) | (count per 10 mL) | Operational | Non-detect | 72 | 95.0% | 100% | 0 | 0.00 | 0 |
| Physical and Aesthetic determinands | | | | | | | | | |
| Colour | (mg / L as Pt-Co) | Aesthetic | ≤ 15 | 12 | 95.0% | 100% | 6.33 | 0.98 | 9.29 |
| Conductivity | (mS / m) | Aesthetic | ≤ 170 | 84 | 95.0% | 100% | 21.51 | 2.99 | 30.48 |
| Total Dissolved Solids | (mg / L) | Aesthetic | ≤ 1200 | 12 | 95.0% | 100% | 155.83 | 24.48 | 229.27 |
| Turbidity | (NTU) | Operational | ≤ 1 | 84 | 95.0% | 100% | 0.26 | 0.04 | 0.39 |
| Turbidity | (NTU) | Aesthetic | ≤ 5 | 84 | 95.0% | 100% | 0.26 | 0.04 | 0.39 |
| pH | (pH units) | Operational | ≥ 5 to ≤ 9.7 | 83 | 95.0% | 100% | 8.08 | 0.12 | 8.45 |
| Chemical Properties: Macro determinands | | | | | | | | | |
| Ammonia | (mg / L as N) | Aesthetic | ≤ 1.5 | 83 | 95.0% | 100% | 0.34 | 0.15 | 0.78 |
| Chloride | (mg / L as Cl) | Aesthetic | ≤ 300 | 12 | 95.0% | 100% | 10.05 | 0.87 | 12.67 |
| Free chlorine | (mg / L as Cl ₂) | Chronic health | ≤ 5 | 84 | 97.0% | 100% | 0.07 | 0.02 | 0.12 |
| Monochloramine | (mg / L as Cl ₂) | Chronic health | ≤ 4.1 | 84 | 97.0% | 100% | 1.39 | 0.24 | 2.12 |
| Fluoride | (mg / L as F) | Chronic health | ≤ 1.5 | 12 | 97.0% | 100% | 0.22 | 0.04 | 0.33 |
| Nitrate | (mg / L as N) | Acute health | ≤ 11 | 83 | 99.0% | 100% | 0.55 | 0.07 | 0.75 |
| Nitrite | (mg / L as N) | Acute health | ≤ 0.9 | 83 | 99.0% | 100% | 0.26 | 0.27 | 1.07 |
| Combined nitrate plus nitrite (3) | (mg / L as N) | Acute health | ≤ 1 | 83 | 99.0% | 100% | 0.33 | 0.30 | 1.23 |
| Residual disinfectant (4) | (mg / L as Cl ₂) | Operational | ≥ 0.1 | 84 | 95.0% | 100% | 1.45 | 0.25 | 2.19 |
| Sodium | (mg / L as Na) | Aesthetic | ≤ 200 | 14 | 95.0% | 100% | 7.14 | 2.27 | 13.93 |
| Sulphate | (mg / L as SO ₄) | Aesthetic | ≤ 250 | 12 | 95.0% | 100% | 14.42 | 0.79 | 16.80 |
| Sulphate | (mg / L as SO ₄) | Acute health | ≤ 500 | 12 | 99.0% | 100% | 14.42 | 0.79 | 16.80 |
| Zinc | (mg / L as Zn) | Aesthetic | ≤ 5 | 14 | 95.0% | 100% | 0.01 | 0.01 | 0.04 |
| Chemical Properties: Micro determinands | | | | | | | | | |
| Aluminium | (µg / L as Al) | Operational | ≤ 300 | 14 | 95.0% | 100% | 42.57 | 17.34 | 94.58 |
| Antimony | (µg / L as Sb) | Chronic health | ≤ 20 | 12 | 97.0% | 100% | 0.67 | 0.23 | 1.36 |
| Arsenic | (µg / L as As) | Chronic health | ≤ 10 | 14 | 97.0% | 100% | 2.86 | 3.38 | 12.98 |
| Barium | (µg / L as Ba) | Chronic health | ≤ 700 | 14 | 97.0% | 100% | 34.71 | 3.17 | 44.23 |
| Boron | (µg / L as B) | Chronic health | ≤ 2400 | 14 | 97.0% | 100% | 3.89 | 3.81 | 15.33 |
| Cadmium | (µg / L as Cd) | Chronic health | ≤ 3 | 14 | 97.0% | 100% | 1.14 | 0.23 | 1.85 |
| Chromium (Total) | (µg / L as Cr) | Chronic health | ≤ 50 | 14 | 97.0% | 100% | 1.79 | 2.11 | 8.11 |
| Copper | (µg / L as Cu) | Chronic health | ≤ 2000 | 14 | 97.0% | 100% | 4.92 | 2.57 | 12.63 |
| Cyanide (Recoverable) | (µg / L as CN) | Acute health | ≤ 200 | 12 | 99.0% | 100% | 5.00 | 0.00 | 5.00 |
| Iron | (µg / L as Fe) | Chronic health | ≤ 2000 | 13 | 97.0% | 100% | 75.62 | 39.11 | 192.95 |
| Iron | (µg / L as Fe) | Aesthetic | ≤ 300 | 13 | 95.0% | 100% | 75.62 | 39.11 | 192.95 |
| Lead | (µg / L as Pb) | Chronic health | ≤ 10 | 14 | 97.0% | 100% | 3.71 | 2.81 | 12.15 |
| Manganese | (µg / L as Mn) | Chronic health | ≤ 400 | 13 | 97.0% | 100% | 5.70 | 10.02 | 35.77 |
| Manganese | (µg / L as Mn) | Aesthetic | ≤ 100 | 13 | 95.0% | 100% | 5.70 | 10.02 | 35.77 |
| Mercury | (µg / L as Hg) | Chronic health | ≤ 6 | 14 | 97.0% | 100% | 1.00 | 0.33 | 1.98 |
| Nickel | (µg / L as Ni) | Chronic health | ≤ 70 | 14 | 97.0% | 100% | 3.57 | 0.94 | 6.38 |
| Selenium | (µg / L as Se) | Chronic health | ≤ 40 | 14 | 97.0% | 100% | 5.14 | 1.88 | 10.77 |
| Uranium | (µg / L as U) | Chronic health | ≤ 30 | 12 | 97.0% | 100% | 0.57 | 0.23 | 1.26 |
| Organic determinands | | | | | | | | | |
| Total Organic Carbon | (mg / L) | Chronic health | ≤ 10 | 12 | 97.0% | 100% | 2.99 | 0.25 | 3.75 |
| Phenols as C ₆ H ₅ OH | (µg / L) | Aesthetic | ≤ 10 | 8 | 95.0% | 100% | 3.00 | 0.00 | 3.00 |
| Chloroform - CHCl ₃ | (µg / L) | Chronic health | ≤ 300 | 12 | 97.0% | 100% | 32.33 | 1.83 | 37.81 |
| Bromoform - CHBr ₃ | (µg / L) | Chronic health | ≤ 100 | 12 | 97.0% | 100% | 10.00 | 0.00 | 10.00 |
| Dibromochloromethane - CHBr ₂ Cl | (µg / L) | Chronic health | ≤ 100 | 12 | 97.0% | 100% | 10.00 | 0.00 | 10.00 |
| Bromodichloromethane - CHBrCl ₂ | (µg / L) | Chronic health | ≤ 60 | 12 | 97.0% | 100% | 14.17 | 0.94 | 16.98 |
| Combined trihalomethanes (5) | (µg / L) | Chronic health | ≤ 1 | 12 | 97.0% | 100% | 0.38 | 0.02 | 0.44 |
| Total Microcystin (2) | (µg / L) | Chronic health | ≤ 1 | 7 | 97.0% | 100% | 0.31 | 0.00 | 0.31 |
| For monitoring/reporting purposes only | | | | | | | | | |
| Calcium (6) | (mg / L as Ca) | Aesthetic | ≤ 150 | 14 | not applicable | 100% | 18.64 | 1.39 | 22.82 |
| Hardness (7) | (mg / L as CaCO ₃) | Operational | ≥ 20 to ≤ 200 | 13 | not applicable | 100% | 70.15 | 5.38 | 86.30 |
| Magnesium (6) | (mg / L as Mg) | Aesthetic | ≤ 70 | 14 | not applicable | 100% | 6.03 | 0.42 | 7.30 |
| Potassium (6) | (mg / L as K) | Aesthetic | ≤ 50 | 14 | not applicable | 100% | 2.75 | 0.23 | 3.43 |
| Rand Water Risk Determinands (RWRD) (6) | | | | | | | | | |
| Odour | TON | RWRD | ≤ 2 | 24 | not applicable | 100% | 1.00 | 0.00 | 1.00 |
| Taste | FTN | RWRD | ≤ 2 | 24 | not applicable | 100% | 1.00 | 0.00 | 1.00 |

| Risks | Required compliances to SANS 241: 2015 standard | Overall Compliances - SANS 241: 2015 standard |
|------------------------------|---|---|
| Acute health microbiological | 99.0% | 100% |
| Acute health chemical | 99.0% | 100% |
| Chronic health | 97.0% | 100% |
| Aesthetic | 95.0% | 100% |
| Operational | 95.0% | 100% |

- Notes
 (1) Specification SANS 241 date of effect : 1 July 2016
 (2) Measured at water treatment works exit points
 (3) (NO₂/0.9 + NO₃/11)
 (4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine
 (5) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)
 (6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006
 (7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec
 **** Determinands with no data are due to instrument breakdown****