



Certificate of Analysis

| | | | | |
|-----------------|--|--------------------------|----------------------|------|
| Client: | Oravida Waters Limited | Lab No: | 2597024 | SPV1 |
| Contact: | Sunel Davies C/- Oravida Waters Limited PO Box 106123 Auckland 1010 | Date Received: | 28-Apr-2021 | |
| | | Date Reported: | 05-May-2021 | |
| | | Quote No: | 107348 | |
| | | Order No: | | |
| | | Client Reference: | OWL Typical analysis | |
| | | Submitted By: | Sunel Davies | |

Sample Type: Aqueous

| | | | | | |
|---------------------|--|--|--|--|--|
| Sample Name: | Typical Analysis: Orando Waters Ltd | | | | |
| Lab Number: | 2597024.1 | | | | |

Individual Tests

| | | | | | | |
|---|---------------------------------------|---------|---|---|---|---|
| pH | pH Units | 7.1 | - | - | - | - |
| Total Alkalinity | g/m ³ as CaCO ₃ | 30 | - | - | - | - |
| Carbonate | g/m ³ at 25°C | < 1.0 | - | - | - | - |
| Bicarbonate | g/m ³ at 25°C | 36 | - | - | - | - |
| Total Hardness | g/m ³ as CaCO ₃ | 13.0 | - | - | - | - |
| Total Dissolved Solids (TDS) | g/m ³ | 111 | - | - | - | - |
| Calcium | g/m ³ | 2.8 | - | - | - | - |
| Magnesium | g/m ³ | 1.44 | - | - | - | - |
| Potassium | g/m ³ | 2.7 | - | - | - | - |
| Sodium | g/m ³ | 11.5 | - | - | - | - |
| Chloride | g/m ³ | 9.4 | - | - | - | - |
| Silicon | g/m ³ | 46 | - | - | - | - |
| Nitrite-N | g/m ³ | < 0.002 | - | - | - | - |
| Nitrate-N | g/m ³ | < 0.002 | - | - | - | - |
| Nitrate-N + Nitrite-N | g/m ³ | < 0.002 | - | - | - | - |
| Reactive Silica | g/m ³ as SiO ₂ | 92 | - | - | - | - |
| Sulphate | g/m ³ | < 0.5 | - | - | - | - |
| Heterotrophic Plate Count 22°C (72 hrs) | cfu / mL | < 1 #2 | - | - | - | - |
| Total Coliforms and E.coli | | | | | | |
| Escherichia coli | MPN / 100mL | < 1 #1 | - | - | - | - |
| Total Coliforms | MPN / 100mL | < 1 #1 | - | - | - | - |

Analyst's Comments

#1 Please interpret this result with caution as it is not known what the sample age was on receipt at the lab. Please ensure that both sampling date and time are recorded on the submission form and sample bottle. The sample is required to be less than 24 hours old at the time of testing in the lab.

Please interpret this result with caution as the sample was > 10 °C on receipt at the lab. The sample temperature is recommended by the laboratory's reference methods to be less than 10 °C on receipt at the laboratory (but not frozen). However, it is acknowledged that samples that are transported quickly to the laboratory after sampling, may not have been cooled to this temperature.

#2 Statistically estimated count based on the theoretical countable range for the stated method.

Please interpret this result with caution as it is not known what the sample age was on receipt at the lab. Please ensure that both sampling date and time are recorded on the submission form and sample bottle. The sample is required to be less than 24 hours at the time of testing in the lab.

Please interpret this result with caution as the sample was > 10 °C on receipt at the lab. The sample temperature is recommended by the laboratory's reference methods to be less than 10 °C on receipt at the laboratory (but not frozen). However, it is acknowledged that samples that are transported quickly to the laboratory after sampling, may not have been cooled to this temperature.



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

| Sample Type: Aqueous | | | |
|---|--|---|-----------|
| Test | Method Description | Default Detection Limit | Sample No |
| Individual Tests | | | |
| pH | pH meter. APHA 4500-H+ B 23 rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used. | 0.1 pH Units | 1 |
| Total Alkalinity | Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (modified for Alkalinity <20) 23 rd ed. 2017. | 1.0 g/m ³ as CaCO ₃ | 1 |
| Carbonate | Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 23 rd ed. 2017. | 1.0 g/m ³ at 25°C | 1 |
| Bicarbonate | Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 23 rd ed. 2017. | 1.0 g/m ³ at 25°C | 1 |
| Total Hardness | Calculation: from Ca and Mg. APHA 2340 B 23 rd ed. 2017. | 1.0 g/m ³ as CaCO ₃ | 1 |
| Total Dissolved Solids (TDS) | Filtration through GF/C (1.2 µm), gravimetric. APHA 2540 C (modified; drying temperature of 103 - 105°C used rather than 180 ± 2°C) 23 rd ed. 2017. | 10 g/m ³ | 1 |
| Calcium | Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017. | 0.05 g/m ³ | 1 |
| Magnesium | Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017. | 0.02 g/m ³ | 1 |
| Potassium | Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017. | 0.05 g/m ³ | 1 |
| Sodium | Analysed as received (after acid preservation, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017. | 0.02 g/m ³ | 1 |
| Chloride | Filtered sample. Ion Chromatography. APHA 4110 B (modified) 23 rd ed. 2017. | 0.5 g/m ³ | 1 |
| Silicon | Analysed as received (filtration, if required), ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017. | 0.005 g/m ³ | 1 |
| Nitrite-N | Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₂ -I (modified) 23 rd ed. 2017. | 0.002 g/m ³ | 1 |
| Nitrate-N | Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House. | 0.0010 g/m ³ | 1 |
| Nitrate-N + Nitrite-N | Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ -I (modified) 23 rd ed. 2017. | 0.002 g/m ³ | 1 |
| Reactive Silica | Filtered sample. Heteropoly blue colorimetry. Flow Injection Analyser. APHA 4500-SiO ₂ F (modified) 23 rd ed. 2017. | 0.10 g/m ³ as SiO ₂ | 1 |
| Sulphate | Filtered sample. Ion Chromatography. APHA 4110 B (modified) 23 rd ed. 2017. | 0.5 g/m ³ | 1 |
| Heterotrophic Plate Count 22°C (72 hrs) | Count on Plate count agar, Incubated at 22°C for 72 hours. APHA 9215 B 23 rd ed. 2017. | 1 cfu / mL | 1 |
| Total Coliforms and E.coli | | | |
| Escherichia coli | MPN count using Colilert 18 (Incubated at 35°C for 18 hours) and 51 wells. APHA 9223 B 23 rd ed. 2017. | 1 MPN / 100mL | 1 |
| Total Coliforms | MPN count using Colilert 18 (Incubated at 35°C for 18 hours) and 51 wells. APHA 9223 B 23 rd ed. 2017. | 1 MPN / 100mL | 1 |

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 29-Apr-2021 and 05-May-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Martin Cowell - BSc
Client Services Manager - Environmental