Food & Water Testing

# ANALYTICAL REPORT

| REPORT CODE | AR-25-NC-038773-01 | REPORT DATE | 18/12/2025 |
|---|---|---|---|

**Attention** Otago Regional Council
[redacted]

**Copy to:** regulatory [redacted]

| | | | |
|---|---|---|---|
| **Contact for your orders:** | [redacted] | **Order code:** | EUNZCH-00239176 |
| **Contract:** | Shotover WWTP | | |
| **Submission Reference:** | Emergency discharge to Shotover River | **Purchase Order Number:** | [redacted] |

| SAMPLE CODE | 817-2025-00121713 | | |
|---|---|---|---|
| **Sample Name** | GT780ORC | | |
| **Sampling Point code:** | GT780ORC | **Sampling Point name:** | 1. Upstream WWTP (before the SH6 bridge) - ORC Sam |
| **Reception Date & Time:** | 08/12/2025 14:32 | **Reception temperature:** | 14.4 °C |
| **Analysis Started on:** | 09/12/2025 | **Analysis Ending Date:** | 18/12/2025 |
| **Product Type** | Surface water, raw water | **Sampler(s)** | [redacted] |
| **Sampled Date & Time** | 08/12/2025 13:15 | | |

| FAECAL SOURCE TRACKING | | RESULTS | | LOQ |
|---|---|---|---|---|
| ⑤NC04R | **Microbial Source Tracking (Faecal Source Tracking)** | | | |
| | Dna Extraction | Complete | | N/A |
| | See Document Attached | See attached report | | N/A |
| ④NCWE6 | **Quantification of Ruminant BacR MST marker by ddPCR** | | | |
| | Ruminant BacR | 10000 | copies/100 ml | N/A |
| ④NCAI2 | **Quantification of Canine DG72 MST marker by ddPCR** | | | |
| | Canine DG72 | <1800 | copies/100 ml | N/A |
| ④NCAJ2 | **Quantification of Avian GFD MST marker by ddPCR** | | | |
| | Avian GFD | <1800 | copies/100 ml | N/A |
| ④NCWF6 | **Quantification of Avian Gull4 MST marker by ddPCR** | | | |
| | Avian Gull4 | 2300 | copies/100 ml | N/A |
| ④NCWG6 | **Quantification of Human HF183 MST marker by ddPCR** | | | |
| | Human HF183 | <1800 | copies/100 ml | N/A |
| ④NCWH6 | **Quantification of Human HumM2 MST marker by ddPCR** | | | |
| | Human HumM2 | <1800 | copies/100 ml | N/A |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | | |
| | Total Nitrogen (N) | 0.29 | mg/l | 0.01 |
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | | |
| | Total Oxidised Nitrogen | 0.01 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |
| | Biochemical oxygen demand (BOD) | <2 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | | |
| | Suspended Solids | 950 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |
| | pH | 7.9 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | | |
| | Ammonia nitrogen | <0.01 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | | |
| | Total phosphorus | 0.66 | mg/l | 0.01 |
| ⑤NCWF8 | **Quantification of Universal GenBac3 MST marker by ddPCR** | | | |
| | General GenBac3 | 87000 | copies/100 ml | N/A |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | | |
| | Escherichia coli | 1000 | cfu/100 ml | 1 |

## SAMPLE CODE 817-2025-00121714

**Sample Name** GT779ORC
**Sampling Point code:** GT779ORC
**Sampling Point name:** 2. Final Discharge post UV - ORC Sampling
**Reception Date & Time:** 08/12/2025 14:32
**Reception temperature:** 14.4 °C
**Analysis Started on:** 09/12/2025
**Analysis Ending Date:** 15/12/2025
**Product Type** treated effluent
**Sampler(s)** [redacted]
**Sampled Date & Time** 08/12/2025 14:06

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | | |
| | Total Nitrogen (N) | 4.33 | mg/l | 0.01 |
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | | |
| | Total Oxidised Nitrogen | 2.8 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |
| | Biochemical oxygen demand (BOD) | 3 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | | |
| | Suspended Solids | 9.6 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |
| | pH | 7.0 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | | |
| | Ammonia nitrogen | 0.21 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | | |
| | Total phosphorus | 2.15 | mg/l | 0.01 |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | | |
| | Escherichia coli | 40 | cfu/100 ml | 1 |

## SAMPLE CODE 817-2025-00121715

**Sample Name** GT781ORC
**Sampling Point code:** GT781ORC
**Sampling Point name:** 3. Discharge to the river - ORC Sampling
**Reception Date & Time:** 08/12/2025 14:32
**Reception temperature:** 14.4 °C
**Analysis Started on:** 09/12/2025
**Analysis Ending Date:** 15/12/2025
**Product Type** Surface water, raw water
**Sampler(s)** [redacted]
**Sampled Date & Time** 08/12/2025 13:33

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | | |
| | Total Nitrogen (N) | 4.75 | mg/l | 0.01 |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | | |
| | Total Oxidised Nitrogen | 2.1 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |
| | Biochemical oxygen demand (BOD) | 3 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | | |
| | Suspended Solids | 8.7 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |
| | pH | 7.2 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | | |
| | Ammonia nitrogen | 0.21 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | | |
| | Total phosphorus | 2.19 | mg/l | 0.01 |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | | |
| | Escherichia coli | 370 | cfu/100 ml | 1 |

| SAMPLE CODE | 817-2025-00121716 | | |
|---|---|---|---|
| **Sample Name** | GT782ORC | | |
| **Sampling Point code:** | GT782ORC | **Sampling Point name:** | 4. 200 meters downstream - ORC Sampling |
| **Reception Date & Time:** | 08/12/2025 14:32 | **Reception temperature:** | 14.4 °C |
| **Analysis Started on:** | 09/12/2025 | **Analysis Ending Date:** | 18/12/2025 |
| **Product Type** | Surface water, raw water | **Sampler(s)** | [redacted] |
| **Sampled Date & Time** | 08/12/2025 13:38 | | |

| FAECAL SOURCE TRACKING | | RESULTS | | LOQ |
|---|---|---|---|---|
| ⑤NC04R | **Microbial Source Tracking (Faecal Source Tracking)** | | | |
| | Dna Extraction | Complete | | N/A |
| | See Document Attached | See attached report | | N/A |
| ④NCWE6 | **Quantification of Ruminant BacR MST marker by ddPCR** | | | |
| | Ruminant BacR | 22000 | copies/100 ml | N/A |
| ④NCAI2 | **Quantification of Canine DG72 MST marker by ddPCR** | | | |
| | Canine DG72 | 2000 | copies/100 ml | N/A |
| ④NCAJ2 | **Quantification of Avian GFD MST marker by ddPCR** | | | |
| | Avian GFD | <1800 | copies/100 ml | N/A |
| ④NCWF6 | **Quantification of Avian Gull4 MST marker by ddPCR** | | | |
| | Avian Gull4 | <1800 | copies/100 ml | N/A |
| ④NCWG6 | **Quantification of Human HF183 MST marker by ddPCR** | | | |
| | Human HF183 | $3.30 \times 10^5$ | copies/100 ml | N/A |
| ④NCWH6 | **Quantification of Human HumM2 MST marker by ddPCR** | | | |
| | Human HumM2 | 23000 | copies/100 ml | N/A |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | | |
| | Total Nitrogen (N) | 0.46 | mg/l | 0.01 |
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | | |
| | Total Oxidised Nitrogen | 0.08 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |
| | Biochemical oxygen demand (BOD) | <2 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | | |
| | Suspended Solids | 1210 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |
| | pH | 7.8 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | | |
| | Ammonia nitrogen | <0.01 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | | |
| | Total phosphorus | 1.06 | mg/l | 0.01 |
| ⑤NCWF8 | **Quantification of Universal GenBac3 MST marker by ddPCR** | | | |
| | General GenBac3 | $2.70x10^6$ | copies/100 ml | N/A |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | | |
| | Escherichia coli | 900 | cfu/100 ml | 1 |

| SAMPLE CODE | 817-2025-00121717 | | |
|---|---|---|---|
| **Sample Name** | GT794ORC | | |
| **Sampling Point code:** | GT784ORC | **Sampling Point name:** | 5. Upstream of Kawarau River - ORC Sampling |
| **Reception Date & Time:** | 08/12/2025 14:32 | **Reception temperature:** | 14.4 °C |
| **Analysis Started on:** | 09/12/2025 | **Analysis Ending Date:** | 15/12/2025 |
| **Product Type** | Surface water, raw water | **Sampler(s)** | [redacted] |
| **Sampled Date & Time** | 08/12/2025 13:20 | | |

| | | RESULTS | | LOQ |
|---|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | | |
| | Total Nitrogen (N) | 0.07 | mg/l | 0.01 |
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | | |
| | Total Oxidised Nitrogen | 0.02 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | | |
| | Biochemical oxygen demand (BOD) | <2 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | | |
| | Suspended Solids | <2.5 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | | |
| | pH | 7.7 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | | |
| | Ammonia nitrogen | <0.01 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | | |
| | Total phosphorus | <0.01 | mg/l | 0.01 |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | | |
| | Escherichia coli | 10 | cfu/100 ml | 1 |

| SAMPLE CODE | 817-2025-00121718 | | |
|---|---|---|---|
| **Sample Name** | GT783ORC | | |
| **Sampling Point code:** | GT785ORC | **Sampling Point name:** | 6. Downstream of Kawarau River - ORC Sampling |
| **Reception Date & Time:** | 08/12/2025 14:32 | **Reception temperature:** | 14.4 °C |
| **Analysis Started on:** | 09/12/2025 | **Analysis Ending Date:** | 18/12/2025 |
| **Product Type** | Surface water, raw water | **Sampler(s)** | [redacted] |
| **Sampled Date & Time** | 08/12/2025 13:00 | | |

| FAECAL SOURCE TRACKING | RESULTS | | LOQ |
|---|---|---|---|
| ⑤NC04R | **Microbial Source Tracking (Faecal Source Tracking)** | | |
| Dna Extraction | Complete | | N/A |
| See Document Attached | See attached report | | N/A |
| ④NCWE6 | **Quantification of Ruminant BacR MST marker by ddPCR** | | |
| Ruminant BacR | 43000 | copies/100 ml | N/A |
| ④NCAI2 | **Quantification of Canine DG72 MST marker by ddPCR** | | |
| Canine DG72 | 2100 | copies/100 ml | N/A |
| ④NCAJ2 | **Quantification of Avian GFD MST marker by ddPCR** | | |
| Avian GFD | <1800 | copies/100 ml | N/A |
| ④NCWF6 | **Quantification of Avian Gull4 MST marker by ddPCR** | | |
| Avian Gull4 | 4300 | copies/100 ml | N/A |
| ④NCWG6 | **Quantification of Human HF183 MST marker by ddPCR** | | |
| Human HF183 | 5300 | copies/100 ml | N/A |
| ④NCWH6 | **Quantification of Human HumM2 MST marker by ddPCR** | | |
| Human HumM2 | <1800 | copies/100 ml | N/A |

| | RESULTS | | LOQ |
|---|---|---|---|
| NC03M | **Total Nitrogen in Water by Discrete Analyser (Trace)** | | |
| Total Nitrogen (N) | 0.29 | mg/l | 0.01 |
| NC04C | **Total Oxidised Nitrogen in Water by Discrete Analyser** | | |
| Total Oxidised Nitrogen | 0.01 | mg/l | 0.01 |
| NC05B | **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode** | | |
| Biochemical oxygen demand (BOD) | <2 | mg/l | 2 |
| NC0AE | **Total Suspended Solids in Water by Gravimetry** | | |
| Suspended Solids | 838 | mg/l | 2.5 |
| NC0AF | **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time)** | | |
| pH | 7.8 | | 0.1 |
| ⑨NC0AK | **Ammoniacal Nitrogen by Discrete Analyser** | | |
| Ammonia nitrogen | <0.01 | mg/l | 0.01 |
| NC76G | **Total Phosphorus in Water by Discrete Analyser (Trace)** | | |
| Total phosphorus | 0.53 | mg/l | 0.01 |
| ⑤NCWF8 | **Quantification of Universal GenBac3 MST marker by ddPCR** | | |
| General GenBac3 | $3.00 \times 10^5$ | copies/100 ml | N/A |
| ZMJU7 | **Enumeration of Escherichia coli by Membrane Filtration** | | |
| Escherichia coli | 2100 | cfu/100 ml | 1 |

**LIST OF METHODS**

NC03M **Total Nitrogen in Water by Discrete Analyser (Trace):** APHA 24th Edition 4500-P J/4500-NH

* Test was performed at 142 Esk Street, Invercargill

NC04C **Total Oxidised Nitrogen in Water by Discrete Analyser:** APHA 24th Edition 4500-NO3 H
* Test was performed at 142 Esk Street, Invercargill

NC05B **Total Biochemical Oxygen Demand (TBOD 5 Days) by Electrode:** APHA 24th Edition 5210 B
* Test was performed at 142 Esk Street, Invercargill

NC0AF **pH in Water by Manual Electrode (Tested beyond 15 minute APHA holding time):** APHA 24th Edition 4500-H B
* Test was performed at 142 Esk Street, Invercargill

NC76G **Total Phosphorus in Water by Discrete Analyser (Trace):** APHA 24th Edition 4500 P B/J mod
* Test was performed at 142 Esk Street, Invercargill

NCAJ2 **Quantification of Avian GFD MST marker by ddPCR:** Method of the subcontractor (subcontract)

NCWF6 **Quantification of Avian Gull4 MST marker by ddPCR:** Method of the subcontractor (subcontract)

NCWG6 **Quantification of Human HF183 MST marker by ddPCR:** Method of the subcontractor (subcontract)

ZMJU7 **Escherichia coli E [IVC] <1 >8 000 cfu/100 ml (0) mTEC Agar-F:** US EPA 1603 2014
* Test was performed at 142 Esk Street, Invercargill

NC04R **Microbial Source Tracking (Faecal Source Tracking):** Method of the subcontractor (subcontract)

NC0AE **Total Suspended Solids in Water by Gravimetry:** APHA 24th Edition 2540 D
* Test was performed at 142 Esk Street, Invercargill

NC0AK **Ammoniacal Nitrogen by Discrete Analyser:** ISBN 0117516139 mod.
* Test was performed at 142 Esk Street, Invercargill

NCAI2 **Quantification of Canine DG72 MST marker by ddPCR:**

NCWE6 **Quantification of Ruminant BacR MST marker by ddPCR:** Method of the subcontractor (subcontract)

NCWF8 **Quantification of Universal GenBac3 MST marker by ddPCR:** Method of the subcontractor (subcontract)

NCWH6 **Quantification of Human HumM2 MST marker by ddPCR:** Method of the subcontractor (subcontract)

**Signature**

[redacted]

**EXPLANATORY NOTE**

①Test is not accredited
②Test is subcontracted within Eurofins group and is accredited
③Test is subcontracted within Eurofins group and is not accredited
④Test is subcontracted outside Eurofins group and is accredited
⑤Test is subcontracted outside Eurofins group and is not accredited
⑥Test result is provided by the customer and is not accredited
⑦Tested at the sampling point by Eurofins and is not accredited
⑧Tested at the sampling point by Eurofins and is accredited
⑨Test is RLP accredited
⑩Test is subcontracted within Eurofins group and is RLP accredited

**N/A** means Not Applicable
**Not Detected** means not detected at or above the Limit of Quantification (LOQ)
**LOQ** means Limit of Quantification and the unit of LOQ is the same as the result unit
✗ (Unsatisfactory) means does not meet the specification
✓(Satisfactory) means meets the specification
**MAV** means Maximum Allowable Value

The Customer acknowledges and accepts that: (a) where Eurofins is not responsible for sampling, the test result(s) in this report apply only to the sample as received. Customer is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the product.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 16 Lorne Street, Dunedin.
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