

**Merafong Municipality Water Quality Report - 12 Month**

23 January 2017 to 22 January 2018 Date generated: 01 February 2018

| Determinand                                       | Measurement units              | Risk           | Required compliance to SANS 241: 2015 standard (%) | SANS 241: 2015 standard limits (1)  | No of results | Achieved Compliance to SANS 241: 2015 Spec(%) | Descriptive statistics |                    |                              |
|---|--------------------------------|----------------|--|-------------------------------------|---------------|---|------------------------|--------------------|------------------------------|
|   |                                |                |  |                                     |               |   | Mean                   | Standard Deviation | Mean + 3 standard deviations |
| <b>Microbiological determinands</b>               |                                |                |  |                                     |               |   |                        |                    |                              |
| <i>E. coli</i>                                    | (mpn per 100 mL)               | Acute health   | 99.0%  | 0                                   | 601           | 100.0%  | 0                      | 0.00               | 0                            |
| Total Coliforms                                   | (mpn per 100 mL)               | Operational    | 95.0%  | 10                                  | 601           | 100.0%  | 0                      | 0.07               | 0                            |
| Heterotrophic Plate Count                         | (cfu per 1 mL)                 | Operational    | 95.0%  | ≤1000                               | 601           | 100.0%  | 4                      | 21.16              | 59                           |
| <i>Cryptosporidium spp</i> (5)                    | (org / 10 Litre)               | Acute health   | 99.0%  | 0                                   | 179           | 100.0%  | 0                      | 0.00               | 0                            |
| <i>Giardia spp</i> (5)                            | (org / 10 Litre)               | Acute health   | 99.0%  | 0                                   | 179           | 100.0%  | 0                      | 0.00               | 0                            |
| Somatic Coliphages (5)                            | (count per 10 mL)              | Operational    | 95.0%  | 0                                   | 775           | 100.0%  | 0                      | 0.00               | 0                            |
| <b>Physical and Aesthetic determinands</b>        |                                |                |  |                                     |               |   |                        |                    |                              |
| Colour  | (mg / L as Pt-Co)              | Aesthetic      | 95.0%  | ≤15                                 | 59            | 100.0%  | 5.07                   | 0.31               | 6.42                         |
| Conductivity                                      | (mS / m)                       | Aesthetic      | 95.0%  | ≤170                                | 601           | 100.0%  | 18.79                  | 1.40               | 22.00                        |
| Total Dissolved Solids                            | (mg / L)                       | Aesthetic      | 95.0%  | ≤1200                               | 56            | 100.0%  | 133.13                 | 9.42               | 154.50                       |
| Turbidity   | (NTU)                          | Operational    | 95.0%  | ≤1                                  | 600           | 100.0%  | 0.29                   | 0.10               | 0.48                         |
| Turbidity   | (NTU)                          | Aesthetic      | 95.0%  | ≤5                                  | 600           | 100.0%  | 0.29                   | 0.10               | 0.48                         |
| pH  | (pH units)                     | Operational    | 95.0%  | ≥ 5 to ≤ 9.7                        | 601           | 100.0%  | 7.85                   | 0.16               | 8.27                         |
| <b>Chemical Properties</b>                        |                                |                |  |                                     |               |   |                        |                    |                              |
| <b>Macro determinands</b>                         |                                |                |  |                                     |               |   |                        |                    |                              |
| Ammonia   | (mg / L as N)                  | Aesthetic      | 95.0%  | ≤1.5                                | 628           | 100.0%  | 0.29                   | 0.13               | 0.50                         |
| Chloride  | (mg / L as Cl)                 | Aesthetic      | 95.0%  | ≤300                                | 60            | 100.0%  | 10.87                  | 1.14               | 14.41                        |
| Free chlorine (2)                                 | (mg / L as Cl <sub>2</sub> )   | Chronic health | 97.0%  | ≤5                                  | 602           | 100.0%  | 0.11                   | 0.17               | 0.81                         |
| Monochloramine (3)                                | (mg / L as Cl <sub>2</sub> )   | Chronic health | 97.0%  | ≤4.1                                | 602           | 100.0%  | 1.07                   | 0.53               | 1.88                         |
| Fluoride  | (mg / L as F)                  | Chronic health | 97.0%  | ≤1.5                                | 60            | 100.0%  | 0.18                   | 0.02               | 0.24                         |
| Nitrate   | (mg / L as N)                  | Acute health   | 99.0%  | ≤11                                 | 623           | 100.0%  | 0.54                   | 0.14               | 1.08                         |
| Nitrite   | (mg / L as N)                  | Acute health   | 99.0%  | ≤0.9                                | 625           | 100.0%  | 0.07                   | 0.10               | 0.45                         |
| Combined nitrate plus nitrite (7)                 | (mg / L as N)                  | Acute health   | 99.0%  | ≤1                                  | 622           | 100.0%  | 0.13                   | 0.11               | 0.57                         |
| Residual disinfectant (4)                         | (mg / L)                       | Operational    | 95.0%  | ≥0.1 Sum of Free and Monochloramine | 602           | 94.4%   | 1.18                   | 0.53               | 1.96                         |
| Sodium  | (mg / L as Na)                 | Aesthetic      | 95.0%  | ≤200                                | 59            | 100.0%  | 8.22                   | 0.67               | 9.50                         |
| Sulphate  | (mg / L as SO <sub>4</sub> )   | Aesthetic      | 95.0%  | ≤250                                | 60            | 100.0%  | 12.92                  | 1.00               | 15.00                        |
| Sulphate  | (mg / L as SO <sub>4</sub> )   | Acute health   | 99.0%  | ≤500                                | 60            | 100.0%  | 12.92                  | 1.00               | 15.00                        |
| Zinc  | (mg / L as Zn)                 | Aesthetic      | 95.0%  | ≤5                                  | 59            | 100.0%  | 0.02                   | 0.01               | 0.05                         |
| <b>Micro determinands</b>                         |                                |                |  |                                     |               |   |                        |                    |                              |
| Aluminium   | (µg / L as Al)                 | Operational    | 95.0%  | ≤300                                | 59            | 100.0%  | 32.02                  | 10.61              | 72.46                        |
| Antimony  | (µg / L as Sb)                 | Chronic health | 97.0%  | ≤20                                 | 52            | 100.0%  | 0.50                   | 0.00               | 0.50                         |
| Arsenic   | (µg / L as As)                 | Chronic health | 97.0%  | ≤10                                 | 59            | 100.0%  | 0.80                   | 0.63               | 2.42                         |
| Barium  | (µg / L as Ba)                 | Chronic health | 97.0%  | ≤700                                | 59            | 100.0%  | 32.68                  | 7.51               | 53.42                        |
| Boron   | (µg / L as B)                  | Chronic health | 97.0%  | ≤2400                               | 59            | 100.0%  | 25.00                  | 0.00               | 25.00                        |
| Cadmium   | (µg / L as Cd)                 | Chronic health | 97.0%  | ≤3                                  | 59            | 100.0%  | 2.50                   | 0.00               | 2.50                         |
| Chromium (Total)                                  | (µg / L as Cr)                 | Chronic health | 97.0%  | ≤50                                 | 59            | 100.0%  | 15.00                  | 0.00               | 15.00                        |
| Copper  | (µg / L as Cu)                 | Chronic health | 97.0%  | ≤2000                               | 59            | 100.0%  | 10.66                  | 1.91               | 17.84                        |
| Cyanide (Recoverable)                             | (µg / L as CN)                 | Acute health   | 99.0%  | ≤200                                | 53            | 100.0%  | 5.44                   | 2.67               | 16.41                        |
| Iron  | (µg / L as Fe)                 | Chronic health | 97.0%  | ≤2000                               | 59            | 100.0%  | 26.96                  | 22.21              | 112.74                       |
| Iron  | (µg / L as Fe)                 | Aesthetic      | 95.0%  | ≤300                                | 59            | 100.0%  | 26.96                  | 22.21              | 112.74                       |
| Lead  | (µg / L as Pb)                 | Chronic health | 97.0%  | ≤10                                 | 59            | 100.0%  | 0.50                   | 1.16               | 6.39                         |
| Manganese   | (µg / L as Mn)                 | Chronic health | 97.0%  | ≤400                                | 59            | 100.0%  | 10.05                  | 0.29               | 11.42                        |
| Manganese   | (µg / L as Mn)                 | Aesthetic      | 95.0%  | ≤100                                | 59            | 100.0%  | 10.05                  | 0.29               | 11.42                        |
| Mercury   | (µg / L as Hg)                 | Chronic health | 97.0%  | ≤6                                  | 53            | 100.0%  | 0.80                   | 0.00               | 0.80                         |
| Nickel  | (µg / L as Ni)                 | Chronic health | 97.0%  | ≤70                                 | 59            | 100.0%  | 10.00                  | 0.00               | 10.00                        |
| Selenium  | (µg / L as Se)                 | Chronic health | 97.0%  | ≤40                                 | 59            | 100.0%  | 0.88                   | 0.93               | 4.87                         |
| Uranium   | (µg / L as U)                  | Chronic health | 97.0%  | ≤30                                 | 52            | 100.0%  | 0.22                   | 0.10               | 0.57                         |
| <b>Organic determinands</b>                       |                                |                |  |                                     |               |   |                        |                    |                              |
| Total Organic Carbon                              | (mg / L)                       | Chronic health | 97.0%  | ≤10                                 | 59            | 100.0%  | 3.85                   | 0.73               | 6.03                         |
| Phenols as C <sub>6</sub> H <sub>5</sub> OH       | (µg / L)                       | Aesthetic      | 95.0%  | ≤10                                 | 58            | 100.0%  | 5.00                   | 0.00               | 5.00                         |
| Chloroform - CHCl <sub>3</sub>                    | (µg / L)                       | Chronic health | 97.0%  | ≤300                                | 66            | 100.0%  | 49.05                  | 6.93               | 64.00                        |
| Bromoform - CHBr <sub>3</sub>                     | (µg / L)                       | Chronic health | 97.0%  | ≤100                                | 66            | 100.0%  | 0.50                   | 0.00               | 0.50                         |
| Dibromochloromethane - CHBr <sub>2</sub> Cl       | (µg / L)                       | Chronic health | 97.0%  | ≤100                                | 66            | 100.0%  | 1.25                   | 0.72               | 3.04                         |
| Bromodichloromethane - CHBrCl <sub>2</sub>        | (µg / L)                       | Chronic health | 97.0%  | ≤60                                 | 66            | 100.0%  | 13.92                  | 1.43               | 17.00                        |
| Combined trihalomethanes (8)                      | (µg / L)                       | Chronic health | 97.0%  | ≤1                                  | 66            | 100.0%  | 0.41                   | 0.05               | 0.51                         |
| Total Microcystin (5)                             | (µg / L)                       | Chronic health | 97.0%  | ≤1                                  | 179           | 100.0%  | 0.33                   | 0.02               | 0.36                         |
| <b>For monitoring/reporting purposes only (6)</b> |                                |                |  |                                     |               |   |                        |                    |                              |
| Calcium   | (mg / L as Ca)                 | Aesthetic      | not applicable                                     | ≤150                                | 59            | 100.0%  | 17.53                  | 2.71               | 23                           |
| Hardness  | (mg / L as CaCO <sub>3</sub> ) | Operational    | not applicable                                     | ≥ 20 to ≤ 200                       | 59            | 100.0%  | 62.69                  | 7.28               | 78.00                        |
| Magnesium   | (mg / L as Mg)                 | Aesthetic      | not applicable                                     | ≤70                                 | 59            | 100.0%  | 5.47                   | 0.38               | 6.20                         |
| Potassium   | (mg / L as K)                  | Aesthetic      | not applicable                                     | ≤50                                 | 59            | 100.0%  | 3.56                   | 0.45               | 4.17                         |
| <b>Rand Water Risk Determinands (RWRD)</b>        |                                |                |  |                                     |               |   |                        |                    |                              |
| Odour   | TON                            | RWRD           | 95.0%  | ≤2                                  | 223           | 100.0%  | 1.00                   | 0.00               | 1.00                         |
| Taste   | FTN                            | RWRD           | 95.0%  | ≤2                                  | 223           | 100.0%  | 1.00                   | 0.00               | 1.00                         |

| Risk                         | Required compliance to SANS 241: 2015 standard | Overall Compliance-SANS 241 |
|------------------------------|--|-----------------------------|
| Acute health microbiological | 99.00%   | 100.00%                     |
| Acute health chemical        | 99.00%   | 100.00%                     |
| Chronic health               | 97.00%   | 100.00%                     |
| Aesthetic                    | 95.00%   | 100.00%                     |
| Operational                  | 95.00%   | 99.11%                      |

- Notes:**
- (1) Specification date of effect : 1 July 2016
  - (2) Free chlorine : Results from chloraminated system
  - (3) Monochloramine : Results are from the chloraminated systems
  - (4) Residual disinfectant : Results from chloraminated system
  - (5) Measured at water treatment works exit points
  - (6) Customer request: Results not included in the risk indices compliance calculations
  - (7) (NO<sub>2</sub>/0.9 + NO<sub>3</sub>/11)
  - (8) (CHCl<sub>3</sub>/300 + CHBr<sub>3</sub>/100 + CHBr<sub>2</sub>Cl/100 + CHBrCl<sub>2</sub>/60)