

b.n. kirk (natal) cc

Reg.No. CK 1994/015428/23

Water, Sewage & Industrial Effluent Testing Laboratory

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T0535

CERTIFICATE OF ANALYSIS - BN Kirk (Natal)cc

| | | | |
|---|---------------------------------|----------------|-------------|
| CLIENT: | Illembé District Municipality | JOB NO: | S2 - BACTOS |
| WORKS: | VARIOUS RETICULATION SITES | | |
| ADDRESS: | P O Box 1788 Kwadukuza 4450 | | |
| ATTENTION: | <i>Mr H N Maphumulo</i> | REPORT DATE: | 18 May 2014 |
| eMail: | Group 2 Details | DATE ANALYSED: | 14 May 2014 |
| In accordance with the visit schedule and procedure QP21. | | DATE RECEIVED: | 08 May 2014 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|--|--|--|--|--|--|---------------|--|--|--|--|--|--|--|--|--|------------|--|--|--|--|--|--|--|--|--|
| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lot No 16 - Elevated Tank | | | | | | | | | | STB 9 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | DATE ANALYSED | | | | | | | | | | 25-03-2014 | | | | | | | | | |

| Determinand | Test Method No | SANS 241-1:2011 operational, chemical and Microbiological determinands | | | | | Physical, aesthetic, 2014 | | | | | | | | | | | | |
|-------------|----------------|---|------|---------------------|-----------------------|-----------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 13-01 | 15-01 | 27-01 | 10-02 | 26-02 | 10-03 | 20-03 | 24-03 | 07-04 | 22-04 | | | |

Physical and aesthetic determinands

| | | | | | | | | | | | | | | | | | | | |
|----------------------------|---------|----------------|------------|--------------|------|-------|------|----------|------|------|-------------|------|----------|------|------|------|--|--|--|
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 8.0 | Resample | | 7.5 | not sampled | 7.5 | resample | 7.5 | 7.6 | 7.7 | | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 75% | 75% | 3.0 | | | 8.0 | | 19 | | | 10 | | | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 17% | 13% | 0.80 | | | 3.2 | | 5.6 | | 8.2 | 4.9 | 1.4 | | | |
| | | Aesthetic | NTU | ≤ 5 | 83% | 13% | 0.80 | | | 3.2 | | 5.6 | | 8.2 | 4.9 | 1.40 | | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 20 | | | 20 | | 13 | | | 18 | | | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 1.41 | | 0.70 | 1.10 | | 1.69 | | 2.16 | 1.53 | 1.24 | | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 88% | 1.33 | | 0.70 | 1.01 | | 1.58 | | 2.00 | 1.40 | 1.12 | | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 7800% | 0.08 | | 0.00 | 0.09 | | 0.11 | | 0.16 | 0.13 | 0.12 | | | |

Chemical determinands - micro-determinands

| | | | | | | | | | | | | | | | | | | | |
|-----------------|---------|----------------|------|-------|------|------|------|--|--|------|--|------|--|------|------|------|--|--|--|
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.40 | | | 0.60 | | 0.36 | | | 0.23 | | | | |
| | | Aesthetic | mg/L | ≤ 0.3 | 25% | 25% | 0.40 | | | 0.60 | | 0.36 | | | 0.23 | | | | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 100% | 75% | 0.10 | | | 0.08 | | 0.27 | | 0.15 | 0.17 | 0.08 | | | |

MICROBIOLOGICAL RESULTS

| | | | | | | | | | | | | | | | | | | | |
|--|---------|------------------|-----------------|--------------|------|-----|---|--|---|---|--|---|--|---|---|---|--|--|--|
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 2 | 0 | 0 | | | |
| Total coliforms ^e | P09/102 | Operational | Count per 100ml | < 10 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | | | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | | | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | | | |

| No : 53 Glenhills Drive - Kearsney Res | | STB 8 | | | | | | | | | DATE ANALYSED | | | | 14-May-14 | | | | |
|---|----------------|---|-----------------|------------------------|--------------------------|--------------------------|--------------|----------|-------|-------|---------------|-------|----------|-------|-----------|-------|-------|--|--|
| Determinand | Test Method No | SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands | | | | | 2014 | | | | | | | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 16-01 | 15-01 | 30-01 | 12-02 | 26-02 | 12-03 | 20-03 | 24-03 | 07-04 | 23-04 | 08-05 | | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 70% | 7.9 | Resample | | 8.0 | not sampled | 7.6 | resample | 7.7 | 7.9 | 7.9 | 7.9 | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 80% | 100% | 1.2 | | | 10 | | 5.2 | | | 9.3 | | 19 | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 14% | 70% | 1.0 | | | 1.7 | | 1.3 | | 2.6 | 4.8 | 2.2 | 3.3 | | |
| | | Aesthetic | NTU | ≤ 5 | 100% | 70% | 1.0 | | | 1.7 | | 1.3 | | 2.6 | 4.8 | 2.20 | 3.30 | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 19 | | | 21 | | 15 | | | 18 | | 23 | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 0.99 | | 0.92 | 0.56 | | 0.87 | | 1.29 | 0.95 | 1.19 | 1.77 | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 70% | 0.71 | | 0.70 | 0.46 | | 0.66 | | 1.14 | 0.91 | 0.93 | 1.56 | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 70% | 0.28 | | 0.22 | 0.10 | | 0.21 | | 0.15 | 0.04 | 0.26 | 0.21 | | |
| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | | |
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.13 | | | 0.16 | | 0.32 | | | 0.22 | | 0.32 | | |
| | | Aesthetic | mg/L | ≤ 0.3 | 80% | 100% | 0.13 | | | 0.16 | | 0.32 | | | 0.22 | | 0.32 | | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 100% | 70% | 0.3 | | | 0.16 | | 0.13 | | 0.07 | 0.11 | 0.23 | 0.29 | | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 70% | 0 | | 0 | 3 | | 0 | | 0 | 0 | 2 | 0 | | |
| Total coliforms ^c | P09/102 | Operational | Count per 100ml | < 10 | 100% | 70% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 70% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 70% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| I Cobbleway - Rocky Park | | STB 7 | | | | | | | | | DATE ANALYSED | | | | 14-May-14 | | | | |
| Determinand | Test Method No | SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands | | | | | 2014 | | | | | | | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 16-01 | 15-01 | 30-01 | 12-02 | 26-02 | 12-03 | 20-03 | 24-03 | 07-04 | 23-04 | 08-05 | | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 7.7 | Resample | | 8.0 | not sampled | 7.6 | resample | 7.7 | 7.8 | 7.8 | 7.8 | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 80% | 100% | 1.3 | | | 2.2 | | 10.0 | | | 7.4 | | 29 | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 0% | 0% | 1.4 | | | 1.4 | | 1.7 | | 2.2 | 4.8 | 1.9 | 3.8 | | |
| | | Aesthetic | NTU | ≤ 5 | 100% | 75% | 1.4 | | | 1.4 | | 1.7 | | 2.2 | 4.8 | 1.9 | 3.8 | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 71% | 100% | 17 | | | 22 | | 15 | | | 18 | | 23 | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 1.26 | | 0.95 | 0.71 | | 1.13 | | 1.35 | 1.17 | 1.45 | 1.85 | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 88% | 1.07 | | 0.73 | 0.62 | | 0.93 | | 1.26 | 0.94 | 1.06 | 1.44 | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 88% | 0.19 | | 0.22 | 0.09 | | 0.20 | | 0.09 | 0.23 | 0.39 | 0.41 | | |

| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | |
|--|----------------|---|-----------------|------------------------|--------------------------|--------------------------|--|----------|-------|-------|-------------|-----------|----------|-------|-------|-------|-------|--|
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.05 | | | 0.80 | | 0.11 | | | 0.23 | | 0.37 | |
| | | Aesthetic | mg/L | ≤ 0.3 | 60% | 100% | 0.05 | | | 0.80 | | 0.11 | | | 0.23 | | 0.37 | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 86% | 75% | 0.2 | | | 0.19 | | 0.10 | | 0.11 | 0.12 | 0.16 | 0.34 | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| Total coliforms ^e | P09/102 | Operational | Count per 100ml | < 10 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| Hospital Ambulance Services | | STB 6 | | | | | DATE ANALYSED | | | | | 14-May-14 | | | | | | |
| Determinand | Test Method No | SANS 241-1:2011 operational, chemical and Microbiological determinands | | | | | Physical, aesthetic, operational, chemical and Microbiological determinands | | | | | 2014 | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | |
| | | | | | | | 16-01 | 15-01 | 30-01 | 12-02 | 26-02 | 12-03 | 20-03 | 24-03 | 07-04 | 23-04 | 08-05 | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 7.6 | Resample | | 7.8 | not sampled | 7.6 | resample | 7.4 | 7.7 | 7.7 | 7.7 | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 100% | 100% | 5.2 | | | 4.0 | | 4.1 | | | 5.8 | | 6.3 | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 0% | 0% | 1.5 | | | 1.5 | | 1.4 | | 1.7 | 4.1 | 1.4 | 3.8 | |
| | | Aesthetic | NTU | ≤ 5 | 100% | 75% | 1.5 | | | 1.5 | | 1.4 | | 1.7 | 4.1 | 1.4 | 3.8 | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 18 | | | 22 | | 21 | | | 18 | | 22 | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 1.49 | | 0.89 | 1.03 | | 1.62 | | 1.79 | 1.41 | 1.55 | 2.01 | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 88% | 1.29 | | 0.66 | 0.80 | | 1.38 | | 1.52 | 1.18 | 1.36 | 1.55 | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 88% | 0.20 | | 0.23 | 0.23 | | 0.24 | | 0.27 | 0.23 | 0.19 | 0.46 | |
| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | |
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.06 | | | 0.94 | | 0.23 | | | 0.90 | | 1.20 | |
| | | Aesthetic | mg/L | ≤ 0.3 | 50% | 50% | 0.06 | | | 0.94 | | 0.23 | | | 0.90 | | 1.20 | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 83% | 75% | 0.3 | | | 0.17 | | 0.11 | | 0.04 | 0.31 | 0.06 | 0.45 | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 11 | 9 | 0 | 0 | |
| Total coliforms ^e | P09/102 | Operational | Count per 100ml | < 10 | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | |

| 14 Lotus Road - Stanger Manor Res | | STB 4 | | | | | | | | | DATE ANALYSED | | | | 14-May-14 | | | | |
|---|----------------|---|-----------------|------------------------|--------------------------|--------------------------|--------------|----------|----------|-------|---------------|-------|----------|-------|-----------|-------|-------|--|--|
| Determinand | Test Method No | SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands | | | | | 2014 | | | | | | | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 16-01 | 15-01 | 30-01 | 12-02 | 26-02 | 12-03 | 20-03 | 24-03 | 07-04 | 23-04 | 08-05 | | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 7.8 | Resample | | 8.3 | not sampled | 7.5 | resample | 8.2 | 7.8 | 7.8 | 7.8 | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 75% | 75% | 4.0 | | | 6.0 | | 12 | | | 16 | | 18 | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 0% | 0% | 1.1 | | | 1.4 | | 2.3 | | 2.6 | 6.7 | 1.9 | 3.2 | | |
| | | Aesthetic | NTU | ≤ 5 | 83% | 63% | 1.1 | | | 1.4 | | 2.3 | | 2.6 | 6.7 | 1.9 | 3.2 | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 18 | | | 13 | | 16 | | | 18 | | 22 | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 1.21 | | 1.07 | 0.72 | | 1.78 | | 0.17 | 1.25 | 1.35 | 1.79 | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 88% | 1.00 | | 0.79 | 0.56 | | 1.51 | | 0.16 | 0.92 | 1.04 | 1.43 | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 88% | 0.21 | | 0.28 | 0.16 | | 0.27 | | 0.01 | 0.33 | 0.31 | 0.36 | | |
| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | | |
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.05 | | | 0.34 | | 0.17 | | | 0.23 | | 0.32 | | |
| | | Aesthetic | mg/L | ≤ 0.3 | 75% | 75% | 0.05 | | | 0.34 | | 0.17 | | | 0.23 | | 0.32 | | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 100% | 75% | 0.2 | | | 0.20 | | 0.10 | | 0.08 | 0.13 | 0.13 | 0.28 | | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 88% | 0 | | 0 | 3 | | 0 | | 7 | 1 | 0 | 0 | | |
| Total coliforms ^c | P09/102 | Operational | Count per 100ml | < 10 | 100% | 88% | 0 | | 0 | 2 | | 0 | | 0 | 0 | 0 | 0 | | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 88% | 0 | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| 5935 Lindelani Ext 46 - Saunders Res | | STB 2 | | | | | | | | | DATE ANALYSED | | | | 14-May-14 | | | | |
| Determinand | Test Method No | SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands | | | | | 2014 | | | | | | | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 16-01 | 15-01 | 30-01 | 12-02 | 26-02 | 12-03 | 20-03 | 24-03 | 07-04 | 23-04 | 08-05 | | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 7.9 | Resample | no water | 8.0 | not sampled | 7.6 | resample | 7.6 | 7.9 | 7.8 | 7.8 | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 100% | 100% | 1.2 | | | 3.7 | | 2.3 | | | 6.1 | | 18 | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 17% | 13% | 0.9 | | | 1.6 | | 1.8 | | 1.8 | 4.4 | 2.5 | 3.8 | | |
| | | Aesthetic | NTU | ≤ 5 | 100% | 75% | 0.9 | | | 1.6 | | 1.8 | | 1.8 | 4.4 | 2.5 | 3.8 | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 18 | | | 19 | | 15 | | | 18 | | 22 | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 1.18 | | | 0.93 | | 0.17 | | 1.05 | 1.35 | 1.12 | 1.72 | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 75% | 0.86 | | | 0.74 | | 0.09 | | 0.88 | 1.14 | 0.08 | 1.42 | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 75% | 0.32 | | | 0.19 | | 0.08 | | 0.17 | 0.21 | 0.32 | 0.30 | | |

| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | | |
|--|----------------|---|-----------------|------------------------|--------------------------|--------------------------|------------------------------|----------|-------|-------|-------------|------------|----------|-------|-------|-------|------|--|--|
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.07 | | | 1.0 | | 0.17 | | | 0.27 | | 0.32 | | |
| | | Aesthetic | mg/L | ≤ 0.3 | 75% | 75% | 0.07 | | | 1.0 | | 0.17 | | | 0.27 | | 0.32 | | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 100% | 75% | 0.20 | | | 0.11 | | 0.09 | | 0.05 | 0.11 | 0.16 | 0.30 | | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 100% | 75% | 0 | | | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| Total coliforms ^e | P09/102 | Operational | Count per 100ml | < 10 | 100% | 75% | 0 | | | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 75% | 0 | | | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 100% | 75% | 0 | | | 0 | | 0 | | 0 | 0 | 0 | 0 | | |
| 172 Hill Drive Road - Gledhow South | | STB 10 | | | | | DATE ANALYSED | | | | | 25-04-2014 | | | | | | | |
| Determinand | Test Method No | SANS 241-1:2011 operational, chemical and Microbiological determinands | | | | | Physical, aesthetic, 2014 | | | | | | | | | | | | |
| | | Risk | Unit | Standard limits (a) | % Analysis Compliance | % Sampling Compliance | Date Sampled | | | | | | | | | | | | |
| | | | | | | | 13-01 | 15-01 | 30-01 | 10-02 | 26-02 | 10-03 | 20-03 | 24-03 | 07-04 | 22-04 | | | |
| Physical and aesthetic determinands | | | | | | | | | | | | | | | | | | | |
| pH at 25°C ^c | P09/042 | Operational | pH units | ≥ 5 to ≤ 9.7 | 100% | 75% | 8.1 | Resample | | 7.7 | not sampled | 7.8 | resample | 7.6 | 7.6 | 7.8 | | | |
| Colour | P09/011 | Aesthetic | mg/L Pt-Co | ≤ 15 | 100% | 100% | 5.0 | | | 12 | | 5.0 | | | 3.7 | | | | |
| Turbidity ^b {A} | P09/045 | Operational | NTU | ≤ 1 | 67% | 50% | 0.5 | | | 1.7 | | 0.3 | | 0.6 | 2.0 | 0.7 | | | |
| | | Aesthetic | NTU | ≤ 5 | 100% | 75% | 0.5 | | | 1.7 | | 0.3 | | 0.6 | 2.0 | 0.7 | | | |
| Conductivity at 25°C | P09/044 | Aesthetic | mS/m | ≤ 170 | 100% | 100% | 22 | | | 19 | | 17 | | | 18 | | | | |
| Residual Chlorine - Total | P09/025 | ns | mg/L | ns | | | 0.07 | 0.04 | 0.05 | 0.31 | | 0.15 | 0.11 | 0.08 | 0.11 | 0.09 | | | |
| Residual Chlorine - Free | P09/025 | Chronic health | mg/L | ≤ 5 | 100% | 100% | 0.02 | 0.03 | 0.03 | 0.23 | | 0.09 | 0.06 | 0.06 | 0.07 | 0.05 | | | |
| Monochloramine | P09/025 | Chronic health | mg/L | ≤ 3 | 100% | 100% | 0.05 | 0.01 | 0.02 | 0.08 | | 0.06 | 0.05 | 0.02 | 0.04 | 0.04 | | | |
| Chemical determinands - micro-determinands | | | | | | | | | | | | | | | | | | | |
| Iron as Fe | P09/014 | Chronic health | mg/L | ≤ 2 | 100% | 100% | 0.07 | | | 0.71 | | 0.08 | | | 0.12 | | | | |
| | | Aesthetic | mg/L | ≤ 0.3 | 75% | 75% | 0.07 | | | 0.71 | | 0.08 | | | 0.12 | | | | |
| Aluminium as Al | P09/053 | Operational | mg/L | ≤ 0.3 | 100% | 75% | 0.30 | | | 0.11 | | <0.01 | | <0.01 | 0.01 | <0.01 | | | |
| MICROBIOLOGICAL RESULTS | | | | | | | | | | | | | | | | | | | |
| Heterotrophic plate count ^f | P09/103 | Operational | Count per ml | < 1000 | 71% | 63% | 54 | | 212 | 39 | | 756 | | 2862 | 976 | 2904 | | | |
| Total coliforms ^e | P09/102 | Operational | Count per 100ml | < 10 | 57% | 50% | 20 | | 9 | 12 | | 3 | | 1 | 40 | 0 | | | |
| Faecal coliforms ^b {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 56% | 56% | 2 | 0 | 0 | 0 | | 1 | 5 | 0 | 28 | 0 | | | |
| E.coli ^a {A} | P09/046 | Acute health - 1 | Count per 100ml | Not detected | 56% | 56% | 2 | 0 | 0 | 0 | | 1 | 4 | 0 | 28 | 0 | | | |

(a) = The health related standards are based on the consumption of 2 L of water per day per person of a mass of 60kg over a period of 70 years.

a = Definitive, preferred indicator of faecal pollution.

b = Indicator of unacceptable microbial water quality, could be tested instead of E.coli , but is not the preferred indicator of faecal pollution.

Also provides information on treatment efficiency and aftergrowth in distribution networks.

c = Confirms a risk of human infection and faecal pollution and also provides information on treatment efficiency. The detection of selected viruses confirms faecal pollution of human origin.

d = Confirms a risk of infection and faecal pollution and also provides information on treatment efficiency. The detection of selected protozoan parasites confirms a human health risk.

e = Indicates potential faecal pollution and provides information on treatment efficiency and aftergrowth.

f = Process indicator that provides information on treatment efficiency, aftergrowth in distribution networks and adequacy of disinfectant residuals.

g = Process indicator that provides information on treatment efficiency.

KEY ** = TOO NUMEROUS TO COUNT ns = NOT SPECIFIED

for and on behalf of B N KIRK (Natal) cc



D. Bester - Laboratory Manager

Technical Signatory



**D. Subban - Chemistry Lab
Supervisor**

Technical Signatory

18 May 2014

Date

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2. Results marked "Subcontracted Test" in this report, are not included in the SANAS Schedule of accreditation for this laboratory.
3. The estimated uncertainty of measurements for the accredited test results is obtainable from the laboratory - QP24 Appendix A.
4. The results relate to the sample tested and the most recent methods available with a 95% confidence level.

End of Report